May - June 2026

ELEVATOR WORLD INDIA

elevatorworld.com/INDIA

Issue 3, Volume 19

BRUGG Lifting

BRUGG LIFTING MARKS IMPORTANT MILESTONE
Strengthens Commitment to Indian Market with BIS License for Swiss-Manufactured Elevator Ropes

MORE AGILE AND FUTURE-READY
Wittur India's New MD Raammohan K shares insights on his future focus for the company and how new standards will impact the VT industry.

A TRUSTED URBAN MOBILITY PARTNER
TK Elevator India CEO and MD Ravikrishnan Srinivasan shares insights about his key priorities for the company and the path forward.

ELEVATOR WORLD INDIA

KARENG/2008/24064

READY FOR THE NEW INDIAN STANDARDS

IS 17900-1 and IS 17900-2

From 1st March 2026, the full range of elevator doors manufactured by Innovatec India Pvt. Ltd. and Tecno Doors Private Ltd. complies with the new Indian standards.

Fermator

AUTOMATIC DOORS FOR LIFTS

COMPLIANCE • SAFETY • INNOVATION

THE ITALIAN MASTER IN ELEVATOR HYDRAULICS

www.coam-spa.com

COAM POWERED BY ELMO ITALY

ELMO MOTORS

40+ years of expertise in submersible motors.
Over 1 million units running worldwide.

TRUSTED. SILENT. UNSTOPPABLE.

3 TRIPLE HYDRAULIC SOLUTIONS

POWER UNITS • CYLINDERS • CANTILEVERS

POWER UNITS

PISTONS

CAR FRAMES

★ ★ ★ ★ ★

"SHAFT PLANNING/ GAD SERVICE PROVIDED FOR EVERY JOB!"

VIJAY JAIN, RIDE SAFE ELEVATORS

★ ★ ★ ★ ★

"EXCELLENT AFTER SALES SERVICE AND ON-SITE ASSISTANCE"

MADHU K - EASYLIFE ELEVATORS

FOR ORDERS & ENQUIRIES: WEST - 9820 174 102 | SOUTH - 9920 698 600 | NORTH AND EAST - 9920 698 690

Contents

ELEVATOR WORLD India
May - June 2026 Issue 3, Volume 19

FEATURES

FOCUS ON VT SELECTION PARAMETERS & PREREQUISITES

COLUMNS

DEPARTMENTS

ELEVATOR WORLD INDIA

ELEVATOR WORLD India is a bi-monthly magazine published by Elevator World, Inc., Mobile, Alabama (U.S.) and Virgo Publications, Bangalore (India). Virgo Publications is a sister organization of Virgo Communications, organizers of the Global Lift and Escalator Expo. Elevator World, Inc. is the premier publisher for the international building transportation industry. Since the inception of ELEVATOR WORLD magazine in 1953, the company has expanded core products to include ELEVATOR WORLD India; an extensive network of websites, newsletters (including ELENET®), and magazines; and the Source©, the most inclusive industry directory.

Publishers – Anitha Raghunath, Ricia Sturgeon-Hendrick, T. Bruce MacKinnon
International Publishing Co. – Elevator World, Inc.
Indian Publishing Co. – Virgo Publications

Editorial
Executive Editor – Angela C. Baldwin
Consulting Editor, India – Vijay Pandya
EW Editorial Staff (U.S.) – Kaija Wilkinson, Lindsay Fletcher, Kathleen Farrell

EW India Contributors - Arun Narang, Prerna Mistry, Sheetal S. Patil, Rajnikant Lad, Dr. Malini Saba, Dr. Paresh Kariya, Subramania Bharathiyar, Shilpa Pandya, Lakshmanan Raja, Dr. Ali Albadri, Fali Palkhiwala

Printing, Distribution and Commercial Operations
Commercial Directors – Anitha Raghunath and G. Raghu (India)

Advertising Sales and Marketing
Anitha Raghunath and G. Raghu (India) – T. Bruce MacKinnon, Lesley K. Hicks, Scott O. Brown (International)
Susan Crigler (Education Products)

Production and Internet
EW Staff (U.S.) – Lillie McWilliams, Khalid Al-Shethry

Virgo Creative Team (India)
Aneena A S

Administration
Anitha Raghunath (India)
J. Scott Eastman (U.S.)

ELEVATOR WORLD India is published in the interest of the members of the elevator industry in India, to improve communication within that industry and to further continuing education of members of that industry. ELEVATOR WORLD India publishes articles by contributing authors as a stimulus to thinking and not directives. ELEVATOR WORLD India publishes this material without accepting responsibility for its absolute accuracy, but with hopes that the vast majority of it will have validity for the field. The ideas expressed therein should be tempered by recognized elevator engineering practices, standards, codes and guidelines. Publication of any article or advertisement should not be deemed as an endorsement by ELEVATOR WORLD India, ELEVATOR WORLD, the publishers at Elevator World, Inc. or Virgo Publications. Printed by Sri Sudhindra Offset Process, No.27-28, 8th Cross, Malleshwaram, Bangalore - 560003, Karnataka, India.
ELEVATOR WORLD India will be published bi-monthly in 2026: February 5, April 5, June 5, August 5, October 5 and December 5.
Advertising and subscription information is available at.
elevatorworld.com/INDIA.
Send company updates, announcements, press releases, product launches and article contributions to ewieditor@gmail.com.
Cover Image Courtesy: magnific.com

Editor's Overview

Focus on the Fundamentals to Touch the Sky

by Vijay Pandya

Choosing the right vertical-transportation (VT) system has become far more nuanced than ticking off speed and capacity on a specification sheet. As buildings evolve into taller, complex, multi-use environments, VT selection now sits at the intersection of planning intelligence, user behavior, regulatory compliance and long-term performance. Simply put, what gets selected today determines how smoothly a building will function for years to come.

Today's selection parameters go well beyond speed charts and capacity tables. Traffic analysis, peak-hour usage, building height and zoning, energy efficiency targets and serviceability all influence outcomes in tangible ways. Just as critical are the prerequisites that often receive far less attention: accurate data, realistic usage assumptions, early coordination across disciplines and clarity on future adaptability. Miss these, and even the most advanced systems risk becoming underutilized, inefficient or visibly strained.

The growing diversity of projects only sharpens the need for precision. A high-rise residential tower, a mixed-use development and a public infrastructure facility may share vertical mobility systems, but their operational demands are fundamentally different. Treating VT selection as a standardized process is no longer defensible. Understanding how people move, wait and interact with a building throughout its life cycle is now central to getting selection right.

This places responsibility squarely across the project ecosystem. Developers must prioritize long-term performance over short-term savings. Consultants must push for informed, data-led decisions. Architects must allow VT systems to be planned, not merely accommodated. And manufacturers must offer solutions grounded in real-world usage, not just theoretical capability. Getting the prerequisites right is no longer a courtesy; it is a professional obligation.

As expectations around sustainability, accessibility and operational efficiency continue to rise, VT selection will only grow more consequential. Buildings are increasingly judged not just by how they look, but by how well they work. Vertical mobility plays a decisive role in that equation.

This edition has several articles by leading experts who have examined and analyzed the parameters and prerequisites that define effective VT selection today. They have underlined the need to give this aspect the importance it deserves even while the structure is just a vague thought. Because when vertical mobility is planned with rigor and foresight, it fades seamlessly into the background. When it isn't, its shortcomings become impossible to ignore.

Calendar

2026-2027

2026

JUN 1-4	Elevator U Quincy, Illinois | elevatoru.org	
15-18	52nd Annual CECA Convention Victoria, B.C., Canada | ceca-acea.org	
22-23	Schwelm Symposium 2026 Schwelm, Germany | henning-gmbh.de	
25	Elevator Association of Minnesota Annual Education & Golf Event Ramsey, Minnesota | elevatorassocmn.org	
SEP 8	51st Annual Pop/Joe Memorial Invitational Golf Outing Glen Head, New York | joelfrohlinger@gmail.com	
16-17	17th Lift & Elevator Technologies Symposium Kettering, U.K. | liftsymposium.org	
21-23	The Elevator Show Dubai, U.A.E. | elevatorshowdubai.com	
24-25	Wisconsin Elevator Symposium Lake Geneva, Wisconsin | naesai.org	
SEP-OCT 28-1	NAEC 77th Fall Convention & Exposition Chicago, Illinois, U.S. | naec.org	
OCT 20-21	MIPIM Middle East Riyadh, Saudi Arabia | mipim.com	
20-22	LiftExpo Poland Warsaw, Poland | liftexpo.pl/en	
28-29	Chicago Build Chicago, Illinois | chicagobuildexpo.com	

28-30	**LiftExpo Italia** Milan, Italy | liftexpoitalia.com/en/	
NOV 10	**Nordic Lift Expo** Stockholm, Sweden | nordiskahissmassan.com	
11-13	**International Lift Expo Korea** Goyang-si, Korea | liftexpokorea.com	
DEC 3-5	**ISEE The E&E Show** Delhi, India | isee-expo.com	
10-11	**International Elevator & Escalator Symposium 2026** Amsterdam, The Netherlands | elevatorsymposium.org	

2027

FEB 8-12	**EESF AGM and Golf Outing** Tampa, Florida | eesf.org	
APR 11-14	**NAEC Spring Education Conference** Tampa, Florida | naec.org	
15-16	**ISO/TC 178 Plenary Meeting** Helsinki, Finland | iso.org	
MAY 6-9	**Asansör Istanbul** Istanbul, Türkiye | asansoristanbul.com	
SEP 12-15	**NAEC 78th Fall Convention & Exposition** St. Louis, Missouri | naec.org	
OCT 12-15	**interlift 2027** Nuremberg, Germany | interlift.de	

NEW LAUNCH

STELLAR

STANDARD STEEL ELEVATOR DOOR

WITTUR

REINVENTED.
REFORGED.
BUILT TO PROTECT.

Engineered for unmatched safety.
Built for every day.

IS 17900 COMPLIANCE
Trusted performance.

1000 N DEFLECTION TESTED
Withstands heavy force.

PENDULUM TESTED
Resilient in extreme impact conditions.

20 LAKH LIFE CYCLE
2 Million cycles of smooth performance.

ANTI DROP SILL HOOK
Keeps the door secure, even under force.

RIGOROUSLY TESTED → DESIGNED TO ENDURE → BUILT TO PROTECT → SAFE. SMOOTH. EVERY SINGLE TIME.

Contact Us

+91 95007 90006

infoin@wittur.com

RISE WITHOUT LIMITS

ISO 9001 : 2015 Certified

TECTRONICS

Power of Smart Engineering

A MADE IN INDIA PRODUCT

TECTRONICS TECHWORLD PVT. LTD.

Plant : 59 to 62, Jaynath Industrial Area-3, Survey No. 148/1, Kothariya Main Road, Village : Lothda, District : Rajkot, Pin : 360022, (Gujarat) INDIA. Ph. +91-90990 71747, Web : www.tectronicsindia.com, Email : info@tectronicsindia.com, Toll Free : 1800 1212 312.

Now,
Just Click & Get
Information on Your Mobile
Available on Play Store & App Store
Find **Tectronics Engineers** For Install

Application Download It From

For **Android** Users

For **ios** Users

www.tectronicsindia.com

Follow us

Nidec Component Expo 2026 Held

Per LinkedIn posts by Nidec India, the Nidec Component Expo 2026 was held on May 13-15 at The Orchard Hub, Dharwad. The event marked the successful culmination of an inspiring and collaborative journey. The inauguration was led by Udaya Kumar, procurement director, Nidec India Motion & Energy; Cristian Cargnelutti, vice president, Sourcing, Nidec Energy; Sebastien De Nardi, procurement officer, Nidec Automotive Motors & Electronic Controls; Aubrey Smith, supply chain director, Nidec Power America; and Claudio Sala, Global Sourcing & Supply Chain leader, Nidec Conversion. The inauguration also featured the traditional lighting of the lamp by the Nidec India procurement team, symbolizing a promising and successful beginning to the event. Driven by the company's "Make in India" commitment and focus on supply chain localization, the expo acted as a catalyst for collaboration and sustainable growth. Under the theme "Stronger Together — Driving Success," it highlighted the power of partnerships in shaping a resilient and future-ready ecosystem. The expo brought together Nidec's valued suppliers, partners and internal teams, fostering engaging conversations, new ideas and strong partnerships. From collaboration to progress, it was an exciting and impactful expo. Meaningful connections and insightful discussions that promise to shape the future of component advancement were witnessed. Interactions reflected a shared commitment to advancing technology and strengthening localization in line with "Make in India." Nidec extended its sincere appreciation to all its suppliers, partners and participants for their enthusiastic involvement and support in making the event a grand success. "Together, we move forward — stronger, more connected and ready to shape the future," the company stated.

Johnson Lifts Acquires Majority Stake in Toshiba Johnson Elevators (India)

Johnson Lifts (JLPL), India's largest manufacturer of elevators and escalators, announced that it has increased its equity stake in Toshiba Johnson Elevators (India) (TJEI) to over 80%, becoming the majority shareholder, the Business Standard reported in April. This development marks a significant milestone in the 14-year-old collaboration between JLPL and Toshiba Elevator and Building Systems Corp. (TELC). Japanese major TELC will continue as a valued strategic partner in the joint venture. The combined presence of JLPL and TJEI represents 20% of the elevator market and 30% of the escalator market in India. TJEI will continue as the sole and exclusive business partner in India for Toshiba-branded elevators, escalators and travelators. It will remain responsible for sales, installation, maintenance, customer service and all ongoing projects. TELC will continue to import its products into India, provide technical support and parts, ensuring continuity in quality and performance. The Japanese mobility market in India is estimated at 5,000 units-plus annually. TJEI will be targeting growth of 20% in the Japanese elevator market, which is the premium segment of the industry. Apart from the reconstitution of the board with a majority of JLPL representatives, there will be no immediate changes to employee roles, ongoing projects or customer commitments.

Exhibitors Display Strong Interest For Interlift 2027

The next edition of interlift Nuremberg will take place from October 12-15, 2027, at Messe Nürnberg. Preparations for this international industry gathering are underway, and there is already significant interest from exhibitors. With just under a year and a half to go, around 240 exhibitors from the lift industry have already registered. Interest in interlift 2027 is greater than ever, and the project team is hard at work on the preparations. Companies with specific placement requests should register as soon as possible, particularly as the early bird discount expires on May 30, 2026. The first edition of interlift at its new venue at Messe Nürnberg was well received by both exhibitors and visitors. The city of Nuremberg offers a wide range of hotels and excellent international transport links. Turkish Airlines will once again be offering special deals for international exhibitors and visitors at interlift 2027. The interlift project team is attending various industry events this year and maintaining close contact with the sector.

Quality That Inspires Trust

SHARP ENGINEERS

Gearless Traction Machine

STERN 6₁ | STERN 8₁ | STERN 10₁ | STERN 13₁

SCAN ME

MAKE IN INDIA

SHARP ENGINEERS
552,'A' Road, Cross Road-12,
G.I.D.C. Kathwada, Ahmedabad-382430.
Gujarat, India.

Phone : + 91 79 2290 1711, 12,14, 15.
E-mail : info@sharpengineers.com
Website : www.sharpengineers.com

Elevator World India Makes A Strong Impact At WEE Expo 2026

Elevator World India participated in the 30th edition of the World Elevator & Escalator Expo (WEE Expo) held from May 20–23 at China Import and Export Fair Complex in Guangzhou, China. Enthusiastic visitors and exhibitors interacted with Anitha Raghunath and Raghu G., the directors of Virgo Communications and Exhibitions, the pioneers who introduced the vertical-transportation (VT) industry-focused expo and magazine concept in India.

Connecting with global industry leaders, innovators and partners, discussing media collaborations, industry growth, and the future of VT and smart mobility over the four-day event, Anitha, publisher, and Raghu, commercial director/ Sales and Marketing, EW India magazine, termed it an incredible few days of global networking, industry interactions, innovation showcases and meaningful conversations with leaders from the elevator and mobility sector.

They also shared it was great reconnecting with long-time associates, meeting new faces from the industry and sharing thoughts on innovation, growth and the evolving future of VT, adding, “We are grateful to everyone for the warm conversations, valuable exchanges and memorable moments throughout the event. Looking forward to future collaborations and crossing paths again soon.”

Raghu made an insightful presentation on the rising opportunities and potential India offers to VT industry players across the globe, which drew loud applause from those gathered at the event venue.

Consistently serving the elevator sector since 2007, Virgo is credited with launching dedicated trade fairs, technical forums, publications, virtual events, webinars and other initiatives in India, as well as in additional emerging international markets like Bangladesh, Sri Lanka and South Africa.

Tectronics Techworld Pvt. Ltd. Launches New RTG 24P 1212 Series and Advanced Safety Block

Tectronics Techworld Pvt. Ltd. launched its latest innovation, the RTG 24P 1212 Series, a new-generation gearless elevator machine designed to deliver advanced performance, efficient operation, and high reliability for modern elevator applications.

The newly launched series reflects the company’s continued focus on engineering excellence, innovation, and delivering high-quality elevator solutions to the market.

The RTG 24P 1212 Series received strong appreciation from industry professionals and customers for its robust design, smooth performance and suitability for evolving vertical-transportation requirements. Developed with advanced technology and precision engineering, the new machine series aims to meet the growing demand for efficient and dependable elevator systems across residential, commercial and industrial projects.

Further strengthening its commitment to elevator safety, Tectronics also introduced its newly developed Safety Block solution following the successful response to its Overspeed Governor range. The Safety Block is designed to enhance operational safety standards and provide improved protection in elevator systems, making it a valuable addition to the company’s expanding product portfolio.

With these new launches, Tectronics continues to reinforce its position as one of India’s leading manufacturers of gearless elevator machines and safety solutions, focused on innovation, quality and customer-centric engineering.

PERMAGSA

Bharat Bijlee

POWERING ELEVATORS IN FOUR CONTINENTS

Lifetime Product Support

The GreenStar® range of gearless machines delivers a smooth, safe ride for passengers in India and around the world. The compact modular design suits a spectrum of application and installation needs: **home lifts to heavy duty goods elevators; MRL configurations; belt or rope suspension; and even 1:1 roping schemes for modernisation jobs.**

We work closely with PERMAGSA of Spain, our technology partners since 2007, to bring you silent, lightweight and energy-saving machines that are designed for durability, reliability and a smoother ride.

GreenStar®

Gearless Machines for Elevators

In collaboration with Permagsa, Spain

For enquiries, please write to **mtmsales@bharatbijlee.com**

Nidec Supplier Meet 2026 Strengthens Partnerships

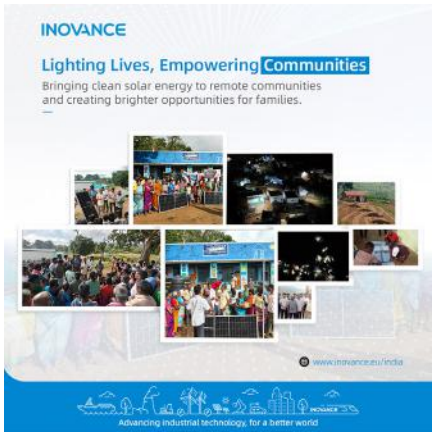
Nidec India successfully hosted Nidec Supplier Meet 2026 on May 15 in Hubli-Dharwad, bringing together its valued suppliers and partners for an evening of collaboration, insights and recognition. The event commenced with a traditional lamp-lighting ceremony led by Swapnil Dethe, managing director, Nidec India; Udaya Kumar, procurement director, Nidec India; Gangadhara Chudappa, business leader, Nidec Power India; Sudeep Edakkattu, business leader, Nidec Conversion India; Milind Salunke, business leader, Nidec Traction India; and Benjamin Bandi, business leader (acting), Nidec Elevator India. The meet featured a well-structured agenda with leadership insights, expert sessions from global supply chain team members and supplier discussions. Highlights included knowledge sharing, an open question-and-answer session and recognition of outstanding contributions with awards. The event strengthened partnerships and aligned attendees on Nidec India's shared vision for localization and supply chain excellence under "Make in India," concluding with a networking dinner that fostered continued collaboration and growth. Nidec thanks suppliers and partners for their participation and continued support in driving success together.

Wittur India Elevates Raammohan to MD

Wittur India announced in March 2026 that it has elevated Raammohan K to Managing Director (MD). Raammohan is a Fellow Member of the Chartered Institute of Arbitrators (UK) and a Level 1 Mediator certified by the Singapore International Mediation Institute. With more than 30 years' experience, out of which 16 years with Wittur, he has been instrumental in strengthening governance, human resources (HR) capabilities and business performance. "His cross-functional contributions across HR, legal, operations and strategic initiatives have played a key role in driving operational growth," Wittur observed. With a bachelor's degree in law and a master's in HR management from the University of Madras in Chennai, India, Raammohan has held leadership roles at Bonfiglioli, Kothari Group and Vedanta.

Inovance India Brings Solar Power to Remote Hamlet

Inovance India, a leading provider of industrial automation solutions, including for the elevator industry, announced in May the successful implementation of a Corporate Social Responsibility (CSR) initiative to bring solar lighting to a remote hamlet in the Kadambur Hills of Tamil Nadu. The initiative brings reliable and sustainable electricity to families who had previously lived without it, and is expected to support children's education and safety after dark. Having electricity also promises to support community development. The project was undertaken in collaboration with local stakeholders and community members to ensure the village's specific needs were addressed. Inovance India Managing Director Anil Kumar said:



"Access to electricity is a fundamental enabler of progress. Through this initiative, we hope to empower communities by creating opportunities for education, safety and economic growth using clean and renewable energy."

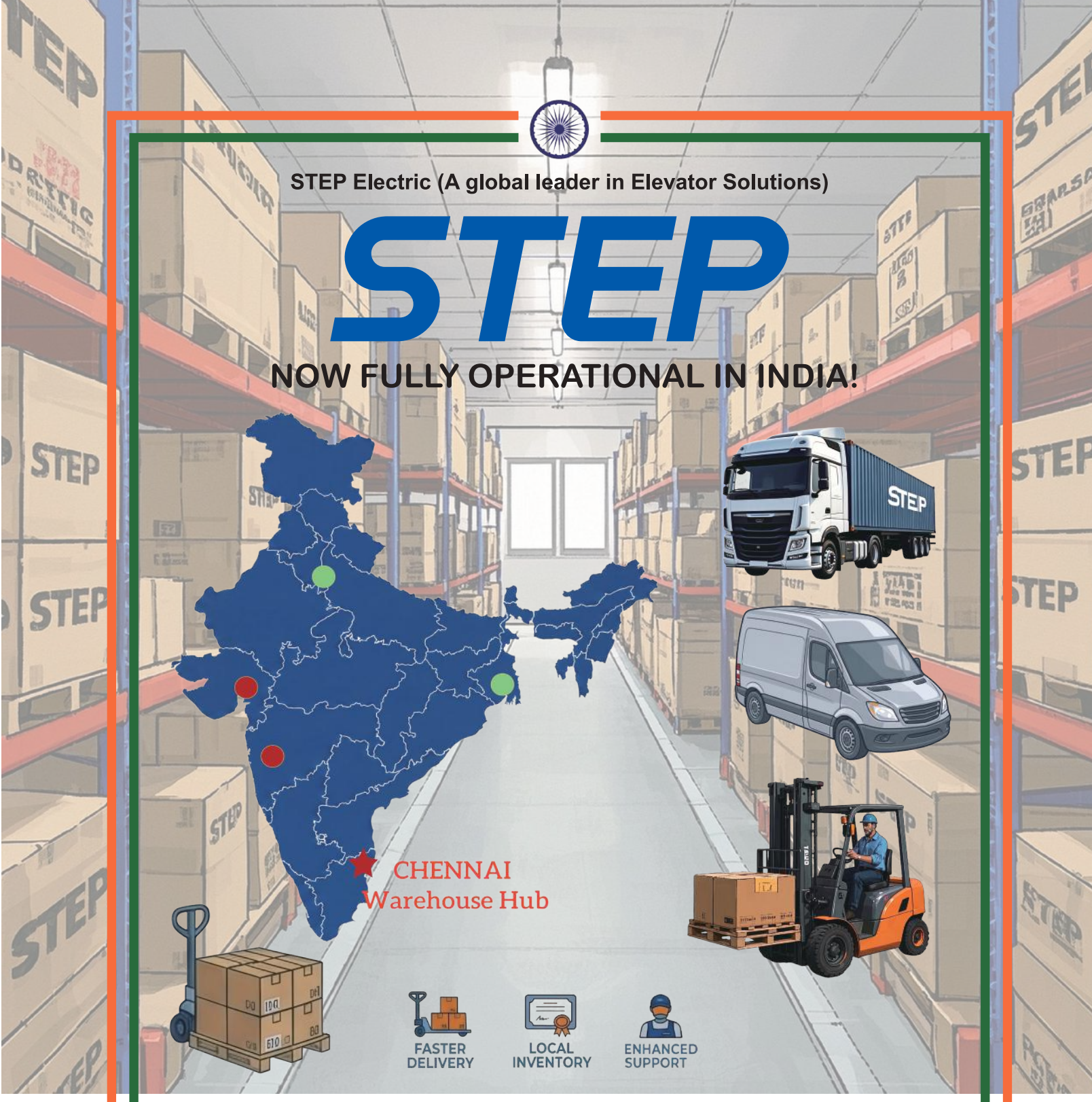
Ravikrishnan Srinivasan Appointed CEO & MD of TK Elevator India

Ravikrishnan Srinivasan has been appointed as the CEO & MD of TK Elevator India, marking a significant leadership milestone for the company's growth journey in one of the world's fastest-evolving urban mobility markets. With a distinguished career spanning industrial automation, digital transformation and large-scale global operations, Ravikrishnan brings deep strategic expertise to the role. Prior to this, he held key leadership positions at Honeywell, where he led Industrial Automation across Asia Pacific and played a pivotal role within Honeywell Connected Enterprise. His earlier tenure at Rockwell Automation further strengthened his experience in driving automation-led growth and infrastructure development across regional markets.

STEP Electric (A global leader in Elevator Solutions)

STEP

NOW FULLY OPERATIONAL IN INDIA!



For enquiries please contact **STEP india** team:

Mr.Uttam Shinde
+91 97624 66402

Mr.Kiran Kumar
+91 81222 30481

Mr.Vishwas Patel
+91 82000 02321

Australia's AEA Formally Re-Launches as AAVT

The entity formerly known as the Australian Elevator Association (AEA) in March officially re-launched as the Australian Association for Vertical Transport (AAVT), "reflecting the sector's growth and increasing regulatory and technical complexity." The new identity, according to AAVT, recognizes the broader scope of modern vertical transportation (VT) across Australia's built environment, including lifts, escalators, moving walks, engineering, consultancy and compliance. With a new website now live at aavt.org.au, the association aims to continue its longstanding role in advocacy, technical leadership and industry collaboration to support a safe, consistent and high-performing VT sector across the continent. "VT now spans a far more complex and regulated environment, and AAVT is positioned to support industry, government and stakeholders across that full scope," AAVT CEO Mark Liversedge said.

Hyprlift Signs MoU With Azizi Developments

U.A.E.-based Azizi Developments has signed a non-binding Memorandum of Understanding (MoU) with Hyprlift, a U.S.-based innovator in advanced vertical-transportation systems, to explore the potential application of ropeless elevator systems within selected Dubai developments, Trade Arabia reported in March. Under the deal, the two parties will undertake technical studies, integration planning and feasibility assessments to evaluate end-to-end requirements from design and installation through testing, commissioning, operations and ongoing maintenance. Hyprlift founder and CEO James Hutchinson said the MoU reflects a shared ambition to rethink vertical mobility and place advanced technology at the heart of modern buildings. He added:

"Azizi Developments' interest in our self-propelled, ropeless elevator systems signals a growing recognition that the future of intelligent buildings depends on reimagining how people move within them."

Azizi said it currently has around 150,000 units under construction, valued at several tens of billions of U.S. dollars. The company is renowned for developing the world's second tallest skyscraper, Burj Azizi, as well as the master planned communities of Azizi Riviera, Azizi Venice and Azizi Milan in Dubai. Azizi Group CEO Farhad Azizi said:

"Innovation is central to our approach. Through this collaboration with Hyprlift, we are exploring elevator systems that could improve performance and comfort, while unlocking new possibilities in building design."

Hyundai Launches World-First Modular High-Rise System

Hyundai Elevator became the world's first to successfully install and commercialize an elevator for high-rise buildings using modular construction, The Korea Herald reports. The company recently completed a quality control inspection for its

27-story ENOBLOC — which stands for Elevator Innovate Block Construction application — at the Songdo Hillstate Center Park construction site in Songdo, Incheon, becoming the first to commercialize a modular elevator system for buildings higher than 20 stories. With ENOBLOC, the company manufactures components in advance, which are then assembled on-site where the system functions as a mini factory occupying less than 33 m2 of the construction site. ENOBLOC streamlines the construction process, reducing construction costs and enabling earlier move-ins. Through partial application, ENOBLOC reduced the Songdo Hillstate Center park construction period by 40 days and is projected to shorten construction by more than two months upon full-scale implementation, Hyundai said. Hyundai Elevator has applied for approximately 50 patents linked to its modular system, high-rise building application and mass-production technologies.

Gustav Wolf Middle East Established in KSA With Area Sales Manager

Gustav Wolf GmbH, the Germany-based global steel and synthetic elevator rope manufacturer, in April announced its new Middle East subsidiary in Dammam, Kingdom of Saudi Arabia (KSA), being led by Area Sales Manager Abu Ghwaileh. Fully compliant with local regulations, the new facility is equipped to stock, cut and supply Gustav Wolf's complete range of traction rope, covering all types and diameters. A mechatronics engineer with hands-on experience in the elevator industry, Ghwaileh has held sales, commissioning and technical support roles in the local market. Fluent in Arabic with a strong command of the English language, Ghwaileh is originally from Jordan. He brings strong regional market knowledge and close familiarity with customer requirements, contractor workflow and site conditions across the Middle East. Gustav Wolf CEO Jens Waldau said the company is proud to welcome Ghwaileh to the team as it broadens its Middle East footprint. "His experience, market insight and customer-centric approach will be invaluable," Waldau said.

TECHNO

LLOYDS ENGINEERING WORKS LIMITED

A Subsidiary of Lloyds Engineering Works Limited

MAKE IN INDIA

PROJECT HIGHLIGHT

DELHI SECRETARIAT PROJECT

INSTALLED ELEVATORS

1360 KG / 20 PASSENGERS | 7 UNITS | FULLY AUTOMATIC SYSTEMS | SPEED 1.5 MPS

TRUSTED BY GOVERNMENT DEPARTMENTS

CPWD	RAILWAYS DEPARTMENT	PWD	ISRO

HIGH-PERFORMANCE ELEVATORS | ADVANCED CONTROL SYSTEMS | RELIABLE ENGINEERING

TECHNO INDUSTRIES PVT. LTD.

1800-102-5222

www.technoelevators.com

info@technoelevators.com

Engineered for Performance.
Trusted by India.

Hyundai Earns Recognition for ESG Efforts

Hyundai Elevator has received an A grade in the 2026 ESG Rating Assessment conducted by the global environmental, social and governance (ESG) evaluation agency Morgan Stanley Capital International, marking an improvement of one level from its previous BBB rating, The Asia Business Daily reported in March. In a corporate sustainability assessment by global rating agency S&P Global, the company scored 59 points — an increase of seven points from the previous year — ranking first among global elevator companies. Domestically, Hyundai Elevator has achieved an overall A+ grade from the Korea Institute of Corporate Governance and Sustainability, an overall AA grade from Sustinvest and was selected as one of the ESG Best Companies 100. By fully launching ESG management in 2022, Hyundai Elevator established and declared a mid- to long-term plan to achieve carbon neutrality by 2050. The company is actively engaged in a variety of ESG activities.

Hyundai Elevator Signs MOU for Modular Technology

Hyundai Elevator has signed a memorandum of understanding (MOU) with GS Engineering & Construction (GS E&C) to jointly develop modular elevator technology for next-generation housing projects, the Korea IT Times reported in April. The partnership focuses on advancing technologies to support the expansion of modular apartment construction, and the two companies plan to develop elevators specifically designed for modular housing. Their collaboration will extend to areas including integrating modular construction methods with elevator systems, strengthening joint R&D and applying detachable formwork structures. The jointly developed modular elevator technology will first be deployed at GS E&C's Siheung Geomo A-1BL project site. This 14-story steel modular apartment complex — the tallest of its kind in Korea — will serve as a pilot case before expanding the application of the technology to other projects.

KONE Strengthens Presence in China With Modernizations

KONE is doubling down on the Chinese market with modernization and digitalization initiatives, China Daily reported in March. China is the company's largest single market, accounting for approximately 20% of KONE's global revenue, and hosts the company's largest overseas R&D center, where innovations in AI, Internet of Things and predictive maintenance are often tested and adopted. KONE's business in China has benefited from policy support, including "two new" initiatives and ultra-long special treasury bonds, which have unlocked new growth drivers, Joe Bao, president of KONE Greater China, said. Looking ahead, the company aims to deepen its presence in China through more localized solutions and offerings tailored to the domestic market. In January, the company delivered elevators to modernization projects in more than 80 cities nationwide. In the Kunshan elevator modernization project — the largest of its kind in China — residents were able to choose their preferred brands, and KONE secured 2,106 elevators, accounting for 96% of the total tender, and completed the renovation in eight months with zero accidents. KONE is also focused on the Greater Bay Area, where it established its southern headquarters in Shenzhen, Guangdong province, last year with the hub scheduled to commence operations by the end of March.

KONE Announces Plan To Acquire TKE

KONE announced on April 29 it has agreed to acquire TK Elevator (TKE) in a deal worth approximately EUR29.4 billion (US$34.4 billion) that would create the world's largest elevator manufacturer. A few weeks later, Reuters reported the proposed transaction will likely face lengthy European Union (EU) antitrust scrutiny and regulatory reviews in the U.S., U.K. and elsewhere. Brussels' antitrust rules, which previously helped squelch a KONE-TKE deal, have come into sharp focus, and any new deal may require asset sales — particularly in Europe — to gain approval.

Finland-headquartered KONE, according to Reuters, is counting on a revamp of EU merger rules that would give companies "more leeway in pursuing continental tie-ups to match the scale of U.S. and Asian rivals." Under EU proposals, companies could argue for their deals by emphasizing the benefits of sustainability, resilience, investment and innovation to counter fears of consumer harm and an unfair competitive landscape — which Swiss rival Schindler has already brought up. In the ramp-up to the announcement, Schindler CEO Paolo Compagna said he opposes the merger, describing it as a "bloodbath" that would create massive industry disruption. Labor representative and Deputy Chairman of the TKE Advisory Board Knut Giesler of German union IG Metall also slammed the deal, calling it a breach of trust amid fear of job losses. The joining together of KONE and Germany-headquartered TKE would create a company with approximately EUR20 billion (US$23.4 billion) in annual sales, more than 100,000 global employees and a market value of nearly EUR49 billion (US$57.3 billion), according to Reuters calculations, vaulting the combined company well ahead of Schindler and U.S.-based Otis. In presenting the deal, KONE CEO Philippe Delorme emphasized uniting teams, innovation and a global footprint that makes the transaction "much more than just 1+1." He expressed confidence in securing regulatory approvals by working closely with authorities.

Johnson
LIFTS & ESCALATORS

TAILORED FOR YOUR HOME, TRUSTED FOR YOUR SAFETY

Introducing Eazy Ride Plus.
A customizable home lift from Johnson

Silent | Stable and Secure | Battery Driven

Johnson Lifts Private Limited

Corporate Office: 1, East Main Road, Anna Nagar Western Extension, Chennai 101
Ph: +91-44-43152200 | enquiry@johnsonliftsltd.com | www.johnsonliftsltd.com

SAFETY FIRST
Johnson LIFTS & ESCALATORS
THINK SAFE · WORK SAFE · BE SAFE

Mitsubishi Electric To Supply 96 VT Units and More for Jakarta Complex

Tokyo-headquartered Mitsubishi Electric Corp. announced in March it will supply vertical-transportation (VT) equipment (66 elevators and 30 escalators), air conditioners and hand dryers to Two Sudirman Jarkata, a massive new complex set to open in 2028 in Jakarta, Indonesia. The order was secured through two Mitsubishi Electric subsidiaries: PT Jaya Elevator and Escalator and PT Mitsubishi Electric Indonesia. The VT equipment includes 17 high-speed, 360 m/min elevators; 49 mid- to low-speed 240 m/min elevators; and 30 escalators that travel at 30 m/min. All VT equipment will be connected to monitoring and control systems. On a prime site facing Sudirman Street, Jakarta's main thoroughfare, Two Sudirman Jakarta is being jointly developed by Mitsubishi Estate Co., Ltd.; PT Benhil Property; and PT Taspen Properti Indonesia. It will consist of two high-rise twin towers — a 74-story building housing offices, a hotel, serviced apartments and commercial facilities and a 65-story building with condominiums.

Two Sudirman Jakarta; image courtesy of Anggara Architeam

Naver's Expanded Robot Fleet Uses Elevators for Full Building Access

Naver is operating an integrated fleet of approximately 100 service robots across its second headquarters in Seongnam, South Korea, transforming the building into a "living laboratory" for physical AI, Let's Data Science reported in April. The fleet, internally named Rookie, delivers food, beverages, packages and documents. The robots are engineered to operate across the entire building, including autonomous navigation across floors and through security gates, elevator use and multi-floor routing and time-scheduled task execution and on-demand summons from a mobile app. The robotics stack was developed by Naver Labs and coordinated through a cloud-native fleet management platform called ARC Brain. The deployment is an example of the shift from isolated robot pilots to building-scale, multi-robot operations. Centralized orchestration, elevator integration and cross-floor autonomy solve nontrivial operational problems that typically block commercial rollouts.

