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DIGITAL PASSPORT TO

SACEA Technical Symposium 2021



29 JULY 2021

09:00-14:00

Virtual / The Leonardo Hotel





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introduction

The Technical Symposium is SACEA's prestige event of the year where we add value to the Coal Mining Industry by sharing knowledge and lessons learned. We strive to be on the forefront of safety improvement initiatives, technology integration with our maintenance practices and mining methodologies in use to support production excellence and cost reduction. Further to this we support the 4IR drive to look at how we can work smarter by extending the impact of digitization in new and unanticipated ways. Getting the youth ready for this big change we have already started by adapting the training material for our learners to be in line with the requirements of the 4IR.

It will then also be demonstrated in today's Technical Symposium where we share presentations from different Mining Houses on the mentioned subjects on a digital platform. Sit back, watch, relax, pay attention in order to be in competition to win one of three prizes and witness the first SACEA Technical Symposium to be presented on the new way to do things.

Lastly we just want to say thank you very much to all the Mining houses and Suppliers that supported us to make this event an unforgettable event

Regards

Hennie Lombard
Engineering Manager
SACEA – President 2021



SACEA



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Founded in 1979, the Association aims to uphold the status of the Engineering and Mining profession by providing mutual assistance and advancement of Engineering in the coal mining and associated industries. Throughout the year SACEA arranges meetings for the interchange of ideas and information, the discussion of new problems and the promotion of technical, intellectual and social intercourse of members.

SACEA is also recognized through the Engineering Council of South Africa (ECSA) as a Voluntary Association which provides some influence in terms of the accreditation of learning materials and institutions, as well as strengthening the Association's role with regard to registration matters.

<https://sacea.org.za/>





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vote of thanks

The 2021 SACEA Symposium was a revolutionary event for SACEA. It was the first time in the 41 year history where the symposium was conducted as a virtual – in Studio – Event and combined with an interactive Amazing Race . Another example of how SACEA is thriving in the 4th Industrial Revolution.

Company Heads of Engineering

For the continuous support – morally , financially and attendance wise of SACEA and this event.

- Exxaro Resources – Baltimore Miles & Stompie Nel
- Thungela (Previously Anglo American Coal) – Luambo Musie
- Sasol Mining – Sheldon Naicker
- Glencore Operations – Sbo Buthelezi
- Seriti – Martin Dimond

The Organisers of the event – also to each council member that assisted in sourcing presenters – a special mention to :

- Jerris Subermoney – Sasol Mining (Pty) Ltd.– Past President
- Hennie Lombard – Mooiplaats Coal – President 2021 .
- Annette Small – Thungela Coal – Immediate Past President





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vote of thanks

The MPAS Manager and his team for nonstop hard work to make this association and all our events a success

- **Raymond van der Berg – MPAS Manager .**
- **The Company Business Partners, Suppliers and Exhibitors** – SACEA recognises the role you play in the industry in support of our Engineers.
- **Attendees for the day** – despite busy calendars – thank you to our members that always attend. We trust and hope this day adds value to your life.
- **Presenters** – For hard work in terms of projects, putting together presentations and sharing your best practice solutions with our industry – you are appreciated and valued!
- **The Production team** – Live stream events Studio
- **MC** – Craig Urbani
- **Tech Team en Producer** – JP van Schalkwyk from UP A TONE EVENTS (www.upatone.co.za)
- **Designers of this Booklets** – Albert Bredenhann from Anything Digital | www.anythingdigital.co.za



agenda

SACEA Technical Symposium 2021



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8h45 – 9h00

Arrival and Opening

09h20

Phillip Venter
Glencore Operations

TWEEFONTEIN Slurry
Dewatering Plant

09h50

Henry Lefawane –
EXXARO

Industry 4 –
Connected Worker

10h25

Virtual Amazing Race
First Session

11h05

Annette Small
THUNGELA

Collision Management
Strategy –
Implementation of
level 1–8 & Industry
Update on PDS Level 9

