

INDIA'S VERTICAL FUTURE

ELEVATORS AT THE INTERSECTION OF TECH,
SAFETY AND SUSTAINABILITY

As Indian cities grow taller and denser, elevators have become the invisible engines powering urban life. No longer just mechanical boxes moving people up and down, they are now intelligent, connected systems shaping how metros operate, how families live, and how green buildings perform. From Wittur's sustainable components to Tectronics' India-specific solutions, and from Omega's smart systems to KONE's people-flow intelligence, the elevator industry is quietly redefining what it means to build cities in the 21st century.







ELEVATORS AS ENGINES OF URBAN INNOVATION

India's rapid urbanisation has forced its cities to rethink infrastructure, not just on the ground but vertically. With land scarce and density rising, the elevator has quietly become one of the most transformative technologies in shaping urban India. No metro station, high-rise redevelopment, or transit hub can function without vertical transport that is safe, efficient, and reliable.

But the elevator industry today is about far more than moving people up and down. It sits at the intersection of

technology, urban planning, and sustainability. Elevators are now embedded with AI algorithms that predict traffic flows, IoT-enabled systems for real-time diagnostics, and regenerative drives that feed power back into the grid. They are as much about software, energy efficiency, and safety protocols as they are about steel cables and motors.

The innovation is happening at multiple layers of the ecosystem. Wittur, a leading global components supplier,

is setting benchmarks with energy-efficient designs and recyclable materials, ensuring Indian elevators align with international sustainability norms. Tectronics, an Indian manufacturer, is localising this innovation — adapting elevators to India's unique realities of voltage fluctuation, high humidity, and cost-sensitive markets.

For legacy operators like Omega and Eros, the shift has been about embedding intelligence and reliability into systems that once were purely mechanical. As Sameep Desai of Omega observes, "Elevators have evolved from simple mechanical devices to intelligent, software-driven systems." Karl Divecha of Eros adds a human dimension: "Our purpose has always been to elevate lives through innovation, reliability, and trust."

Global giants bring another dimension. TK Elevator pushes predictive maintenance and IoT-driven service models; Mitsubishi sets benchmarks in safety and precision engineering; and KONE is advancing "people flow intelligence," critical to keeping metros and high-footfall transit hubs moving smoothly. Elevators in India are no longer hidden shafts of machinery. They are urban engines shaping how cities expand, how people live together, and how infrastructure keeps pace with India's vertical future.



SMARTER SYSTEMS: AI, IOT & PREDICTIVE ANALYTICS

The elevator of yesterday was a mechanical marvel. The elevator of today is a digital ecosystem – one that thinks, predicts, and adapts in real time. In India's crowded cities, where millions depend on vertical transport daily, this shift from machine to intelligent system has been transformative.

AI and IoT are now at the heart of this transition. Elevators embedded with smart sensors and connected platforms can detect faults before they occur, optimise passenger traffic during peak hours, and provide remote diagnostics that cut downtime dramatically. In metros, this means reduced bottlenecks; in high-rise housing, it translates into shorter waiting times and smoother operations.

"AI-driven traffic optimisation studies passenger flow to reduce wait times and maximise efficiency," explains Sameep Desai of Omega, noting how data analytics is directly shaping user experience in residential and commercial towers.

Global players are pushing these capabilities further. TK Elevator has been pioneering predictive maintenance models that use cloud platforms to



monitor entire fleets of elevators in real time. These systems not only forecast potential breakdowns but schedule servicing proactively, making safety and uptime non-negotiables.

For KONE, the emphasis is on what it calls "people flow intelligence" – mapping how people move through airports, malls, and metros to ensure elevators, escalators, and travellers are integrated into seamless mobility corridors. This is particularly critical in India's rapidly expanding metro systems, where peak-hour ridership runs into the millions.

Local innovation is equally vital. Tec-

tronics, a homegrown manufacturer, is bridging the global-to-local gap by designing control systems and IoT-enabled solutions that are tailored for India's realities – from erratic voltage supply to congested retrofits in older buildings. These are not stripped-down versions of global tech but re-engineered products that bring smart connectivity to markets where affordability and resilience matter most.

Together, these innovations mark a turning point. The elevator is no longer a reactive piece of infrastructure; it is an intelligent node within India's urban mobility ecosystem. It senses, learns, and adapts – keeping pace with the rhythms of cities that never stand still.