TKE Launches AI-Powered Safety Assistant OSHGenAI

TK Elevator (TKE) announced in March it has launched OSHGenAI, an AI-powered safety assistant that supports Occupational, Safety and Health (OSH) professionals companywide. Developed in collaboration with ITHub Brazil, OSHGenAI breaks down language barriers to provide fast, reliable safety information to assist in decision-making for frontline leaders, OSH professionals and operational teams. "This launch marks a key milestone in our AI roadmap, strengthening our safety transformation by making life-saving knowledge accessible anytime, anywhere," TKE Senior Vice President of Global Risk, Governance and Assurance Rodrigo Gomes said. Gomes thanked everyone who contributed to making the launch possible, particularly those at ITHub Brazil. Bruno Muniz, IT coordinator and member of the Global IT Architecture Council at TKE, said he is "proud to support a solution that helps assess safety risks and reinforces what matters most: helping people get home safely."

Otis To Launch Training Program in China

Otis will partner with the China Development Research Foundation (CDRF) to integrate its Otis Technical Academy (OTA) into the foundation's vocational education initiative "For the Future," the Connecticut-based firm said at the 2026 China Development Forum, Yicai Global reported in March. The OTA has trained more than 4,500 elevator professionals since its launch in 2016. The program will first launch in southern China, aiming to train more than 800 elevator technicians a year, with plans to expand nationwide. CDRF will oversee operations and academic credentials, while Otis will provide funds, equipment, training materials and specialized instructors. Graduates will have the opportunity to directly apply for field service positions within the company. Another company with similar plans is Tesla, which requires a workforce capable of evolving alongside increasingly complex production systems. On March 21, 62 graduates were the first group to complete the work-study program jointly launched by Tesla Shanghai and Shanghai University of Electric Power in 2021.

Lifts Trade Pvt Ltd.™
One Stop Lift Shop

One Stop Lift Shop

Manufacturing-backed lift material partner

MANUFACTURING-BACKED LIFT MATERIAL PARTNER

Doors • Cabins • Components • Spares

Doors & Frames
(Automatic / Glass / Swing/Semi-auto)

Standard & Custom Cabins

Components & Spares

Installation & Service Support

Delivery promise

Doors: 3-5 working days	**Standard cabins:** 7-10 working days
Custom cabins: 20-30 working days Timelines confirmed at quotation stage	

Supporting 440+ OEMs across India

Connect With Us Today

WhatsApp:
+91 9346166209

Website:
www.liftstrade.com

Factory:
IDA Balanagar, Hyderabad

Otis To Upgrade 46 Elevators for China Residential Renewal Project

Otis will upgrade 46 elevators to Gen3TM Comfort units in the Run Win community of Harbin City, China, as part of a bond-funded residential renewal project, Otis Chair, CEO and President Judy Marks said during an April earnings call. The contract represents the first nationwide implementation of the Gen3 Comfort model since Otis launched it at the eighth China International Import Expo in 2025, she said. Aligning with China's good-housing standards, Gen3 Comfort elevators are elderly-friendly with full-height mirrors to enhance spatial awareness, bright LED lighting to improve visibility, increased cab height for a more spacious and comfortable ride and smart cameras to enhance safety, Marks observed. The elevators are also equipped with regenerative drives and the Otis ONETM Internet of Things platform to provide real-time predictive maintenance.

Otis Acquires Majority Stake in PropTech Company WeMaintain

Otis announced in April it agreed to acquire a majority stake in WeMaintain, a fast-growing property technology (PropTech) company based in Paris and London. The investment reflects "Otis' continued focus on advancing service and service technology to deliver the best possible solutions for customers," Otis stated. Otis and WeMaintain will operate as separate entities, with WeMaintain continuing to offer its agnostic Internet Things (IoT)- and AI-based solutions to current and future customers. Founded in 2017 by Benoit Dupont and Jade Francine, WeMaintain combines AI-driven insights, IoT-powered data and on-the-ground expertise to deliver real-time visibility, enhanced operational efficiency and increased equipment reliability for building owners and operators. The company has operations across Asia and Europe and more than 350 employees, providing services and solutions for elevators, escalators, automatic doors and fire-safety systems. Otis Chair, CEO and President Judy Marks said:

"Service is the foundation of our business, and innovation in how service is delivered is increasingly important as customers seek greater reliability and better visibility into performance. WeMaintain has built a strong platform and agile operating model that reflects how quality service is delivered in a fast-paced, digital and customer-centric environment. We are confident in their growth potential and believe this investment supports their continued success while creating long-term value for both organizations."

(l-r) Nora LaFreniere, executive vice president and general counsel, Otis; Judy Marks, chair, CEO and president, Otis; Jade Francine, chief growth officer, WeMaintain; and Benoit Dupont, CEO, WeMaintain; image courtesy of Otis

CAFE NILOUFER, HYDERABAD PHOTO COURTESY:
ZION LIFTS, Mr.Verghese MD Hyderabad

The world's largest guide rail manufacturing network

MONTEFERRO
Simply Up

Monteferro India Guiderails And Elevator Parts Private Limited

#48/1, Thigalarapalya Main Road, Adjacent Manjusri Garments, Peenya Industrial Area 2nd Stage, Bangalore 560058. Karnataka, INDIA.
Contact: Kumar +91 9739 982 517 | kumar@monteferro.it

INDIA | ITALY | CZECH REPUBLIC | CANADA/USA | BRAZIL | CHINA | SPAIN | RUSSIA

www.monteferro.it

MORIS
www.moris.it

Leading Manufacturer of Hydraulic Components - MADE IN ITALY
Exclusively marketed by: MONTEFERRO INDIA

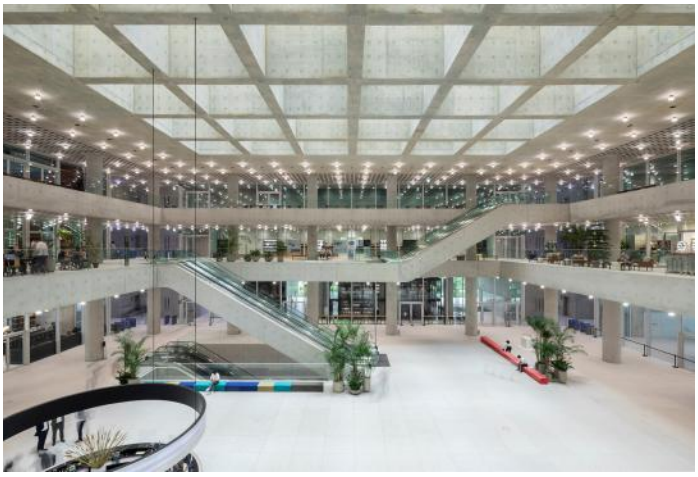
A Conversation With the CEO & MD of TK Elevator India

Ravikrishnan Srinivasan (RS), shares insights with your author (PM) about the path forward.

by Prerna Mistry

PM: What are your key priorities or focus areas as CEO & MD of TK Elevator India?

RS: As CEO & MD of TK Elevator India, my focus is to strengthen our position as a trusted urban mobility partner, with customer centricity at the core of every decision. I strive to deeply understand customer needs and deliver safe, reliable and seamless mobility solutions across the life cycle. Growth would come from expanding across residential and commercial segments while increasing focus on high-impact areas like infrastructure, airports, metros, industrial projects aligned closely with customer demand and future urban development. A strong service-led approach would drive proactive maintenance, faster response times and modernization solutions, enhanced through digital and predictive technologies to improve uptime and the customer experience. Operational excellence and agile execution would ensure consistent quality and timely delivery,



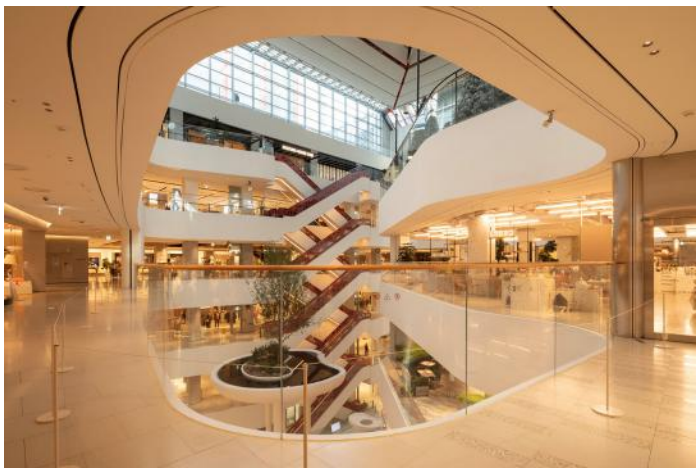
while a safety-first, empowered workforce would strengthen customer trust at every touchpoint. Guided by innovation, sustainability and responsiveness, TK Elevator India aims to be a truly customer-centric mobility leader.

PM: How would you describe your leadership style and approach to motivate the team at TK Elevator India to raise benchmarks even higher going forward?

RS: My leadership style is centered on trust, transparency and accountability. At TK Elevator India, I believe leaders must enable people to succeed by providing clear direction, empowering teams to take ownership and fostering a culture where individuals understand the larger purpose behind their work. Motivation comes from creating an environment where people feel valued, heard and inspired to contribute beyond defined roles. To continuously raise benchmarks, I focus on empowering teams through collaboration, data-driven decision-making and a mindset of continuous improvement. Recognizing achievements, encouraging innovation and learning from challenges help build confidence and momentum. By investing in people development and leading by example, the objective is to cultivate a high-performance culture where teams are motivated to consistently exceed expectations and drive sustainable growth.

PM: TK Elevator India has been expanding its network and strengthening its portfolio. How do you see these steps providing impetus and driving growth at a faster pace going forward?

RS: The continued expansion of our network and strengthening of our portfolio at TK Elevator India are strategic enablers for accelerating sustainable growth. Expanding our footprint allows us to be closer to customers across emerging cities and high-growth regions, improving responsiveness, execution speed and service coverage. A stronger nationwide presence not only enhances customer confidence but also positions us to capture opportunities arising from rapid urbanization, infrastructure development and increasing modernization demand. At the same time, broadening our portfolio enables us to address diverse customer needs — from residential and commercial developments to complex infrastructure and specialized segments such as data centers and industrial facilities. This balanced portfolio strengthens



resilience by reducing dependence on any single market segment while opening new revenue streams. Together, network expansion and portfolio strengthening create a powerful growth engine, enhancing market access, deepening customer relationships and enabling TK Elevator India to scale faster while maintaining operational excellence and long-term profitability.

PM: TK Elevator India recently expanded its Mumbai operations through opening a strategic new office. How do you see this benefiting the company and its customers?

RS: The expansion of TK Elevator India's operations with a new office in Mumbai strengthens our presence in one of the country's most important urban markets. The new facility brings us closer to customers, enabling faster response times, improved coordination across installation and service teams and more efficient project execution. For customers, this translates into enhanced service reliability, quicker support and a more responsive engagement model. For the organization, the expansion reinforces our commitment to growth, strengthens our service network and positions TK Elevator India to capture emerging opportunities while delivering superior urban mobility solutions.

PM: Which key products from the TK Elevator India portfolio are expected to witness greater demand and drive the company's growth further during 2026 and beyond?

RS: The company anticipates significant momentum from its next-generation elevator platforms such as TWIN and EOX, which are designed for residential and commercial developments with enhanced energy efficiency, digital connectivity and faster installation capabilities. In parallel, digital service solutions like MAX are gaining strong traction as customers increasingly prioritize predictive maintenance, uptime reliability and smart building integration.

Additionally, escalators and moving walks — including solutions such as iWalk — are expected to see rising demand driven by airports, metro projects, retail spaces and large infrastructure developments across India. Together, these innovations position TK Elevator India to capitalize on urbanization, infrastructure expansion and the growing adoption of smart mobility solutions, making them central to the company's growth strategy in the coming years.

PM: How have vertical-transportation (VT) selection parameters and prerequisites evolved over the years and which factors do you see impacting these aspects the most in the current scenario?

RS: Over the years, VT selection has evolved from focusing mainly on capacity, speed and cost to a more holistic, life cycle-driven approach. Today, VT systems are viewed as critical infrastructure that influences building efficiency, user experience and long-term asset value. Key factors shaping current selection parameters include rapid urbanization and

high-rise development, growing emphasis on sustainability and energy efficiency and increasing adoption of digital and connected solutions such as predictive maintenance and smart building integration. Enhanced safety, accessibility and reliability expectations are also playing a major role. Overall, VT decision-making is shifting toward intelligent, sustainable and future-ready mobility solutions rather than standalone equipment choices.

PM: With the new Bureau of Indian Standards (BIS) codes implemented, there is a greater emphasis on safety. How do you see this impacting the VT industry across India?

RS: BIS's implementation of the new safety codes is a significant step toward strengthening safety standards across India's VT industry. The updated norms place greater emphasis on safer design, installation, maintenance and modernization practices, raising overall industry benchmarks. While compliance may require initial investments and operational adjustments, it will drive standardization, accelerate modernization of existing elevators and enhance customer confidence. In the long run, these regulations will support a more structured, technology-driven and safety-focused VT industry aligned with global standards.

Prerna Mistry is a writer and editor with more than a decade of experience at notable English and Korean media platforms. Backed by a master's in English literature, she brings a global perspective and editorial depth to covering the VT, real estate and infrastructure industries.

Choose IS17900 ARCUBE Panel

Designed to meet IS 17900 standards ensuring safer, smarter, and more reliable elevator performance

Certified Safety Architecture	Enhanced Passenger Safety with Re-levelling	Unintended Car Movement (UCM) Protection	Advanced Door Contact Monitoring
Secure Door Bypass Mechanism	Safe Brake Release & Testing	Superior EMC Compliance	Residual Current Device (RCD) Integration

Available in MR and MRL version

For more information reach out at sales@arkel.co.in

ARKEL

Arkel Electronic India Private Limited

Vadodara | Ahmedabad | Delhi | Mumbai | Pune | Bangalore | Kolkata
Hyderabad | Chennai

E-mail : sales@arkel.co.in **Website :** www.arkel.co.in

Tel.: 02667-265100

An Interview With YugX Lifts Founder and MD

Anurag Gupta (AG), founder and managing director (MD), YugX Lifts Pvt. Ltd., shares insights with your author (SP) on the thought process behind building a strong elevator brand.

by Shilpa Pandya

SP: YugX has been in the news since its inception. What was the thought process behind its launch?

AG: YugX was not built on a sudden idea — it was built on more than 20 years of observing the evolution of this industry. After my exit from Arkel India, I had the opportunity to step back and ask a more fundamental question: What does the Indian elevator industry truly need?

My conclusion was simple: India has no shortage of elevator companies, but it does have a shortage of strong elevator brands. Companies built around design integrity, technology partnerships and long-term ownership are still rare in a market often driven by short-term project margins. YugX was created to fill that gap.

The name itself comes from the Sanskrit word Yug, meaning era or generation. It reflects our ambition to build something enduring, something that outlasts a single product cycle or even a single founder. From day one, YugX has been designed as a brand-led, partnership-anchored and scalable platform for the future of vertical mobility in India.

SP: YugX has made rapid progress since then. What are the aspects or unique selling propositions that define YugX and set it apart?

AG: First, our exclusive technology partnership with MP Lifts of Spain — one of Europe's most respected lift technology companies — gives us access to a complete European product platform that very few Indian players can offer under a single brand.

Second, our service-led business model. We see every installation not as the end of a transaction, but as the beginning of a20-year relationship. Maintenance, modernization and digital monitoring are central to our strategy — not secondary functions.

Third, our brand discipline. We have been deliberate in positioning YugX as a premium, design-conscious brand that respects the architectural value of a building rather than competing purely on price.

These three pillars — European technology, service-first economics and brand-led positioning — allow us to stand apart in a market historically divided between multinational giants at the top and fragmented regional players below.

SP: What is the significance of the recent announcements by YugX? What are the positive implications for the vertical-transportation (VT) industry and the company?

AG: The recent announcements — the formal MP Lifts partnership, the strategic integration of Ostrich Elevators and our preparation for a dedicated manufacturing and assembly base at Manjusar GIDC, Vadodara — together represent a defining moment for YugX.

Individually, each is an important milestone. Collectively, they signal that a new, fully integrated Indian elevator company is taking shape.

For the industry, this is healthy. Customers, consultants and developers now have access to a credible Indian alternative that combines global technology with local accountability.

For our suppliers and channel partners, it demonstrates long-term commitment — we are building an institution, not pursuing short-term opportunity.

And for our employees, especially those joining us through the Ostrich integration, it reinforces that they are becoming part of a platform designed for national growth and market scale.

SP: The merger of Ostrich with YugX has its roots in a relationship that evolved over the years. Please share the history behind this unique development.

AG: Ostrich Director Piyush Patel and I first met in 2012 when he was a customer of mine during my Arkel days. What began as a supplier-customer relationship gradually evolved into a much deeper professional and personal bond.

In 2015, we traveled together to the Asansör Expo in Istanbul — our first overseas trip as friends rather than simply buyer and seller. Over the next decade, we traveled, did business, raised our families and remained closely connected.

When I started building YugX, Piyush was independently considering succession options for Ostrich, the conversation evolved naturally. There was no formal courtship; there was simply a decade of trust already in place.

The integration was formalized in early 2026, and Piyush joined as director – Projects & Business Development, as well as a shareholder.

For me, this reflects the kind of partnerships YugX should be known for: relationships built on trust and shared values, not just transactions.

SP: What is the strategic approach and mindset driving the company's growth, and how does it distinguish YugX?

AG: Our strategy is to build a brand-led, service-anchored elevator company with the discipline of a technology business.

Three principles guide us.

First, we own our brand. YugX is not a rebadging exercise; it is a name we are prepared to stand behind for decades.

Second, we own our service. Maintenance and modernization are not afterthoughts; they are the foundation of long-term value for both the customer and the company.

Third, we grow with intent. Our expansion is planned around regions we can serve exceptionally well, not merely regions we can sell into.

What distinguishes us is our willingness to grow patiently. We are not chasing volume for its own sake. Every new installation becomes part of a service base we expect to maintain for decades, and that long-term thinking influences every decision, from recruitment to supplier selection to regional expansion.

SP: How do your years of experience and domain knowledge in the VT industry provide YugX an edge?

AG: I have spent more than two decades in this industry, and most of that journey has been entrepreneurial.

My years at Arkel India taught me how to build a national distribution network from the ground up, how to introduce new technology into a conservative market and, most importantly, how to earn trust over time — from customers, consultants and channel partners alike.

Those are lessons that cannot be accelerated.

That experience gives YugX practical advantages. It helps us evaluate technology partners with clarity — we understand what works in Indian conditions and what remains only good on paper.

It helps us build service systems around how elevators actually behave in the field, not how brochures describe them.

And it helps us build teams that respect the technical and operational discipline this industry demands.

In VT, domain knowledge compounds over time, and YugX is benefiting from that accumulated experience every day.

SP: What is your vision for YugX, and your plans for driving the company's growth during 2026 and beyond?

AG: My vision for YugX is straightforward: to build India's most respected premium elevator brand.

We are building for a long horizon — a company doing business not in tens of crores, but in hundreds, supported by the governance, operational depth and institutional discipline that such ambition demands.

For 2026, our focus is on consolidation and structured expansion.

We will complete the integration of Ostrich operations, commission our manufacturing and assembly base at Manjusar, and begin measured expansion beyond Gujarat into adjoining markets.

At the same time, we are investing heavily in our service technology stack — the digital backbone that will allow us to monitor, manage and maintain every YugX installation across India.

Beyond 2026, the focus shifts toward scale: deeper national presence, broader product offerings and the operating discipline required to prepare a company for long-term institutional ownership.

The era we are building YugX for is a long one, and we are intentionally pacing ourselves for that journey.

About Anurag Gupta

Anurag Gupta is the founder and MD of YugX Lifts Pvt. Ltd., an Indian premium elevator company built on the exclusive distribution partnership with MP Lifts of Spain — one of Europe's most respected VT technology houses. Headquartered in Vadodara, Gujarat, with operations across Vadodara, Bharuch and Ankleshwar, YugX has rapidly emerged as one of the most closely watched new entrants in the Indian elevator industry.

An electronics engineer by education, Gupta has spent more than two decades in the VT industry, almost entirely as an entrepreneur. He is best known for founding Arkel India, the joint venture that introduced integrated CANbus elevator controller technology to the Indian market and went on to build the country's leading elevator controller distribution network across more than 20 cities. He successfully exited Arkel India in 2023, leaving behind a fully operational business with strong national presence.

Gupta founded YugX Lifts in 2025, signing the exclusive India distribution agreement with MP Lifts shortly thereafter. In early 2026, he completed the strategic merger of Ostrich Elevators — a 30-year-old Gujarat-based elevator company — into YugX, bringing together a combined workforce of nearly 70 professionals and a strong installed service base. He is currently overseeing the establishment of a dedicated manufacturing and assembly base for YugX at Manjusar Gujarat Industrial Development Corp., Vadodara. His leadership philosophy combines deep domain knowledge with patient brand-building: an emphasis on service-led economics, long-term technology partnerships and disciplined geographic expansion. The long-term vision is to build YugX into India's most respected premium elevator brand, with the operational depth and governance discipline appropriate for the public markets. Gupta is based in Vadodara, Gujarat, India.

An Interview With Wittur India's New MD

Raammohan K (RK), shares insights with your author (SSP) on his future focus for the company and how new standards will impact the VT industry.

by Sheetal S. Patil

SSP: With more than three decades of cross-functional contributions across HR, legal, operations and strategic initiatives, you have played a key role in Wittur India's journey. What will your management style and strategy be now that you are at the helm of the company?

RK: Having spent over 16 years at Wittur India, I have seen the organization evolve closely, from operational execution to market expansion and customer transformation. This experience has shaped my leadership style around empowerment, accountability and speed of decision-making. My focus now is to build a more agile and future-ready Wittur India by strengthening manufacturing efficiency, accelerating innovation and staying closely aligned to changing customer expectations. The elevator industry in India is entering a new phase led by safety regulations, localization and premiumization, and our strategy is to ensure Wittur remains ahead of this shift not just as a component supplier, but as a trusted technology and solutions partner.

SSP: Which key products from the Wittur India portfolio are expected to witness greater demand during 2026 and beyond?

RK: We expect demand to grow strongly across four key categories. First, elevator door systems will continue to see the highest traction, as safety-compliant doors become the preferred choice for new installation and modernization.

Second, locally manufactured safety components, such as governors and safety gears, will gain momentum due to better compliance readiness, cost competitiveness and faster availability. Third, home elevator kits will witness steady growth with rising demand from premium residences and mid-rise buildings. The market is clearly moving toward products that deliver compliance, reliability and design value together.

Fourth, advanced safety devices such as progressive safety gears are expected to witness significant demand growth, especially with BIS regulations and safety compliance requirements becoming increasingly mandatory across the industry.

SSP: There is a greater emphasis on safety with implementation of the new Bureau of Indian Standards (BIS). How do you see this impacting the vertical-transportation (VT) industry across India?

RK: The implementation of BIS codes, especially IS 17900, is a major turning point for the Indian VT industry. Safety is no longer an optional differentiator; it is becoming the minimum acceptable benchmark. This will bring greater standardization, improve passenger safety and gradually move the market away from non-compliant, low-cost practices. Over time, the industry will become more organized, quality-driven and professionally structured. Most importantly, customers are beginning to understand that long-term safety and reliability cannot be compromised for short-term savings, and that mindset shift will redefine purchasing decisions.

SSP: How has Wittur India geared up for the same with the launch of the all-new, IS 17900-compliant variants of its Core MD, Core and Stellar steel doors?

RK: Wittur India was naturally prepared for this transition since compliance has always been part of our engineering foundation. Our Core and Core MD platforms were already aligned with stringent European safety standards, such as EN 81, well before IS 17900 was introduced. Since the Indian code follows a similar safety philosophy, our migration to the new compliant variants of Core MD, Core and Stellar has been seamless. This gives customers confidence they are not buying products redesigned only to meet a new mandate, but solutions backed by years of proven global safety engineering. That is where Wittur stands apart. We are not adapting to compliance now; we have been building around compliance for decades.

SSP: Wittur India was recently certified as a "Great Place to Work" for the fourth time in a row. How does this reflect the company's emphasis on trust, respect and teamwork?

RK: This recognition reflects the consistency of our people culture. At Wittur India, we believe strong business performance is built on trust, transparency and shared responsibility.

We consciously create an environment where employees are encouraged to take ownership, communicate openly and work across functions as one team. Over time, this has built a culture of mutual respect and accountability, rather than dependency on hierarchy. The certification is therefore not just an HR achievement; it is proof that our people remain engaged, aligned and committed to the company's long-term vision. The "Great Place to Work" certification reinforces our belief that when people feel valued and empowered, business performance naturally follows. Our rewards and recognition systems are deeply aligned with our core values, and our shop-floor culture promotes self-managed teams with a high degree of accountability. Most importantly, our values are

consistently communicated and lived across the organization, right down to the last mile.

SSP: The Wittur India team has adopted the mindset of sharing a common goal, a single vision and collective ownership. How do you see this accelerating growth even further going forward?

RK: When teams operate with a shared vision, execution becomes faster and more customer-focused. Collective ownership removes functional silos and improves coordination across departments, which is critical in a dynamic market. At Wittur India, this mindset is helping us respond quicker to customer needs, scale new initiatives faster and drive sharper business decisions. As the market opens up to new compliance-led and premium product opportunities, this unified approach will be a strong enabler of growth.

SSP: The R&D team at Wittur India has developed solutions like Wittur Hydra Doors, representing a quantum leap in elevator door technology and elevating its position as a pioneer in climate-adaptive elevator technology. How do you see such innovations providing impetus to India's infrastructure development and further strengthening the company's positioning?

RK: Innovations such as Wittur Hydra Doors represent a very important shift in how elevator components are being engineered for India — not simply as imported standard products, but as intelligent solutions built around local environmental realities. India's infrastructure is expanding rapidly across metro rail, airports, railway stations, public institutions, coastal regions and high-dust/high-humidity geographies. These applications demand elevator systems that can withstand climatic stress, contamination, corrosion and fluctuating operating conditions without compromising passenger safety or uptime.

Hydra Doors have been developed precisely with this future in mind. They are climate adaptive, durable, low maintenance and performance stable under harsh Indian conditions. Such innovations provide direct impetus to infrastructure development because they improve life-cycle reliability, reduce downtime, lower maintenance intervention and ensure long-term operational sustainability of public assets. At a strategic level, it also strengthens Wittur India's positioning from a conventional supplier to an innovation-led engineering partner. Combined with our upcoming launches in premium glass doors, advanced safety systems and integrated elevator solutions, Wittur is steadily building a portfolio that addresses not just today's market demand, but the next decade of India's vertical-mobility evolution.

About Raammohan K

With more than 30 years' experience and 15-plus years with Wittur, Raammohan has been instrumental in strengthening governance, people capability and business performance. His cross-functional contributions across HR, legal, operations and strategic initiatives have played a key role in driving organizational growth. He brings rich industry experience from leadership roles at Bonfiglioli, Kothari Group and Vedanta (MALCO). He holds a bachelor's degree in law, a master's in HR management and advanced global credentials including Fellow of the Chartered Institute of Arbitrators (U.K.) and Singapore International Mediation Institute Accredited Mediator (Level 1).

A Discussion on the Need for Independent Third-Party Inspections

Ajay Marshal (AM), provides perspectives to your author (SP) on elevating safety and global competitiveness in India's VT sector.

by Shilpa Pandya

SP: Why is there a growing need for independent third-party inspections in the Indian lift and escalator industry?

AM: The industry is evolving rapidly. While manufacturers, installers and maintenance providers have their own protocols, independent third-party inspections provide an unbiased "second pair of independent expert eyes." This creates a system of checks and balances that ensures safety is never compromised by commercial or operational pressures. It offers lift owners a transparent assessment of their assets, ensuring that maintenance isn't just being performed, but that their lifts have been installed in accordance with the relevant standards, and that the residual risk during operation has been minimized as far as possible.

SP: With the transition to IS 17900, how do third-party inspections help stakeholders navigate these new standards?

AM: The adoption of IS 17900-1/2 is a landmark shift for India, aligning our national standards with global benchmark ISO 8100-1/2. For developers and owners, third-party inspectors act as technical experts who ensure that, during a preliminary review of the technical documentation, compliance with the standards is ensured prior to the actual installation and handover. This proactive approach prevents costly rectifications later and ensures that the lifts do not exhibit any design defects in subsequent inspections, once they are already in operation.

SP: How does certification and inspection enhance the "Make in India" initiative and export potential?

AM: For "Make in India" to succeed globally, our products must speak the global language of safety. By obtaining type-test examination certifications at an international quality standard, Indian manufacturers, including the micro, small and medium enterprises (MSME) sector, can demonstrate that their equipment is on par with international quality. This opens doors to export markets in the vast majority of countries worldwide as the equipment already meets the standards required by international buyers.

SP: There is often a debate among MSMEs about certification. Is it a boon or a threat to smaller manufacturers?

AM: It is undoubtedly a boon. While the initial transition to higher standards may seem challenging, certification is actually a "leveling of the playing field." While adhering to high safety standards, it allows MSMEs to compete with global giants based on quality and compliance rather than just price in local, limited markets. It acts as a badge of credibility, helping smaller players gain trust with large-scale developers and institutional clients who prioritize safety and risk mitigation.

SP: In what ways do independent third-party inspections reduce long-term operational costs for property managers?

AM: Safety and efficiency are two sides of the same coin. Equipment built and maintained to these standards tends to have higher reliability and a longer life cycle. Independent inspections identify "silent" wear and tear before they lead to major breakdowns or accidents. If faulty parts are not replaced in good time, they can cause further damage to the system, which can prove very costly. This shifts the focus from reactive repairs to predictive maintenance, significantly reducing downtime and long-term liability costs for lift owners and facility managers.

SP: How do independent third-party inspections contribute to tenant satisfaction, retention, long-term property value and help property developers/facility managers enhance the marketability and credibility of their projects?

AM: At the end of the day, passenger transportation is about human safety. When a project is inspected by a third-party independent inspection company, it sends a strong message of care and reliability to the users, residents and tenants. High reliability leads to higher tenant satisfaction and retention. In a competitive real estate market, an independent third-party safety-inspected lift system is a tangible asset that increases the overall marketability and valuation of the property.

By verifying the quality of installations and the adequacy of maintenance, third-party inspections help insurers mitigate risk, while property owners benefit from potentially lower premiums and more robust protection.

SP: What is your vision for the future of India's vertical-transportation (VT) industry in the global context?

AM: India has the potential to become a leading global hub for VT manufacturing. By moving toward the uniform adoption of high-level standards and recognized certifications across India, we can ensure that every installation in the country meets world-class benchmarks. When our local manufacturing consistently aligns with global safety standards, Indian-made equipment won't just be "Make in India"; it will be recognized and accepted anywhere in the world.

About Ajay Marshal

Ajay Marshal is the Head of Lifts, Cranes & Conveyors [LCC] – South Asia and General Manager – Business Development for Vertical Transportation Systems at TÜV SÜD South Asia. A seasoned business leader with over a decade of experience in the vertical mobility sector, he currently handles business development and strategic growth across the region for LCC. In his current role, Ajay along with his LCC team is dedicated to advancing safety benchmarks and operational excellence by leveraging TÜV SÜD's comprehensive global portfolio.

Add value. Inspire trust.

TÜV SÜD is a trusted partner of choice for safety, security, and sustainability solutions. It specializes in testing, certification, auditing, and advisory services. Since 1866, the company has remained committed to its purpose of enabling progress by protecting people, the environment, and assets from technology-related risks. Through more than 24,000 employees across over 1,000 locations, it adds value to customers and partners by enabling market access and managing risks. By anticipating technological developments and facilitating change, TÜV SÜD inspires trust in a physical and digital world to create a safer and more sustainable future.

Innovalift CEO Discusses Arkel Acquisition

Andrea Veggian (AV), CEO, Innovalift AB – Sweden, shares insights with your author (VP) on the significance of the Arkel Electronic India acquisition, the synergies and opportunities.

by Vijay Pandya

VP: What is the significance of Arkel Electronic India Pvt. Ltd. from an overall perspective for the Innovalift Group?

AV: Arkel Electronic India Pvt. Ltd. is a strategic industrial and growth platform for the Innovalift Group. It strengthens Innovalift's position in elevator electronics and integrated control systems, a core pillar of the Group's components and modernization strategy. India provides both a local manufacturing base and access to one of the world's fastest-growing vertical-transportation (VT) markets. Arkel India is therefore a key asset supporting Innovalift's long-term global footprint, supply-chain resilience and cost competitiveness. Last but not least, we see India as a fantastic pool of talent to strengthen our organization and our innovation capability.

India provides both a local manufacturing base and access to one of the world's fastest-growing vertical-transportation (VT) markets. Arkel India is therefore a key asset supporting Innovalift's long-term global footprint, supply-chain resilience and cost competitiveness.

VP: What synergies does the Arkel acquisition provide for the Innovalift Group?

AV: The Arkel acquisition delivers strong product, geographic and commercial synergies. Arkel's expertise in integrated controls and inverters complements Vega and Esse-Ti's strengths in interfaces, alarms and communication systems, creating a broader and more complete electronics portfolio, particularly relevant for modernization. Geographically, Arkel adds a strong presence in Türkiye and India, expanding Innovalift's exposure to high-growth markets. Commercially, the Group benefits from cross-selling opportunities and a strengthened competitive position.

VP: What is the importance of India as an operations base and market for the Innovalift Group?

AV: India is strategically important for Innovalift on three levels. First, as an industrial base with local production of electronic boards and control components supporting cost efficiency, localization and supply-chain diversification. Second, as a high-growth VT market, driven by urbanization, infrastructure development and a rapidly expanding installed base that will increasingly require modernization. Third, as a potential export hub for standardized products to South Asia, the Middle East and Africa, supporting Innovalift's regional manufacturing hub strategy.

Geographically, Arkel adds a strong presence in Türkiye and India, expanding Innovalift's exposure to high-growth markets.

VP: Apart from VT, in which other sectors does Innovalift Group see opportunities in India?

AV: While India offers many opportunities, our ambition is to play a leading role in the VT industry. Staying fully focused on the path ahead will be critical to achieving where we want to be.

VP: What challenges and opportunities does the VT market in India offer to the Innovalift Group?

AV: India offers strong opportunities through high-volume growth, a large future modernization market and demand for standardized, cost-efficient solutions where Arkel is well positioned. At the same time, the market presents challenges including intense price competition, margin pressure, fragmentation and the need to scale talent and management capabilities. Innovalift addresses these challenges through local manufacturing, disciplined governance, group quality standards and a long-term investment perspective focused on sustainable value creation.

Arkel's expertise in integrated controls and inverters complements Vega and Esse-Ti's strengths in interfaces, alarms and communication systems, creating a broader and more complete electronics portfolio, particularly relevant for modernization.

Spanning 1,35,000 ft2, the Arkel Electronic India Pvt. Ltd. facility in Vadodara, Gujarat, is built to deliver scale with precision.

India offers strong opportunities through high-volume growth, a large future modernization market and demand for standardized, cost-efficient solutions where Arkel is well positioned.

Andrea Veggian, CEO, Innovalift AB

About Andrea Veggian

Andrea Veggian is the CEO of Innovalift AB, Investment AB Latour's newly formed business area for vertical mobility solutions. Appointed in 2024, Veggian leads a group of 10 companies specializing in platform lifts, stairlifts and elevator components with roughly 1,300 employees and an annual turnover around SEK3.2 billion. He brings more than two decades of industry experience spanning both the HVAC sector and the lift industry. In late 2023, Veggian, together with Chief Financial Officer Niclas Nylund, co-founded Innovalift AB, officially launching the seventh business area of Latour in early 2024. As CEO of Innovalift, Veggian now steers a global enterprise focused on "moving people forward" through innovative lift solutions. Throughout his career, Veggian has been recognized for his strategic vision and entrepreneurial leadership.

A Conversation With MAS Industries CEO

Mudassar Mukadam (MM), shares insights with your author (PM) on the company's expansion plans and USPs.

by Prerna Mistry

PM: You recently said MAS Industries is soon coming to Lucknow. What is the significance of this announcement, and why did you decide to take this step?

MM: Lucknow is rapidly becoming a pivotal hub for infrastructure growth in North India. The significance is two-fold: proximity and partnership. By establishing a direct presence in Lucknow, we are significantly reducing lead times and providing localized technical support to elevator companies in the growing real estate and commercial sectors of Uttar Pradesh. The goal is to bring the best quality in accessibility, mobility and aesthetics to Tier-2 cities

PM: MAS Industries already has a strong, successful global presence. What are its key markets in India and overseas? Do you foresee further expansion during 2026?

MM: Nationally, we have built a robust pan-India network that allows us to serve the diverse needs of the Indian vertical-transportation (VT) market. Along with our state-of-the-art

manufacturing base in Taloja in Navi Mumbai, we have established strong regional hubs across India via our Delhi, Ahmedabad and Kolkata branches, as well as a significant footprint in the South with our Hyderabad, Bengaluru and Chennai operations. MAS Industries recently set up a manufacturing unit in Chennai for cabins and car frames. We have also diversified into dedicated electrical and electronic components with a separate new state-of-the-art unit in Turbhe, Navi Mumbai. This widespread presence ensures that our clients receive customized market-specific products, immediate technical support and seamless service, regardless of their location.