agenda

SACEA Technical Symposium 2021



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11h35

Johan Schoeman
SASOL Mining

Sasol Mining
Connected Sections

12h10

Virtual Amazing Race
Team Building –
Second Session

12h45

Phillip Venter
Glencore Operations

TwEEfontein Water
Reclamation Plant

13h15

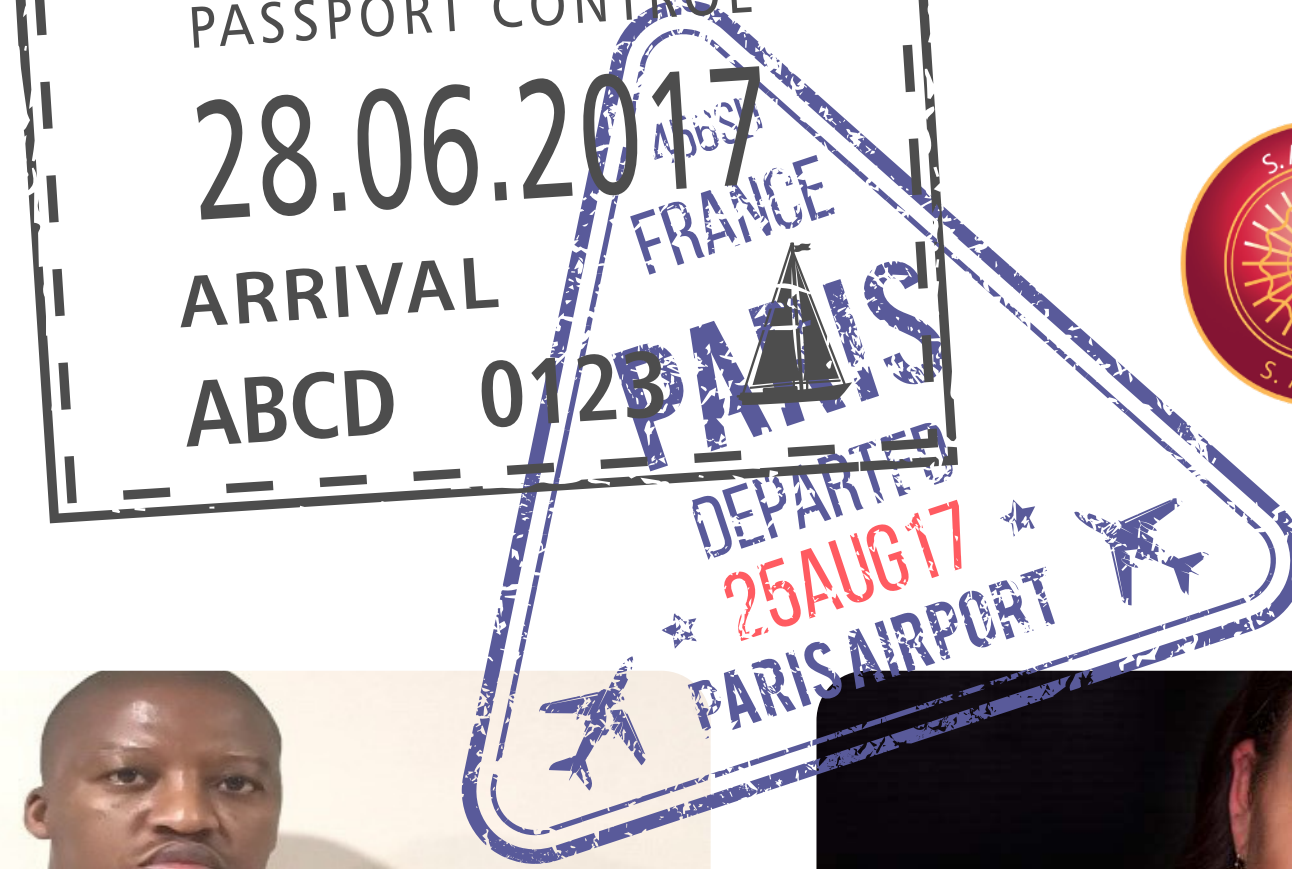
Greg Odell
SASOL Mining

Technical Solution for
Roofbolter Middle-
Walkway Canopy

13h50

Closure and Prize
Giving

our expert speakers



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Johan Schoeman
SASOL Mining

Digitilisation: Sasol Mining
Connected Section
johan.schoeman2@sasol.com



Henry Lefawane
EXXARO

Industry 4 – Connected Worker
Henry.Lefawane@exxaro.com



Annette Small
Thungela

Collision Management Strategy –
Implementation of level 1–8 &
Industry Update on PDS Level 9
annette.small@thungela.com

our expert speakers



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Phillip Venter
GLENCORE OPERATIONS

Twefontein : Slurry Dewatering
Plant and Water Reclamation Plant
Solution

Phillip.Venter@glencore.co.za



Greg Odell
SASOL MINING

Technical Solution for Roofbolter
Middle-Walkway Canopy

Gregory.Odell@sasol.com



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Annette Small



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Annette started her career with Anglo American Coal in 2006 as an Engineer in Training. She passed her GCC in 2007 – Annette gained extensive experience in Underground, Plants, Surface and Opencast Sections throughout various Anglo American Collieries during 2007–2015. Annette was appointed as the first female Engineering Manager for Coal SA in 2015. Until this day she remains the only appointed female Engineering Manager in the Company.