SAFETY REDEFINED RELIABILITY IN A VERTICAL NATION

If intelligence defines the future of elevators, safety defines their credibility. In high-rise housing, where families depend on lifts multiple times a day, and in metros or airports where millions ride escalators daily, reliability is not a feature — it is the baseline expectation.

In India, the stakes are even higher. With redevelopment driving denser towers, and metro systems expanding across multiple cities, the margin for error has narrowed.

As **Mitsubishi** engineers emphasise, safety is not about minimum compliance but about building redundancies into every system — from braking mechanisms to fire-resistant shafts — to ensure passenger confidence.

Omega Elevators illustrates this point with a simple metaphor. “Our motors are so smooth you could balance a 50-paisa coin during the ride — and it won’t fall,” says Sameep Desai. The anecdote underscores years of engineering refinement to eliminate vibration and jerks, providing not only comfort but assurance that systems are finely tuned.



TK Elevator, leveraging its global R&D, has pushed predictive maintenance as a safety strategy. Instead of reacting to breakdowns, its IoT systems identify stress points, forecast component wear, and alert service teams before problems surface. This proactive approach reduces risks while improving availability — critical for commercial and public spaces.

For **KONE**, the challenge is scale. In metro stations and airports, uptime is a non-negotiable. “In India’s metros and

airports, uptime is not an option — it’s a necessity,” the company has emphasised, highlighting how its systems are built with redundancy and rescue protocols to handle extreme footfalls without disruption.

Taken together, these innovations reveal that safety in India’s elevator sector is being redefined not only as compliance with EN 81, NBC, and ISO codes, but as a commitment to resilience, passenger trust, and seamless urban movement.



SUSTAINABILITY AS A CORE DRIVER

As Indian cities climb higher, the question is no longer only how to move people but how to do so without exhausting resources. Elevators and escalators are intensive energy consumers — often running 24/7 in commercial towers, metro hubs, and hospitals. The industry's next great leap, therefore, is in sustainability: designing systems that use less, waste less, and contribute actively to greener cities.

Wittur, one of the world's largest suppliers of elevator components, has made this the heart of its innovation agenda. Its energy-efficient drives, recyclable materials, and low-VOC cabin finishes are setting benchmarks for how elevators can meet global sustainability norms while being adapted for Indian projects. "Green design and energy efficiency are no longer optional — they are central to every project," stresses a senior Wittur executive. For architects and developers seeking IGBC or LEED certifications, components like Wittur's are becoming critical enablers of green building points.



On the ground, Tectronics is localising this sustainability push. By focusing on manufacturing in India, it reduces the carbon footprint of imported supply chains while tailoring designs to Indian realities — voltage fluctuation, high humidity, and cost sensitivity. Its innovation lies not in replicating Western solutions but in re-engineering them for environments where reliability and affordability must coexist. This

localisation ensures that sustainability is not an elite choice, but a mainstream option even in Tier 2 and Tier 3 cities.

Legacy companies are also embedding green thinking into operations. Omega Elevators runs its Ahmedabad facility on a 10 MW rooftop solar plant and uses oil-free permanent magnet synchronous (PMS) motors, eliminating lubricants that are difficult to recycle. Regenerative drives in their high-speed systems recover up to 80% of energy during descent — savings that matter in tall towers consuming electricity round the clock.

Global players like TK Elevator have aligned their India operations with international climate targets, introducing regenerative technologies and energy-efficient designs across their product lines. These innovations ensure that as India builds vertically, it does so with a smaller environmental footprint.

Sustainability, once a peripheral consideration, is now becoming a competitive advantage in India's elevator industry. As demand for green buildings rises and regulations tighten, elevators are no longer just about mobility — they are about aligning India's cities with the global climate agenda.

DESIGNING FOR INDIA'S DIVERSE REALITIES

India's urban fabric is unlike any other. Cities must accommodate both gleaming new towers and crumbling retrofits, climates that range from the icy cold of Ladakh to the humidity of Chennai, and power supplies that fluctuate unpredictably in Tier 2 and Tier 3 towns. For the elevator industry, innovation is not just about speed or aesthetics — it is about engineering for resilience, adaptability, and inclusivity.

Tectronics exemplifies this localisation imperative. Its systems are engineered to withstand voltage fluctuations, integrate higher battery back-ups for power outages, and function reliably in semi-urban markets where service access can be limited. This approach ensures that residents in smaller cities and towns experience the same safety and comfort as those in metropolitan high-rises. By designing specifically for



India's diverse electrical and structural contexts, Tectronics is demonstrating that advanced mobility solutions need not be imported — they can be made for India, in India.