As for 2026, expansion is very much a core part of our strategy. We have planned an investment boost of Rs. 100 crore in the next few years. The upcoming Lucknow branch is a major milestone for us this year, and we are already looking at increasing our presence to emerging Tier-2 cities where infrastructure development is accelerating, including the Northeast. Internationally, we soon expect to have manufacturing units set up in the North African and Gulf Cooperation Council markets, where there is high demand for European-standard safety components delivered with Indian engineering value.

PM: What is the Unique Selling Proposition (USP) or approach that sets MAS Industries apart?

MM: As you know, we are a complete solutions provider to elevator companies. But what I feel truly sets us apart is that we don't consider this complete solution as just parts availability, but as a technology solution. From design to build quality to ease of installation, it has to be a seamless experience: The components need to "speak" to each other perfectly. We don't take our customers for granted — what is best for them is best for us! Apart from that, a

pan-India network, 24/7 service support and a motto of "Customization Endlessly Possible" enable us to deliver high-quality, certified elevator products at a great value.

PM: Which key products from the MAS Industries portfolio are expected to witness greater demand and drive the company's growth even further during 2026 and beyond?

MM: Key products include our belt technology complete solutions and the Veyron COP (Car Operating Panel)/LOP (Landing Operating Panel) series, both of which drew major attention to our stall at the Smart Lift & Mobility World Expo in February 2026.

Other key offerings include our ultra-premium MAS Mind cabins, our high-rise elevator solutions (up to 4-m/s speed), heavy industrial goods lifts and structured round lift solutions (vacuum/electric). As safety regulations become more stringent, we also expect a massive surge in demand for our CE-certified overspeed governors and safety gears. Then there are our elevator controllers, which emphasize plug-and-play simplicity for installers and will be a major growth driver as the industry moves toward faster project turnaround times. We invite everyone to experience these innovations firsthand at the ISEETM (International Sourcing Exposition for Elevators and Escalators) expo in New Delhi this December.

PM: The implementation of new Bureau of Indian Standards (BIS) codes has placed a greater emphasis on safety. How do you see this impacting the VT industry across India, and how has MAS Industries prepared?

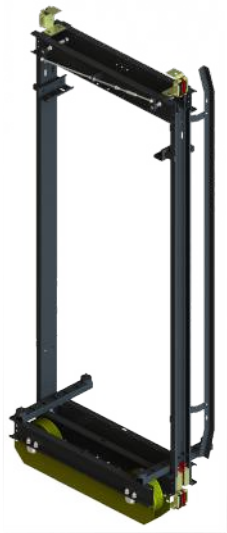
MM: The implementation of new BIS codes is a welcome move that will filter out substandard products and elevate the entire industry. It shifts the narrative from "cost-first" to "safety-first." Thankfully, this shift is not too much work for us since we have always adhered to EN 81-20/50 (the global benchmark). Our status as the first Indian CE-certified safety component manufacturer means that "safety by design" is part of our manufacturing culture — not just a compliance checkbox.

PM: You are a dealer and distributor for many brands. What are your selection criteria for choosing the right brands?

MM: At MAS Industries, our brand selection process is driven primarily by market requirements and long-term customer value. We carefully evaluate every brand based on product quality, technological innovation, reliability and the strength of its R&D capabilities. A strong and committed R&D team is one of the key factors we look for as it reflects the manufacturer's dedication to continuous improvement and advanced elevator technology. In addition, we also consider the brand's global reputation, manufacturing standards and after-sales support capabilities. Once a product successfully meets our technical evaluation and receives approval from our R&D team, our marketing and sales teams work extensively at the grassroots level to promote and establish the product in the market. This systematic approach — combined with the dedication of our technical, sales and support departments — has enabled MAS Industries to become one of the leading dealers and distributors for several internationally recognized elevator brands across the industry.

PM: Reflecting on the journey of MAS Industries, what would you like to share?

MM: MAS Industries would like to express its sincere gratitude to all our valued clients, suppliers, partners and employees for their continued trust and unwavering support. Their confidence and cooperation have played a vital role in our journey toward excellence in elevator technology and solutions across India. We remain committed to delivering quality products, advanced technologies and reliable service standards to the elevator industry. We look forward to growing together and continuing to contribute to the advancement of the Indian elevator sector with innovation, integrity and customer satisfaction at the core of everything we do.



About Mudassar Mukadam

Mudassar Mukadam, CEO of MAS Industries Pvt. Ltd., is a visionary leader who has played a pivotal role in elevating India's status on the global VT map. With an elevator industry career spanning more than 20 years, he has combined the company's technical mastery with a "safety-first" engineering mindset to redefine the standards of Indian manufacturing. Mukadam's core mission is centered on making high-quality elevator components and kits accessible to every corner of India without compromising safety or performance. He has spearheaded a massive national expansion, establishing a presence across 18 cities nationwide. As a proactive advocate for the "Make in India" initiative, MAS Industries is constantly innovating to ensure that world-class mobility, accessibility and aesthetics are not restricted to major metros — but are available to projects in every city.

Real Estate Insights

Anand Agarwal (AA), managing director, Ceratec Group, shares insights with your author (SSP) on fulfilling homebuyer aspirations, the significance of VT in real estate and his expectations from its providers.

by Sheetal S. Patil

SSP: Your company has focused on developing real estate projects in Pune and emerging areas like Kharadi. What are the key market shapers and demand drivers witnessed there during 2026?

AA: In 2026, micro-markets like Kharadi are clearly leading Pune's next phase of growth. Infrastructure upgrades, metro connectivity and the continued expansion of IT hubs are driving sustained interest. Demand today is largely end-user-leading, with buyers prioritizing livability, long-term value and well-integrated communities. At Ceratec, we see these locations maturing into complete residential ecosystems that offer both lifestyle depth and steady appreciation.

Tower 108 by Ceratec Group

SSP: What are the aspirations of new-age homebuyers, and how do you take them into consideration while planning new projects? How do they reflect the Ceratec brand and its USPs?

AA: Today's homebuyer is informed, decisive and value conscious. They are not just purchasing a home, but investing in a lifestyle that includes efficient design, community living, connectivity and long-term reliability. Our developments reflect this shift through practical layouts, quality construction and community-focused planning, ensuring that aspiration is met with genuine, lasting value.

SSP: With buildings getting taller, elevators and escalators play a key role in real estate; what is the level of importance given to their planning, procurement and placement in your projects? How do you approach aspects like foot traffic analysis?

AA: As buildings grow taller, vertical mobility becomes central to daily experience. We approach elevator planning at the design stage itself, studying density, movement patterns and peak usage. The objective is to ensure efficient flow, minimal wait times and absolute reliability. Partnering with established providers ensures systems that perform consistently over time.

SSP: How do you plan the amenities in your projects and ensure easy access to them for the residents?

AA: Amenities are not add-ons; they are integral to how a community functions. We design them with a clear understanding of resident behavior, ensuring they are centrally located, easily accessible and meaningfully used. The focus remains on creating balanced environments that enhance everyday living.

SSP: How would you describe the importance of aspects like incorporating branded amenities in your projects? Are elevators included in this list, and are they also highlighted along with other lifestyle amenities?

AA: Branded amenities help elevate the lifestyle quotient and reinforce quality benchmarks. However, essential systems like elevators are equally critical, as they directly influence convenience and efficiency. We treat them as a core part of the

overall living experience, ensuring high standards of safety and performance, even if they are not always positioned as lifestyle highlights.

SSP: Which security-related aspects do you take into consideration while planning access control at each phase of the project, right from the main entrance to individual wings, elevator lobbies, etc.? How do you prioritize safety in your projects?

AA: Security is embedded into the planning process from day one. We follow a layered approach of guaranteeing secured perimeters, monitored entry and exit points, controlled access to internal zones and comprehensive surveillance across critical areas. Well-lit spaces, visitor management systems and access-controlled lobbies ensure a secure yet seamless experience, giving residents complete peace of mind.

SSP: With the development of high rises increasing further going forward, as a real estate developer, what are your expectations from elevator and escalator providers?

AA: With the increase in high rises, expectations from mobility partners have evolved. Speed, efficiency and reliability are now baseline requirements. We look for advanced solutions in intelligent traffic management, remote monitoring, predictive maintenance and energy efficiency. Equally important is strong after-sales support, as consistent long-term performance is essential to maintaining quality living standards.

Sheetal S. Patil is associate editor, ELEVATOR WORLD India. She has a decade's experience in overseeing weekend sections, special features, news columns, magazines and theme pages for leading English language daily newspapers, as well as several business-to-business publications. A holder of a diploma course in journalism, Patil previously worked in administrative positions with various real-estate, hospitality and media enterprises.

Anand Agarwal, managing director of Ceratec Group, is a first-generation real estate developer who has blended deep-rooted industry knowledge with a forward-looking vision for urban living. At the helm of a group that traces its origins to a building materials business in 2000, he played a pivotal role in shaping Ceratec's evolution into a trusted real estate developer in Pune, anchored in the philosophy of building landmarks that reflect trust, quality and lifestyle.

With a hands-on and detail-oriented leadership style, Agarwal credits his previous business of construction materials, which laid the foundation for his expanding empire of premium residential and commercial complexes that sum up Ceratec's portfolio. In real estate, he is closely involved in every stage of development, from architectural planning and material selection to sales strategy and customer experience.

His unique advantage lies in Ceratec's strong foundation in construction materials and interior solutions, enabling him to ensure superior quality, thoughtful design and long-term durability across projects. This integrated expertise allows Ceratec to consistently deliver premium homes at accessible price points, a positioning that has resonated strongly with first-time homebuyers and upwardly mobile professionals.

Under the leadership of Agarwal, Ceratec Group follows a deeply hands-on and purpose-driven approach to development. He personally reviews every project to ensure optimum livability and customer satisfaction, placing strong emphasis on user feedback, often using testimonials to refine existing infrastructure and enhance future offerings.

Moving beyond a numbers-driven mindset, his philosophy is rooted in giving back to society. This is reflected in initiatives like Ceratec Green (2016), where 200 saplings were planted to promote environmental responsibility, alongside a consistent focus on green-certified developments across projects. In 2017, Ceratec launched Avika, a pioneering project designed primarily for women homeowners, which today boasts nearly 80% women residents. Agarwal's progressive outlook also extends to workforce inclusivity, with close to 90% of Ceratec's staff comprising women, thus demonstrating a forward-thinking commitment to empowerment both within and beyond the organization.

As Ceratec Group looks to scale its operations, Agarwal remains focused on sustainable growth, innovation and creating communities that stand the test of time.

BRUGG Lifting Receives BIS License for Swiss-Manufactured Elevator Ropes

Strengthening Commitment to the Indian Elevator Market

The Indian elevator industry is experiencing rapid growth, driven by urbanization, infrastructure development and rising expectations in safety and reliability. In this dynamic environment, compliance with local standards and proven product quality are essential for sustainable success.

BRUGG Lifting has reached an important milestone by obtaining the Bureau of Indian Standards (BIS) license for its Swiss-manufactured elevator ropes, certified in accordance with IS 2365:2024. This certification confirms full compliance with Indian regulatory requirements while maintaining the high standards associated with Swiss engineering.

For elevator OEMs, contractors and project stakeholders, the BIS certification provides a clear advantage: it enables seamless use in regulated projects, simplifies approval processes and minimizes compliance-related risks—without compromising safety, reliability or performance.

At the same time, BRUGG Lifting continues to expand its presence in India through a structured, long-term market approach. The company focuses on building sustainable

The BIS certification marks a significant step in BRUGG Lifting's ongoing commitment to the Indian market, reinforcing its focus on quality, compliance and long-term collaboration.

BRUGG
Lifting

partnerships while supporting customers with technical expertise, responsive service and access to premium rope solutions engineered in Switzerland.

By combining Swiss manufacturing excellence with the specific needs of the Indian market, BRUGG Lifting contributes to the development of safe, efficient and future-ready elevator systems. Its rope solutions are designed for demanding operating conditions and long service life.

The BIS certification marks a significant step in BRUGG Lifting's ongoing commitment to the Indian market, reinforcing its focus on quality, compliance and long-term collaboration.

About BRUGG Lifting AG

Who We Are & What We Stand For:

Swiss Engineering with a Global Mindset

BRUGG Lifting is a globally active manufacturer of high-quality elevator ropes, recognized for its Swiss engineering heritage, technical expertise and long-standing experience in vertical transportation. As part of the BRUGG Group, the company has been developing rope solutions for demanding applications for decades.

Elevator ropes from BRUGG Lifting are designed to meet the highest standards of safety, reliability and performance. Manufactured in Switzerland, they combine precise engineering, controlled production processes and consistent quality—key factors for long-term operational stability in elevator systems.

By combining Swiss manufacturing excellence with the specific needs of the Indian market, BRUGG Lifting contributes to the development of safe, efficient and future-ready elevator systems.

Focus on Safety, Performance and Lifecycle Value

In modern elevator installations, rope quality plays a critical role in system performance and service life. BRUGG Lifting's rope solutions are engineered to support:

- Stable and smooth elevator operation
- High durability under demanding operating conditions
- Reduced maintenance requirements over the product lifecycle

This focus on lifecycle value supports OEMs and operators in achieving reliable performance and predictable long-term operation.

Strengthening Presence in the Indian Elevator Market

India represents one of the fastest-growing elevator markets worldwide. BRUGG Lifting is committed to supporting this growth through certified products, technical expertise and long-term partnership.

A recent milestone in this journey is the receipt of the Bureau of Indian Standards (BIS) license for BRUGG Lifting's Swiss-manufactured elevator ropes in accordance with IS 2365:2024. This certification enables the use of BRUGG Lifting ropes in regulated projects across India and confirms full compliance with local requirements.

Supporting OEMs and Customers

BRUGG Lifting's approach in India is based on a phased market setup, focusing on sustainable development and close collaboration with OEMs, contractors and customers. The company provides:

- Premium rope solutions engineered in Switzerland
- Technical support aligned with local project needs
- Reliable cooperation across the entire project lifecycle

By combining Swiss manufacturing excellence with a clear understanding of the Indian market environment, BRUGG Lifting aims to contribute to safe, efficient and future-ready elevator systems.

Looking Ahead

BRUGG Lifting views India as a key long-term market. With BIS-certified products, strong technical expertise and a partnership-oriented approach, the company is well positioned to support the continued evolution of India's vertical transportation industry.

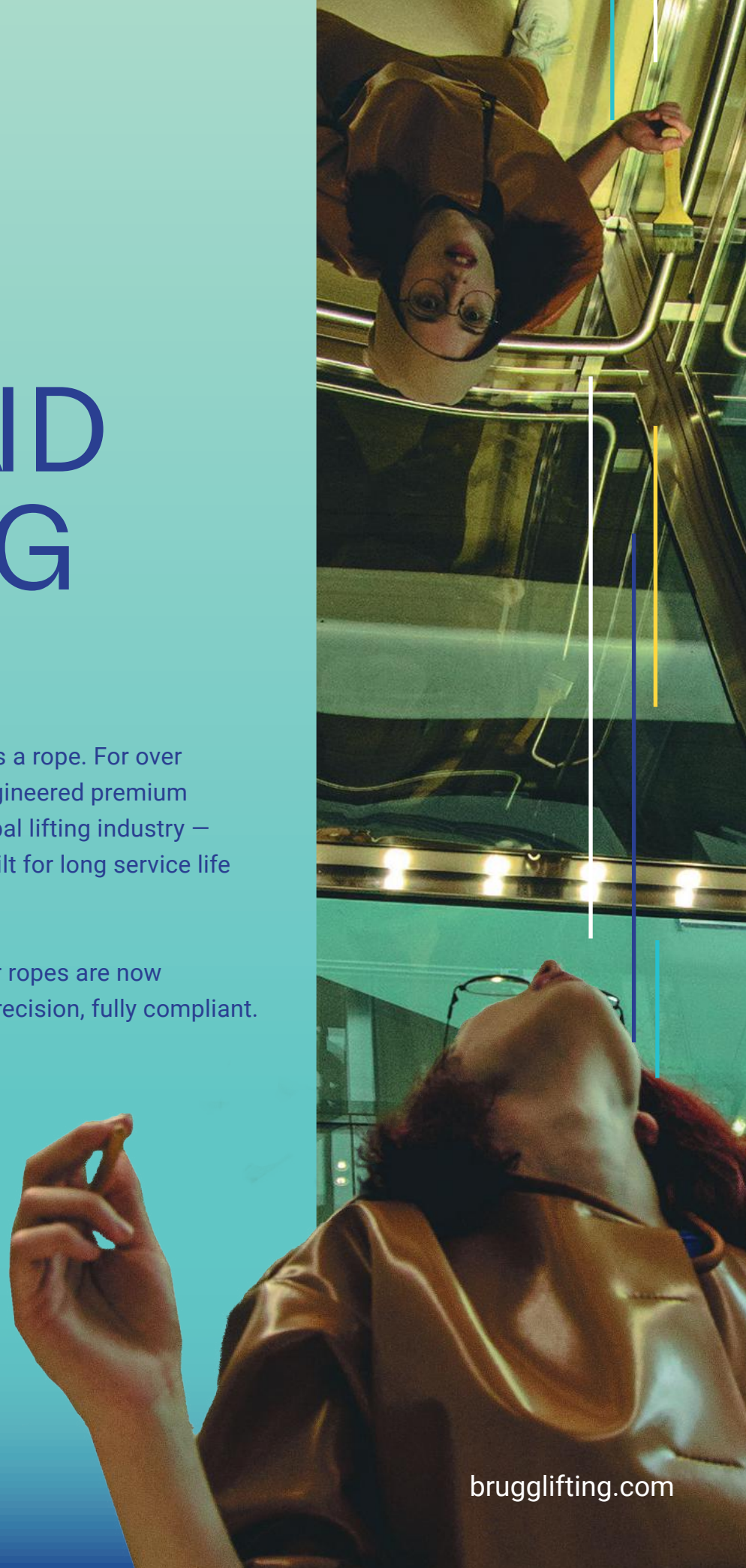
BRUGG
Lifting

BEYOND LIFTING

Behind every elevator ride there is a rope. For over 120 years, BRUGG Lifting has engineered premium suspension solutions for the global lifting industry — manufactured in Switzerland, built for long service life and smooth operation.

Our Swiss-manufactured elevator ropes are now **BIS-certified for India** — Swiss precision, fully compliant.

- MADE IN **SWITZERLAND**
- IS 2365: 2024 **CERTIFIED**
- +120 YEARS **EXPERIENCE**



brugglifting.com

Concord Ascentech Designs and Engineers Complete Elevator Systems, Elevator Components and Kits

Engineering excellence for future-ready elevator systems and components

by Fali Palkhivala

Built on our strong foundation spanning 50 years, Concord Ascentech specializes in delivering end-to-end vertical- and horizontal-transportation solutions. Our core activities span the entire product life cycle — from conceptualizing and designing to integrating, manufacturing and supplying advanced, field-friendly elevator components and kits. Every solution we create is engineered to support seamless installation, enhanced performance and long-term efficiency for elevator companies and field technicians alike.

At Concord Ascentech, our mission is to empower elevator companies with sophisticated, universal and future-ready components and kits, reducing the need for manpower and overall costs for the companies that choose to use our technology/equipment. We aim to provide products that offer maximum convenience, adjustability and flexibility, enabling effortless adaptation to diverse site conditions and architectural requirements. Through continuous innovation and a deep commitment to quality, we strive to elevate industry standards and contribute to smarter, safer and more versatile vertical-transportation (VT) systems, employing our patented technologies.

One of our technologies is the Future Ready Adjustable and Flexible Chassis System for which patents have been filed with the World Intellectual Property Organization (WIPO) and the intellectual property office of the Government of India, which administers Indian law for patents, designs, trademarks and more. The system is also registered with the Patent Cooperation Treaty (PCT), an international treaty managed by WIPO, securing patents in all the 158 contracting countries under this treaty.

The Future Ready Adjustable and Flexible Chassis System has been conceptualized, designed and developed by elevator experts especially for the elevator industry. This Chassis System has culminated from decades of exposure, from the elevator layout design, shop floor execution, pre-dispatch quality control, logistics/storage, site handling/installation/alteration, maintenance and modernization.

This system eliminates the need to generate unique set (per elevator dimension/type) of elevator layout drawings to production drawings, creating nesting drawings and setting parameters for CNC laser-cutting machines, bending drawings and setting parameters for the CNC bending presses, running quality control at various stages of processing and assembly of the car frame system. The quality control process, which is required for all these stages, is completely eliminated, as this is a standardized chassis system that can be configured and assembled as per the requirement of any elevator installation within its configuration range.

Further, this chassis system is packed and shipped in very small and compact packages configurable for a car frame. Packages can be as small as about 500 mm wide X 500 mm height x 1,550 mm length, eliminating the need for large storage space and transportation space, saving warehouse space, labor and transportation costs.

The Future Ready Adjustable and Flexible Chassis System provides adjustable distance between guides (DBG), adjustable height, can accommodate any component/attachment which could require changes/alterations due to multiple lapses in the above-mentioned process chain or due to unforeseen site limitations/deviations.

Patented Adjustable and Flexible Chassis System — Car Frame System and Configurations

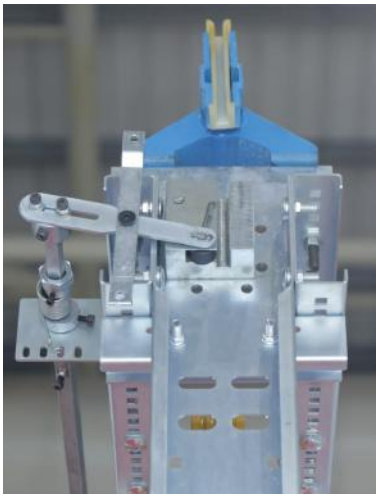
The chassis system is configured and will fulfil all possible needs of various elevator systems. Current applications of the Future Ready Adjustable and Flexible Chassis System are as follows:

- DBG adjustability of approximately 400 mm
- Load capacities range to cover the standard ranges required
- Various cabin dimensions are incorporated.
- Suitable for 1:1 and 2:1 suspension types
- Above suspension and below suspension (under slung) position possibilities
- Rope suspension and flat belt suspension
- Instantaneous safety gear and progressive safety gear incorporation possibilities
- Safety gear positioning can be at the top or at the bottom of the car frame system.
- Numerous safety gear activation linkage incorporation possibilities
- Numerous safety gear activation linkage positioning incorporation possibilities
- Suitable for slider guide shoe/roller guide shoes
- Numerous subassembly incorporation possibilities

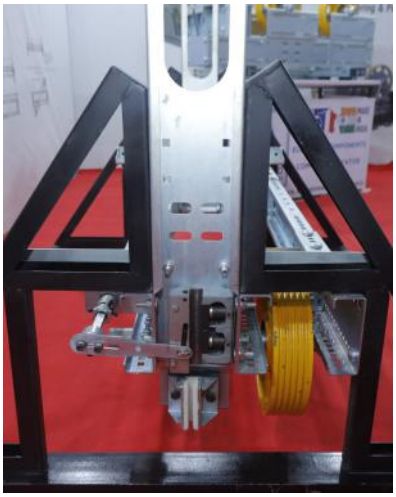
- Numerous accessory incorporation possibilities
- Sheet-formed sections with multiple bends for better structural integrity

In addition to the above advantages of the Future Ready Adjustable and Flexible Chassis System configured for the car frame system, it can be very easily and completely modernized/upgraded in the future to achieve the following:

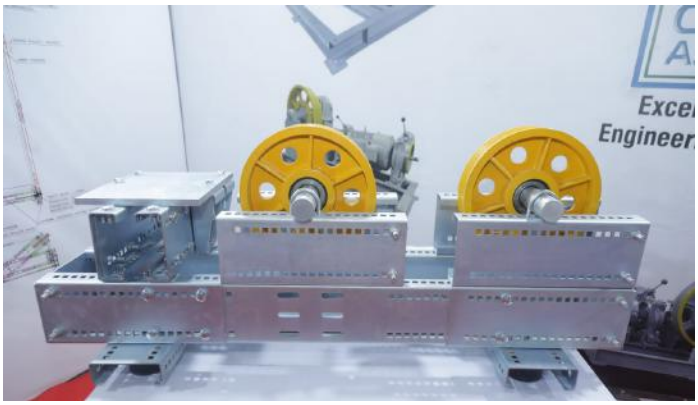
- Upgrade from instantaneous safety gears to progressive safety gears
- Changing the position of the safety gears, linkage and activation mechanism from left to right or from bottom to top/vice versa
- Upgrade from conventional safety gears/blocks, linkage and activation mechanism to integrated safety gears with linkage and activation mechanism
- Upgrade from conventional safety gears/blocks, linkage and activation mechanism to on-board governors with integrated safety gears/blocks, linkage and activation mechanism
- Upgrade from conventional safety gears/blocks, linkage and activation mechanism to remote activated safety gears/blocks with integrated linkage and activation mechanism
- Upgrade from fixed guide shoes to spring-loaded guide shoes or from slider shoes to roller guide shoes
- Change from over slung suspension to underslung suspension
- Upgrade/change the suspension medium from conventional wire ropes to TPU/CTP ropes and also possible to change to thermoplastic polyurethane flat belts
- Add buffer striker plate as required
- Add under-cabin platform load-weighing device
- Add attachments for compensation chain/s as required



Instantaneous safety gear/block with activation and linkage mechanism installed at the top of the car frame/cross head level



Progressive safety gear with activation and linkage mechanism installed at the bottom of the car frame/bottom plank level



Machine base frames for conversion of geared to gearless machine room installations

Machine base frames, governor and hitch plate mounting for machine-room-less installations and buffer stands/supports/ hydraulic cylinder supports

Patented Adjustable and Flexible Chassis System – Machine Base Frames for MR and MRL Installations and Configurations

- Machine-Room (MR) installation and MRL installations
- Can be configured and adjusted as per the required car and counterweight centers of conventional car frame installations
- Can be configured and adjusted as per required car and counterweight centers cantilever car frame installations
- Can be used for various suspension mediums
- Can be incorporated for new installations
- Can be incorporated for conversion for geared installations to gearless installations

The Future Ready Patented Adjustable and Flexible Chassis System is an ideal product to be integrated in all elevator installations, especially for elevator companies, elevator kit suppliers, elevator solution providers and component traders having a reasonable / high volume and variety of elevator installations.

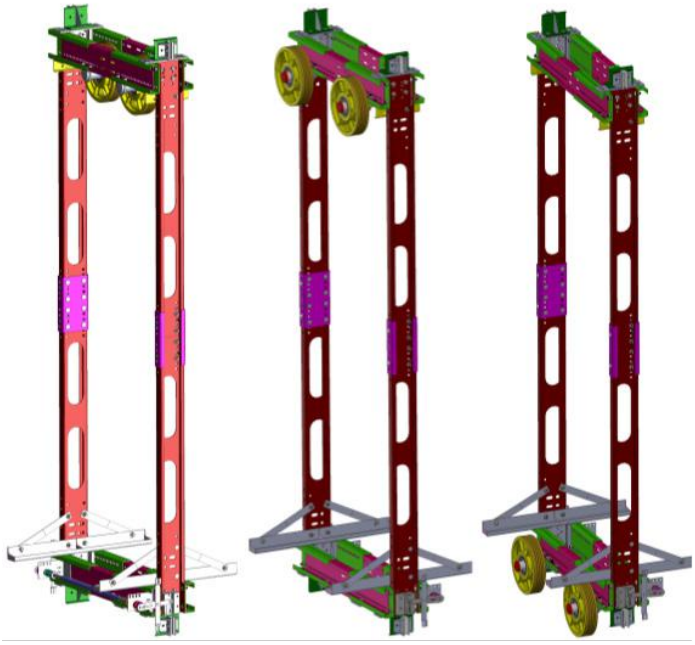
This Chassis System has culminated from decades of exposure, from the elevator layout design, shop floor execution, pre-dispatch quality control, logistics/storage, site handling/ installation/alteration, maintenance and modernization.

Advantages of the Future Ready Patented Adjustable and Flexible Chassis System

- Reduces design integration engineering inputs and time on projects
- Eliminates coordination between the engineering, purchase team and vendor as one design covers all varieties of installations
- Pre-dispatch inspection of material will be substantially reduced/negated.
- Reduces delivery lead time due to the system's flexibility to cover various kind of requirements
- Simplifies process and understanding between the store in-charge and site in-charge as one product fits all.
- One design allows multiple variations like:
  - Over slung single- or double-looping sheaves in the crosshead
  - Over slung cantilever twin-looping sheaves
  - Over slung looping sheaves perpendicular to crosshead
  - Under slung cantilever twin-looping sheaves
  - Under slung twin looping sheaves with support member
  - Over slung/under slung cross sheave installations
- Reduces storage space and costs
- Reduces packing costs
- Reduces transportation costs
- Reduces hidden overhead costs and increases profitably
- Uplifts your brand value as this will help to substantially reduce total project turnaround time

Every solution we create is engineered to support seamless installation, enhanced performance and long-term efficiency for elevator companies and field technicians alike.

Future Ready Patented Adjustable and Flexible Chassis System 3D schematics – few MAX DBG car frame configurations



Future Ready Patented Adjustable and Flexible Chassis System 3D schematics – few MIN DBG car frame configurations

About the Author

With 36 years of experience in the elevator and vertical mobility industry, Fali Palkhivala brings a combination of entrepreneurship, product innovation and future-ready system design. His core expertise lies in creating intuitive, high-performance elevator components and systems that enhance user experience while maintaining the highest standards of reliability, safety, sustainability and operational ease. He has consistently championed bespoke solutions, tailoring products to specific client and project needs without compromising industry standards. In his role, he plays a pivotal part in strengthening the Concord brand legacy, taking complete ownership from concept to execution. His leadership style is deeply client-centric, fostering close collaboration with architects, developers and stakeholders to deliver maximum value. He has also been instrumental in supply chain and vendor development, enabling partners to adopt advanced technologies, while driving process optimization for greater efficiency and responsiveness. Under his leadership, Concord has earned a reputation for design excellence, engineering innovation, ethical values and long-term client relationships, with many clients retained since 1979 and a strong culture of internal talent growth.

VT Selection: A Strategic Infrastructure Choice

The shift from "number of lifts" to "people flow engineering"

by Dr. Paresh Kariya

Vertical transportation (VT) is never a late-stage "mechatronics decision." It is a strategic infrastructure choice that directly shapes building efficiency, life-cycle cost, user experience and long-term asset value. In high-density markets such as India where mixed-use developments, healthcare campuses, metro linked commercial towers and premium residential clusters are expanding vertically, elevator planning must begin at the concept/design stage, not after civil drawings are frozen. This paper brings together key technical parameters, planning prerequisites and globally aligned best practices to support informed VT selection across different building typologies.

Why VT Planning Must Start Early

Elevators are the only building system that touches every floor, every day, under full load conditions. Poorly selected or designed systems lead to congestion, energy waste, tenant dissatisfaction and expensive retrofits, resulting in an unsuccessful project. Unlike HVAC or lighting, post-construction elevator corrections are extremely difficult and capital-intensive. Globally, developers now treat VT as mobility infrastructure rather than equipment to be procured. The shift is from "number of lifts" to "people flow engineering."

Core VT Selection Parameters

The following framework integrates design engineering logic, Indian regulatory considerations and global performance methodologies used in advanced markets.

VT Selection Matrix

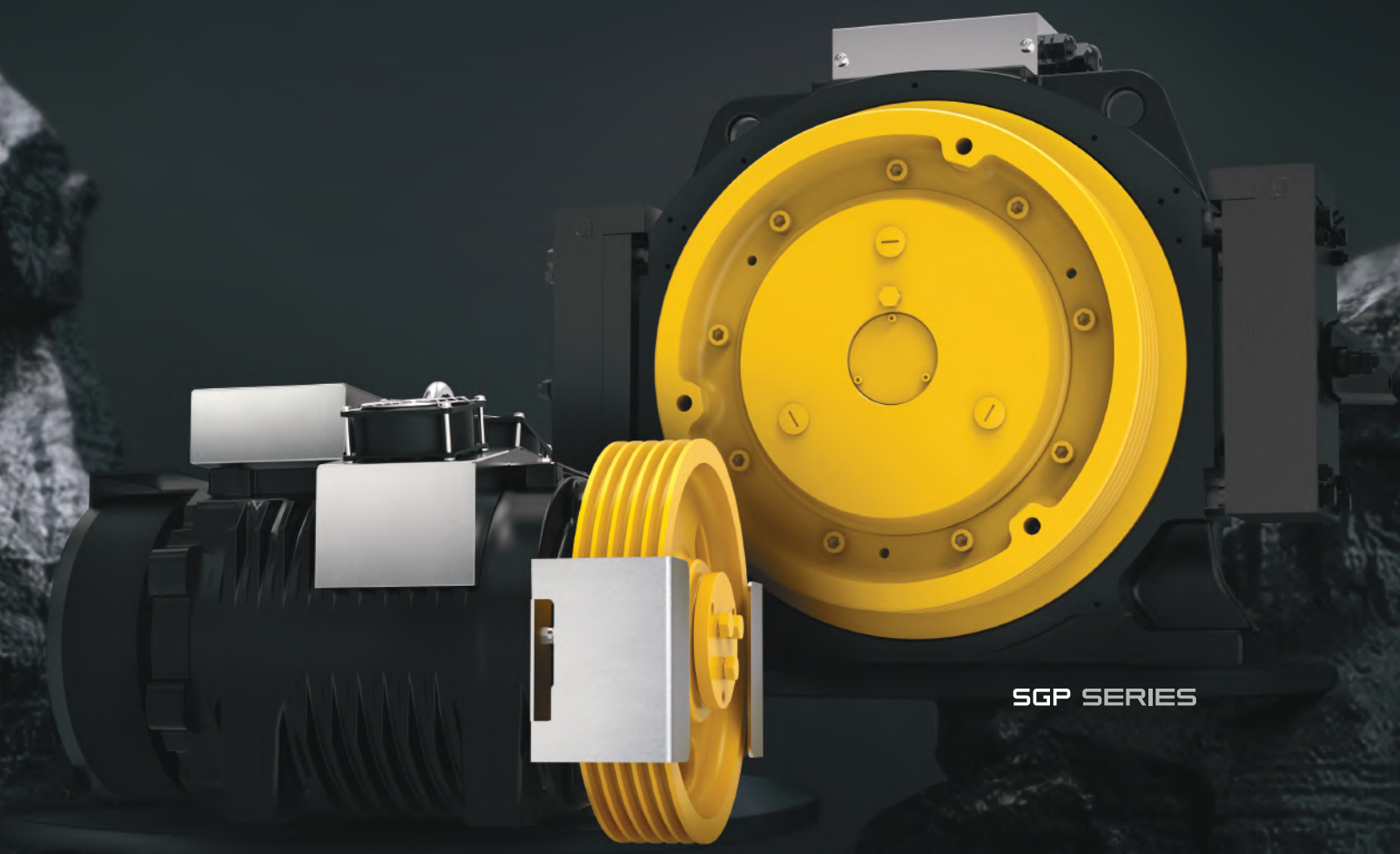
Main Idea	Explanation	Best Practices India	Best Practices Global	Examples	Key Questions
Building Usage Profile	Passenger pattern varies across residential, hospital, office, retail, & transit linked buildings	Define occupancy realistically. Avoid using generic thumb rules	Use traffic simulation software during schematic stage	IT park vs. residential tower need different handling capacity	Who are the users at peak hour
Population Density	Determines handling capacity & waiting time	Consider Indian peak stacking behavior & festival surges	Model 5 minute peak traffic using simulation tools	Metro connected commercial towers need higher design population	What is real peak demand, not average occupancy
Handling Capacity (HC)	Percentage of building population moved in 5 minutes	Minimum 10 to 15 % for offices. Often under designed in India	15 to 18 % for premium commercial developments	Grade A office towers design for faster people movement	How fast must the building empty or fill
Interval Time	Time between two car arrivals at main floor	Target 30 to 40 seconds in commercial buildings	Premium global assets target 25 to 30 seconds	Long waits reduce tenant satisfaction	What waiting time is acceptable for the asset class
Travel Height and Speed	Lift speed must align with building height	Avoid over specification which increases cost and power load	Use optimized speed zoning rather than one speed strategy	30 storey building does not always require high speed lifts	Is speed aligned to travel distance and usage
Zoning Strategy	Dividing floors into service zones improves efficiency	Rarely implemented in mid-rise Indian buildings but highly beneficial	Sky lobby and zone control widely used globally	Hotels and offices benefit from separate zoning	Can zoning reduce number of shafts
Core Space Optimization	Elevator shafts consume saleable area	Coordinate architect and VT consultant early	Global projects integrate VT with structural grid planning	Poor planning reduces leasable space	Are we losing revenue due to inefficient core design
Energy Consumption	Elevators run continuously unlike many systems	Adopt VVVF drives and regenerative systems	Energy modeling integrated with green certifications	Hospitals benefit from energy efficient lifts	What is lifecycle energy cost
Redundancy and Reliability	Critical for hospitals, airports, and public buildings	Include service redundancy and AMC clarity	Predictive maintenance through IoT enabled systems	Downtime impacts reputation in healthcare	What happens if one lift fails
Code Compliance	Governed by NBC India, local lift acts, and fire norms	Fireman lift, stretcher lift compliance mandatory	EN81, ASME A17 aligned safety benchmarks	Hospitals require evacuation compliant elevators	Are statutory requirements future ready
Digital Integration	Smart dispatch and access control integration	Increasing adoption in Indian commercial projects	AI based destination control standard globally	Reduces crowding during peak	Can technology reduce physical infrastructure
Lifecycle Costing	Capex driven decisions lead to long term losses	Evaluate 20 year cost not purchase price	Lifecycle engineering is standard selection metric	Cheap systems increase maintenance burden	What is total cost of ownership

Continued

SICOR
TRACTION MACHINES FOR ELEVATORS

by
SICOR INDIA
AN ELEVANTIS COMPANY

where **quality** meets **power**



SGP SERIES

SGI SERIES

ISE® THE E&E SHOW

INDIA NEW DELHI

DECEMBER
03,04,05, 2026

YASHOBHOOMI CONVENTION CENTRE
NEW DELHI, INDIA

visit us @ **Booth1E21**

Online secondary research was conducted and reviewed as part of this study. The following synthesized research insights capture how macro trends are influencing elevator planning decisions.