Annette is currently the Project Manager for the Thungela Coal Collision Management Strategy and has devoted wide-ranging effort and time in the Operator Support Technology and industry PDS Level 9 space. She works closely with the Minerals Council, EMESRT and other forums to ensure the best practice industry standards and solutions in order to reduce the significant risks for vehicle collisions on sites.

Annette has also been a SACEA Council Member from 2010–2012 and again since 2015 and remains on council. She was the first female President of SACEA, selected for the 2020 period. Annette is passionate about her work, she is an avid nature and music lover and resides in Middelburg with her husband and 2 little girls.

Annette is available for any queries and discussions focusing on:

1. Traffic Management
2. MOSH Traffic Management Leading Practice
3. Operator Support Technology
4. Industry PDS Level 9 information etc



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Johan Schoeman

Johan obtained his National Diploma Electrical Engineering: Digital Technology in 1994. Between 1994 and 2011 he gained experienced as Electrical and C&I Foreman at Sasol Middelbult Colliery while obtaining his Baccalaureus Technologiae in Electrical Engineering: Digital Technology in 2004.

During this time Johan was also appointed as Chief Foreman Technical Services and Project Engineer

In 2011 he was appointed as the Snr C&I Engineer for Sasol Mining Engineering Services – a position that he still holds.

Johan is a veteran to SACEA Presentations and has previously presented extensive industry work in various SACEA Forums



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MASS.kq



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Henry Lefawane

Henry is an Electrical Engineer with over 11 years mining experience in both underground and surface coal mines. He started professional career, as an engineer-in-training at Exxaro's Grooteegeluk Coal Mine in 2010 and later got appointed as an electrical project engineer in 2012. During his time at Grooteegeluk Coal Mine, Henry managed in numerous Electrical engineering projects such as:

- Proximity Detection System- Implementation of proximity detection system in the red permit are.
- Diesel Nozzle protection system – An electrical system which prevents haul truck operators driving off with the nozzle during the refueling operation.

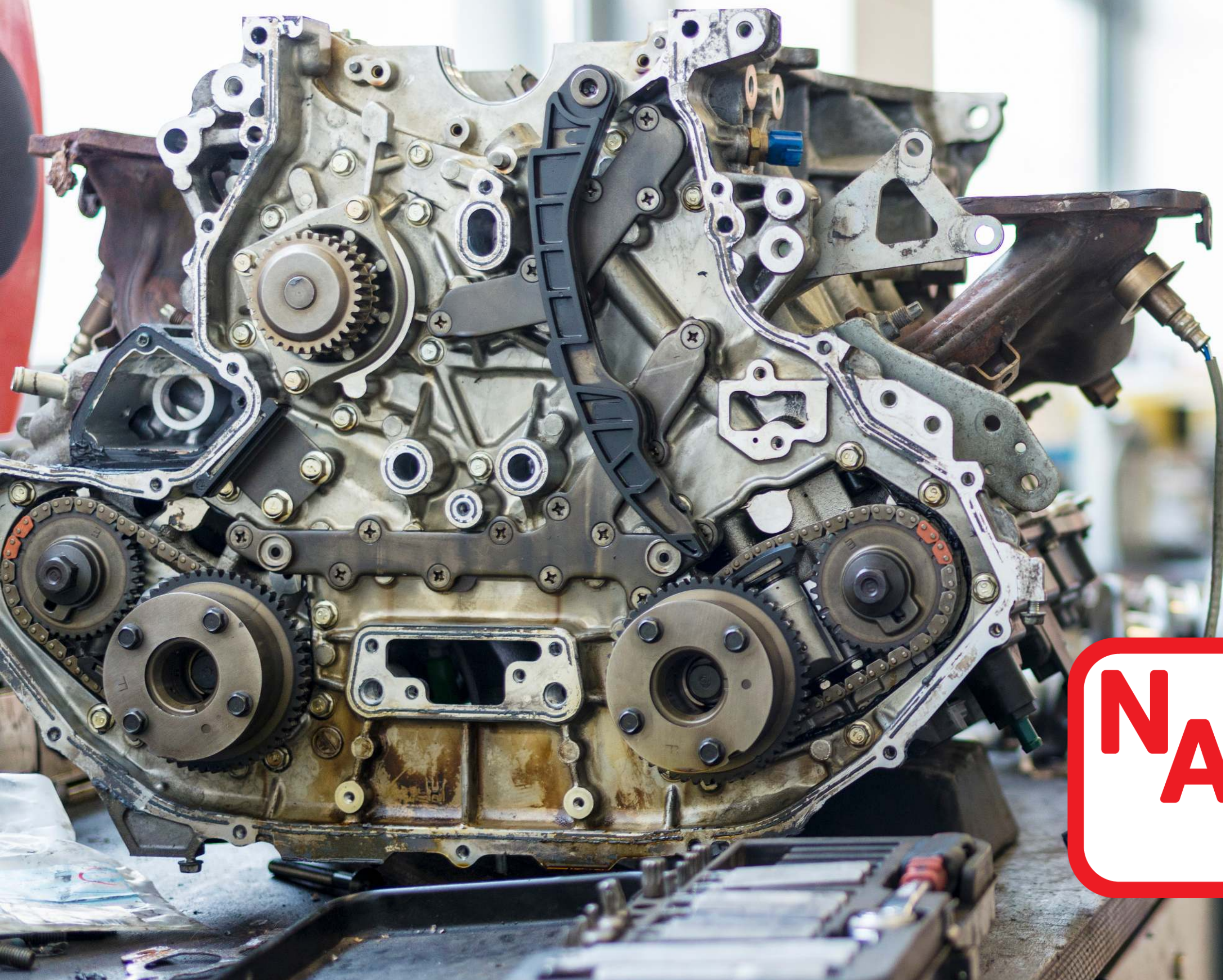
In 2017, Henry moved to Matla Coal Mine as a senior electrical engineer.