Omega Elevators has taken a similar route, building solutions for extreme environments. In Ladakh, where sub-zero winters would cripple conventional systems, Omega installed lifts engineered to withstand the cold.

THE ROAD AHEAD — ELEVATORS AS CITY-MAKERS



The future of India's cities will not be measured only in kilometres of road or square feet of construction, but in vertical mobility — how fast, safe, and sustainable people can move through tall buildings and transit hubs. Elevators are emerging as city-making infrastructure, woven into the very logic of how metros, airports, housing towers, and workplaces are planned.

Omega sees speed and specialisation as central to this future. With land scarcity driving vertical development, high-rises of 20–30 floors even in Tier 2 cities are becoming the norm. “Expect faster high-speed lifts of 2.5 to 7.5 metres per second to become standard in Indian towers,” says Sameep Desai, adding that specialised car lifts integrated with smart parking systems will be vital to solving urban congestion.

For KONE, the elevator of the future is not just about speed, but integration into people-flow ecosystems. As metro ridership expands into the tens of millions, airports become mega-hubs, and



Its pitless elevators allow retrofitting in older buildings without major civil work, making them particularly valuable in Mumbai's dense redevelopment projects where space is scarce. "From Ladakh's icy terrain to Mumbai's metro stations, every installation must be built for the environment it serves," notes Sameep Desai.

For Eros, the design challenge has been about reliability in day-to-day living. In India, where three generations often share the same home, elevators have become extensions of domestic

life. "Our purpose has always been to elevate lives through innovation, reliability, and trust," says CMD Karl Divecha, underscoring the role of lifts not just as machines but as enablers of family convenience.

Precision engineering has also been critical in mega-projects. Mitsubishi, with its Japanese legacy of quality, has brought in safety-critical redundancies and design modifications for high-foot-fall environments like airports and public buildings. Its systems demonstrate how global best practices can be adapted to Indian requirements, where infrastructure must operate continuously under heavy stress loads.

These examples point to a common thread: in India, elevators must be versatile. They must work in luxury skyscrapers as well as compact housing blocks; they must survive climate extremes and erratic electricity; they must deliver reliability in places where uptime is not just desirable but life-critical. Designing for India means designing for diversity – and the sector's innovations reflect precisely that.



mall morph into multi-use spaces, elevators must work in concert with escalators, travellers, and digital wayfinding systems. This requires predictive modelling of human movement – a field KONE describes as "people flow intelligence."

TK Elevator brings a global R&D perspective, positioning predictive maintenance and fleet monitoring as the nervous system of future urban mobility. By tracking thousands of elevators across cities simultaneously, their systems promise not only efficiency but also resilience in crisis situations – a dimension critical for infrastructure such as hospitals and transit hubs.

At the component layer, Wittur con-



tinues to anticipate the sector's long game: sustainability. Its next generation of components aims to be lighter, stronger, and recyclable, reducing energy consumption while improving lifecycle performance. This isn't just about compliance; it's about ensuring that as India builds vertically, it also builds sustainably.

The trajectory is clear. In the coming decade, elevators in India will no longer be standalone machines hidden in shafts. They will become integrated nodes in smart city ecosystems – intelligent, connected, and sustainable. Elevators will not just carry passengers; they will carry the weight of India's urban future.



BEYOND THE SHAFT

The story of elevators in India is no longer about vertical transport alone. It is a story of how technology, sustainability, and design innovation are converging to meet the demands of a rapidly urbanising nation. In the process, elevators have become urban engines: shaping density, enabling inclusivity, and defining how India's cities function.

From Wittur's global focus on green components to Tectonics' localised solutions for Tier 2 and 3 cities, from Omega's shift to smart, software-driven systems to Eros' emphasis on reliability for family living, the domestic industry is responding to India's unique realities. Meanwhile, global leaders – TK Elevator with predictive maintenance, Mitsubishi with safety precision, and KONE with people-flow intelligence – are embedding global best practices into Indian projects.

The cumulative effect is profound. Elevators now touch every layer of urban life: reducing congestion in metros, powering retail complexes, providing independence in homes, and lowering the carbon footprint of buildings. They represent not just a market valued at billions, but an industry that is redefining how cities evolve in an era of climate challenges and rapid growth.

As India's cities push higher, elevators will remain the hidden yet indispensable infrastructure that makes vertical living possible. They will continue to integrate AI, sustainability, and resilience, ensuring that the country's urban future is not only taller – but smarter, safer, and greener.