1) Aligned with global trends, a clear shift is emerging in India where elevator systems are evolving from basic mechanical utilities to intelligent mobility infrastructure. However, the transition in India is at a dual stage. While advanced projects are adopting digital optimization and smart control systems, a significant portion of the market is still addressing rapid urbanization, infrastructure expansion and modernization of existing assets. This creates a unique landscape where both capacity augmentation and technology integration gets addressed simultaneously.
2) Sector-specific demands are driving custom VT configurations. No two buildings move people the same way anymore. A hospital handles critical patient transfers, a hotel manages the guest experience, a data center prioritizes equipment movement and an educational institution balances peak student flows. Each comes with its own operational logic. This makes "one-size-fits-all" elevator planning irrelevant. The focus must shift to purpose-driven design, with dedicated systems — such as bed lifts, service lifts and fire lifts — each engineered for reliability and clear segregation of movement.
3) Secondary research consistently shows elevator demand is no longer driven only by building height. It is driven by density, usage diversity, sustainability expectations and user experience benchmarks. Projects that interpret these signals early achieve better efficiency, lower life-cycle costs and result in stronger asset positioning.
4) Common mistakes observed in projects often stem from late-stage or perception-driven decision-making. In many cases, the number of elevators is finalized only after architectural approval, limiting the ability to optimize core design.
5) Traffic simulation is frequently overlooked, especially in mixed-use developments where movement patterns are inherently complex.
6) Elevator speed is sometimes selected based on marketing positioning rather than sound engineering logic, leading to mismatched performance.
7) The importance of service elevators is often underestimated, affecting operational efficiency and logistics.
8) Retrofit and modernization are emerging as strategic segments. A quiet but powerful shift is underway. Across India, aging buildings are meeting rising expectations, bringing modernization to the forefront of VT planning. Increasingly, the opportunity is not in new installations alone, but in upgrading what already exists. This means a growing share of projects now involves retrofits, where constraints are tighter and decisions carry long-term impact. Success depends on early feasibility assessments, digital audits and well-planned phased upgrades, rather than reactive fixes.
9) Maintenance is treated as an afterthought instead of being integrated into life-cycle planning. Such decisions result in long-term operational inefficiencies that persist throughout the building's life.

Prerequisites Before Finalizing VT Design

Effective VT design begins well before tendering and requires a structured, multidisciplinary approach supported by a clear selection framework. The process should start with defining the building type and user journey, followed by a simulation-based traffic and handling-capacity analysis, as conventional estimation tables are no longer adequate for today's complex usage patterns. Early collaboration between the architect, structural engineer and VT consultant is critical to align shaft planning with the structural grid since parameters such as shaft size, pit depth and headroom cannot be corrected later without a costly redesign.

The design must then be anchored to a clearly defined building performance objective, whether driven by affordability, premium positioning, healthcare criticality or transit efficiency, ensuring the VT system aligns with its intended use. Compliance and safety requirements, including fire and evacuation strategies, should be validated at this stage, as modern codes increasingly integrate elevators into controlled evacuation planning. Equally important is planning for future demand, particularly in India where occupancy often intensifies over time, making it essential to design beyond current load assumptions. Project teams should also evaluate life cycle energy consumption and maintenance models to avoid long-term inefficiencies, and integrate smart control systems wherever traffic complexity justifies their use. Finally, all specifications must be clearly defined and frozen before the tender stage to ensure technical integrity and prevent compromise during procurement.

Conclusion

VT is the circulatory system of a building. When it is engineered well, the structure feels effortless to occupy. When it is poorly planned, no amount of architectural excellence can compensate for daily inconvenience. India is entering an era where urban efficiency will define asset value. Therefore, elevators must be selected through performance engineering, not catalog comparison. The future of VT lies in integrating mobility science, digital intelligence, sustainability and life-cycle thinking into one coordinated design decision. Projects that recognize VT as infrastructure rather than equipment will deliver a superior occupant experience, stronger operational economics and enduring building relevance.

Dr. Paresh. M. Kariya is director at PAPL and AIQ India. With a PhD, an MBA and a degree in mechanical engineering, he has nearly three decades of diverse experience in the VT industry with Otis, beginning his career as a service engineer working closely with equipment and later progressing to management positions in India, Thailand and the Asia-Pacific region. Kariya had the pleasure of working on the Statue of Unity — the world's tallest statue — in India. Passionate about developing programs that bridge the gap between elevator companies and customer requirements, he has helped put together modules on VT service quality and management.

Made in India for the world

ESBEE

switch to perfection

ENGINEERED FOR
SAFE MOVEMENTS

Customised Solutions

Elevator Accessories

Pit Control Devices

Car Top Devices

Lighting Solutions

Auxiliary Controls

Under Car Devices

Esbee offers a complete range of products and accessories designed to support every stage of elevator lifecycle—from installation to maintenance and modernization. These solutions are engineered for elevators, escalators, moving walkways, and all types of lift systems, ensuring seamless integration, operational safety, and long-term reliability across applications.

Scan the QR code for Esbee Elevator Catalogue

Esbee Electrotech LLP

Corporate office: S-42/1, M.I.D.C Bhosari, Pune - 411026.

Plant 1: S-42/1, M.I.D.C Bhosari, Pune - 411026, Maharashtra, India.

Plant 2: J-159, M.I.D.C Bhosari, Pune - 411026, Maharashtra, India.

Plant 3: C-29, M.I.D.C Ahilyanagar - 414111, Maharashtra, India.

Email: info@esbee-electrotech.com | Website: www.esbee-electrotech.com

Scan the QR code for Product Catalogue

Thoughtful VT Design

Systems quietly define the relationship between a building and the people inside it.

by Dr. Malini Saba

images by Gagandeep Kaur

I have always found it interesting how we judge buildings. We notice the height, the design, the lighting, the way the entrance feels. Sometimes we even notice the materials, the detailing, the aesthetics. But what we rarely pay attention to, at least consciously, is how the building moves us. And yet, that is what we experience the most.

You may forget the color of the walls, but you will remember if you had to wait too long for an elevator every single day. You will remember if it felt crowded, confusing or slow. You will remember if something about it just didn't flow. In many ways, vertical transportation (VT) quietly defines the relationship between a building and the people inside it.

The Moment It Becomes Noticeable

Most systems, when they work well, disappear. You don't think about them. You don't analyze them. You simply move on. But the moment something feels off — even slightly — you become aware of it. A delay, a long wait, too many stops, unclear movement — it all begins to accumulate. And that accumulation turns into a daily experience. That's why I often feel that VT is not really about machines or systems. It is about consistency, about removing friction from everyday life.

Where the Thinking Really Begins

One thing I have seen repeatedly is that VT is often discussed later in planning than it should. By the time it comes into focus, much of the building has already been imagined. Spaces are allocated, layouts are defined and the elevators are expected to "fit in." But they don't really work like that.

Elevators, shafts, movement corridors — they shape how a building breathes. If they are not part of the early thinking, you are not designing freely; you are adjusting within constraints. And adjustments, almost always, come with compromises.

Understanding How People Actually Move

Every building carries a certain rhythm. You don't always see it on paper, but you can feel it once the building is in use.

In residential spaces, mornings and evenings have a natural intensity. People are leaving for work, returning home and managing their routines. In between, things slow down.

In office environments, the movement is sharper. There are defined peaks where everyone seems to arrive or leave at the same time. Even a small delay during these periods feels amplified.

In hospitals, movement has a completely different emotional layer. It is not about convenience; it is about care, urgency and sensitivity.

So, when we think about VT, the question is not just how many elevators we need. It is what kind of movement are we supporting every single day.

The Subtle Psychology of Waiting

Waiting is not just a measure of time. It is a feeling. Two people can wait for the same duration and experience it very differently. Someone who is relaxed may not notice it at all.

Someone in a hurry will feel every second. And then there is the environment itself. If the system feels organized, if there is a sense things are moving as they should, waiting feels shorter. If it feels chaotic or unpredictable, even a short delay feels longer. This is where planning makes a difference.

Traffic studies, handling capacity, zoning — all of these technical elements exist for a reason. But their real purpose is not just efficiency on paper. It is to shape perception.

Because in the end, people don't remember numbers. They remember how something felt.

Why More Doesn't Always Solve the Problem

There is often a simple instinct in planning: If movement feels heavy, add more elevators. But more is not always better.

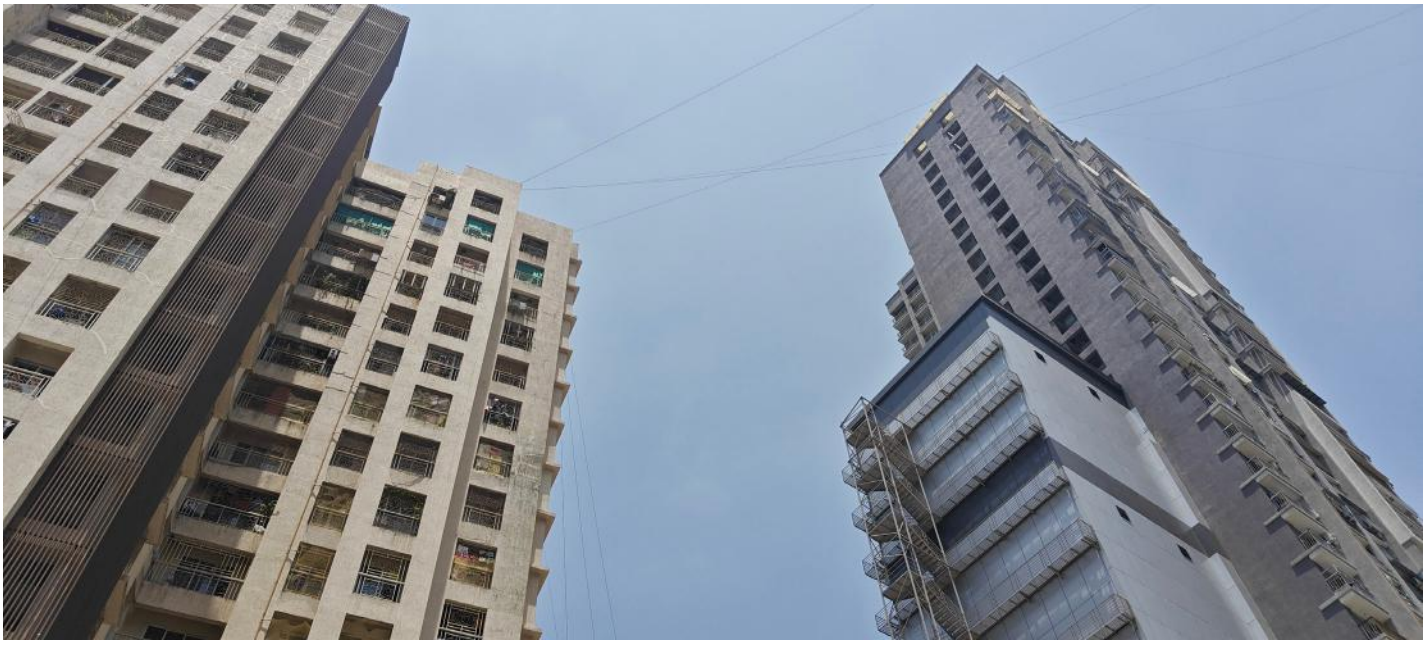
Without clear zoning or flow, additional elevators can actually create confusion. That can take the form of too many stops, overlapping routes and inefficiencies that cancel out the benefit of added capacity.

On the other hand, a well-planned system with fewer elevators but better distribution can feel far more efficient.

This is where intention matters more than scale.

Zoning: A Quiet But Powerful Decision

Zoning is one of those concepts that sounds technical but has a very real impact. Separating elevators based on floor ranges — low, mid and high — reduces unnecessary stops and



keeps movement more direct. But beyond the mechanics, it creates a sense of order. People understand where they need to go, and systems respond accordingly. It is not a dramatic change. But it is a meaningful one.

Technology: Useful, But Not Everything

We live in a time where almost every system can be made smarter.

Destination control systems, automated scheduling, predictive algorithms — a lot can be done. And in many cases, it helps.

But I have also seen systems where the technology felt overwhelming — where users had to think too much just to

perform a simple action. That, to me, is where the balance gets lost.

Technology should reduce effort, not increase it. It should feel intuitive, not impressive. Because at the end of the day, people are not looking for innovation in an elevator. They are looking for ease.

Energy is part of the conversation, whether we acknowledge it or not. VT systems run constantly. Even when they are not in

use, they are consuming energy in some form. Over time, this adds up — not just financially, but environmentally. This is why decisions around efficiency matter.

Regenerative drives, better control systems, smarter energy use - these are not just "good to have" features anymore. They are part of responsible planning. Not everything needs to be visible to be important.

Safety Is Something We Should Never Have to Question

When safety is done well, it goes unnoticed. And that is exactly how it should be. Fire integration, emergency systems, structural considerations — these are not areas where we experiment or compromise. They require discipline and clarity. Especially in high-rise buildings or sensitive environments, these decisions carry real consequences. It's not something people will talk about when it works. But it's something they will remember if it doesn't.

Thinking Beyond Installation

A building doesn't stop evolving once it is completed. Usage patterns change. Wear and tear become visible. Systems are tested in ways that were not always anticipated. This is where long-term thinking becomes important. A system that is difficult to maintain or too complex to manage eventually creates its own challenges. What seems efficient in the beginning may not remain so over time. So, the real question is not just, "Does it work today?" It is, "Will it continue to work well years from now?"

A Humane Way of Looking at Systems

In my work, whether in business or through the Saba Family Foundation, I have always believed that systems should support people quietly. They don't need to stand out. They don't need to be noticed. They simply need to work in a way that makes life easier.

VT is one of the clearest examples of this. When it is done well, it blends into everyday life. It supports routines without interrupting them. When it is not, it becomes a small — but constant — source of discomfort.

In the End, It Comes Down to Thoughtfulness

We are building higher than ever before. Cities are becoming more vertical, more dense, more complex. But inside all of that growth, the experience of a building is still made up of very small moments: Waiting for an elevator, stepping inside, reaching your floor. These moments may seem insignificant individually. But, over time, they shape how a space feels.

And that is why VT deserves more attention than it usually gets.

Because, in the end, it is not just about moving people efficiently. It is about moving them in a way that feels natural, reliable and respectful of their time. And when that happens, a building doesn't just stand tall. It works well.

Dr. Malini Saba is a self-made businesswoman, philanthropist, psychologist, author, environmentalist, human and social rights activist, and a global advocate for women and girls. But her work goes far beyond titles. For over 32 years, she's built a career driven by purpose, not just profit, working across countries and industries.

Dr Saba has a business background in international, multicultural environments and experience with highly engineered systems, requiring a deep understanding of critical business drivers in multiple markets. She has worked across agriculture and trade, pharmaceuticals, fintech, real estate, hospitality, entertainment, and gold mining.

A lifelong researcher, Dr Saba continues to explore areas where leadership-led intervention can drive meaningful change. She's not afraid to take risks but does so with empathy and insight — qualities not often seen together in high-stakes business.

Dr Saba founded the Saba Family Foundation to help one billion people live healthier, more empowered lives — a mission she's been quietly working toward for years. Through the foundation, she has supported millions across South and Southeast Asia, Africa, South America, and the U.S., helping people access healthcare, education, nutrition, and financial stability.

Her work has led to collaborations with institutions like the Bill Clinton Foundation, Stanford Medical Centre, CRY, Concern Worldwide, the Women Refugee Commission, and the Delhi Sikh Gurudwara Management Committee, to name a few.

Efficient and Safe Elevator Performance for Modern Buildings

Inovance showcases its controllers and drives.

by Subramania Bharathiyar

Vertical-transportation (VT) systems — such as elevators, escalators and moving walks — are essential to modern infrastructure, enabling efficient movement of people and goods across buildings of all sizes. From residential complexes to high-rise commercial towers, their performance directly impacts user experience, safety and operational efficiency. Selecting the right components, along with careful evaluation of key parameters and prerequisites, is crucial for optimal system performance.

At Inovance Technology, our VT solutions are built on seamless integration, high reliability and intelligent control. This article outlines the key selection parameters and prerequisites and showcases how our NICE series integrated controllers and elevator drives — including NICE3000+, NICE1000+ and ME320L —deliver efficient and safe performance for modern buildings.

Understanding VT Systems

VT is a high-performance ecosystem of interconnected subsystems in which real-time synchronization between power electronics and mechanical components is critical. Rather than operating as a collection of standalone parts, a modern VT system functions as a unified platform designed to deliver safety, precision and passenger comfort. It is an integrated system that enables the movement of people and goods between floors in a building, incorporating elevators (lifts), escalators and moving walks working together in a coordinated manner.

A VT system consists of several key subsystems. These include:

- Drive and motor system — provides controlled movement
- Controller — acts as the central brain, managing calls and operations
- Car and landing panels — serve as the user interface for floor selection
- Door system — ensures smooth and safe entry and exit
- Safety systems — protect passengers through brakes, sensors and interlocks

The VT system operates by receiving user inputs, processing them through the controller and executing precise movements to ensure efficient, safe and comfortable transportation.

Understanding VT systems involves:

- Analyzing user traffic patterns within the building
- Evaluating system response to varying passenger demand
- Measuring performance based on capacity, rated speed and average waiting time (AWT)

VT systems are not just about lifts; they are intelligently designed movement systems that integrate engineering, safety and user experience to ensure efficient building circulation. Inovance offers a comprehensive Integrated E-Package — a full-stack VT solution engineered in compliance with IS 17900 and EN 81-20/50 standards.

Key VT Selection Parameters

1. Building Type and Application

The building's occupancy type and traffic profile are the primary drivers in defining the optimal VT configuration. Systems must be designed to meet key performance benchmarks such as handling capacity and AWT. This varies based on building type.

- Residential Buildings — focus on simplicity, reliability and cost-effectiveness with emphasis on smooth operation, low maintenance and adequate capacity
- Commercial Buildings (Offices, IT Parks) — require higher-speed elevators designed for peak-hour traffic, typically supported by group control systems for improved efficiency
- High-Rise Buildings — demand advanced solutions such as zoning (low/mid/high-rise groups) and destination control systems (DCS) for optimized traffic handling

2. Load Capacity and Traffic Analysis

Load capacity defines the maximum safe carrying weight of an elevator and is governed by standards such as IS 17900 and National Building Code of India (NBC) 2016.

- Typical Capacity Ranges (India):
    - Residential: 408–680 kg (6–10 persons)
    - Commercial: 1020–1360 kg (15–20 persons)
    - Hospital/Stretcher: ≥1360 kg with extended cabin dimensions

Traffic analysis determines the number, speed and capacity of elevators based on population and usage patterns, directly impacting system efficiency and user experience. Inovance enhances this through intelligent traffic management systems. Destination Dispatch Systems (DDS) group passengers traveling

to similar floors, reducing stops and travel time, while adaptive algorithms dynamically optimize elevator allocation during peak and non-peak hours.

As per NBC 2016, the recommended travel times for office, commercial or hotel buildings are as follows:

Sl No.	Level	Nominal Travel Time (s)
1	Excellent	15 to 25
2	Good	>25 to 35
3	Satisfactory	>35 to 45

3. Speed and Performance Requirements

Speed selection directly influences system efficiency and passenger comfort:

- Low-speed: Residential applications (comfort-focused)
- Medium speed: Mid-rise and commercial buildings (balanced performance)
- High-speed: High-rise and premium infrastructure (fast, efficient movement)

Inovance's NICE series integrated drives ensure smooth acceleration, precise leveling and consistent performance across all speed categories. For passenger elevators in a building, the general recommendations are given in the following table, recommended by NBC 2016.

Sl No.	No. of Floors	Speed
1	Up to 6	0.6 to 1.0
2	7 – 15	1.0 to 1.5
3	16 – 20	1.5 to 1.75
4	21 – 30	1.75 to 2.5
5	31 – 45	3.0 to 4.0
6	46 – 60	4.0 to 6.0
7	Above 60	6.0 and above

4. Drive and Control System Integration

Integrated drive and control systems are essential for performance, reliability and simplified implementation.

- VVVF (variable-voltage, variable frequency) drives enable smooth acceleration, high leveling accuracy and energy efficiency.
- Integrated architecture ensures fail-safe operation, supporting critical safety functions such as UCMP (Unintended Car Movement Protection), ACOP (Ascending Car Overspeed Protection) and real-time monitoring of brakes, doors and safety circuits.

Inovance's integrated solutions combine controller and drive functions into a unified platform, reducing complexity while enhancing coordination and system reliability.

5. Safety and Compliance

Safety remains a core requirement in VT system design. Key considerations include emergency operations, evacuation functionality, advanced fault detection and compliance with evolving standards such as IS 17900.

Inovance E-package solutions are engineered to meet stringent Indian and international safety standards, ensuring dependable operation. Features such as access-controlled operation (e.g., card-based systems) further enhance security in residential, commercial and restricted environments.

6. Energy Efficiency and Sustainability

Energy efficiency is a key consideration in modern VT systems, driving both cost savings and environmental sustainability. This is achieved through technologies such as regenerative braking, high-efficiency PMSM (Permanent Magnet Synchronous Motors) motors, advanced VFDs (variable-frequency drives) with Active Front End (AFE) and low standby power consumption. Inovance solutions effectively recover braking energy and feed it back into the system, reducing overall power usage while supporting green building initiatives.

7. Installation Environment

Environmental conditions such as temperature, humidity, power quality and space availability significantly impact system performance and longevity. Inovance designs robust and adaptable VT solutions that ensure reliable operation across diverse and challenging installation environments.

Prerequisites for VT System Selection

1. Building Data and Functional Requirements

A clear understanding of the building is fundamental to VT system design. Key inputs include building type (residential, commercial, hospital), number of floors, total height, floor-to-floor height, population density and usage patterns. These factors define system configuration and performance expectations.

2. Traffic Analysis and Demand Estimation

A scientific traffic study is essential to avoid under- or over-design. It evaluates peak conditions (up-peak, down-peak, inter-floor) and key metrics such as Handling Capacity (HC), Interval (waiting time) and Round-Trip Time (RTT). These parameters determine number of elevators, capacity (persons/kg), required speed and performance level.

3. Architectural Planning and Space Allocation

Efficient VT design must align with the building layout to ensure smooth movement and user convenience. Key considerations include centralized elevator placement for efficiency, an adequate number and size of shafts, sufficient

E-package solution in compliance with EN 81 & IS17900

lobby space to prevent congestion and optimal positioning of escalators and moving walks.

4. Structural Provisions and Mechanical Readiness

Structural integrity is critical for safe and reliable operation. The lift core must withstand static and dynamic loads during operation and emergency conditions. Essential parameters are shaft dimensions, pit depth and overhead clearance, load-bearing capacity and guide rail-fixing provisions.

5. Electrical and Power Infrastructure

A robust electrical system is essential for reliable VT performance. This includes an adequately connected load to handle motor starting currents, a dedicated power supply to avoid interference, proper earthing (double earthing) and surge protection. These ensure equipment protection, system stability and passenger safety.

6. Safety and Fire Protection Requirements

VT systems must comply with stringent safety norms to ensure the protection of both passengers and building infrastructure. This includes the provision of fire-rated shafts and landing doors to prevent the spread of smoke and fire, as well as the installation of a dedicated firefighter's lift in high-rise buildings to support emergency-response operations. In addition, VT systems are equipped with emergency alarm and communication systems to assist passengers during unforeseen situations. Features such as an Automatic Rescue Device, or an ARD, enable the safe evacuation of passengers to the nearest floor during power failures, while integration with the building's fire alarm system ensures automatic elevator recall and coordinated emergency response.

7. Accessibility and Universal Design

Inclusive design ensures accessibility for all users by incorporating features such as barrier-free access with ramps and wide doors, braille-enabled and tactile interfaces and audio-visual indicators for floor announcements and direction. It also includes wheelchair-compliant car dimensions, emergency intercoms with visual acknowledgement and full-height infrared light curtain sensors to enhance door safety.

8. VT System Type and Control Strategy

Early identification of the VT system type and control logic is essential for effective design and performance. This includes selecting the appropriate system type — such as passenger, freight/service, hospital (stretcher) lifts, escalators or moving walks — along with the right control strategy. Depending on the building's requirements, this may range from simple collective control for low-rise applications to group control for mid- and high-rise buildings and advanced DCS for high-traffic environments.

9. Legal Compliance and Approvals

Compliance with statutory regulations is mandatory. This includes lift inspector approvals and adherence to applicable standards such as NBC and relevant IS codes.

Conclusion

Selecting the right VT system is crucial for building efficiency, passenger experience and long-term costs. By carefully evaluating key parameters and prerequisites, an optimized solution can be achieved. Inovance addresses these needs with its complete E-package, featuring NICE series integrated controllers and elevator drives such as ME320LN, MD500L and WISE310, along with AFE regenerative solutions for improved energy efficiency. Supported by high-quality components and intelligent control systems, Inovance delivers reliable, safe and energy-efficient VT solutions for modern, high-performance buildings.

Subramania Bharathiyar is Elevator Product head for Inovance Technology India.

India's only integrated expo for Elevators, Escalators, Mobility Solutions, Parking Systems, Building Access & Allied Components

3rd SMART LIFT & MOBILITY WORLD 2028™

EXPO | SUMMIT | AWARDS | RUN

Concurrent Events

ELEVATOR WORLD INDIA SUMMIT 2026 | FBSM Future Buildings & Smart Mobility Summit 2026 | SMART LIFT & MOBILITY AWARDS 2026 | ELEVATOR SAFETY RUN

17-19 FEBRUARY 2028

BOMBAY EXHIBITION CENTRE

Coming To

MUMBAI

Organised By

virgo COMMUNICATIONS AND EXHIBITIONS (P) LTD

SCAN HERE TO EXHIBIT

BOOKINGS OPEN

www.slmworld.com

Selecting an Elevator To Meet Building Needs

Each building type has different VT requirements.

by Rajnikant Lad

Selecting elevator specifications for a big multi-purpose building is a tedious job.

The architect, developer, consultant and elevator supplier need to study the exact needs of a project before working out the necessary specifications for the elevators.

The most important requirement before starting actual construction work is to finalize the number of elevators and their capacity, dimensions and speed. This will further help determine the shaft dimensions, pit depths and overheads.

These are the prerequisites for going ahead with elevator projects, because this determines the civil structural designs. These cannot be changed once you start the actual civil construction.

Let's study the required parameters for elevator selection:

1)Building characteristics, which should include residential, commercial, hospital, hotel, mall, industrial or mixed occupancy

2)Population, fixed population, floating population

3)Traffic movement, morning peak, evening peak, inter-floor movement

4)Capacity and dimensions consideration

5)Prevailing lift rules

6)Prevailing fire rules

A detailed study of these requirements helps determine the ideal requirements for elevator specifications and numbers.

While studying the same, we must refer to the applicable IS and NBC codes (IS 14665/IS 17900/NBC, etc.).

Let's study the requirements of elevators for various types of buildings:

1. Residential

Residential buildings have simple basic requirements (speed, capacity, door opening, control, drive).

2. Commercial

Capacity is the prime consideration for commercial buildings. The control system, grouping of elevators and home parking area are the most important requirements.

3. Hospitals

Hospital buildings need passenger elevators, as well as stretcher elevators. Even dumbwaiters are important, as they help transport medical supplies. Hospital elevators' basic requirements are carrying capacity, dimensions to

accommodate stretchers, smooth start/stop and leveling accuracy. In addition, they need to provide smooth travel and precise leveling.

4. Hotels

For hotels, in addition to vertical-transportation means, elevators are a luxury item. Elevators should provide the best ambience, travel comfort and smooth functions. Hotels may also have service elevators and dumbwaiters.

5. Malls

Here, the building height is lower and, therefore, speed is not the issue. Traffic is less and so is the number of trips. To meet customers' expectations, one must plan for an attractive cabin interior, music system and improved lighting effects.

6. Industrial

For industrial elevators, the size of the cabin, load-carrying capacity, leveling accuracy and door opening width are the

deciding factors. The elevator speed, interior decoration or other features do not affect these requirements.

For various types of industries, requirements are also different. In some cases, you need to carry heavy loads occupying small space (metal industries), and in some cases, you need a bigger area to carry bigger boxes and packages (cotton and paper industries). Therefore, load capacity and cabin area must be determined before defining elevator requirements for that particular industry.

Based upon the size of goods it carries, an elevator door size must be decided. The door opening varies from 700 mm to 2,000 mm or more in special cases.

Here, speed and the interior look are not very important.

7. Mixed Occupancy

In some places, we find different activities under one roof. You may have residential flats, offices, shops, restaurants, conference halls or meeting rooms. Understanding the need for such a building is a tedious job. We require a detailed study of the occupants and plan accordingly.

The basic criteria for designing the best elevator configuration are to have minimal waiting time and travel time for passengers. This, in turn, is decided by studying the traffic movement in that building at various intervals. The best handling capacity of various buildings are:

Handling Capacity

1)Percentage of building population handled in 5 min

- Residential: 5–8%
- Commercial: 12–15%
- Hospital: depends on bed capacity

2)Interval - Time between car departures from main floor

- Office building: 25–30 s preferred

3)Peak Traffic Type

- Up-peak (morning office)
- Down-peak (evening)
- Inter-floor traffic

Typical elevator capacity recommendations

- Small Residential: 544–680 kg (8–10 people)
- High-rise Residential: 680–1020 kg
- Commercial: 1020–1600 kg
- Hospital: 1600–2500 kg (stretcher/bed lift)
- Service/Freight: 2000 kg-plus

Speed Selection (m/s) recommendations

Depends on travel height:

Travel Height	Recommended Speed
Up to 15 m	0.65 – 1.0 m/s
15–30 m	1.0 – 1.5 m/s
30–60 m	1.5 – 2.5 m/s
60 m-plus	2.5 m/s-plus

Proper study and consideration of all requirements and rules will result in the best possible elevator design. Certainly, this will be the best possible option in terms of elevator services.

It is highly recommended to involve elevator consultants at the drawing-board stage of any big project.

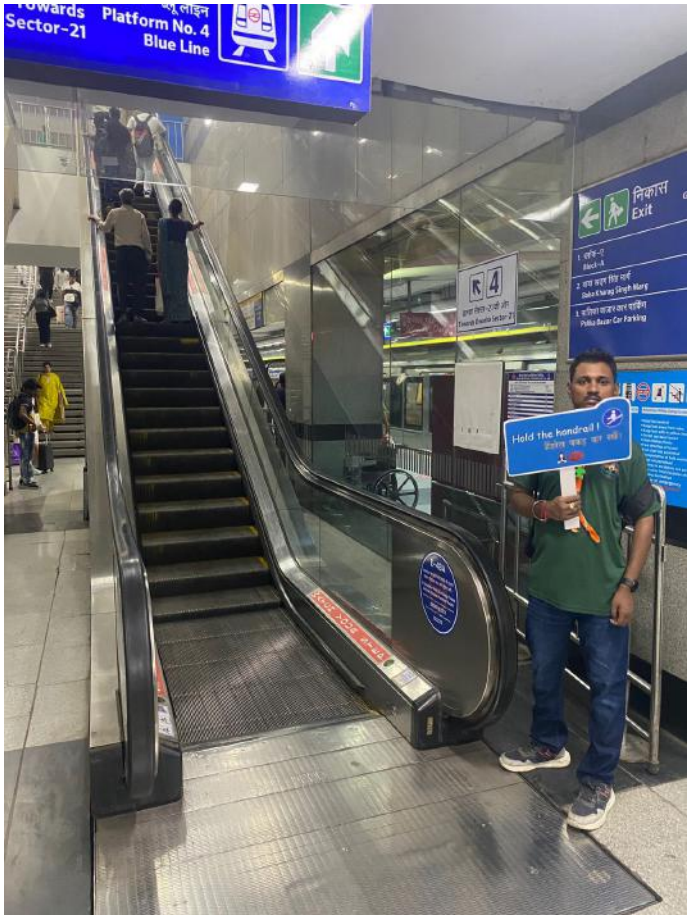
Rajnikant Lad is an elevator auditor and chairman, Building Transportation Safety (FSAI).

DMRC Observes Safety Awareness Week

India's largest VT metro operator successfully concludes its campaign focused on elevator and escalator safety.

submitted by DMRC

The Delhi Metro Rail Corporation (DMRC), India's largest metro operator of elevators, escalators and moving walks, held its Safety Awareness Campaign on Elevators and Escalators on April 7-13. With a special focus on escalator safety, the campaign concluded with a half-day technical session on the "Safe Use of Escalators" at the DMRC Academy. The initiative combined passenger outreach with technical deliberations, reaffirming DMRC's commitment to safety and operational excellence.



Scale of Operations and Safety Commitment

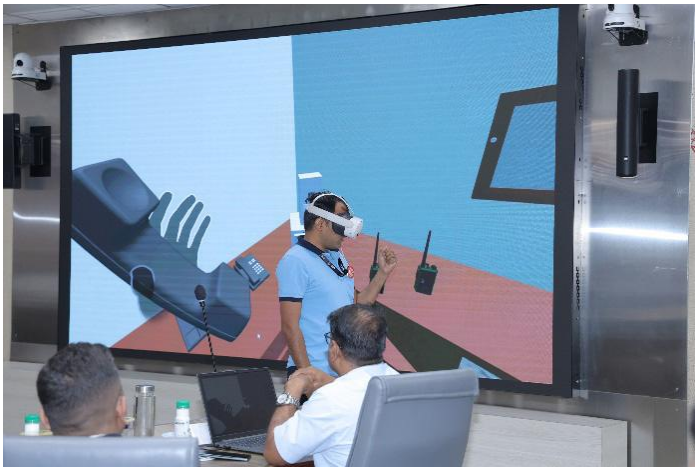
DMRC operates 965 elevators, 1,297 escalators and 42 moving walks across its network. Kashmere Gate Metro Station alone houses 53 escalators, the highest number at any metro station globally. With such scale, DMRC gives top priority to passenger safety and reliability of vertical-transportation (VT) systems.

Awareness Campaign Across the Network

This year, DMRC technical staff actively participated with volunteers in spreading awareness among commuters regarding the safe use of elevators and escalators through the distribution of placards, leaflets, etc. Also, Nukkad Nataks (street plays) were organized at high-footfall stations, while tailored guidance was provided to elderly passengers and those with disabilities.

Key Safety Messages:

- Elevators: “Stand clear of doors,” “avoid forcing them open” and “use alarms/intercoms in case of malfunction.”
- Escalators: “Hold the handrails,” “stand facing forward,” “keep feet within yellow lines” and “use emergency stop switches when required.”



Launch of Safety Directive and AI-Based Video

A Safety Awareness Directive for Escalators, along with an AI-based instructional video on safe escalator use, was formally launched during the campaign.

The educational video demonstrates various “Do’s” and “Don’ts” while using the escalators.

Complementing this, DMRC showcased Interactive Virtual Reality (IVR) software developed for Elevator Rescue Training, underscoring its commitment to world-class, technology-driven training methods. The software, designed to train DMRC staff for real-world situations, displayed rescue procedures for various scenarios of trapping incidents in elevators, specifically for equipment supplied by KONE and Johnson Lifts Pvt. Ltd.

Technical Session Highlights

The concluding half-day technical session on the “Safe Use of Escalators” on April 13 featured seven technical presentations attended by senior officials along with approximately 150 participants in person from other metro organizations; OEMs and OEM representatives also joined virtually from Germany, China and Singapore.