Since joining the Matla Project Department, Henry has been actively involved in several projects, such as

- Proximity Detection System, implementation of proximity detection system for underground diesel equipment and surface stockpile equipment.
- Matla fire strategy – developing a strategy for fire prevention.
- Connected worker – the project involves three components: equipment key control, shaft clearance & asset tracking and employee availability. Digital initiative to empower the worker and operation supervisors.



nae.co.za





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Phillip Venter

Phillip achieved his National Higher Diploma for Technicians in 1978 whereafter he obtained his GCC Certificate in 1983.

Phillip spent various years as an Electrician, Foreman, GES and later Underground Section Engineer at Matla and Twistdraai Collieries.

Before becoming the Engineering manager at Brandspruit in 1995 Phillip gained experience as Principle Project Engineer for the Sasol group, where he was involved in various turn key projects such as the Syferfontein Overland Conveyor , which at the time , was the longest of its kind in the country.

In the years following Phillip was in various high-level Management positions such as Engineering Manager, Shaft Manager and Mine Manager. He was also the Technical Director in his own venture up until 2011- This included managing sites in RSA , Australia and travelling the world.

Phillip re-joined the corporate sector in 2011 and in 2016 he joined Glencore Coal as the Group Manager : Projects , a position that he still holds.

Phillip is a well-rounded individual with extensive experience in the corporate and private sector. He enjoys reading ancient history, radical business improvement books and exercises every day , believing in a healthy body and mind !





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Greg Odell

Greg Odell is a professional mechanical engineer, with over 20 years' experience in both the Mining and Petrochemical industries. After having obtained a BSc Electro-Mechanical Engineering degree at UCT, Greg began his working career at Sasol Mining as an Engineering in Training in January 2000. In 2002, he was appointed as a foreman, at an underground section at Brandspruit Colliery.

Later in 2002, he moved from Sasol Mining to Sasol Synfuels, where he appointed, first as a Reliability Engineer, and then later as a Senior Mechanical Engineer, in the Gasification business unit. In 2005, he was seconded to Sasol Group Technology, to work on the petrol "lead replacement" projects, and as a project manager he implemented various fuel dosing projects.

In 2006, Greg returned to Sasol Synfuels, where he worked as the Lead Mechanical Engineer at the Refinery business unit. In May 2008, he was appointed as the Divisional Manager for the Mechanical Engineering team, overseeing all the business units in Sasol Synfuels. This team was responsible for the technical management of all piping, pressure vessels and rotating equipment at the Synfuels' facility. Through internal restructuring, Greg made a return to the mining industry in 2016, where he was appointed as the Principal Mechanical Engineer at Sasol Mining's Engineering Services department, this department supports both capital projects and operations with any technical support on all mechanical related equipment.

In November 2020, he was appointed as the Senior Manager for the Mechanical, Civil and Design department at Sasol Mining.



www.jae.co.za



TwEEfontein Water Reclamation Plant



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TwEEfontein Colliery has implemented a Water Treatment Facility for the treatment of mine-affected water. The first intent of the establishment of the TWRP was to preserve water, one of our scarcest resources, by preventing decanting of mine-affected water into useful water bodies. The second intention was to recover as much as possible of the mine-affected water, either for release into the natural environment or as potable water to communities.

The third, as important consideration, to ensure that mining could go ahead undisturbed by controlling the level of water below the operational activities. The presentation takes a practical approach to known technologies and the most economical applied solution, both in terms of capital expenditure and operational and maintenance cost.

The presentation furthermore endeavours to provide sight on pitfalls when the establishment of a water treatment facility is considered.

We share learnings from the project and operation as well as some interesting statistics over the last 5 years, since the initial plant was established.



Phillip Venter

TRACKLESS MINING EQUIPMENT

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Collision Management Strategy – Implementation of level 1-8 & Industry Update on PDS Level 9



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thungela

Statistical analysis of surface mines' TMM accidents over the past 12 years within the South African mining industry shows that as much as 80% of TMM accidents are as a result of undesired Traffic Management controls, driver behaviour and fatigue related incidents. As a means of reducing this significant risk posed by TMM's in mining operations, the DMRE, MCSA and Thungela Coal (previously Anglo American Coal South Africa) adopted the Earth Moving Equipment Safety Round Table (EMESRT) Levels of Control model as guidance for the development of the Collision Management Strategy (CMS).

In the presentation the following aspects will be elaborated on:

1. There are various industry concerns re the current Level 9 Collision Prevention System Industry readiness (design, adoption, manufacturing & maintenance)
2. In order to reduce significant risk, while the research work for Level 9 continues, there are various low hanging fruit that needs to be addressed by companies – in conjunction with the Minerals Council and CEO Zero Harm forum
3. The very successful Level 1-8 Implementation project that Thungela has embarked on.

The Thungela Collision Management Strategy (CMS) Consist of 3 Aspects:

1. Organizational Structure
2. Key Physical Implementations and
3. Operator Support Technology Considerations

It is believed that with this scope SIGNIFICANT RISK with regards to traffic management incidents can and will be reduced and that the methodology followed is an example of best practice solutions in the industry.



Annette Small

BADCELS



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Digitilisation: Sasol Mining Connected Section



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sasol



Sasol Mining's Wireless Connectivity within a constant advancing coal mining section.

- Current impact of the connectivity and
 - Equipment and people tracking.
 - Reduced administration
 - Improved resource allocation
 - Gathering of sensor data
 - Replacing manual forms with digital forms
 - Enables voice, video and text communication through mobile devices from the coal face
 -
- Future digital applications.
 - Sensors on equipment and wearables for employees to provide data in real time should improve productivity and safety.
 - Pushing of information (task lists, checklists, etc) to employees in the production Sections to streamline processes.
 - Video feed from critical areas underground to monitor processes and reduce delays in reaction time.
 - Interactive displays in the crew stations underground to enable SCADA displays and give employees to access payroll and time and attendance information without leaving the workplace to resolve payroll issues.
 - Infrastructure management and resource structures optimization to be enabled.
 -
- What the Connected Section Network Architecture looks like.
- How People and Machines authenticate on the wireless network.
- Maintaining high network availability during belt extension with less communication cable work during the process.
- The main components of the deployed system will be discussed and how each component adds to the success of the connectivity.



Johan Schoeman

BARCELONA



eversure.africa

WE MINE BY DESIGN



Industry 4 – Connected Worker



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exxaro

Matla Coal aims to enhance safety standards for the mine and have introduced the Connected Worker initiative which will enhance worker safety and provide a view of the workforce availability. The Connected Worker Solution at Matla is made up of several sub systems. Employee Availability & Fatigue Management – dashboards on Power BI. Provides visibility of employees available for scheduled shifts to aid shift planning and production management. Monitoring of overtime hours to manage and prevent fatigue amongst employees in compliance with legal standards. Visible information to make labour planning easier

The solution provides labour the visibility on the following:

- Leave days due
- Medical due
- Induction due
- Over time worked
- Labour availability per shift per section