Presentation Lineup:

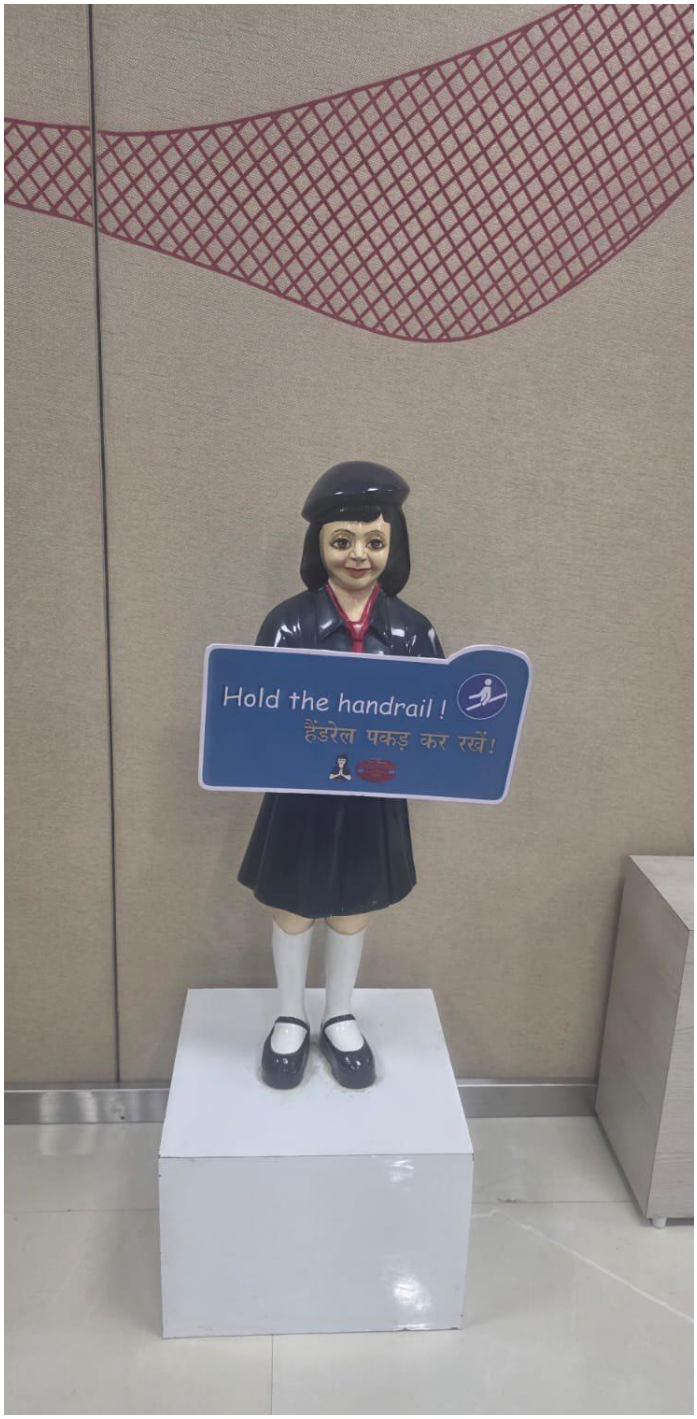
- DMRC: Escalator development over 20 years, including safety and specification as compared to EN 115 Standards

- TKE (Germany): Escalator safety standards as per EN 115
- KONE (Singapore): AI-based video-monitoring solutions that can automatically detect and respond to any predefined scenarios
- CANNY (China): The causes of escalator reversal incidents and maintenance practices to mitigate unintended reversal of escalator direction
- NCRTC (India): Various checks to be done during prototype and commissioning as per EN 115
- Schindler (India): The importance of PESSRAE certification and Safety Integration Level (SIL) for escalators
- OTIS (India): The critical safeties and various factors of safeties in escalators
- Johnson Lifts Pvt. Ltd. (India): The progress of indigenization of various components of escalators, including challenges faced and a way forward

Collaborative Platform for Safety

The workshop provided a collaborative forum for DMRC, other metro organizations and OEMs to exchange knowledge, share experiences and reaffirm their collective commitment to accident-free operation of elevators and escalators. By combining technical expertise with public outreach, DMRC reinforced its leadership role in advancing safety awareness in India's metro sector.

The campaign concluded with a half-day technical session on the "Safe Use of Escalators" at the DMRC Academy. The initiative combined passenger outreach with technical deliberations, reaffirming DMRC's commitment to safety and operational excellence.



About DMRC

Established in 1995, DMRC is a joint venture of the Government of India and the Government of Delhi. It operates 416 km of metro network across 12 lines and 303 stations, connecting Delhi with satellite cities. The DMRC operates one of the world's most extensive metro networks. Its proactive initiatives, such as Safety Awareness Week, set benchmarks for passenger safety and operational excellence in VT systems.

A Fermator Group Company

INDEX SYSTEM INDIA PVT. LTD.

TRUSTED BY INDUSTRYLEADERS
DELEVERING GLOBAL STANDARDS

Proud to be **Preferred Partner**

Building Partnerships. Elevating Performance.

We are honoured to be associated with ELEMAC ELEVATORS, Ahmedabad — a name synonymous with quality, innovation, and reliability.

Together, we continue to deliver elevator solutions that redefine comfort, safety, efficiency, and modern sophistication

> ELEMAC ELEVATORS has been a valuable partner in our journey of delivering world-class elevator solutions. Their commitment to quality, attention to detail, and customer-centric approach reflects in every project they deliver.
>
> We highly recommend ELEMAC ELEVATORS for their professionalism, reliability, and unwavering dedication to excellence.

ELEMAC ELEVATORS

QUALITY
Engineered for performance and long-lasting reliability.

SAFETY
Advanced safety features for complete peace of mind.

PARTNERSHIP
Strong partnerships built on trust and mutual growth.

GLOBAL STANDARDS
Driven by innovation, delivering global elevator solutions.

INDEX SYSTEM (INDIA) PVT. LTD.

+91 9808722722 info@index-system.com www.index-system.com

Elevator Safety Awareness

The concept expands further.

by Rajnikant Lad

A long time ago, it was only from Mumbai — specifically its western and central areas — that I would receive safety audit calls. Now, the concept of safety awareness has reached numerous cities, including Delhi, Noida, Bengaluru, Pune, Chennai and Hyderabad.

Elevators have sufficient safety provisions and are governed under government rules and regulations. There are safety norms and procedures to check equipment conditions periodically. But in our country, there are several states where there is no government authority that monitors elevator operation and safety.

Parswanath Shristi Noida RWA members

In absence of required rules and control, elevator inspections are not conducted properly and in a timely manner. Elevator industry experts and safety organizations are working hard to implement rules uniformly throughout the country.

A lift's life cycle is considered 15 years. After that, we need to have it examined to assess the condition of the whole system. Several moving parts need replacement after a certain period. Technology is always advancing, resulting in a need for timely upgrades.

If improperly cared for, an elevator may experience frequent breakdowns, long shutdowns or unsafe operations. It is therefore strongly recommended to get elevators audited by certified elevator auditors at least once a year.

Parswanath Shristi Resident Welfare Association (RWA) of Noida is one of the societies that took proactive steps and had its 20-year-old elevators audited.

In the state of Uttar Pradesh, lift rules are at the initial stage of implementation, and such proactive steps taken by society need to be appreciated. The recent elevator audit taken up by your author at Parswanath Shristi RWA of Noida and in Serene County at Hyderabad are signs of increasing safety awareness throughout the country.

Parswanath Shristi project Noida

It is said that "awareness keeps you alert, and alertness saves your life." Certainly, this increased awareness must reflect a reduction in elevator accident deaths. I sincerely thank members of both the societies for deciding to go for a safety audit of their elevators.

Serene County Hyderabad managing committee members

This was your author's first audit in Hyderabad, and I thought to share my experience and customers' view on elevator safety audits.

When asked about the need for elevator safety audit and safety awareness training for members, Dr. Vinay Mohan, president, Parsvanatha Shristi RWA at Noida, replied that users' safety is always a top priority for them. He believes safety audits and regular user training are necessary.

Raghvendra Shivane, managing committee member of the gated community Serene County at Hyderabad, says the frequent problems with their elevators forced them to request an independent audit of their elevators. According to him, twice-yearly safety and rescue training should be a part of every service contract.

When asked whether advances in technology force users to upgrade units regardless of where they are in their life cycle, Shivane replied "no" — not until existing lifts cannot provide dependable and safe services.

At the same time, Dr. Vinay Mohan thinks it becomes necessary for societies to modernize as technology changes, irrespective of life cycle.

When it comes to the obsolescence law for elevators, however, both were in favor of it.

Most of the societies do not take timely action for replacement of worn-out parts, which may lead to expensive repair, major accidents or passengers' deaths.

The best way to reduce deaths during elevator operation is to increase awareness among the elevator users, provide frequent safety training and adhere to the safety norms provided by controlling authorities.

Serene County project Hyderabad

Rajnikant Lad is an elevator auditor and chairman, Building Transportation Safety (FSAI).

Modern Urban Living at Presidential Towers in Pune

Your author explains how Ceratec's residential high rises exemplify a refined lifestyle with elevators to match.

by Shilpa Pandya

Ceratec Presidential Towers in Ravet, Pune, introduce a refined lifestyle through 700 thoughtfully designed units of two and three BHK (bedroom, hall, kitchen) residences crafted for modern urban living. Set within a 4.5-acre premium development, the residential project features well-planned homes filled with natural light, smart layouts and elegant finishes.

Located opposite Sentosa Resort, the project has a palatial theme. Residents enjoy 40% open green spaces, creating a balanced environment of nature and city convenience. The project has two basements, ground-floor parking and 28 floors with rooftop amenities.

The units and amenities can be accessed via four Fujitec elevators with a speed of 2.5 m/s, placed in the center of the project. These include three passenger elevators with a capacity of eight people and a service elevator with a capacity of 13 people.

Ceratec Presidential Towers development offers stunning views and a premium living experience. The gated community includes a gym, swimming pool, billiards, kids' play area, temple and 24/7 security including CCTV for complete comfort.

With seamless connectivity to major business hubs and city landmarks, Ceratec Presidential Towers is also close to shopping centers, educational institutions, IT hubs, healthcare facilities and entertainment zones, making it an ideal address for sophisticated, well-connected living in Pune.

Project proximity

- Pune-Mumbai Expressway - 2 km
- Reliance Mart Ravet - 1 km
- City Pride School - 3 km
- S.B.Patil School - 3 km
- Ojas Hospital - 2.1 km
- D.Y.Patil University - 2.5 km
- D-Mart Ravet - 3 km
- Dehu Road Railway Station - 3.3 km
- Aditya Birla Hospital - 5 km

Key lifestyle amenities

- Swimming Pool
- Recreational Corner
- Multipurpose Party Lawn
- Gazebo
- Children's Play Area
- Senior Citizen's Sit Out
- Toddlers Area
- Club House
- Designer Garden

About Ceratec Group

Ceratec Group is a leading real estate developer known for its quality-driven development, customer-centric approach and commitment to creating thoughtfully designed spaces. With a legacy rooted in premium building materials since 2000 and a foray into real estate in 2011, the organization has been

recognized as a class apart in trust and transparency in Pune's evolving construction, residential and commercial real estate industries, bringing deep expertise in construction excellence and design-led development.

Ceratec Group's philosophy is anchored in four core principles: setting global benchmarks, upholding trust at all costs, delivering maximum customer value and maintaining uncompromising quality across every development.

Headquartered in Pune, Ceratec Group has established a strong presence across South and West Pune, delivering premium residential developments across high-growth residential corridors. With more than a dozen landmark projects completed, delivering more than 4,000 homes and serving 2,500-plus families, its growing portfolio is supported by a land bank of more than 4.5 million ft2, reflecting sustained and strategic expansion.

Equally specializing in commercial spaces, Ceratec enjoyed early success with its sprawling 30,000-ft2 retail tile showroom, India's largest in the segment, built in 2008. Collaborating with DMart for a massive 97,000 ft2 of combined retail space across Kondhwa and Ambegaon destinations, the developer has also beautified the concept of hostel accommodations with Couch and Cheese Homestel, a luxury hostel in Pune.

Driven by a vision of architectural excellence and sustainable urban living, Ceratec Group develops future-ready homes that integrate optimal space planning, minimalistic design and energy-efficient solutions. Its developments are guided by environmentally responsible practices, supported by green building certifications and regulatory approvals that reinforce its commitment to sustainable construction.

The Group's portfolio includes flagship developments such as Ceratec City, Ceratec Avika, Presidential Towers, Tower 108 and Westwinds, each reflecting its commitment to quality, innovation and design precision. The company has earned industry recognition, including Times Realty awards for Best Project (Presidential Towers) and Best Design (Tower 108), key certifications such as Green Building certifications, Environmental Clearances and design recognitions, underscoring a strong focus on sustainable and responsible development.

Led by Founder and Managing Director Anand Agarwal, Ceratec Group actively fosters eco-conscious communities through engagement initiatives and experiential events, enhancing the overall lifestyle experience. It actively engages residents through initiatives like Udaan, Umeed, pottery workshops, meet-and-greets and chess tournaments, fostering meaningful connections and vibrant communities.

Strategically focused on Pune's evolving real estate landscape, Ceratec Group continues to expand into key micro-markets, including emerging hubs such as Kharadi, with a focus on premium housing and future-ready developments. With 1 crore-plus ft2 of total constructed area and counting, Ceratec Group is backed by a self-funded growth strategy and aims to deliver more quality homes in the coming years.

Shilpa Pandya is a senior journalist who has handled business- and lifestyle-related coverage. With more than 25 years' experience, she has written for a wide array of publications. Experienced in global coverage, she also excels in regional reporting. Based in Mumbai for the past few decades, she has been a silent team player across different organizations and is happy to be part of the EWI content team, as well

The Octopus Framework: Building Revenue Resilience in the Independent Elevator Company

Eight revenue arms that help India's homegrown elevator companies grow steadily and survive any market cycle

by Arun Narang

I recently came across a blog titled "The Octopus Ascends," written by Saurabh Mukherjea, one of India's most celebrated investment bankers, thinkers and a bestselling author. The blog builds a fascinating framework around how businesses grow by extending multiple revenue arms from a single core.

And Mukherjea does not casually choose the octopus for describing the framework. The octopus is considered one of the most intelligent creatures of nature — each of its eight arms can sense, react and operate independently while staying connected to one brain. When it loses an arm, the others keep working — it even grows back.

So, what Mukherjea found was, across small towns in India, families that enter business start with one enterprise and, over time, build multiple revenue streams, each growing from the surplus of the one before. He gives an example — a family into grain trade formalizes its business, opens a cold storage – and now they can hold grain longer and sell when prices are better. That surplus funds a two-wheeler dealership, then a car dealership, then construction, then real estate and, after a decade or two, you see a mini conglomerate with multiple revenue streams all growing from one original business.

Mukherjea calls them the "octopus families," and I am sure you know such families in your own towns and cities, and how, over time, these families become very hard to displace. While I was reading this observation by Mukherjea, I couldn't help but draw parallels to an independent elevator business — i.e., an elevator business can also be made into an octopus, an intelligent being, by adding multiple revenue streams. I'll explain how.

Unlike many other businesses, this framework suits an elevator business naturally. A restaurant owner cannot extend into eight revenue streams from the same kitchen. A garment manufacturer would struggle. But an elevator company? Your technician team, your reputation in the elevatoring domain and the professional elevator practices — that is the body of the octopus. That is your core. Now let's look at the eight arms — potential opportunities for becoming a multiple stream business.

1. Passenger Lifts

This is where it all starts — new installations in residential and commercial buildings. Most elevator companies begin here, and this is where you build your name. New projects bring visibility, reference sites and relationships that feed every other arm. But just like the grain family's original grain business — this arm works best when it is not the only thing paying the bills.

2. Home Lifts

Villas, independent homes — this segment is growing fast across India. These are different customers with different expectations, often homeowners spending their own money on comfort and accessibility. You already have the technical know-how from passenger lifts — you just need to see this as its own revenue stream with its own pricing and sales effort.

3. Service and AMC

Service and annual maintenance contracts (AMCs) are where the octopus really starts to make sense. Every lift you install creates a service relationship that can last 15, 20 years. Proper contracts, defined scope, consistent service — and this money comes in whether new projects are coming or not. Many companies we know say this arm eventually becomes the most valuable part of their business.

4. Special Application Lifts

Cement factories, chemical plants, flameproof environments, fire evacuation lifts — these need higher specifications and they pay higher margins. They also need deeper knowledge of safety and compliance. Not many companies can do this work — and that is exactly why it is valuable. The fewer people who can do it, the stronger this arm becomes.

5. Goods Lifts – B2B Customers

Warehouses, factories, logistics parks, hospitals — completely different customers with their own buying cycle and their own decision-makers. India's logistics and e-commerce infrastructure is expanding fast, and this arm has real potential for companies that position themselves to serve it.

6. Modernization

Every lift running today will eventually need modernization — new controllers, automatic doors, energy-efficient drives, updated safety systems. India has lakhs of lifts in operation, and many are getting old. And the best part, this is not limited to lifts you installed. Any lift, anywhere, is a potential job. This revenue stream grows on its own as India's installed base ages.

7. Parking Systems

Car lifts and automated parking are growing in India's crowded cities. If you are an elevator company, you already

understand motors, controls, safety, vertical movement — the engineering is the same. What changes are the application and the customer conversation.

8. Stairlift Solutions

India's population is aging, and awareness of accessibility is growing. Stairlifts are new for most elevator companies, but the installation and service skills overlap with what you already do — and companies getting into this early are building a position in a segment that will only grow.

Now you don't need all eight arms on day one — the grain family didn't start with real estate, remember? They started with grain and grew one arm at a time. We have seen elevator companies that started with two arms and today they run five or six. The point is not to do everything at once — it is to see that your business can become something most businesses simply cannot.

Think about it: If you depend only on new installations, you are riding the real estate cycle. When projects slow down, your income slows down with it. But if you have four or five arms running — one slows down and the others carry you through — service income keeps coming, modernization jobs keep coming, special applications have their own cycle altogether.

If you are running an elevator company today with one or two revenue streams — take a step back and look at what you are sitting on. The capability is already there. The relationships are already there. You just need to see the arms and start building them, one at a time. The grain family didn't plan all of it from the beginning — they just kept extending from what they had. You can do the same — and the business you build will be one that lasts for generations. An elevator business that builds multiple revenue streams becomes exactly what Mukherjea describes — an undefeatable marvel of nature. The octopus.

If your company is on this journey and you have a perspective to share, we would love to hear from you. Write to us at arun@besco.in or anitha@virgo-comm.com

Arun Narang leads BESCO, a supply chain company serving India's elevator industry. He works with homegrown elevator brands and focuses on solutions that support capability-building and better installation outcomes. Narang is based in Mumbai.

Safety Relay Circuits

UCMP's logical backbone

by Lakshmanan Raja

The Unintended Car Movement Protection (UCMP) system is designed to prevent or stop a lift car that moves away from the landing level when the landing door is unlocked and the car door remains open, as a result of a single failure in the lift machine or drive control system. The UCMP system comprises three core elements: a detection mechanism that monitors for unintended movement, a control mechanism and a stopping mechanism that acts to safely halt the car when such movement is detected.

In this article, we focus on the control mechanism: the safety relay circuit, which forms the logical backbone of UCMP control by providing redundant monitoring, fault detection and fail-safe response capabilities.

To understand the logic of this safety relay circuit, we start with a simple start-stop motor control circuit and improve that step by step to reach the safety relay circuit.

Before we delve deeper, it's essential to familiarize ourselves with some important terminology:

- Relays — Relays and contactors are like automated switches. By controlling the current to their coil, we can decide when to turn it ON and OFF. It may have one or more contact pairs, which can be normally open or normally closed.
- Normally Open (**NO**) and Normally Closed Contacts (**NC**) — For electrical relays and contactors, the **NC/NO** is based on the status of the electrical contact when their coil is not connected to any electrical supply. For mechanical switches, it is the status of their contacts in the idle state, when there is no external mechanical energy applied to the switch-activating mechanism.
- Force-Guided Contacts/Mechanically Linked Contacts — These are a special type of relay contact design in which all contacts are mechanically interconnected by a rigid linkage within the relay. This construction ensures that if one contact becomes stuck or welded, the others cannot change state independently. In other words, their movement is mechanically synchronized, allowing the detection of a contact fault condition.

Simple Start-Stop Control

We start our discussion with a simple circuit, the start-stop motor control circuit shown in Figure 1. The control relay is **A**. **M** represents the contactor that controls the power to the motor. The start is a pushbutton with the **NO** contact, and the stop is another pushbutton with the **NC** contact.

When all items are wired correctly and the power is on, pressing the start button closes its contact and connects the coil of the relay **A** to the power supply. This energizes the relay, causing its normally open contacts, **A1** in the first rung and **A2** in the second rung, to close. Since contact **A1** is connected across the start button, it provides the necessary power to the coil and maintains the relay in a latched-ON state after the start button is released. Contact **A2** connects the motor contactor **M** to the power supply. When the STOP button is pressed, it breaks the supply line to relay **A**, which, in turn, disconnects the supply to the **M** contactor. This removes the power from the Motor.

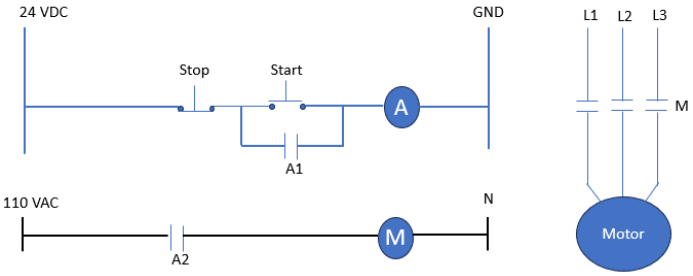


Figure 1: Start-stop control of the motor

Here, one important question arises. When we press stop, how confident are we that the power will be removed from the motor contactor?

Adding Redundancy

The most significant safety failure in the circuit described in Figure 1 occurs when relay **A** gets stuck in the energized position due to contact welding. As a result, the **M** contactor is continuously energized through the permanently closed **A2** contact, and pressing the STOP button becomes ineffective. To address this issue, we added a second relay, relay **B**, for redundancy, as shown in Figure 2.

There is also a possibility that the STOP button may be mechanically stuck, preventing it from functioning when required. Therefore, a stop switch incorporating two **NC** contacts is used, and both contacts are wired in series. Hence, if one becomes mechanically stuck, at least the other will open the circuit when the stop is pressed. Thus, the redundancy is added in the circuit shown in Figure 2 for the control relay and stop switch.

The important drawback of the circuit in Figure 2 is, if either relay **A** or relay **B** becomes stuck due to contact welding, the circuit will continue to operate as intended. The same applies to the stop switch contact. However, the user will not know about the failure of one of the components until both become stuck. This is dangerous, and how do we address this?

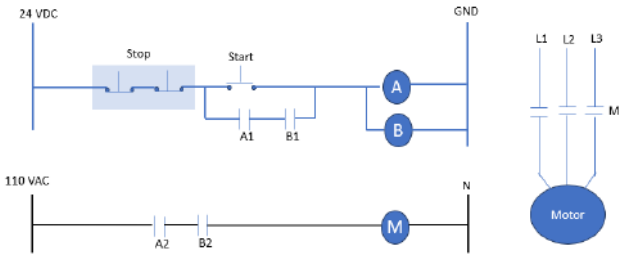


Figure 2: Redundancy added

Redundancy Monitoring – Failure Detection

Redundancy without proper monitoring and failure detection will compromise the purpose of redundancy. It allows faults to accumulate and go unnoticed by the user. To address this issue, it is essential to implement a failure detection circuit.

In the circuit arrangements shown in Figure 3, relay **C** is used to monitor the status of relays **A** and **B** for any signs of contact welding. The term "monitoring" can be ambiguous, so it's important to clarify the frequency of this monitoring. In these arrangements, detection occurs before every start cycle. Let me explain that in the next paragraph.

Let's assume the components are wired according to the schematic in Figure 3, and the power is turned on. The relay **C** in the second rung will turn on through the **NC** contact **A2**, **B2** of the relay **A** and relay **B**. Now pressing the start button closes its contacts and connects the coils of relays **A** and **B** to the power supply through the **C1** contact in the first rung. This energizes both relays, which then open their respective contacts in the second rung, causing relay **C** to de-energize (Note: The time delay element connected across a coil of relay **C** will delay it from getting off too quickly before relay **A** and **B** turn on.) De-energizing the **C** relay won't remove the power from relay **A** and the relay **B** coil in the first rung because of the self-holding path across **C1** and the start button formed by **A1**, **B1** contacts. With relays **A** and **B** energized and relay **C** de-energized, the **M** contactor in the third rung is connected to the power supply.

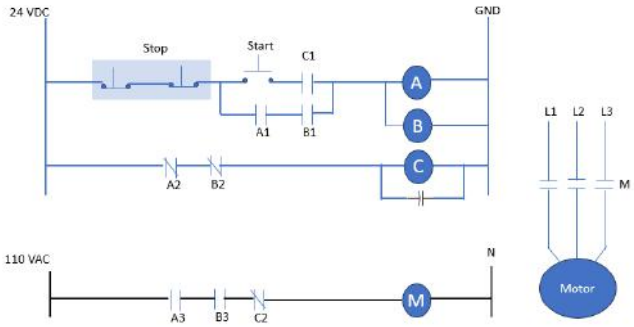


Figure 3: Redundancy monitored only for relays

When the stop button is pressed, it effectively removes power from both relay **A** and **B** coils in the first rung. If a contact welding occurred in either relay **A** or relay **B**, power to the **M** contactor is still removed as intended because of the redundancy.

The welded contact may cause that particular relay to become stuck in the ON position. This prevents supply from reaching the relay **C** coil in the second rung. Without the relay **C** getting energized, the next start operation is not possible because of the **C1** contact in the first rung. In this way, any failure due to contact welding in relays **A** or **B** is detected by relay **C**, and this detection is effective during the subsequent start cycle.

The circuit shown in Figure 3 can monitor the output relay conditions. How about the issues with stuck contacts at the input controls, such as the stop switch and start button? These issues are addressed in the circuit shown in Figure 4.

Final Circuit With Redundancy and Fault Detection

For the circuit illustrated in Figure 4, two stop-switch contacts are utilized in rungs 1 and 2, serving as a two-channel control. This provides options for monitoring each contact and ensuring redundancy. The start button has been upgraded to a design featuring two sets of contacts: one **NC** and the other **NO**, which are connected by a rigid linkage. Thus, monitoring the **NC** contacts of the start button accurately reflects the true status of the other contact position (same as a force-guided relay).

When the stop button is pressed, if one of its **NC** contacts is welded or stuck in the closed position, the relay in that specific rung (channel) will remain energized while the relays in other channels will switch off. As a result, the **M** contactor will be disconnected from the power as intended. At the same time, the permanently energized relay due to the stuck contact of the stop switch will prevent the **C** relay from activating, thereby preventing the next start operation.

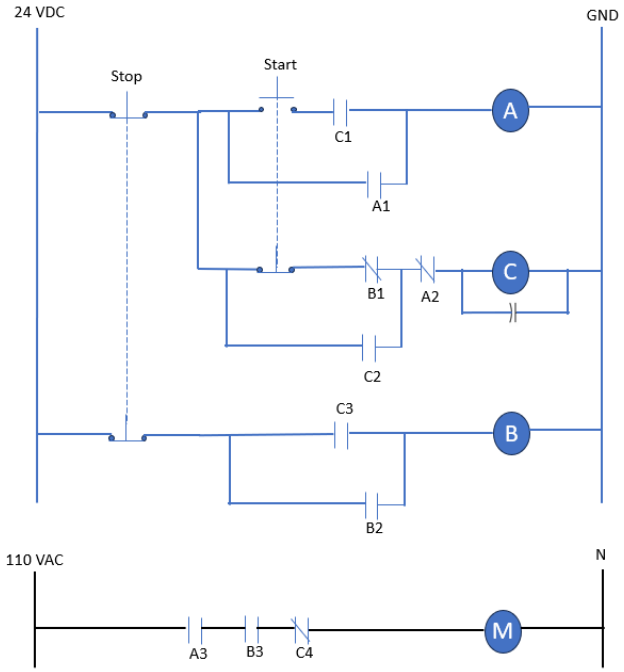


Figure 4: Final circuit

If the start button remains stuck in the ON position, it will prevent its normally closed contact from closing. As a result, this will stop the C relay from energizing in the next cycle, thus hindering the next start operation. Therefore, the circuit in Figure 4 has redundancy in control relays, switch contacts and monitoring to prevent the accumulation of faults in the next start cycle.

Note: For this article, the welding of the motor contactor M is not considered within the scope of discussion. The focus here is solely on understanding the logic and operation of the safety relay circuit and its application within the UCMP system.

Application in UCMP

An example of a safety relay circuit employing relays **A**, **B** and **C** as a means of UCMP is described below, assuming the lift controller does the following tasks.

- During advanced door opening, as the lift approaches a designated landing, the lift controller activates the door bridging (DB) contact after confirming that the car is within the safe leveling zone. This confirmation is achieved through the engagement of switches S1 and S2, which are operated by the leveling plate.
- Additionally, the door bridging signal is activated when the level difference between the car sill and the landing sill exceeds the code-acceptable distance ±20 mm, for releveling purposes.

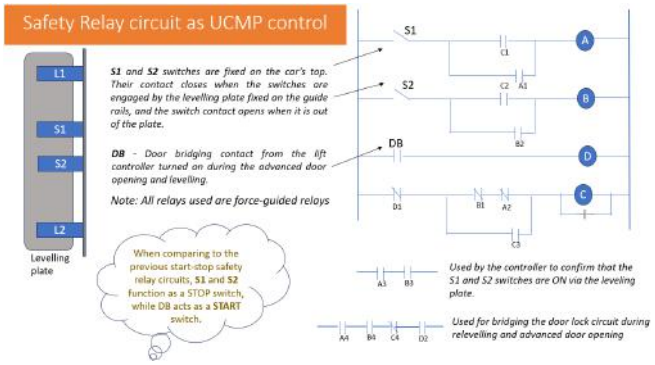


Figure 5: Application in UCMP control

In any of these scenarios, if the car reaches a position where either S1 or S2 is not engaged with the leveling plate, the respective switch contact opens, and the system will initiate a stop by opening the door bridging contacts. Thus, the unintended movement is prevented.

The door bridging contacts comprise the series combination of **A4**, **B4**, **C4** and **D2**.

A3 and B3 series combination can be used to give a confirmation signal to the lift controller that the leveling plate of a particular floor is engaged with the S1 and S2 switches, i.e., the car is closer to the landing and within the unlocking zone (see Figure 5).

If you examine the circuit closely, you'll notice that it is related to the safety relay circuit we discussed earlier.

In this configuration, **S1** and **S2** serve as stop switches, while the **DB** control acts as the start button. The contacts of **S1** and **S2** and their respective rungs create a two-channel control circuit. The relays used in this circuit are force-guided. The **C** relay is used for fault detection and monitoring. Whenever there is a short circuit in the **S1** and **S2** contacts due to faulty switches or when the **DB** control is always on due to a lift control fault, then the **C** relay won't turn ON, and thus the next operation cycle is prevented. This prevents the fault accumulation and ensures redundancy is always there. The door lock circuit will be bridged if every switch contact, control relay is healthy and the bridge will open if any one of the components is faulty. Thus, the UCMP stopping is accomplished.

Conclusion

In this article, we started with simple stop-start controls, then gradually added redundancy to both input and output controls, along with fault detection. This approach helps readers understand and appreciate the control logic of safety relay modules, which are used to detect unintended car movement in lifts. Although the detection system using the safety relay is reliable, a UCMP system can only function correctly if the stopping means used for that purpose operate properly. If redundant brake sets are employed, each brake set and its monitoring switches must be tested according to code requirements and inspected regularly.

References

[1] EN 81-20:2020 — Safety rules for the construction and installation of lifts – Lifts for the transport of persons and goods – Part 20: Passenger and goods passenger lifts

[2] EN 60947-5-1:2004, Low-voltage switchgear and control gear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)

[3] IEC 61810-3:2015 – Electromechanical elementary relays – Part 3: Relays with forcibly guided (mechanically linked) contacts

[4] D. Macdonald, *Practical Machinery Safety*, Oxford, U.K.: Newnes, 2004.

Lakshmanan Raja is a lift and escalator professional with more than 25 years of experience in the industry. He specializes in conducting acceptance inspections, periodic inspections, accident investigations and evaluating new products. Throughout his career, he has worked in various roles, including installation, testing, commissioning, maintenance and repair of elevators and escalators. Raja holds a master's degree in electrical engineering from the National University of Singapore and is certified as a Functional Safety Engineer in lifts and escalators, Safety Instrumented Systems (SIS), and Machinery.

MADE IN USA
Veteran Founded

Completed Projects / Team-Mobility

BRUNO

STAY IN THE HOME YOU LOVE

CHAIRLIFT SOLUTION FOR STRAIGHT STAIRCASES IN HOMES & VILLAS

DEPENDABLE QUALITY. QUIET RIDE.

- ✓ **Easy Operation.** Push the armrest paddle control to travel up and down the stairs. Two wireless remote controls also included.
- ✓ **Space Saving.** Narrow vertical rail installs close to the wall to preserve maximum stairway space.
- ✓ **Sleek & Clean.** The Elan's vertical rail with hidden gear rack gives a clean appearance and reduces exposure to dirt and grease.
- ✓ **Dependable.** Battery-powered operation ensures performance even in a power outage. Stairlift continually charges along entire rail.
- ✓ **Compact.** Fold the Elan's arms, seat and footrest to save space when stairlift is not in use.
- ✓ **Safe.** Seat swivels up to 90° away from steps, then locks in place for safe exit. Seat belt and obstruction sensors ensure safety.

Team Mobility Advantages

Next day delivery
Measured and installed within one day

Reliable Advice
Expert advice for correct solutions for any kind of staircases

Excellent After Sales
On-site installation assistance and phone support at all times

Speak to a stairlift expert today

North +91 98205 16503 | West +91 79779 41463 | South and East +91 98201 74109

Rameswaram, Tamil Nadu, India

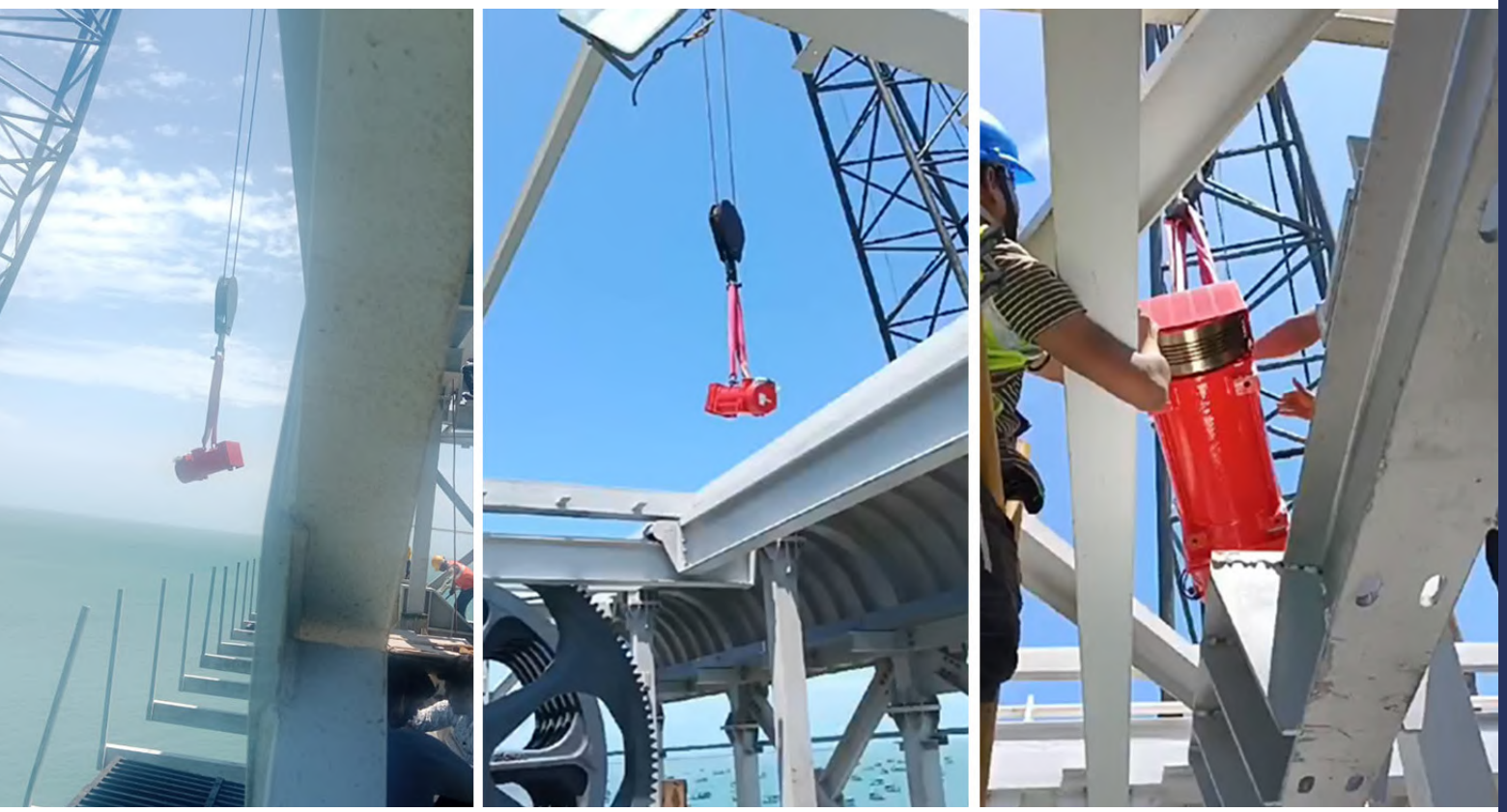
Pamban

Railway Track Bridge

Special-Purpose Lifts

Pamban Bridge

PROJECT OF THE YEAR 2026



Hoisting the motor using cranes above the sea

submitted by Johnson Lifts

Introduction: About the Railway Track in Pamban Bridge

The Pamban Bridge is a vital link between mainland India and Rameswaram Island, above the sea. It has always been a significant project as the railway track on the bridge opens for maritime traffic. Earlier, a double-leaf bascule system was used to open the bridge for the passage of ships. Due to aging infrastructure and an increase in sea traffic, this age-old system needed to be replaced with the latest state-of-the-art technology.

India's first vertical railway track lift system, designed by Typsa Spain and executed by RBL (inspected by IIT Mumbai) under the guidance of RVNL, was opted to replace the earlier one. In this, a section of the railway track is vertically lifted to allow ships to pass underneath.