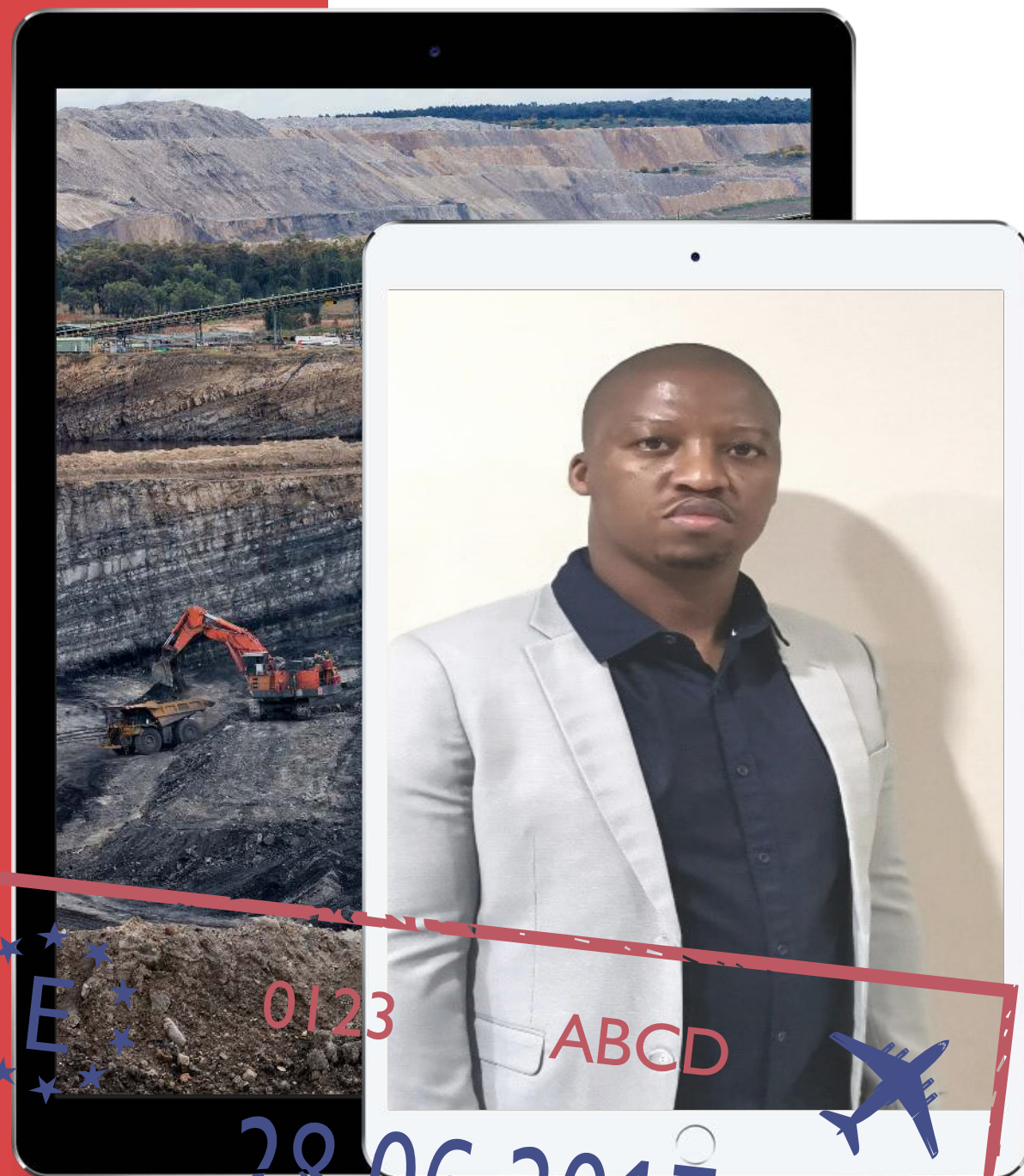
Key Control system – Ecos WEBMAN. The Key Control system to be implemented aims to eliminate borrowing of keys and enhance identification of key holders to allow access to operation of mining equipment and ensure:

Effective management of keys which will be automated and not be a burden on the Control room.

- Authorization Control (Competent, Licenses, inductions, medicals)
- Key Tracking – A historian that enables one to digitally view details such as – which operator took the key, at what time and date, and whether he or she returned the key.

Shaft Clearance & Underground Vehicle monitoring – Strata Connect. This process is to ensure that Matla Coal can account at any given time for every employee present in the underground workings in compliance with the Mine Health and Safety Act in cases of emergency occurrences at the mine.

- The “Miner in distress” functionality as part of shaft clearance, focusing on Woman in mining. The drive is to provide safe working environment for our female colleagues.
- Vehicle tracking to understand availability of LHDs and tractors – improve planning and execution of belt extensions, sweeping and stone dusting



28 06 2017

Henry Lefawane

BADCE

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Technical Solution for Roofbolter Middle-Walkway Canopy



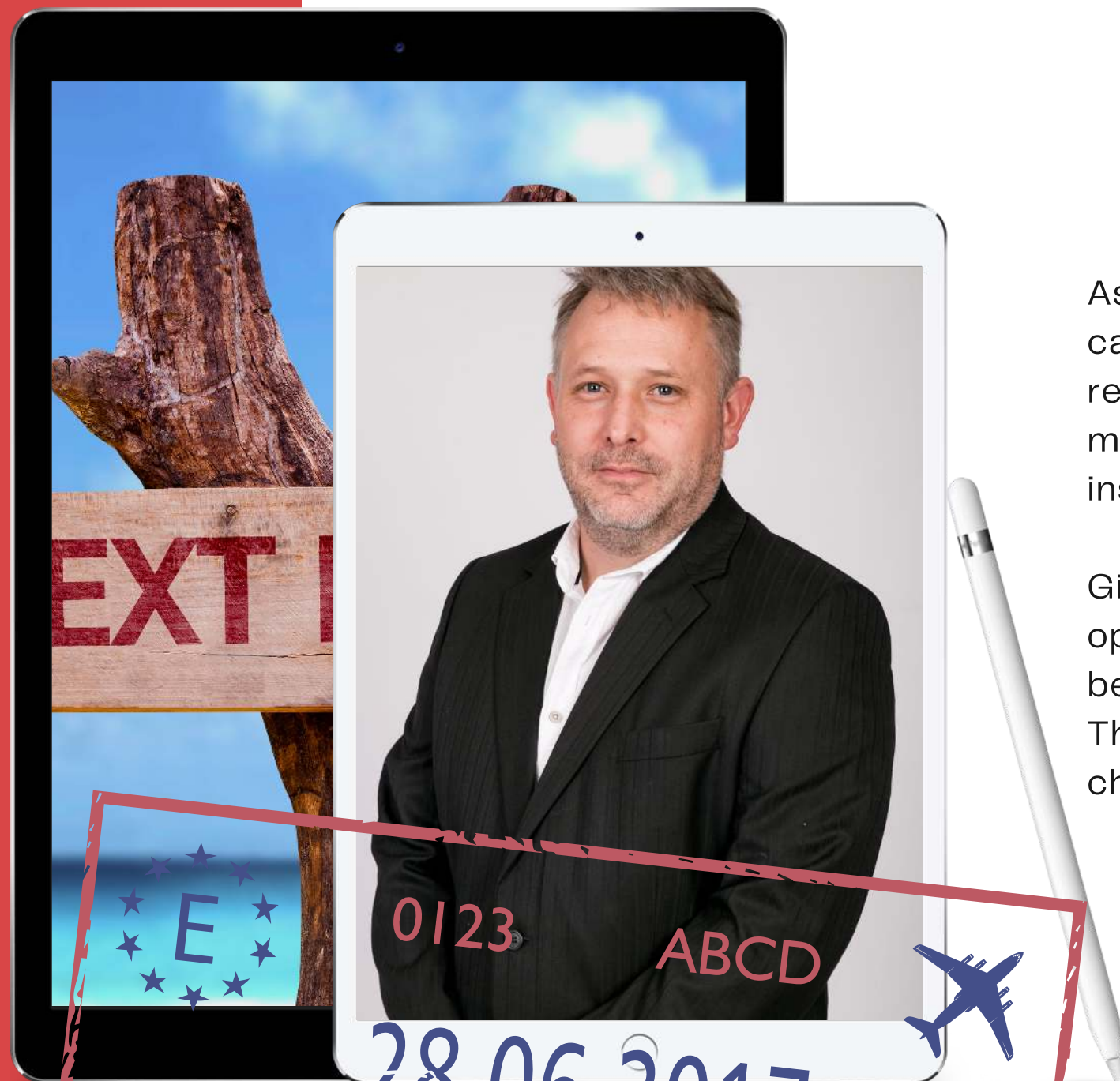
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sasol



As a safety improvement initiative, Sasol Mining identified the need of installing walkway canopies, on its entire fleet of underground roofbolters. The “walkway area” is situated to the rear of the machine, and is always under supported roof. However, as an additional safety measure to provide further protection for any personnel working in this area, it was decided to install a FOPs canopy covering the walkway.