This segment of the railway track lies between four 35-m-high steel towers — two on either side of the track. At the top of these towers are machine rooms that house the machinery used to lift the railway track vertically.

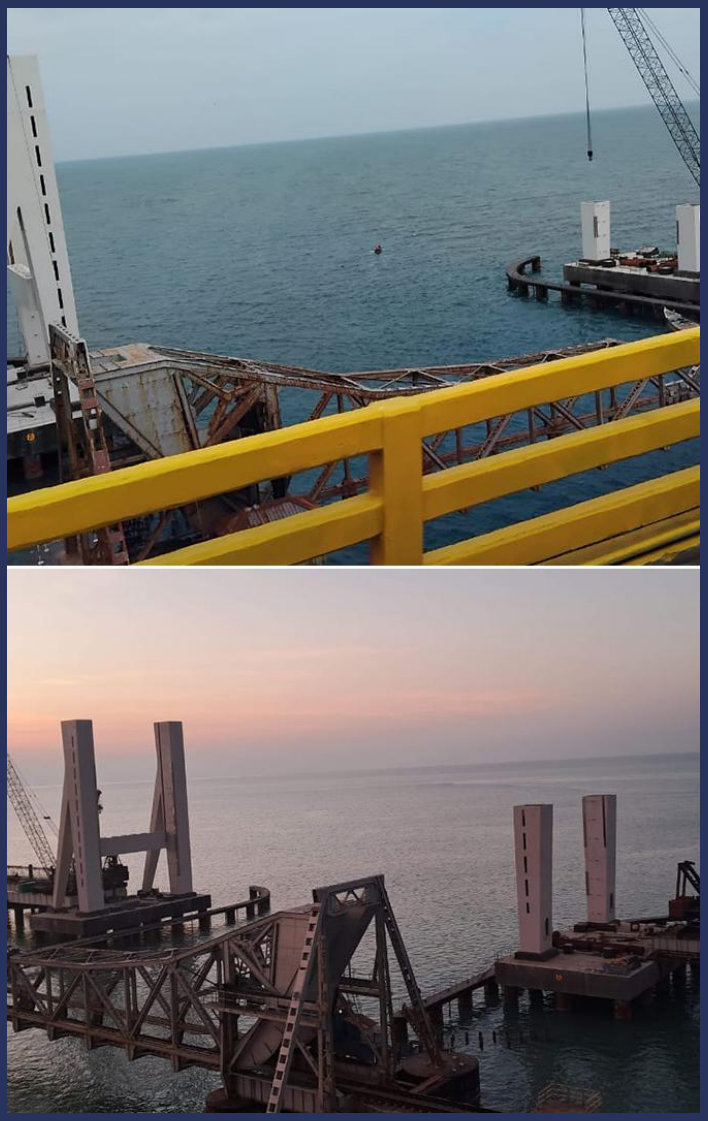
Johnson Lifts is proud to be a part of this prestigious project by providing custom-designed lifts inside two of the four towers, on either side of the bridge, enabling access to the machine rooms at the top for regular maintenance and inspections.

A Trailblazing Solution at Sea

This project is the first of its kind in Indian infrastructure, as Johnson Lifts designed and installed compact lifts within the hollow steel shafts of the towers located in the rough sea.

Each lift was designed to stop at three levels, complying with the standards — bottom floor at the ground level, first level (emergency doors) and the top level — the machine room. The bottom level was uniquely engineered with two doors — one

Continued



Different stages of the lift shaft construction

standard lift door and a special airtight shaft door – to prevent moisture from entering the lift shaft, thereby safeguarding the lift equipment against corrosion.

This lift system is not just a transportation tool, but an integral part of the bridge's lifespan management strategy, ensuring quick and safe access for technicians even in harsh weather conditions.

Project Challenges

This project had complex challenges, as listed below:

1. Fabrication Complexity

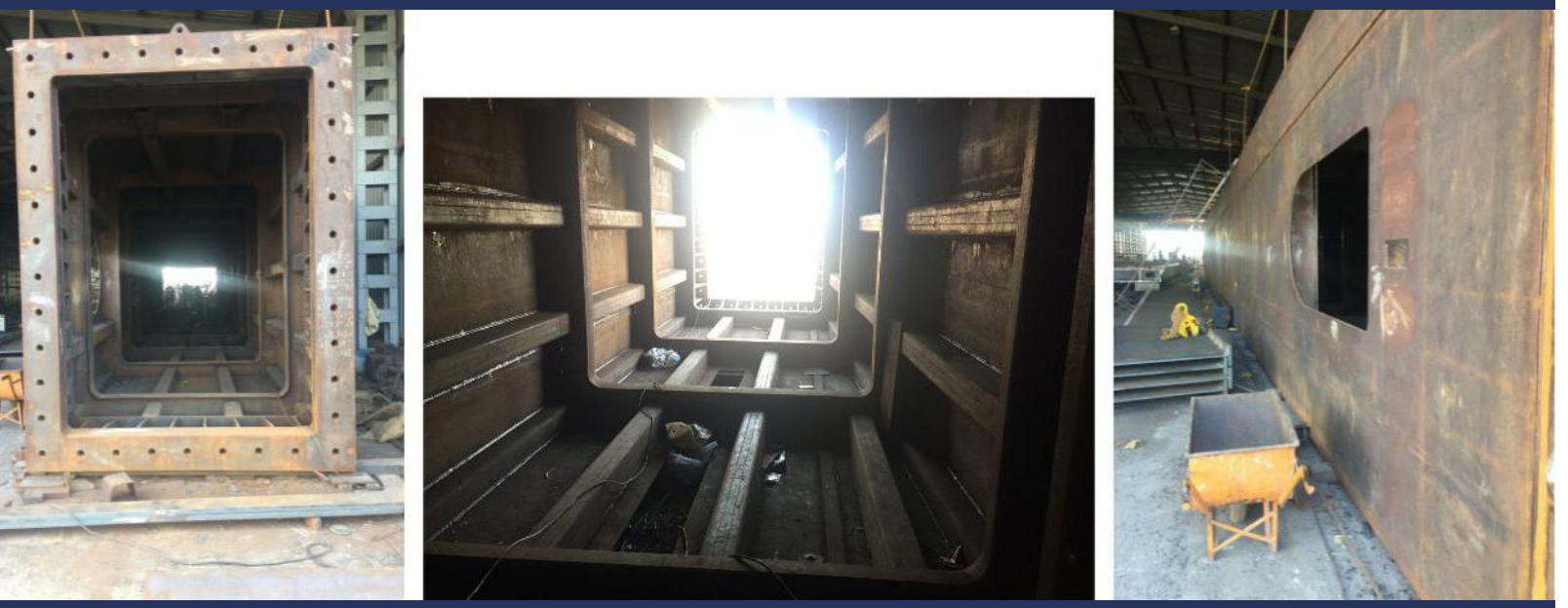
Each steel tower served a dual purpose – as the structural pillar and as the elevator shaft. They were made up of five massive, prefabricated sections, stacked one above the other, with the topmost section connecting to the machine room.

All sections were fabricated and welded at a dedicated yard located in Chatrakudi (75 km away from the job site) due to confined space at the bridge site. Welding, bracket positioning, verticality verification, trial fittings, making bracket holes for installing guide rails, landing doors, the hoisting machine, etc., had to be completed off-site with millimeter-level precision. Every bracket that would support the lift car or counterweight was trial-fitted and aligned before leaving the yard – because once on-site, there was no scope for error or last-minute adjustments.

2. Transportation and Logistics Intricacies

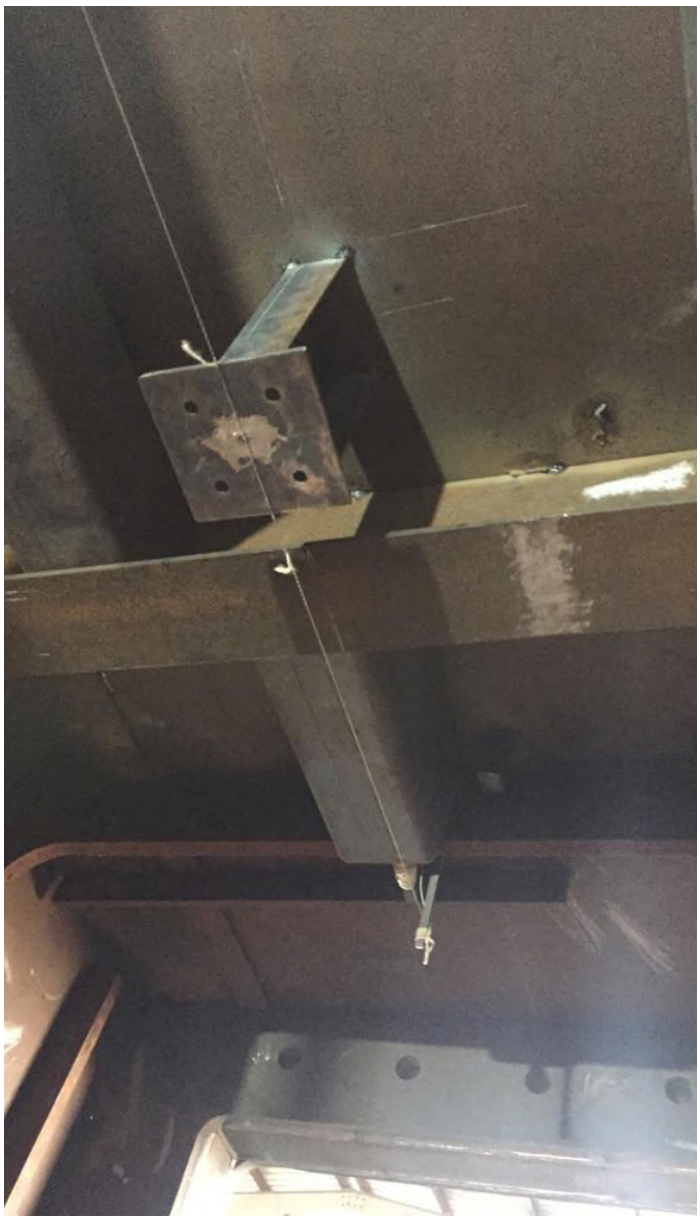
The materials were sent from the Chennai factory to the storage yard located 7 km away from the lift shafts. All the materials were in airtight packages to withstand the corrosive environment. Even a fractional amount of rust on the components could cause significant damage to the timeline and the entire project, owing to the final installation done on the sea.

As described above, the materials were fabricated and welded in the yard. Getting the five fabricated sections to the actual bridge location was a logistical puzzle:



Fabrication of the shaft structure at the yard

Shifting the materials



Plumbing guide bracket positioning during shaft fabrication

- Lift components materials were first moved by road from the storage yard to the shore using heavy commercial vehicles.
- From there, everything had to be carefully loaded onto boats from the commercial vehicles and transported across the sea to the installation site.
- Cranes and pickers were used to handle the heavy parts with utmost care, ensuring nothing was damaged while unloading from the boat to the installation site.
- Ensuring that the components remained free from corrosion during this extended timeline was also critical. Hence, every component was packed in airtight, weatherproof containers and stored safely until required on-site.

3. Weather and Site Constraints

The bridge's sea-facing location presented unpredictable challenges including:

- High winds, salt spray and unexpected torrential rainfall often disrupted installation schedules.
- Access to the site required crossing narrow walkways under heavy surface winds while carrying tools and equipment, making safety and coordination paramount.
- Risks due to working at height and above sea were mitigated by providing special safety training to the installation crew.

Precision in Installation

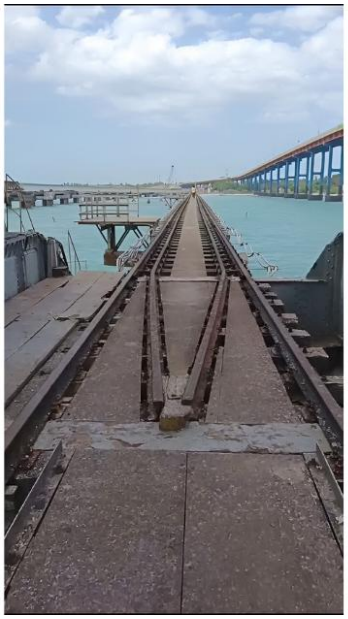
This project commanded incomparable planning and zero-error execution:

- All shaft sections were pre-assembled and assembly work only was allowed on-site, as welding on-site was not feasible due to the weatherproof structural base.
- The five sections of the shaft had to be perfectly aligned before elevator bracket installation began.
- Using high-precision tools, the car and counterweight brackets were fixed exactly as they were trial-fitted earlier. This ensured the lift would run smoothly without the slightest misalignment.

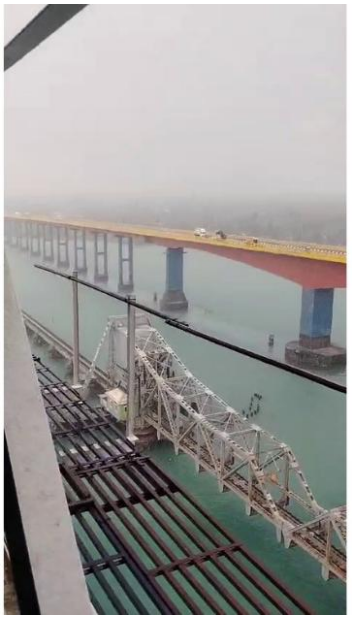
Even within the confines of a steel structure, Johnson Lifts successfully managed cable routing, counterweight placement

Continued

Challenges Faced



Narrow Walkway



Unexpected Rain interruptions

Challenges faced

Material storage with airtight packing

and the installation of safety interlocks — adhering strictly to national and international safety standards.

Use of Advanced Technology

These aren't typical elevators you'd find in a building. Every component had to be adapted to the harsh coastal environment:

- Marine-grade materials were used to resist rust and corrosion.
- All wiring and electronics are sealed and weather-protected to avoid any impact/damages caused by salt, moisture or wind.
- Safety interlocks and limit switches ensure that the lift stops accurately at every level, even if weather conditions outside are extreme.

Unique Aspects of Our Contribution

Johnson Lifts' role in this project goes far beyond just supplying lifts. This was a completely customized lift solution, built from scratch to solve a very specific requirement — one that posed multiple real-world queries like:

- Designing a compact lift system that fits within steel bridge towers and operates reliably in harsh, exposed marine conditions — proving that safe access is possible even in extreme environments.
- Managing shaft and lift logistics post-fabrication. Given the constraints at the bridge site, all fabrication and trials were done off-site. Johnson Lifts coordinated the transportation of prefabricated components via both road and sea, ensuring that the parts reached the site in perfect condition, ready for bolt and nut-based assembly.
- Protecting delivered materials from rust and damage by packing each component carefully in airtight, weather-resistant containers during extended storage.
- Tackling weather-related challenges in a high-sensitivity area. The sea-facing location meant high winds, salt-laden air and sudden rains. Every step — from design, material selection and installation to safety training — was carefully looked into.

We believe this project stands out for several reasons:

- Our lifts play a vital part in the operation and maintenance, ensuring long-term performance of the first vertical lift railway bridge in India.
- The project demanded a perfect blend of innovation, foresight and meticulous execution under challenging conditions.
- Despite unpredictable weather and tough logistics, the entire process was completed without compromising on quality or safety.

A Partner in Progress

At Johnson Lifts, we are always open to opportunities that contribute to infrastructure development. We take immense pride in having played a key role in this landmark project — a reminder of what's possible when committed teams come together with a shared goal, backed by smart design, meticulous planning and committed workmanship.

Credits

Client: RVNL – Railway Vikas Nigam Ltd.
Main Contractor: RBL – Ranjit Buildcon Ltd.
Johnson Lifts Factory and Field Team

World's leading trade fair for the lift industry

Elevators – Components – Knowledge

interlift

SAVE THE DATE

12 – 15 October 2027

Messe Nürnberg | Germany

Organiser: AFAG Messen und Ausstellungen GmbH | www.interlift.de
Technical sponsor: VFA-Interlift e.V. | www.vfa-interlift.de

Not Everywhere – Only Where It Counts

AI in lift/escalator safety

by Lakshmanan Raja

AI has become a prominent buzzword in recent years. However, is the application of AI necessary for all control applications? The answer is no. When a system has clear, predictable and rule-based conditions, AI is not required. Many safety-critical tasks can be effectively handled using simple, hardwired logic or a pre-programmed, deterministic device rather than relying on a self-learning AI system.

Example: Monitoring the status of the landing door interlock. It is a clear definitive with two possible states, and the outcomes are: Locked – the lift car is allowed to move; unlocked – the lift car is not allowed to move.

Tasks that involve analyzing human behavior or predicting component failures can greatly benefit from AI capabilities, especially when it comes to handling complex, dynamic data in real-time situations. In this article, we will explore some of the lift and escalator controls that already utilize AI, as well as potential opportunities where AI could provide valuable assistance.

Let's begin by defining AI. It simply refers to making machines think and act like humans. Now, what is human intelligence?

Multi-Intelligence

Humans possess multiple types of intelligence, as described by Howard Gardner, an American developmental psychologist.[1] The composition of these intelligences varies from person to person. Some individuals may excel in music, while others might be skilled in logical thinking or language.

There are AI tools available that focus on each type of intelligence, and I have listed some of them in Figure 1. Although there are eight kinds of intelligence, they all involve some form of cognitive processing. But what exactly is cognitive processing?

Cognitive processing refers to the inner workings of the mind, while intelligence represents overall performance. Human life is essentially a journey of learning, which is why I utilized Bloom's taxonomy[2] framework along with some additional skills to model our intelligence system in Figure 2.

Bloom's Taxonomy

When we face challenges or encounter new environments, we first observe our surroundings using our senses. We then recall past experiences from similar situations. If we have relevant knowledge, we understand it and apply that

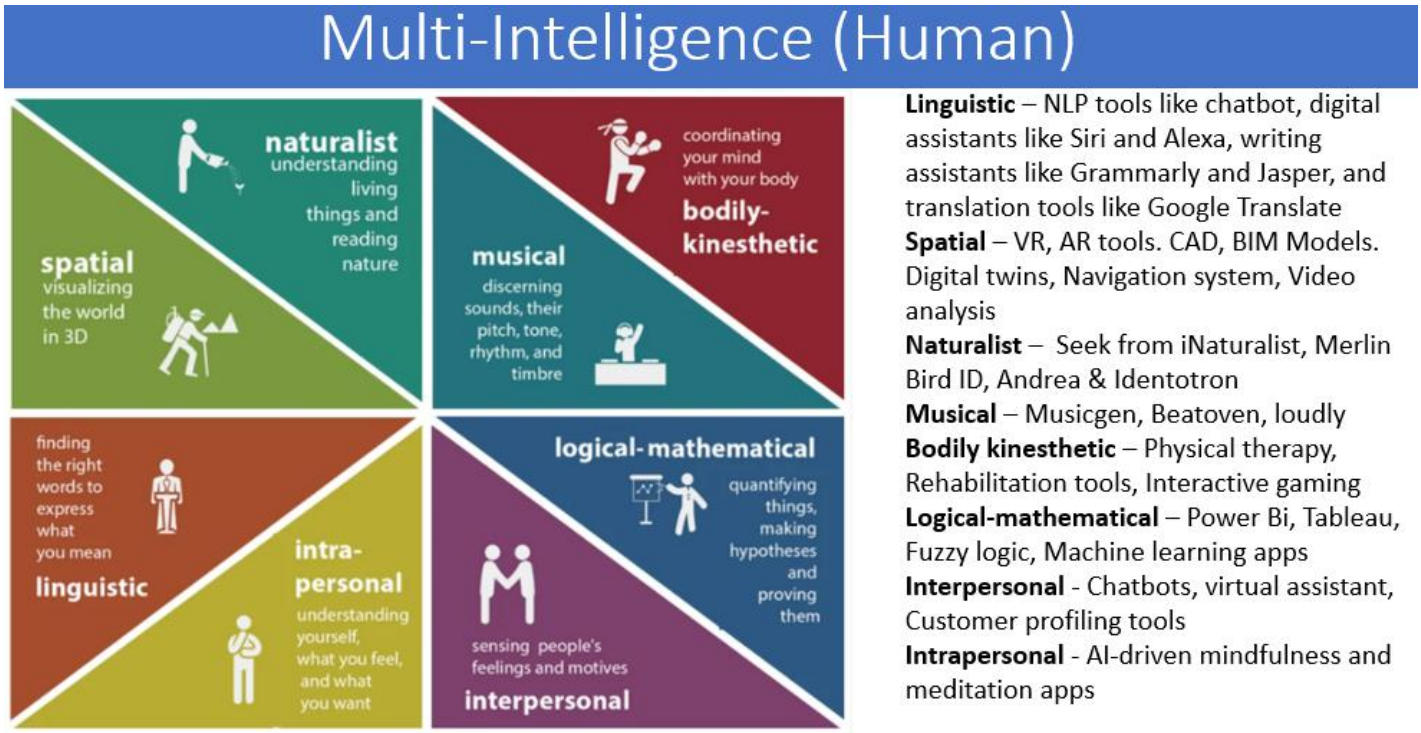


Figure 1

Ref: https://pz.harvard.edu/resources/the-theory-of-multiple-intelligences

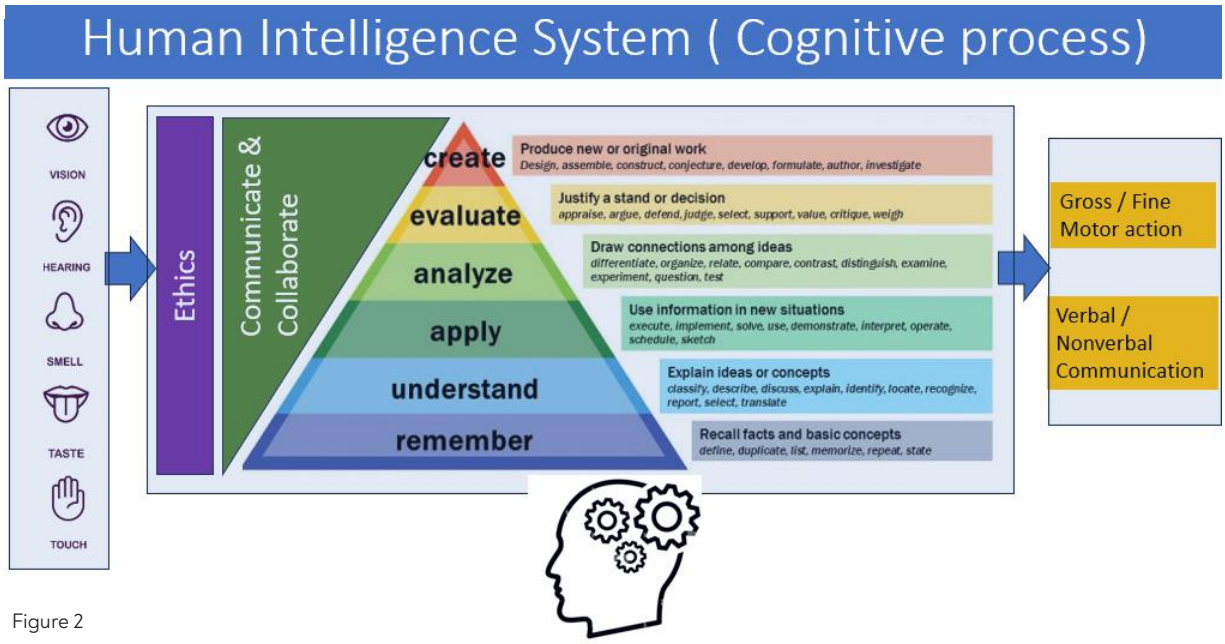


Figure 2

knowledge to achieve the desired outcome. In instances where we confront entirely new situations for which we have no prior experience, we rely on the most closely related experiences or information stored in our memory to grasp the situation and apply that knowledge toward our goals. If the outcome is not satisfactory, we can either use our second-most related experience or adjust some of our action parameters to see what results we obtain. In more complex situations, we often communicate with friends or mentors to gain expert input.

We analyze and evaluate all attempted outcomes, developing our own rules based on the best results. These newly established rules and experiences are then stored in our memory for future reference. Ethics must be a guiding principle throughout this process. This describes how our learning occurs. Now, let's apply the same framework to explore an AI system.

AI System

In an AI system,[3] as illustrated in Figure 3, human senses are replaced by artificial sensors, and man-made memories are utilized to store data collected from these sensors, as well as information from past experiences. Cognitive processes are continuously performed using machine learning algorithms on powerful processors that analyze data from the sensors, along with knowledge from previously established rules.

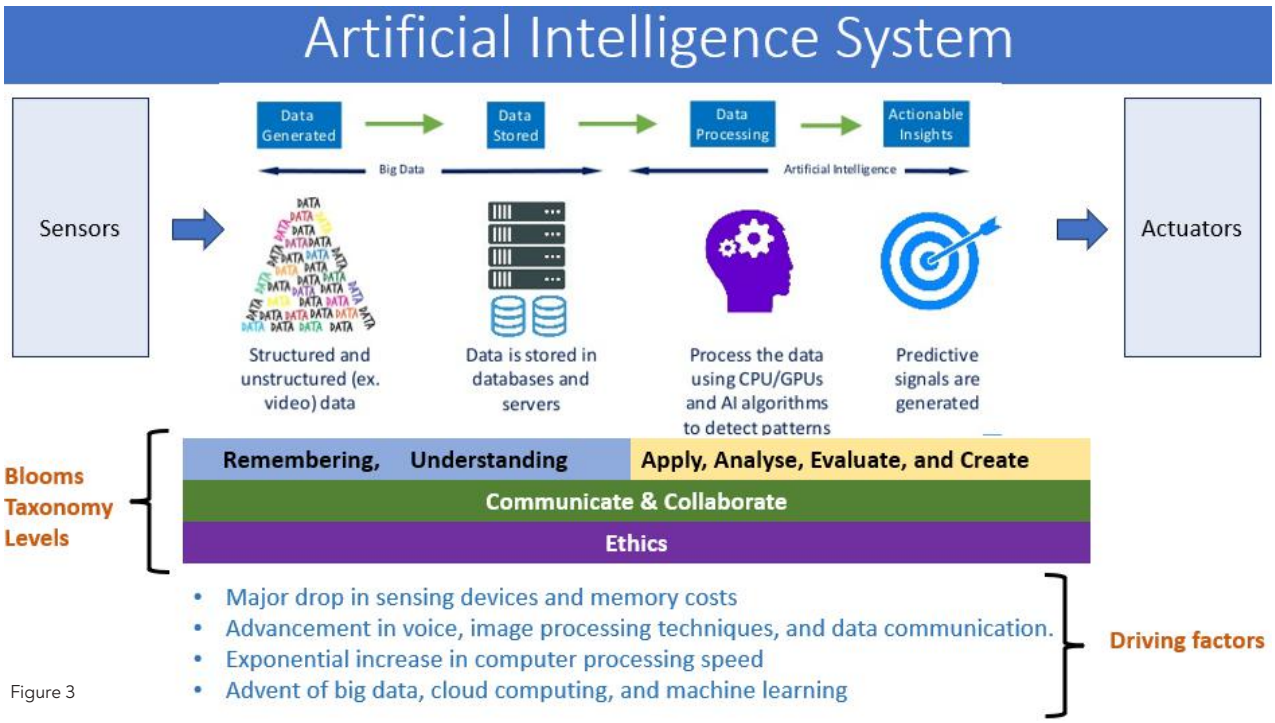


Figure 3

Continued

Optimal solutions to new challenges are determined similarly to human reasoning, and actions are executed by actuators. When necessary, multiple AI systems from different geographical locations can collaborate to quickly identify the best solutions. Importantly, ethical guidelines must be reinforced during the machine learning phase and reviewed periodically to address any discrepancies that may arise.

What has contributed to the recent boom in AI technology? Several key factors are driving this growth:

- Significant reductions in the costs of sensing devices and memory
- Advancements in voice- and image-processing techniques, as well as data communication
- An exponential increase in computer processing speed
- The rise of big data, cloud computing and machine learning

In summary, the two most important factors driving the use of AI systems are the abundance of big data generated by numerous sensors and the complexity of the data patterns that require analysis.

Application of AI in Lifts and Escalators

Existing Solutions

1) Traffic analysis and remote monitoring and diagnostic system

The initial application of AI in elevator systems primarily focuses on optimizing traffic flow among large groups of elevators (see Figure 4). Given the numerous factors that need to be monitored and the unpredictability of human behavior, employing AI techniques such as genetic algorithms, fuzzy logic and neural networks can yield improved solutions. The effectiveness of these systems is typically measured by their capacity to handle traffic and the waiting times, which are standard performance metrics in the elevator industry.

Remote monitoring and diagnostic solutions[4,5] are gaining traction as the industry faces a shortage of manpower. With the advent of AI, performing condition monitoring on lift and escalator components has become more effective and straightforward. Remote monitoring and diagnostics must handle large volumes of real data collected from various sensors, where AI techniques play a critical role (see Figure 5).

2) User safety — AI-based elevator emergency call service bridges language barriers

Getting stuck in an elevator in a foreign country can be a distressing experience, particularly if you struggle to understand the local language when you press the emergency call button. Thankfully, a multilingual elevator emergency call service has been introduced to tackle this challenge.[6] This service employs an AI voice bot capable of translating conversations in real time, thereby facilitating effective communication between the individual trapped in the elevator and the emergency response center. This innovative solution not only enhances safety but also provides users in unfamiliar environments with much-needed peace of mind.

3) User safety — Fall detection and unsafe behavior detection by video analysis

It could happen to anyone. You're running late and rushing through the airport, desperate not to miss your flight. You do what you know you shouldn't: Instead of taking the elevator, you race up the escalator, dragging your oversized luggage with you. Suddenly, your giant suitcase gets caught between the steps, and you fall. In some cases, this fall can create a domino effect, causing injuries to others nearby.

Most public buildings have cameras focusing on the escalators and a control room equipped with supervisory

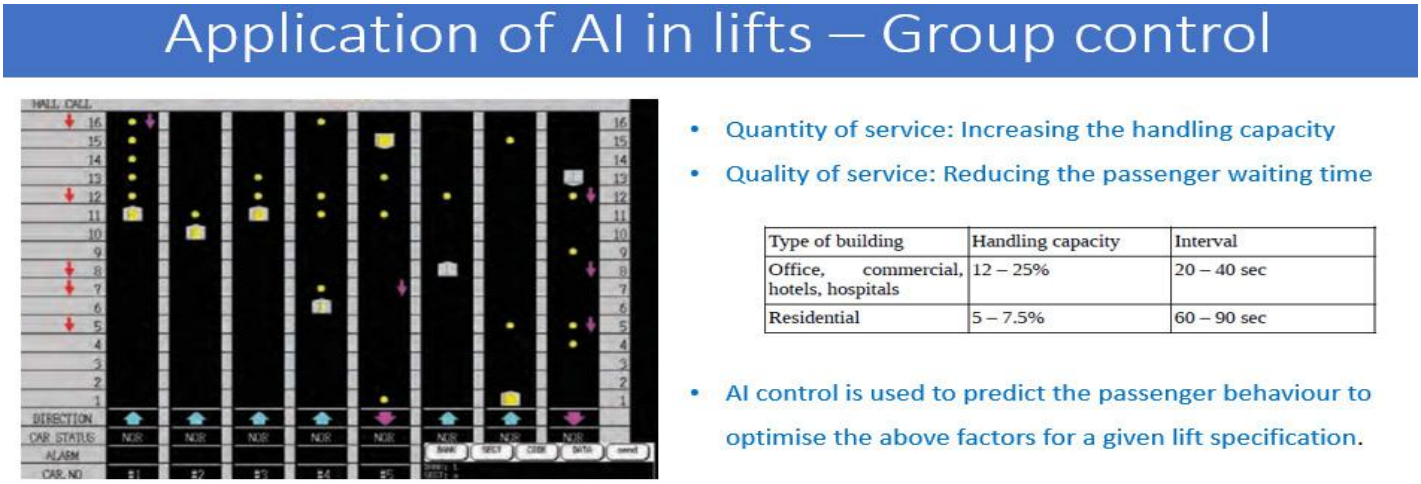


Figure 4

Figure 6

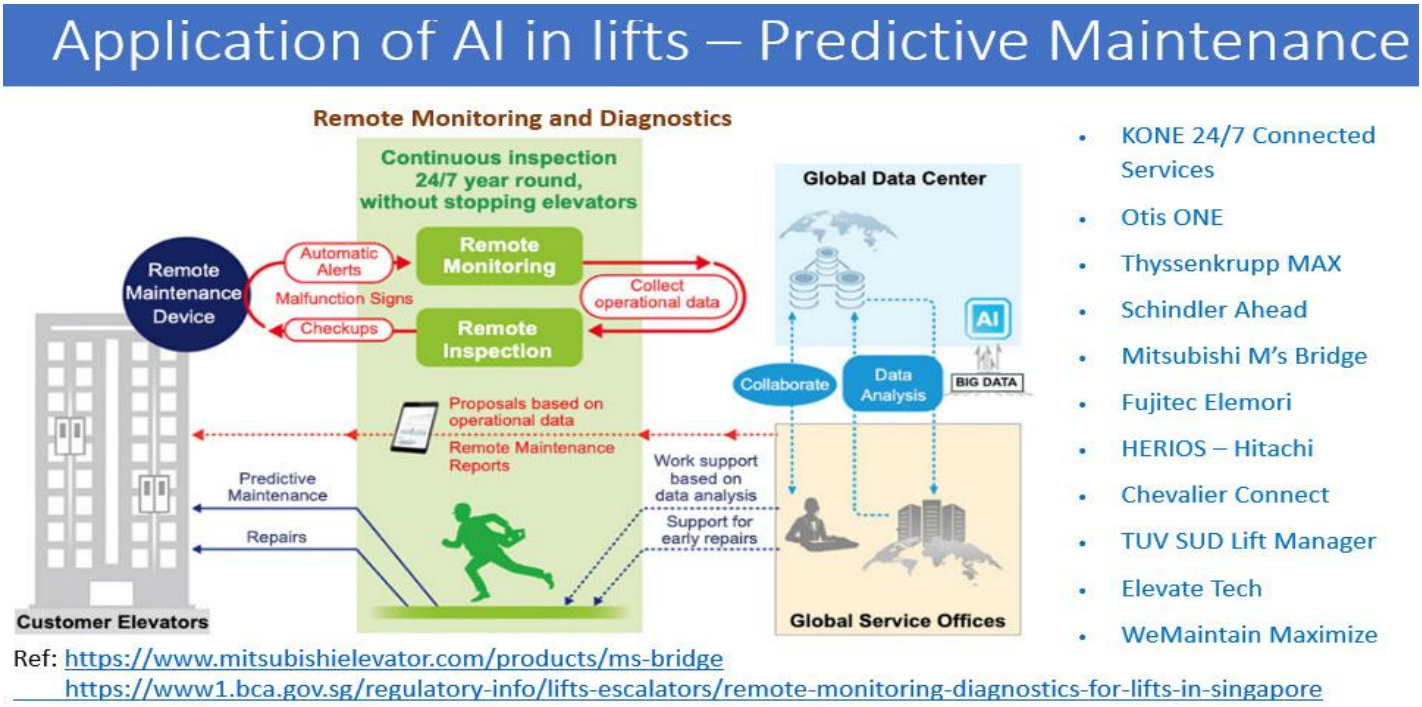


Figure 5

panels, and multiple monitors that display the operational status of these systems. However, with a limited number of personnel monitoring the escalators, if an accident occurs, it takes time for them to reach the site and stop the escalator. In some instances, the escalator may be stopped by bystanders before the building staff can arrive.

Implementing real-time video analysis using an AI system to monitor escalators could enable quicker responses, potentially reducing the severity of accidents.[7]

Possible solutions

1) User safety - Avoiding the longer waiting time for the person with a wheelchair/baby stroller

We often observe, in crowded shopping centers, that individuals in wheelchairs or mothers with baby strollers face challenges when trying to access lifts that accommodate their space needs, as every lift stopping at their landing may be crowded and unable to accommodate wheelchairs or baby strollers.

One possible solution could involve using video monitoring and analysis from cameras located in the lift lobby and inside the lift car. This system would identify individuals who require

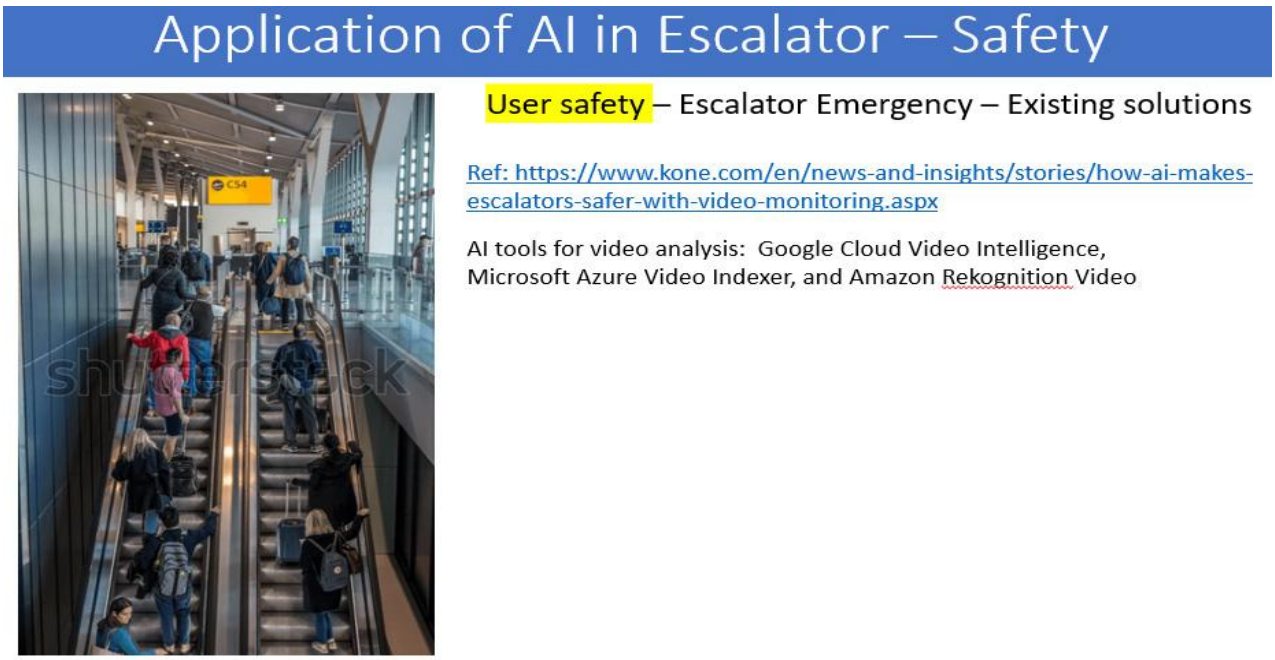


Figure 7

Continued

more space and assign the appropriate lift cars that can accommodate their needs to their landing. Additionally, adjusting the door dwell time during passenger boarding and alighting could help improve the experience for these individuals (see Figure 8).

2) User safety — Avoiding dangerous situations where the dog leash gets caught between the lift doors

Today, we can observe that the use of cell phones distracts people and can lead to accidents in elevators. One particular concern arises when passengers are accompanied by their dogs. If pet owners are not cautious, dog leashes can get caught in the elevator doors, which may result in serious accidents that could cause severe injuries or even fatalities for both the dog and its owner. Since the light curtains in elevators have blind spots, they may not always detect a thin leash. However, with the help of AI-powered video analysis, we can prevent such incidents by:

- Initiating voice announcements of relevant safety messages whenever a passenger with a dog is detected
- Analyzing video feeds and stopping the elevator, triggering the emergency alarm and activating the emergency communication device at the moment an incident is about to occur

The same type of video analysis can prevent unsafe behavior by trapped passengers when the person attempts to force open the lift car doors (see Figure 9).

Figure 8

3) Workers' safety – Pit/car top access and exit

Accessing and exiting the top of the lift car and lift pits are among the most safety-critical tasks that lift workers perform during inspection, maintenance, repair and modernization. Most lift companies have established standard procedures to ensure their workers' safety. However, due to work pressure or overconfidence, lift workers may occasionally skip certain steps, which can lead to serious accidents.

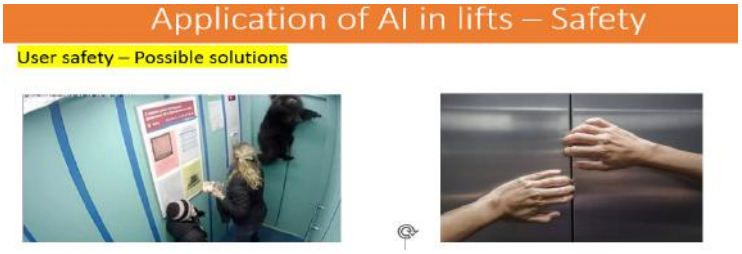


Figure 9

To ensure compliance with these procedures, an AI-enabled expert system can monitor the activities of lift professionals during these critical tasks using video cameras or smart glasses. This system can provide warnings through visual or audible alarms if any non-compliance is detected. The data collected can be used to initiate further training and counseling, helping to identify the root causes of non-compliance and ultimately improving the overall safety culture (see Figure 10).

4) Worker and user safety – E-mentor for maintenance/inspection professionals

An AI system can serve as an e-mentor for lift maintenance and inspection professionals, enhancing the safety of both workers and passengers. These systems integrate inputs such as component images, voice commands and gesture controls

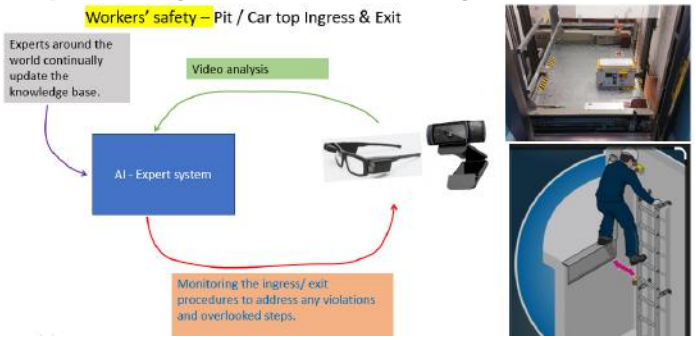


Figure 10

through wearable devices like augmented reality (AR) smart glasses.[8] This technology allows workers to receive step-by-step assistance while keeping their hands free to perform mechanical tasks. The AI expert system guides with necessary adjustment procedures, regulatory requirements related to the specific component and access to historical accident data stemming from failures of that component. This information helps prevent recurring errors (see Figure 11).

For example, when maintenance or inspection personnel conduct regular checks on lift brakes while wearing smart glasses, the glasses can identify the component as a brake. They can then communicate with the AI expert system to retrieve relevant regulatory requirements or maintenance guidelines by using voice commands or gesture controls. Additionally, it can highlight accident statistics related to that specific brake type

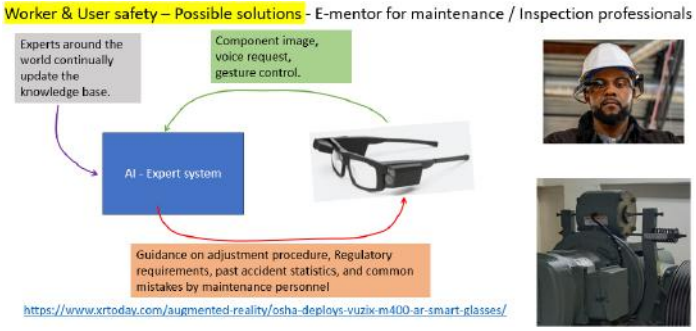


Figure 11

and emphasize the importance of its maintenance or inspection. The knowledge base of the expert system is continuously updated by lift industry experts from around the world, ensuring that the guidance provided is accurate and aligned with the latest safety standards. With real-time support, continuous learning and enhanced task execution, AI-augmented maintenance systems reduce human error, improve compliance and significantly enhance overall lift safety for both workers and users.

Conclusion

As mentioned, AI is not necessary when there are definitive, predictable, rule-based conditions that require consistent system behavior under the same input. However, AI systems can be beneficial in situations where there is a large amount of data generated by numerous sensors in predictive maintenance and the complexities of data patterns, such as analyzing human behavior. To achieve optimal solutions, control systems may adopt a hybrid approach that combines the strengths of traditional methods and AI. This includes using traditional algorithms for essential safety functions while incorporating AI for enhanced adaptability and informed decision-making. This article discussed various existing and potential AI-based solutions aimed at improving the safety of lift and escalator users. For further information, please refer to the references provided.

References

[1] Theory of Multiple Intelligences — pz.harvard.edu/resources/the-theory-of-multiple-intelligences

[2] Heller, R. F. (2022). A new bloom – adding "collaborate" to Bloom's taxonomy. *Journal of Learning Development in Higher Education*, Issue 24. doi.org/10.47408/jldhe.vi24.906

[3] AI process — electronicsforu.com/technology-trends/tech-focus/ai-ml-shifting-focus-back-hardware

[4] Mitsubishi Elevator M's Bridge: mitsubishielevator.com/products/ms-bridge

[5] Remote Monitoring & Diagnostics for lifts in Singapore — bca.gov.sg/regulatory-info/lifts-escalators/remote-monitoring-diagnostics-for-lifts-in-singapore

[6] BOSCH - Multilingual elevator emergency call service — bosch-elevatorcloud.com/en/multilingual-elevator-emergency-service/

[7] Safer journeys with KONE's AI-powered video solution — kone.com/en/news-and-insights/stories/how-ai-makes-escalators-safer-with-video-monitoring.aspx

[8] OSHA Deploys Vuzix M400 AR Smart Glasses — xrtoday.com/augmented-reality/osha-deploys-vuzix-m400-ar-smart-glasses/

Lakshmanan Raja is a lift and escalator professional with more than 25 years of experience in the industry. He specializes in conducting acceptance inspections, periodic inspections, accident investigations and evaluating new products. Throughout his career, he has worked in various roles, including installation, testing, commissioning, maintenance and elevator and escalator repair. Raja holds a master's degree in electrical engineering from the National University of Singapore and is certified as a Functional Safety Engineer in lifts and escalators, Safety Instrumented Systems (SIS) and Machinery.

Fractal and Nonlinear Behavior of Tracks Vibrations in Escalators

The next step to a previous study recording and analyzing data recorded from escalators

by Dr. Ali Albadri

Further to one of our previous studies,[1] we have continued our research in recording and analyzing data that was recorded from different locations in an escalator. The behavior of temperature distribution in the gear box that drives an escalator was studied and verified.[1]

In this study, vibration signal has been recorded from escalator tracks. The fractal nature of the recorded traces has been evaluated and analyzed. The vibration signals have been recorded for different operation periods. It is interesting to observe that the value of the fractal dimension becomes consistent and repeatable in various locations in the escalator. However, as soon as abnormality, such a wheel failure, is developed on one of the tracks in the escalator, the fractal dimension values start to be affected.

This study has proven that determining the fractal dimension for vibration signals that are recorded from tracks of an escalator can be a useful tool to recognize and monitor any abnormal behaviour in the operation conditions of the escalator.

Introduction

By using the smart step, the fractal nature and patterns of escalator heartbeat has been proven and established.[2-7] Further research has proven that the heartbeat of an escalator can be measured by evaluating the fractal dimensions of assemblies and components of the escalator, such as studying the temperature distribution in an escalator gear box.[1]

In this study, we collected data from vibration sensors, which were mounted on tracks of an escalator, as shown in Figure 1. The regular and irregular pattern and behavior of the components and assemblies of the escalator are quantified by using the fractal dimension concept. To our knowledge, there has never been a study that has used the approach we have adopted in this study. There is really a lack of data and research in this area, which we are trying to enrich.

Vibration Data Collection

Vibration sensors were distributed at different locations on the tracks of an escalator, as shown in Figure 1. The data/traces were logged into a data logger (Figure 2), then downloaded on a computer for analysis. The period of run was divided into three regions: regions one, two and three. The three regions don't include a region of shut down as shown in Figure 2.

Figure 3 shows zoomed-in views of the recorded traces for each region.

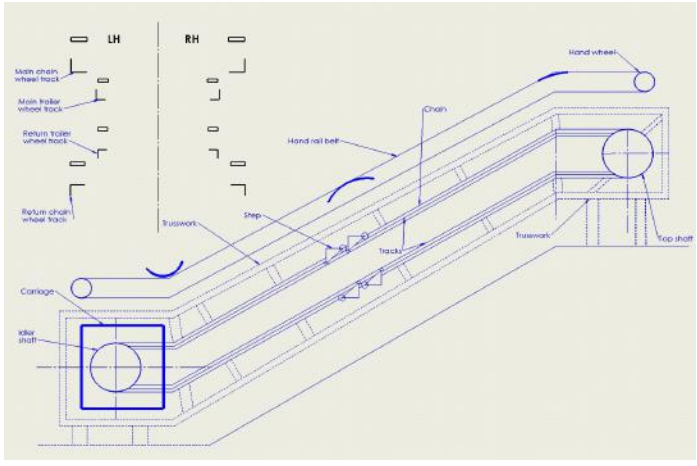


Figure 1: Shows escalator tracks layout and the locations of the vibration sensors

Methodology Used To Determine D_f

The scaling step technique has been used here to determine D_f. A computer program was written in Microsoft Excel to determine D_f and plot the data. Our methodology is very similar to the Multiresolution Length Method, which has been used by many researchers.[8-10]

The steps in the time series = $s = \{s(0), s(1), s(2), s(3), \ldots s(n)\}$ of length n of the trace. Each point in the plot is represented in (xi, y_i) when $i = 1, 2, 3, \ldots n$. x_i values are abscissa, and y_i values are ordinate values. The Euclidean distance between two points ($x1$, $y1$) and ($x2$, $y2$) is:

$$\text{dist}(s1, s2) = ((x1 - x2)^2 + (y1 - y2)^2)^{0.5} \quad (1)$$

The total length of the curve of the first-time resolution is calculated as:

$$L = \sum_{I=1}^{n-1} \text{dist}(s_i, s_i + 1) \quad (2)$$

It is noted that, as the resolution becomes coarser, the estimated length of the time series becomes less accurate. Repeat the above for different resolutions, ($r = r1, r2, r3, r4, \ldots rp$, where rp is the maximum coarsest resolution at which the length of the curve is calculated.

By drawing a log-log graph, ($1/rk$) versus (Lr) and computing the slope, the fractal dimension is calculated from:

$(D_f - 1) = -[\log(Lr)/\log(1/rk)] = -[\text{slope}]$ (3)

Vibration sensors were located at different places on the tracks of an escalator (on the right hand (RH) chain wheel track, left hand (LH) chain wheel track, RH trailer wheel track and LH trailer wheel track (Figure 1).

Figure 2 shows the vibration signal against the running time for the escalator.

Figure 3 presented a magnification view to regions one, two and three in Figure 2.

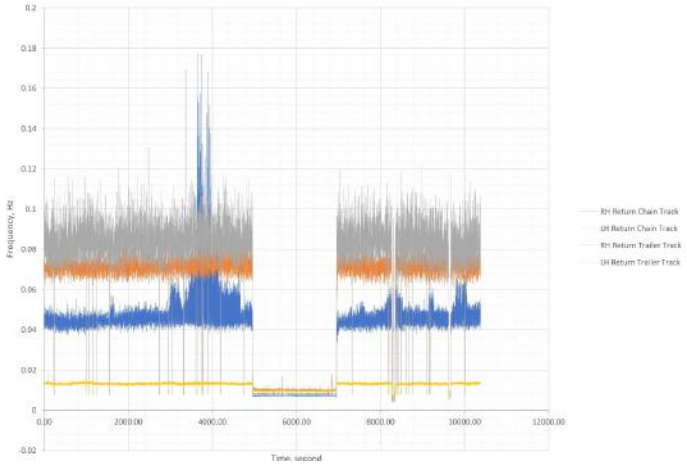


Figure 2: Presents the vibrations readings against the running time

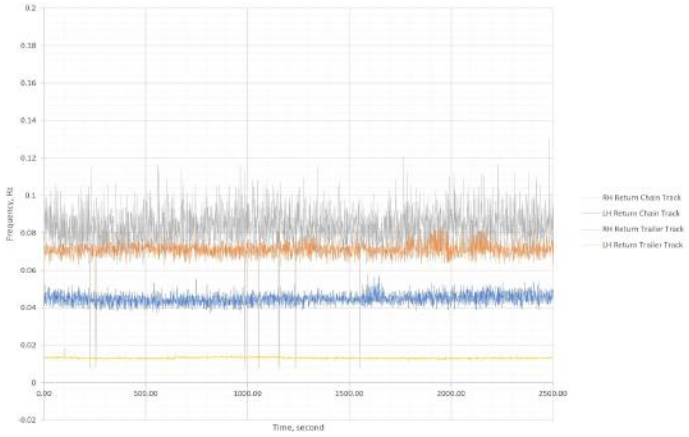


Figure 3a: A magnification view for region 1 (0-2,500 s) in Figure 2

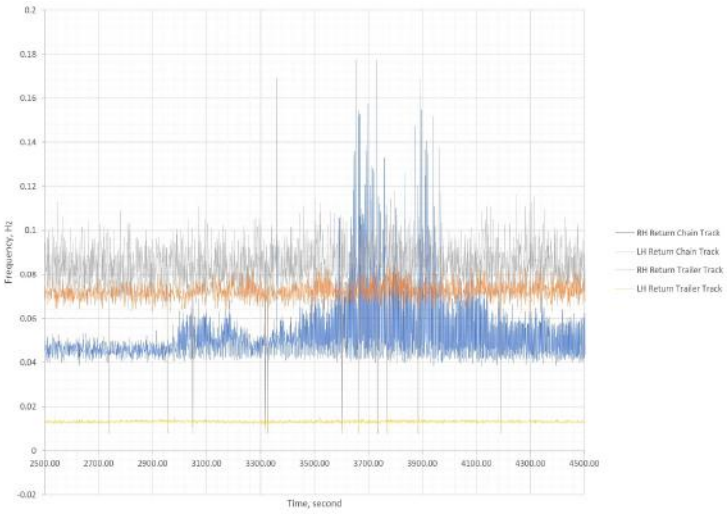


Figure 3b: A magnification view for region 2 (2,500-4,000 s) in Figure 2

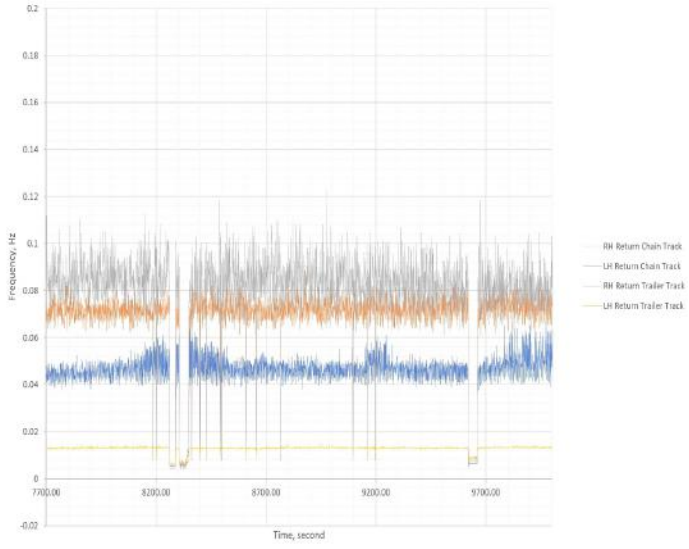


Figure 3c: A magnification view for region 3 (7,700-10,000 s) in Figure 2

Results and Discussion

After plotting and determining the fractal dimension of each region, Figures 4, 5, 6 and 7 and Table 1 show that the sensors on the RH chain wheel tracks and on the LH trailer wheel track produced higher fractal dimension values than those produced by the RH trailer wheel track and LH chain wheel track. The difference between the values is in the region of 0.01, which we should pay attention to, considering that the scale of the fractal dimension is between 1 to 2. The difference in the values of the fractal dimension reflects different vibration patterns to which the tracks were subjected to. The high values of the fractal dimension suggest some abnormality in the escalator.

Upon a physical inspection of the escalator, it was discovered that there was damage to one of the RH chain wheels. The damaged wheel was replaced; then the machine was returned to its normal operation conditions. After the repair, the fractal dimension values of the RH chain wheel track and the LH trailer wheel track started to read similar to the values for the LH chain track and RH trailer wheel track, i.e., the vibrations on both sides of the escalator are consistent.

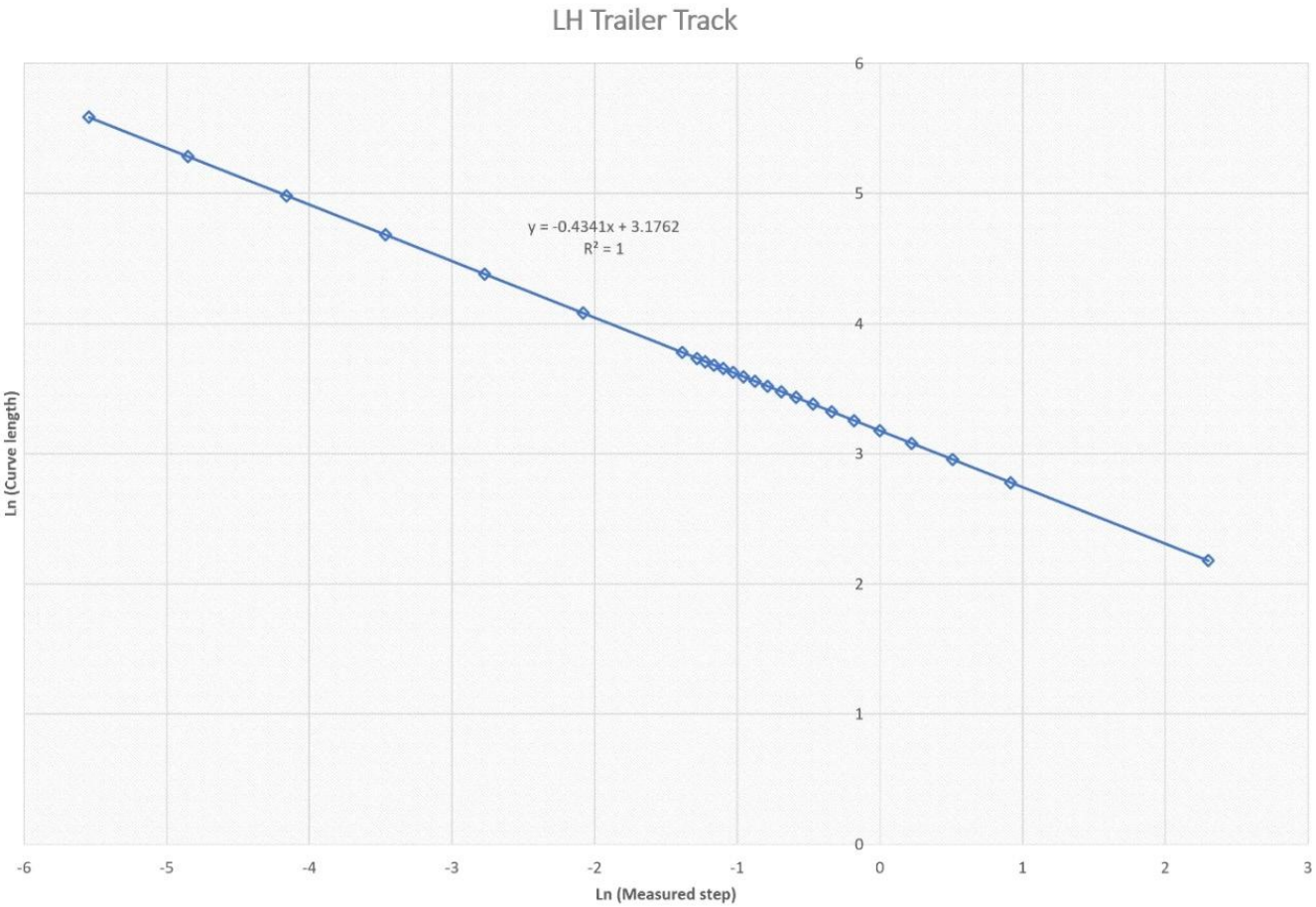


Figure 4a: Estimation of the fractal dimension for the vibration from LH trailer track between 0.0-2,500 s

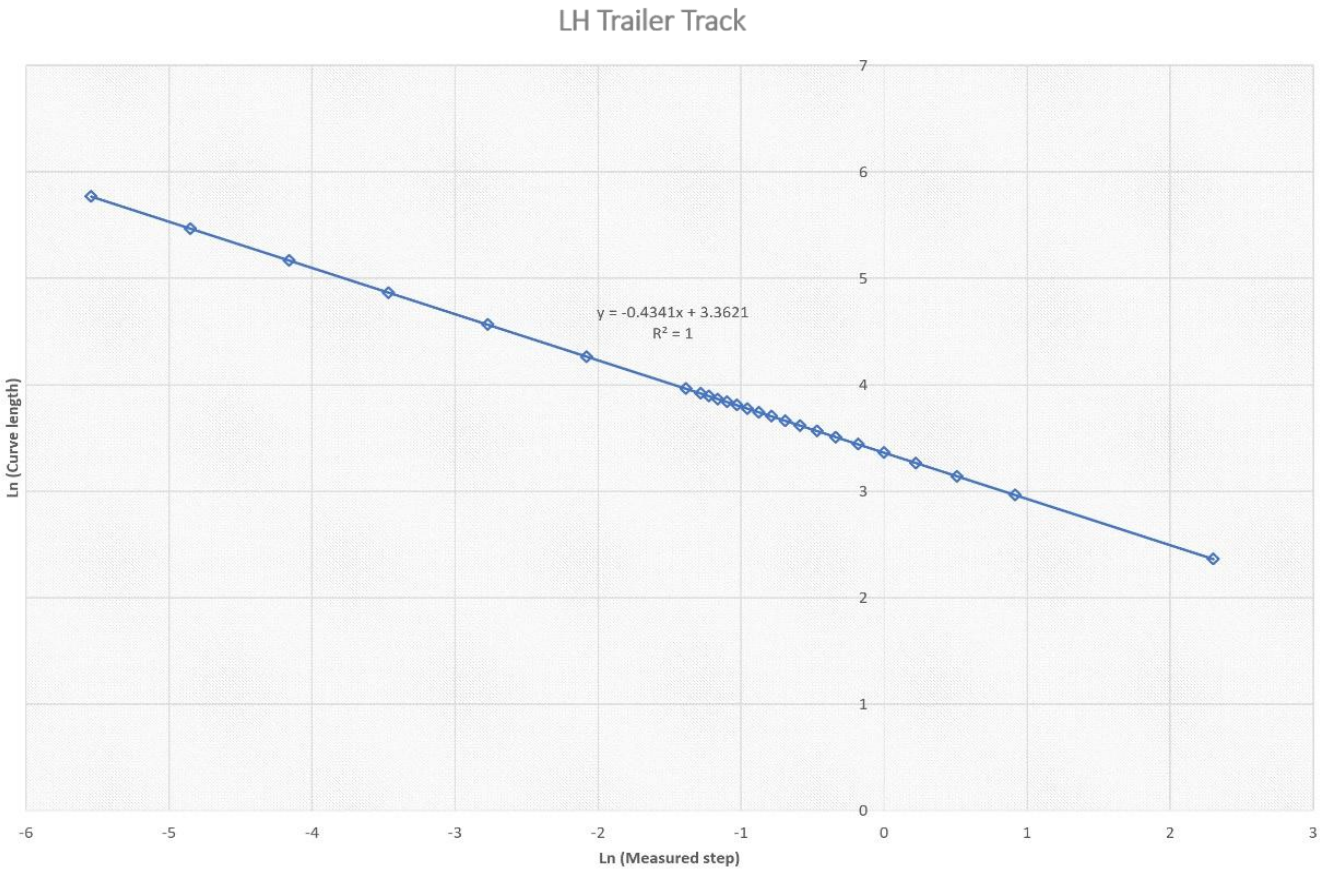


Figure 4b: Estimation of the fractal dimension for the vibration from LH trailer track between 2,500-4,000 s

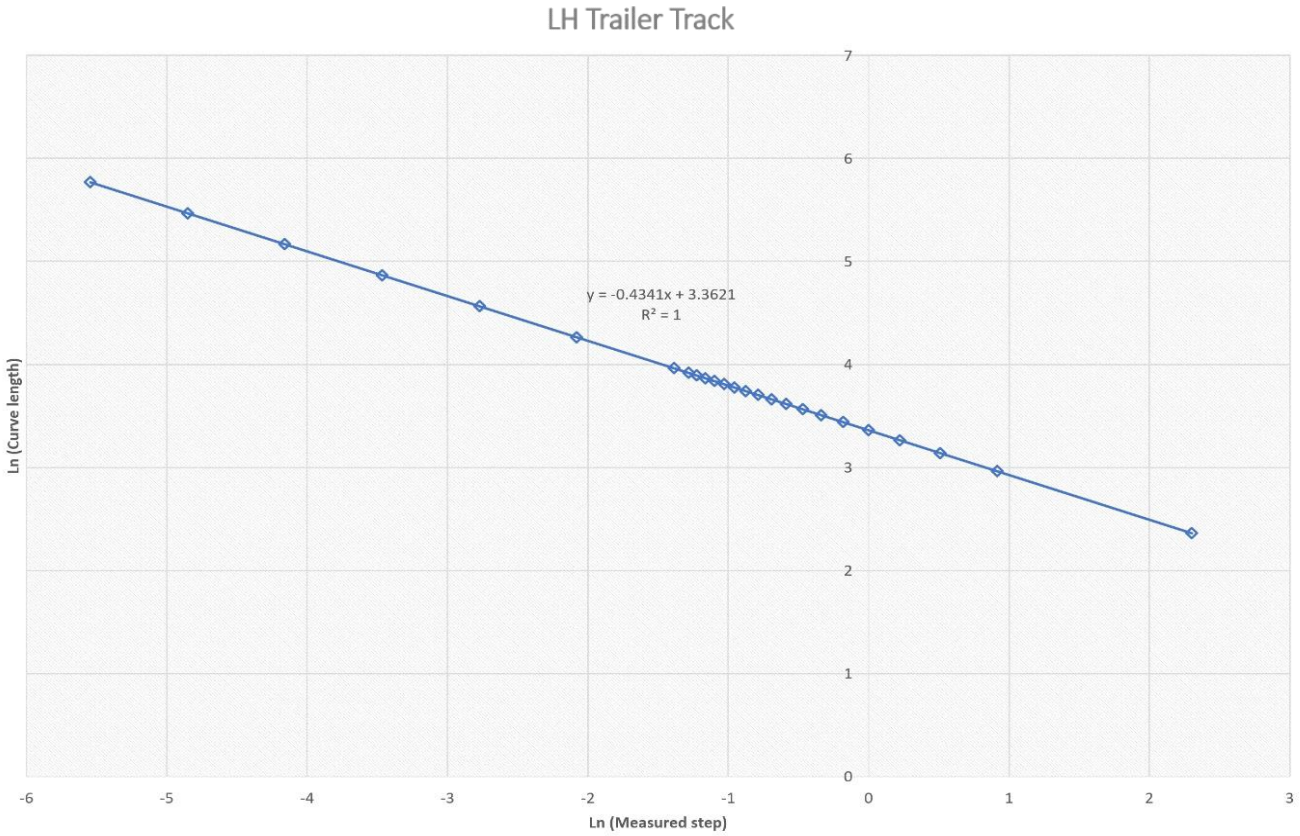


Figure 4c: Estimation of the fractal dimension for the vibration from LH trailer track between 7,700-10,000 s

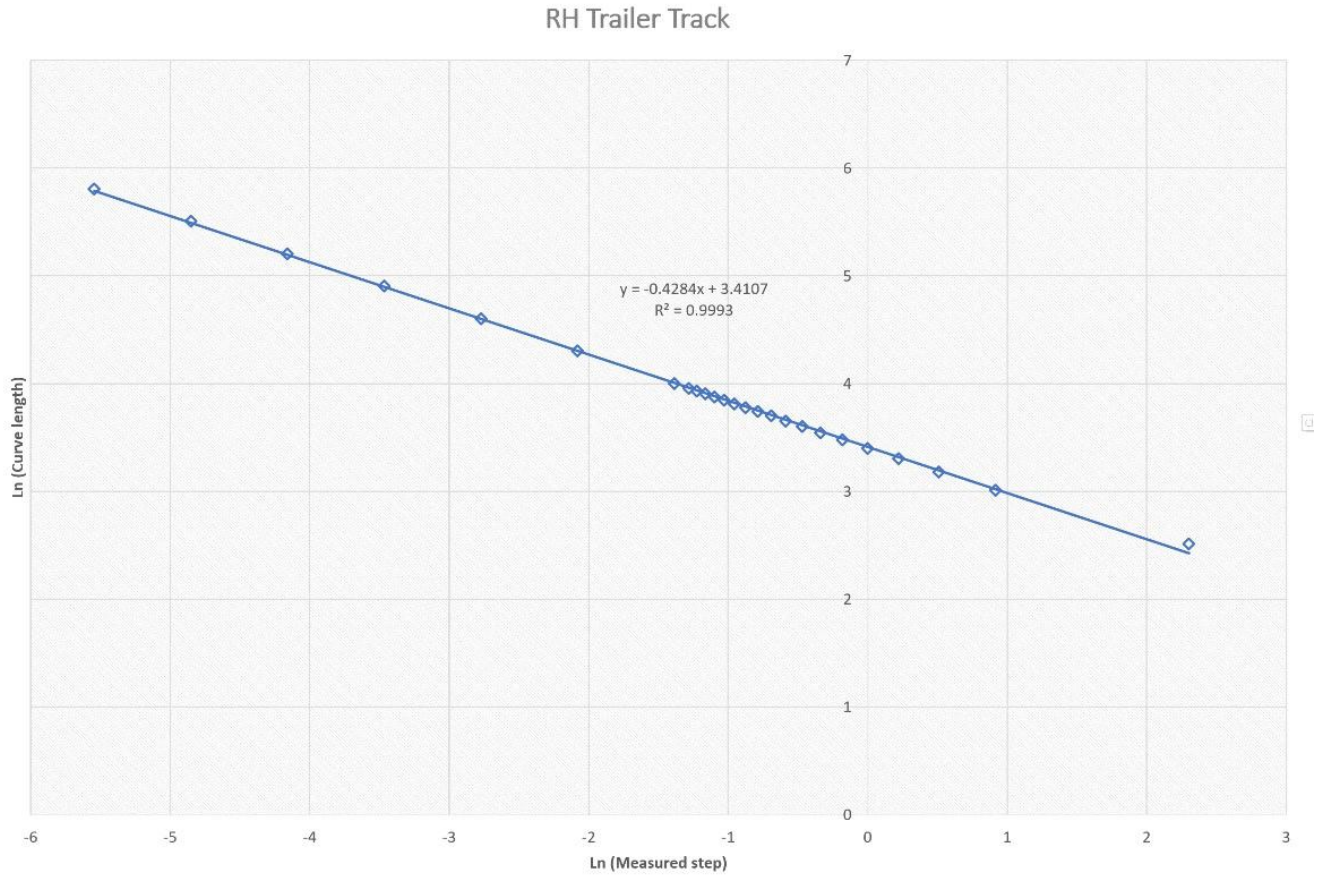


Figure 5a: Estimation of the fractal dimension for the vibration from RH trailer track between 0.0-2,500 s

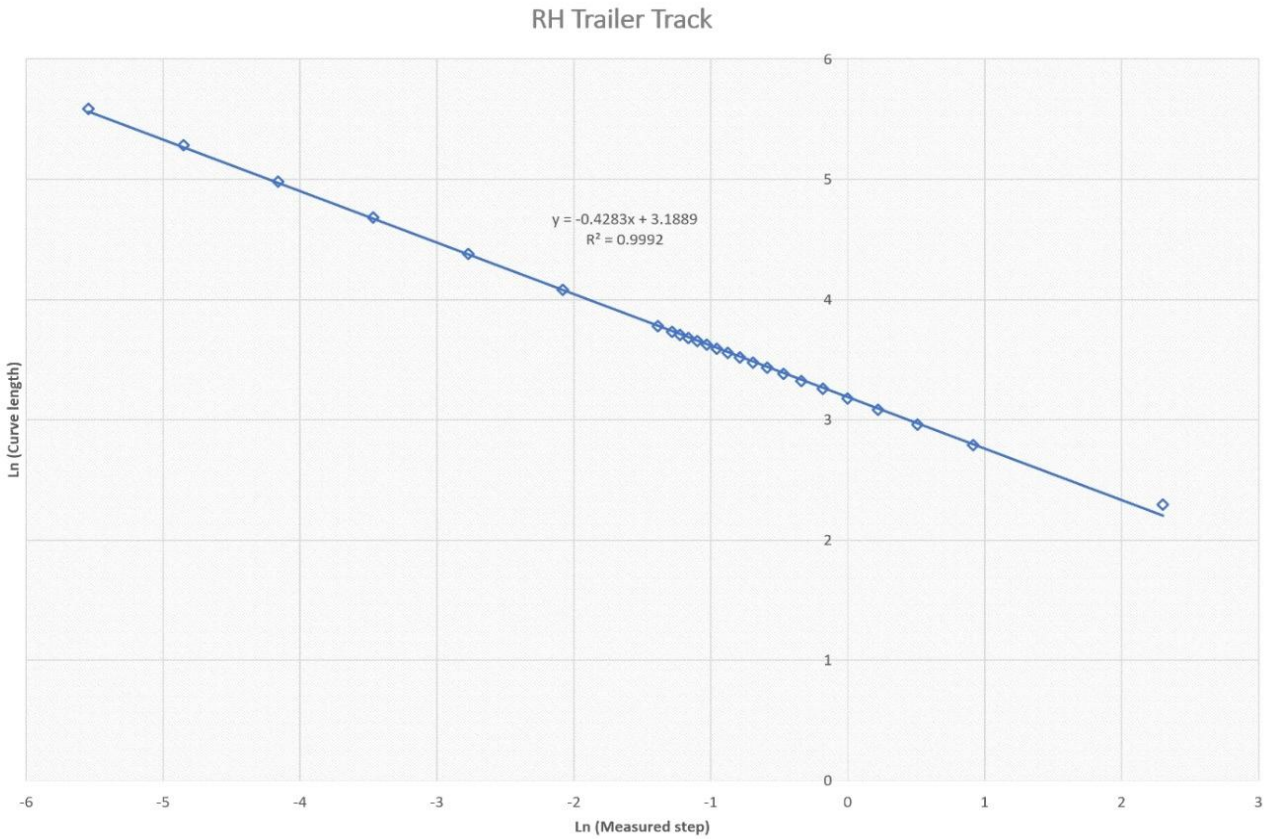


Figure 5b: Estimation of the fractal dimension for the vibration from RH trailer track between 2,500-4,000 s

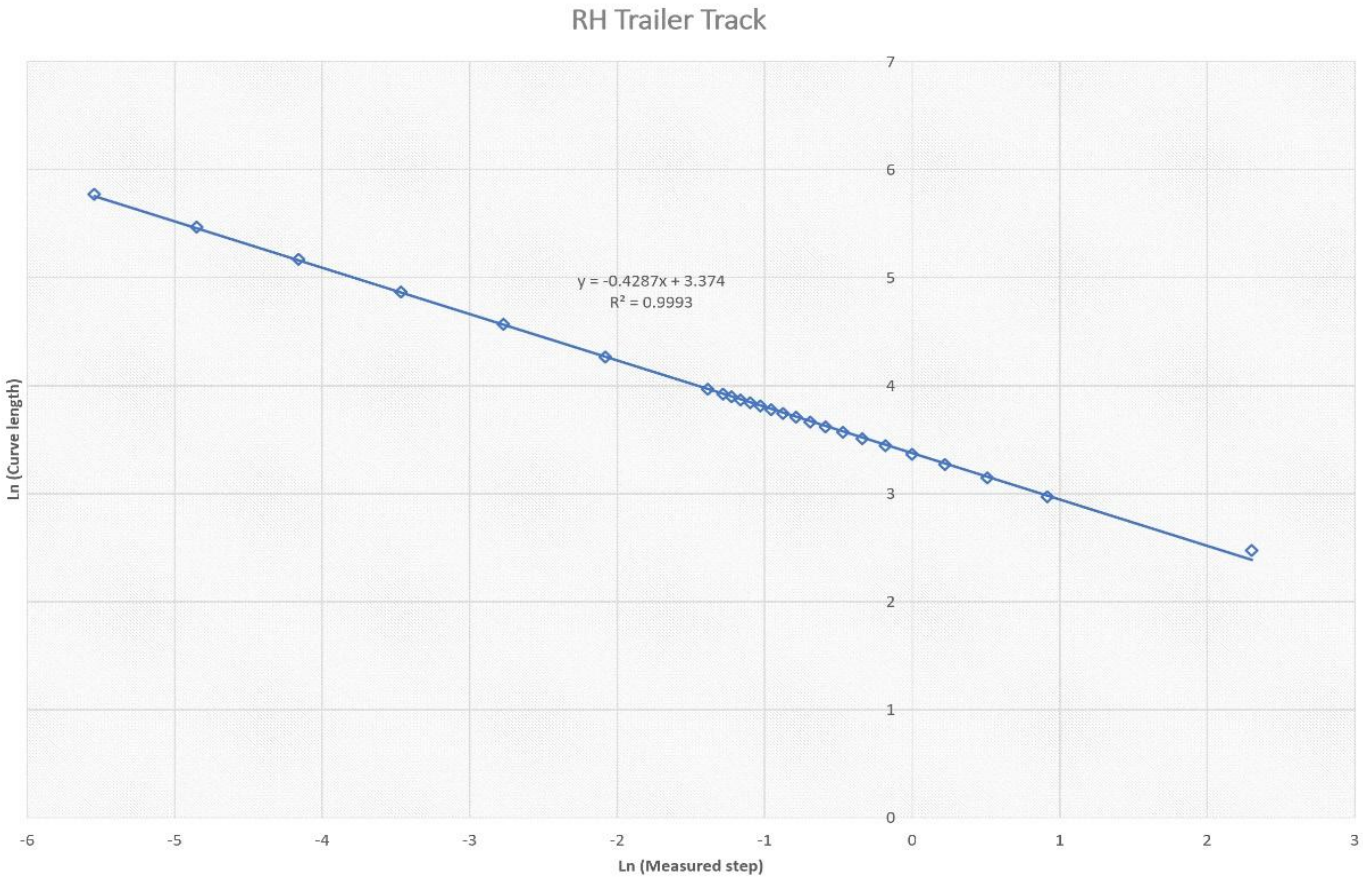


Figure 5c: Estimation of the fractal dimension for the vibration from LH trailer track between 7,700-10,000 s

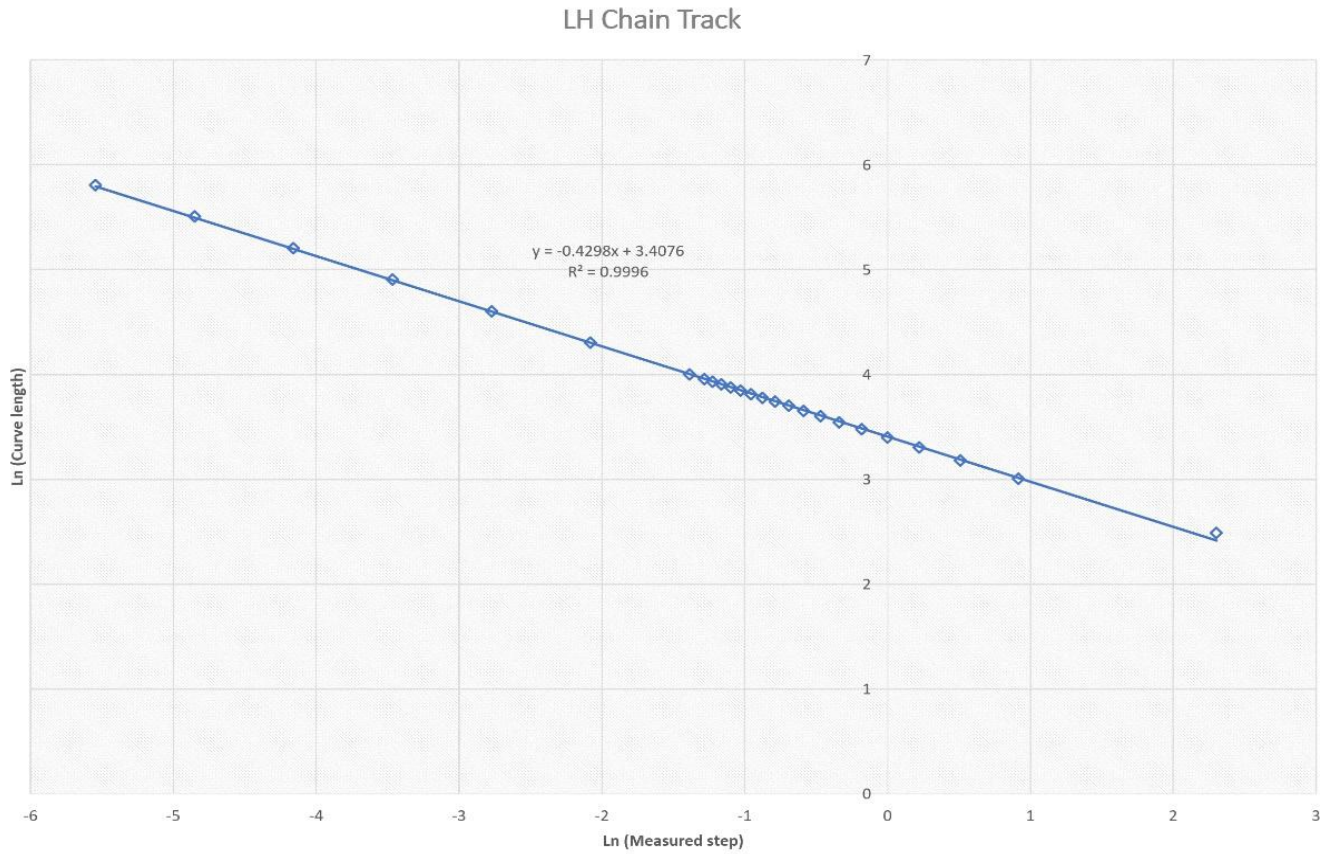


Figure 6a: Estimation of the fractal dimension for the vibration from LH chain track between 0.0-2,500 s

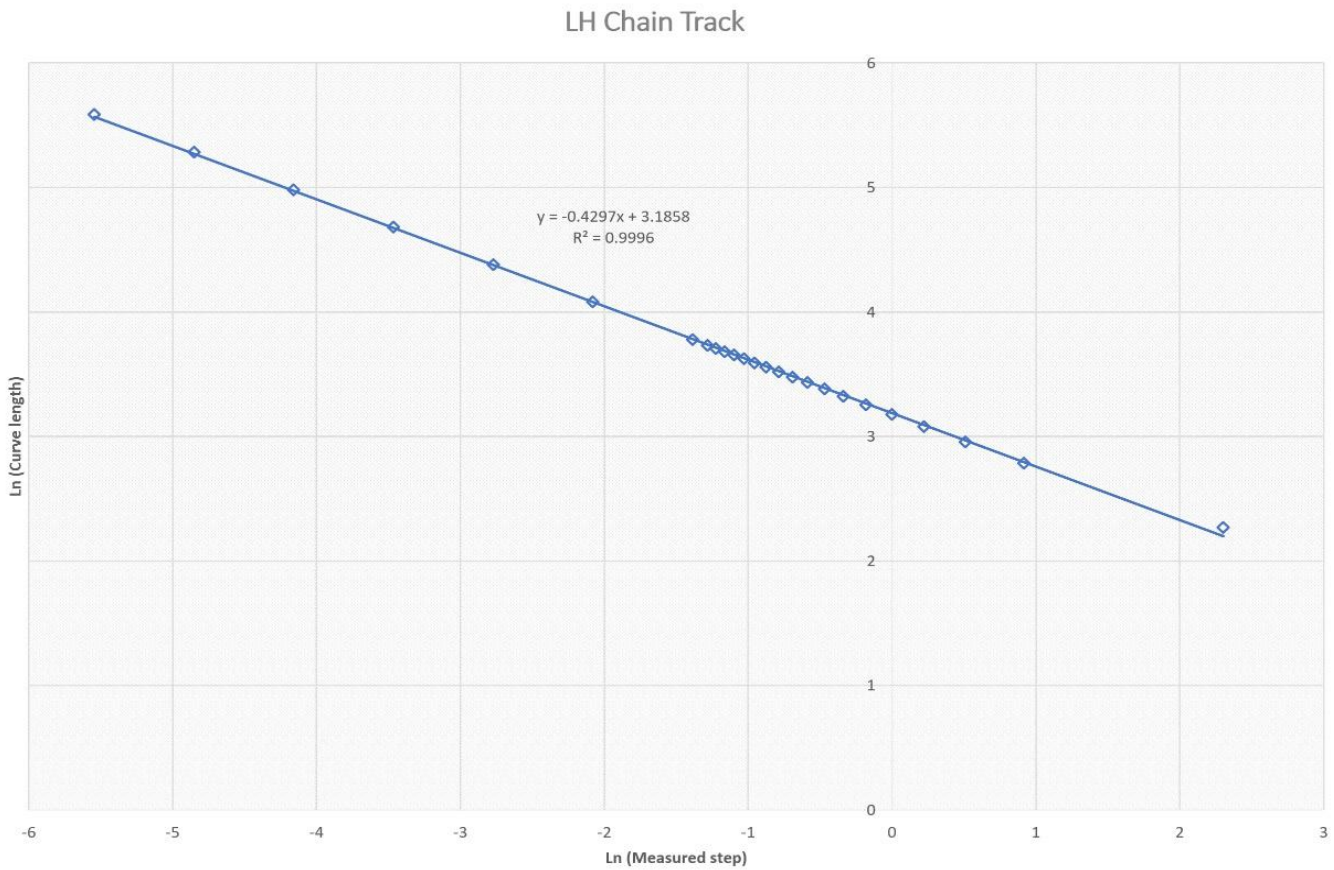


Figure 6b: Estimation of the fractal dimension for the vibration from LH chain track between 2,500-4,000 s

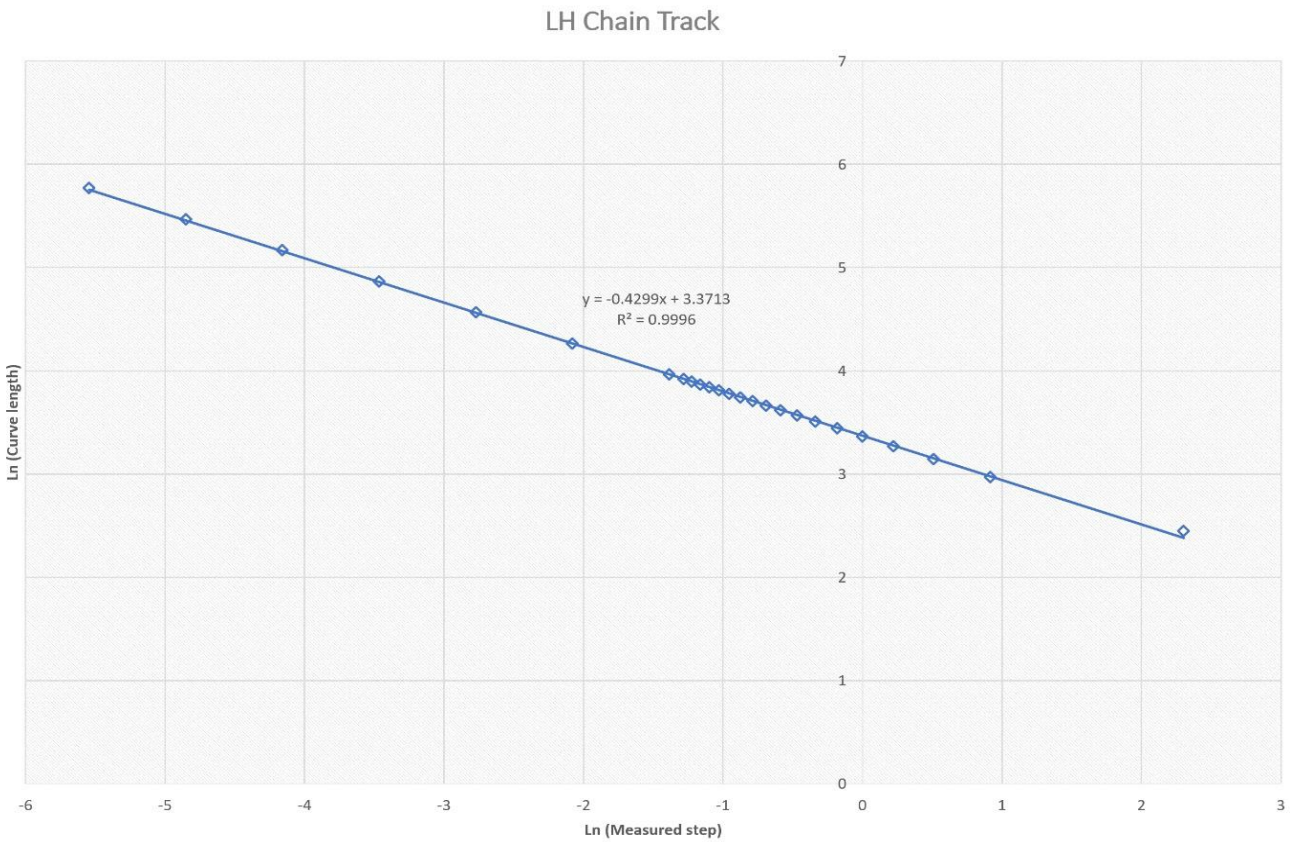


Figure 6c: Estimation of the fractal dimension for the vibration from LH chain track between 7,700-10,000 s

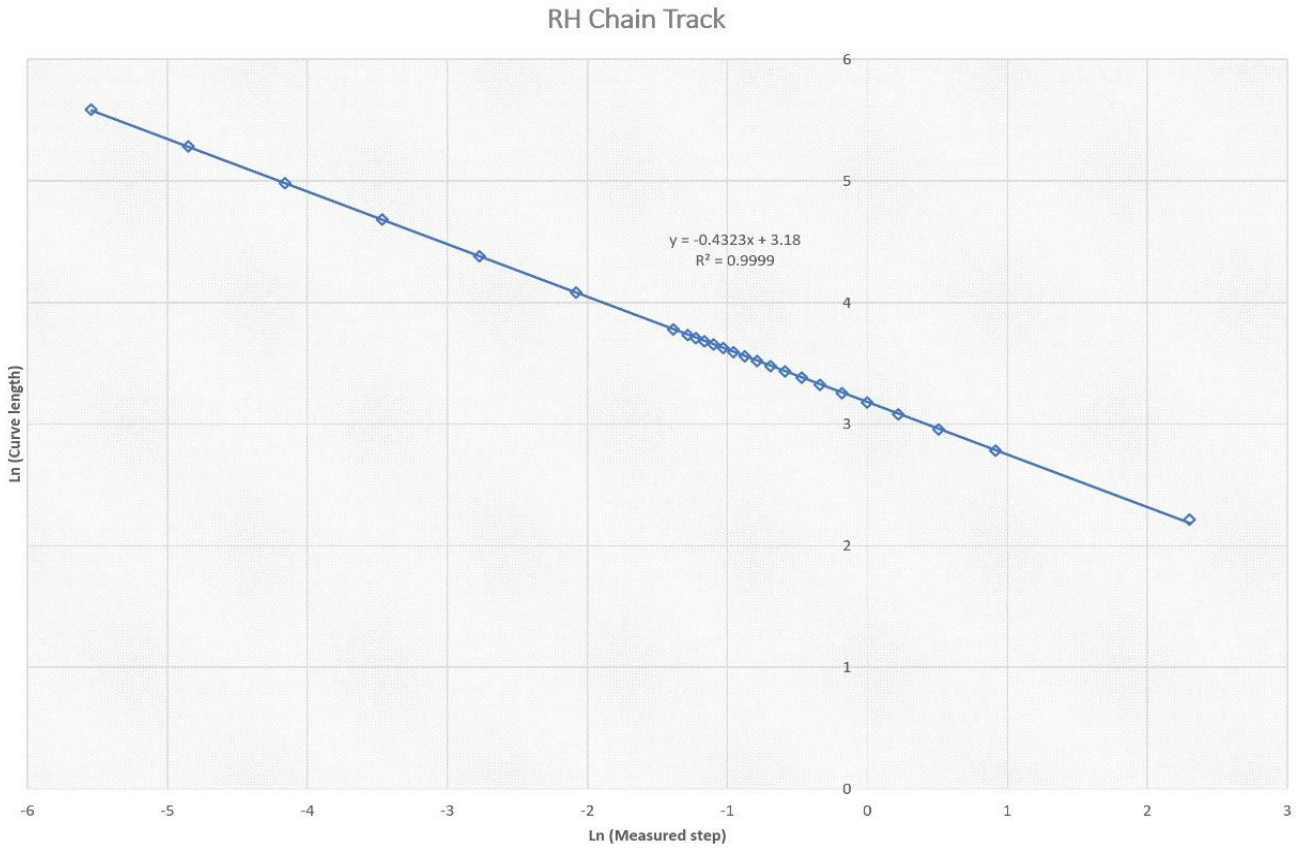


Figure 7a: Estimation of the fractal dimension for the vibration from RH chain track between 0.0-2,500 s

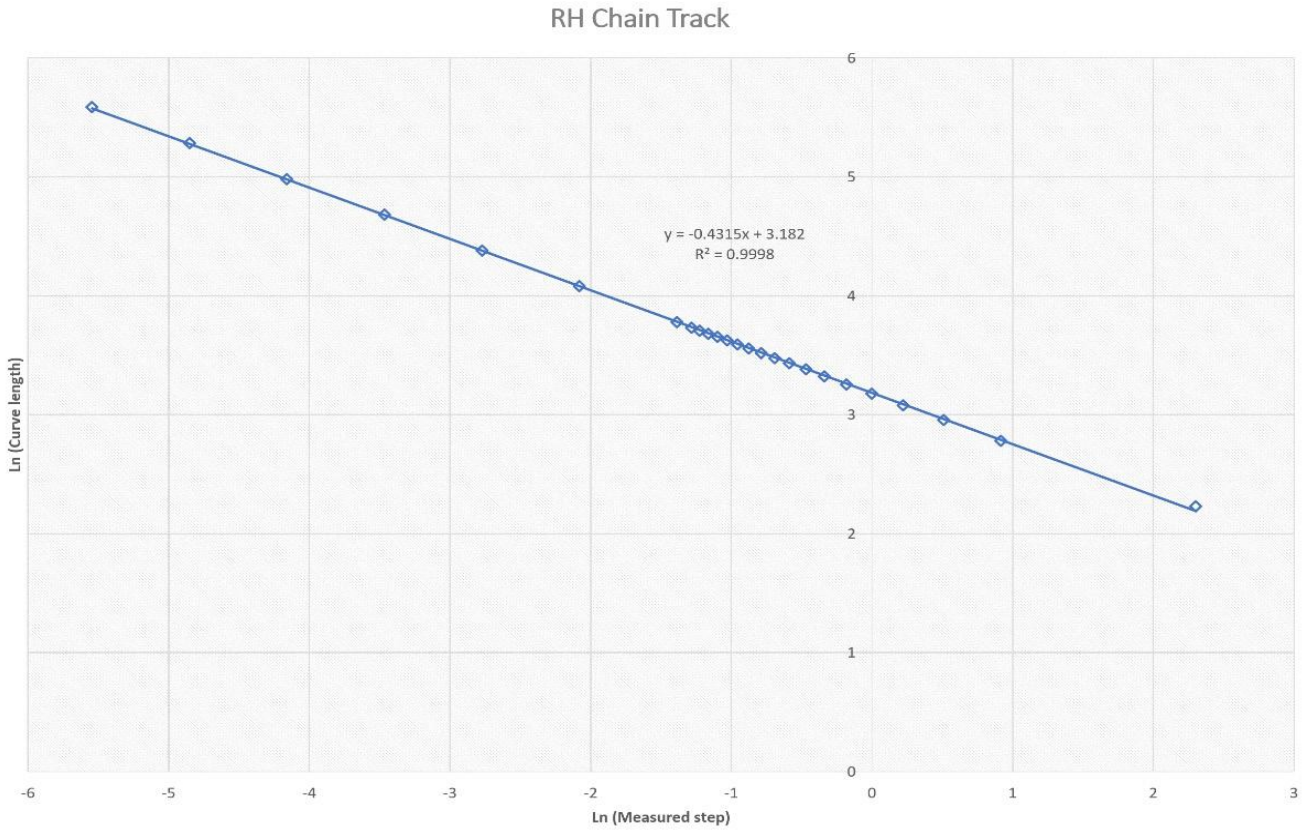


Figure 7b: Estimation of the fractal dimension for the vibration from RH chain track between 2,500-4,000 s

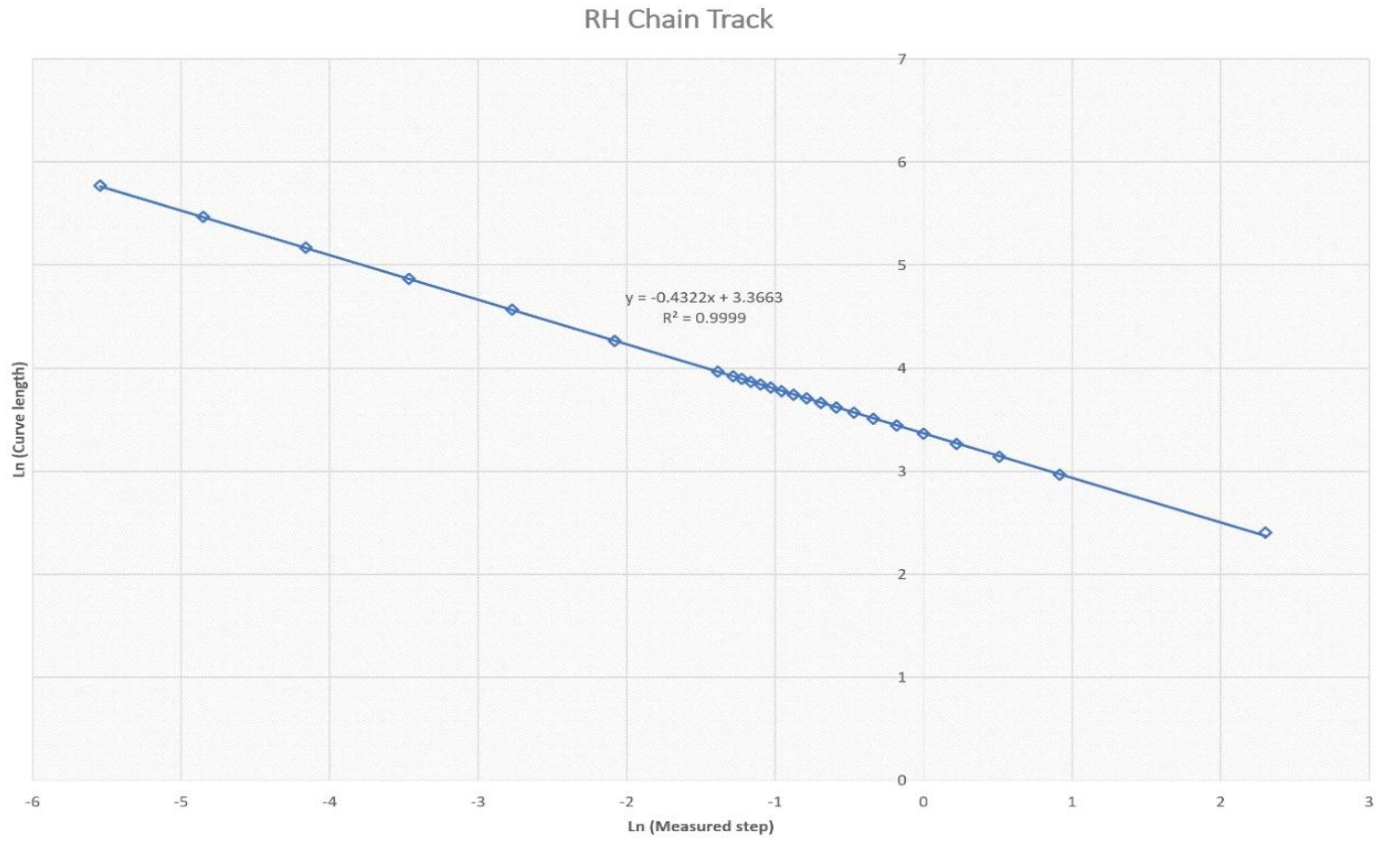


Figure 7c: Estimation of the fractal dimension for the vibration from RH chain track between 7,700-10,000 s

No	Temperature Trace Type	Fractal Dimension value, D_f (0.0-2,500 s)	Fractal Dimension value, D_f (2,500-4,000 s)	Fractal Dimension value, D_f (7,700-10,000 s)
1.	LH trailer track	1.434	1.434	1.434
2.	RH trailer track	1.428	1.428	1.428
3.	LH chain track	1.429	1.429	1.429
4.	RH chain track	1.432	1.431	1.432

Table 1: List values of the fractal dimensions for the four tracks.

Conclusions

This study has proven the volubility of using the fractal dimension concept in analyzing vibration signals, measured from tracks of an escalator. Although the values of the fractal dimension of the tracks are close, a careful look to the values presented in Table 1 suggests that there is a quantifiable difference in the measurements, in the region of 0.01, between the tracks that measured high vibrations compared to the track subjected to low vibrations. Physical examination of the escalator showed that there was a failure in one of the RH chain wheels.

Our study here suggests that the values of the fractal dimension can be used as a detection tool to monitor and observe abnormal behavior in the escalator or any other mechanical machine.

References

[1] A. Albadri. "Temperature Fractal and Nonlinear Behavior for Escalators," Lift & Escalators Symposium 14th Sept. 2023.
[2] A. Albadri. "Tube Lines Gets Smart to Monitor Escalator Wear," *Computer Weekly* (07/01/2008).
[3] A. Albadri. "Smart Step Measures Escalators Heartbeats," EW UK, iss.104, 20/03/2020.
[4] A. Albadri. "Escalator Fractal Behavior (part 3)," EW Jan 2021.
[5] A. Albadri. "Smart Step Measures Escalator`s Heartbeat," EW UK, March- April 2020.
[6] A. Albadri. "Escalator Fractal Behavior Elevator (Part 1)," EW Jun 2020.
[7] A. Albadri. "Escalator Fractal Behavior (part 2)," EW Jun 2020.

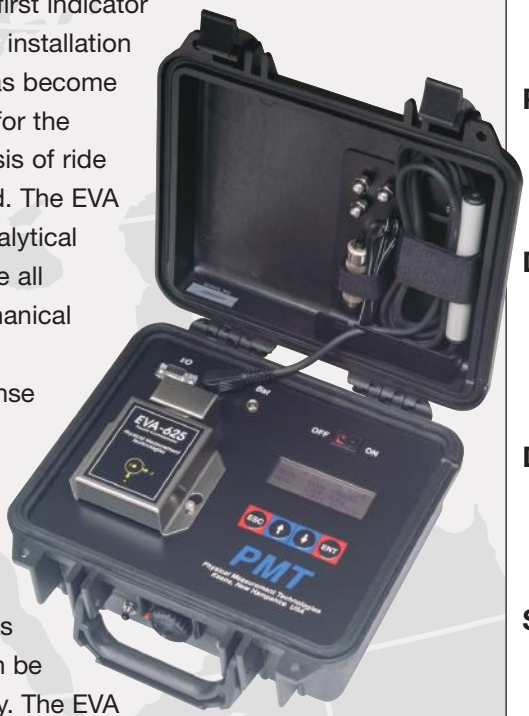
Dr. Ali Albadri is chief engineer at London Underground Ltd. He has served as lead engineer for Tube Lines Ltd. and JNP. Prior to joining the vertical-transportation industry, he worked for the University of Manchester Institute of Science and Technology (UMIST), Brunel University and Oxford University, in addition to Cookson Group, ABB, Olympus and Hydronix Ltd. He has a PhD and an MPhil in materials science from UMIST and the University of Sheffield, respectively, and BSc degrees in nuclear engineering from Baghdad University and mechanical engineering from Technology University. Albadri has had papers about materials science and concrete design instruments published. Recently, he has had more than 20 papers on using the fractal dimension concept in understanding and maintaining machines published. He has also invented and patented many products, such as the concrete strength device, the smart step and the smart test rig.

The Absolute Measure...

Measurement & Analysis for the Elevator/Escalator Industry

Elevator ride quality is a first indicator of the quality of design, installation and service. The EVA-625 has become the **International Standard** for the absolute measure and analysis of ride quality and vibration & sound. The EVA system includes powerful analytical software tools to fully analyze all aspects of the elevator mechanical and control system.

The highly accurate response of the EVA system, and the powerful analysis capabilities offered by the EVA Elevator/Escalator Analysis Tools software, allows rapid identification of problem areas so that corrective actions can be targeted quickly and precisely. The EVA system uniquely provides the ability to measure the vibration and sound that people feel and hear, yet allows analysis of the broad-band vibration and sound that is the result of the function of all dynamic aspects of the elevator system. Problems with roller guides, rail joints, motor control systems, and other dynamic elements can be identified in minutes. Quality of installation and service can be improved dramatically. The EVA system and accessories are designed to be robust and easy to operate. The system includes high resolution sensors and data acquisition system, all necessary cables, one year warranty and the industry standard EVA Elevator/Escalator Analysis Tools software, all at very low cost.



EVA-625

◆ ***Optional Flash Drive Data Storage***

Elevators

Ride Quality (re: ISO18738)
- 3 Axis Vibration, Sound Level
- Maximum/A95/Jerk Zone Peak to Peak

Performance (ISO18738)
- Velocity (Maximum & V95)
- Acceleration/Deceleration (Maximum, A95)
- Jerk (Maximum)

Diagnosis
- Drive Controller Function
- Locate Rail Joint Misalignment
- Guide Rollers
- Sheave(s)/Ropes/Counter Weight
- Frequency Analysis (FFT)

Documentation
- Ride Quality Report
- Pre-Bid Analysis
- Pre/Post Modernization Changes
- Year to Year Comparison

Software
- EVA Elevator/Escalator Analysis Tools
- Advanced, Powerful, Complete
- Updated at No Charge, ***Forever!***

Escalators

Ride Quality (re: ISO18738)
- RMS Vibration
- Multi-Point Sound Level

Step/Skirt Performance Index
- w/IMD-1 (re: A17 Code)
- Coefficient of Friction
- Step/Skirt Loaded Gap

Vibration
- Step
- Hand Rail
- Machine

Performance
- Handrail/Step Speed
- Deceleration/Stopping Distance

PMT ***Physical Measurement Technologies, Inc.***
P.O. Box 400, 4 Ling Street, Marlborough, NH 03455 USA
VOICE: 603.876.9990 ◆ FAX: 603.876.9995
www.pmtvib.com

CE
Y3K Compliant

Elevators/Escalators ◆ Global Standard

High Accuracy Instrumentation for the Vertical Transportation Industry
High Accuracy Instrumentation for the Vertical Transportation Industry
High Accuracy Instrumentation for the Vertical Transportation Industry

SOURCE DIRECTORY

This section serves as a resource for the industry and consists of current Elevator World India advertisers and their website or email addresses. For detailed information on each company, please visit www.elevatorworld.com/directory. Contact Anitha Raghunath at anitha@virgo-comm.com or T. Bruce MacKinnon at tbruce@elevatorworld.com for more information.

ARKEL ELECTRONIC INDIA PRIVATE LIMITED
Website: www.arkel.co.in

BESCO
Website: www.besco.in

BHARAT BIJLEE LIMITED
Website: www.bharatbijlee.com

DATIS ELEVATORS
Website: www.datis.in

ECE ELEVATORS
Website: www.eceelevators.com

ELETECH INDUSTRIES
Website: www.eletechindustries.com

ELEVATOR & ESCALATOR SAFETY TRUST
Email: info@eest.in

ELEVATOR WORLD, INC.
Website: www.elevatorworld.com

ESCON ELEVATORS PVT. LTD.
Website: www.esconelevators.com

ESQUIRE ENGINEERING CO.
Website: www.esquireelevatorparts.net

GEBA CABLES AND WIRES INDIA PVT LTD
Website: www.gebacables.com

GEZE INDIA PRIVATE LTD.
Website: www.geze.in

INDEX SYSTEM
Website: www.index-system.com

INOVANCE TECHNOLOGY PVT LTD
Website: www.inovance.eu/india

INTERLIFT
Website: www.interlift.de

JOHNSON LIFTS PVT. LTD.
Website: www.johnsonliftsltd.com

JUPITER
Website: www.jupitergroup.co.in

KONE INDIA
Website: www.kone.in

MACH UNIT
Website: www.machunit.com

MAGTECH GROUP
Website: www.magtech.in

MAYR ANTRIEBTECHNIK
Website: www.mayr.de

MONTANARI LIFTS COMPONENTS PVT. LTD.
Website: www.montanarigiulio.in

MONTEFERRO INDIA GUIDERAILS AND ELEVATOR PARTS
Website: www.monteferro.it

MOTHER INDIA FORMING PVT. LTD.
Website: www.migoldline.com

NIBAV HOME ELEVATORS
Website: www.nibavlifts.com

NIDEC
Website: www.nidec.com

PHYSICAL MEASUREMENT TECHNOLOGIES
Website: www.pmtvib.com

PORTAL ENGINEERING PVT. LTD.
Website: www.portalengg.com

RAMAN ENGINEERING CO. PVT. LTD.
Website: www.ramanengg.com

SHARP ENGINEERS
Website: www.sharpengineers.com

SICOR ENGINEERING INDIA PVT. LTD.
Website: www.sicorindia.com

STANDARD ELEVATOR SYSTEMS
Website: www.standard-elevators.com

START INDIA ELEVATOR COMPONENTS PVT LTD
Website: www.startelevator.in

TAK CONSULTING PVT. LTD.
Website: www.takconsulting.net

TECTRONICS ENGINEERS
Website: www.tectronicsindia.com

TEDRA AUTOMOTIVE SOLUTIONS
Website: www.tedraauto.com

TORIN DRIVE INDIA PRIVATE LIMITED
Website: www.torindriveintl.com

VIRGO COMMUNICATIONS & EXHIBITIONS PVT. LTD.
Website: www.virgo-comm.com

VIRGO PUBLICATIONS
Website: www.elevatorworldindia.com

WECO ELEVATOR PRIVATE LIMITED
Website: www.weco-india.com

WITTUR ELEVATOR COMPONENTS INDIA PVT LTD
Website: www.wittur.com

ZIEHL-ABEGG SE
Website: www.ziehl-abegg.de

Advertisers Index

Leading E-package solution provider in India

STANDARD
EN81-20/50

In compliance with EN81 & IS17900

E-package features:

- **Easy to Use** - Smooth, hassle-free installation
- **Plug & Play** - Pre-configured for quick setup
- **Cost Effective** - Optimized to reduce project cost
- **Saves Time & Manpower-**
  Faster installation, minimal effort compatible with
  NICE3000+ & NICE1000+
- **Complete Solution-**
  Panel, COP/LOP, J-Box, Accessories & Travelling Cable

More info:

- **Delhi** - 93840 65612
- **Ahmedabad** - 93846 62330
- **Mumbai** - 93848 05374
- **Kolkata** - 93848 06294
- **Hyderabad & Bengaluru** - 9043 334147
- **Tamil Nadu & Kerala** - 93842 69024
- **Pan India** - 78248 37922

INOVANCE

Visit Us

www.inovance.eu/india
info@inovance.ind.in

The Epic
Kits & Components

epic
RISE ABOVE

OFFICE ADDRESS : A - 1311, Mondeal Heights, Iscon Cross Road, Sarkhej - Gandhinagar Hwy, Ahmedabad, Gujarat 380015

FACTORY ADDRESS : Survey Number 259, Zekda Village, Bavla Taluka, Ahmedabad-382230, India

SCAN FOR MORE

+91 81415 50125 | 1800 123 616161 | info@epicelevators.com | www.epicelevators.com