Given the constraints of schedule, cost and quality, this presentation highlights the various options that were considered to find a cost-effective / technically-robust solution, that could be installed in-situ, using in-section and maintenance artisans over a single maintenance shift. The project highlights the need for innovative thinking, to meet the typical engineering challenges related to implementing technical solutions on a fleet of equipment.



28.06.2017 Greg Odell

BARCELONA



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OUR MINING SOLUTIONS:



TwEEfontein Slurry Dewatering



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TwEEfontein Colliery has recently implemented a successful Slurry Management Solution. As we all know, slurry handling and treatment on every mining operation presents unique challenges. The presentation is a very practical approach to the final solution:

1. Types of technology considered
2. Total Systems approach
3. Integration into an existing operations
4. Continued challenges

There is unfortunately no single solution for all applications, but the presentation endeavours to enlighten the areas under consideration, before a final solution is implemented on a site.

No matter how excited we are about the Fourth Industrial Revolution, we shall ALWAYS require some physical engineering solutions to challenges in industry. The microchip opens doors to Engineering solutions that was previously impossible to address successfully.

The importance of the successful integration of projects into operations can never be over emphasized. Stakeholder buy-in and very close process management are required.



Phillip Venter



www.ritchiecranehire.co.za



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Contact Us

We'd love to talk about all things mining.

- **Phone Number**
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- **Email Address**
mpasinfo@mpas.org.za
- **Website**
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supplier info...

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A large yellow mining truck is shown in a dark, rocky environment, likely a mine. The truck is positioned on the right side of the frame, and its headlights are on. The background is dark and rocky, with some industrial structures visible in the distance.

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TWO COMPANIES COOPERATE TO OFFER THE *AIRO-DUST* SOLUTION TO SOUTH AFRICAN COAL MINES



Airo-Dust is the commercial name for the manufacture and application of coal mine approved stone dust as a wet foam. It is a process patented by ITW



AIRO-DUST ADDITIVE

Airo-Dust additive is a complex blend of surfactants used as an integral part of the Airo-Dust process to treat the stone dust applied to underground coal mine rib, roof and floor surfaces as an explosion retardant.

The use of Airo-Dust prevents the stone dust from caking and enables it to retain the required dusting action in the event of an explosion.



AIRO-DUST TRAILER

Airo-Dust trailer is used to apply the foam product to surfaces. The trailers are manufactured and sold or leased by Bird Machines in South Africa under an agreement with ITW.

The Airo-Duster trailer is a two wheel trailer designed and engineered to carry 3 tons of stone dust and 1200 litres of water. The trailer includes a slurry pump delivering approximately 110 litres of product per minute.



‘AIRO-DUST’ FOAM STONE DUST PROCESS



Stone dust foam is applied to surfaces instead of dry stone dust suspended in air

Process:

- Water is loaded into the wet stone dust machine
- Dry stone dust is added to the water and mixed to form a slurry
- The slurry is converted to foam by adding ‘**Airo-Dust***’ additive and air
- The stone dust foam is sprayed onto the surface areas
- Water evaporates from the foam and the dry stone dust remains
- No clearing of sections or areas required (no stone dust suspended in air)

* ‘**Airo-Dust**’ is patented and the brand name of ITW polymers & fluids

STONE DUST FOAM APPLICATION METHODS & ADVANTAGES



1) Application with spray bar mounted on a trailer

(Used in roadways & in-section areas)



2) Application with pipe with nozzle

(Used in confined areas e.g. beltway areas)



Advantages of Airo-Dust foam stone dust process

- Limited stone dust suspended in air i.e. less inhalation of stone dust particles
- No evacuation of stone dust areas required i.e. less downtime (tests confirm that respirable dust levels next to a working Airo-Duster lower than legislated guidelines)
- Less wastage of stone dust i.e. no stone dust transported in return airways during application
- Process utilises existing sampling and testing procedures for compliance
- Different application methods available to suit area to be stone dusted e.g. spray bar application for roadways & in-section, pipe & nozzle application for beltway areas & confined areas



THE *AIRO-DUST* FOAM STONE DUST PROCESS

Basic Process



Tests Conducted at CSIR Kloppersbos

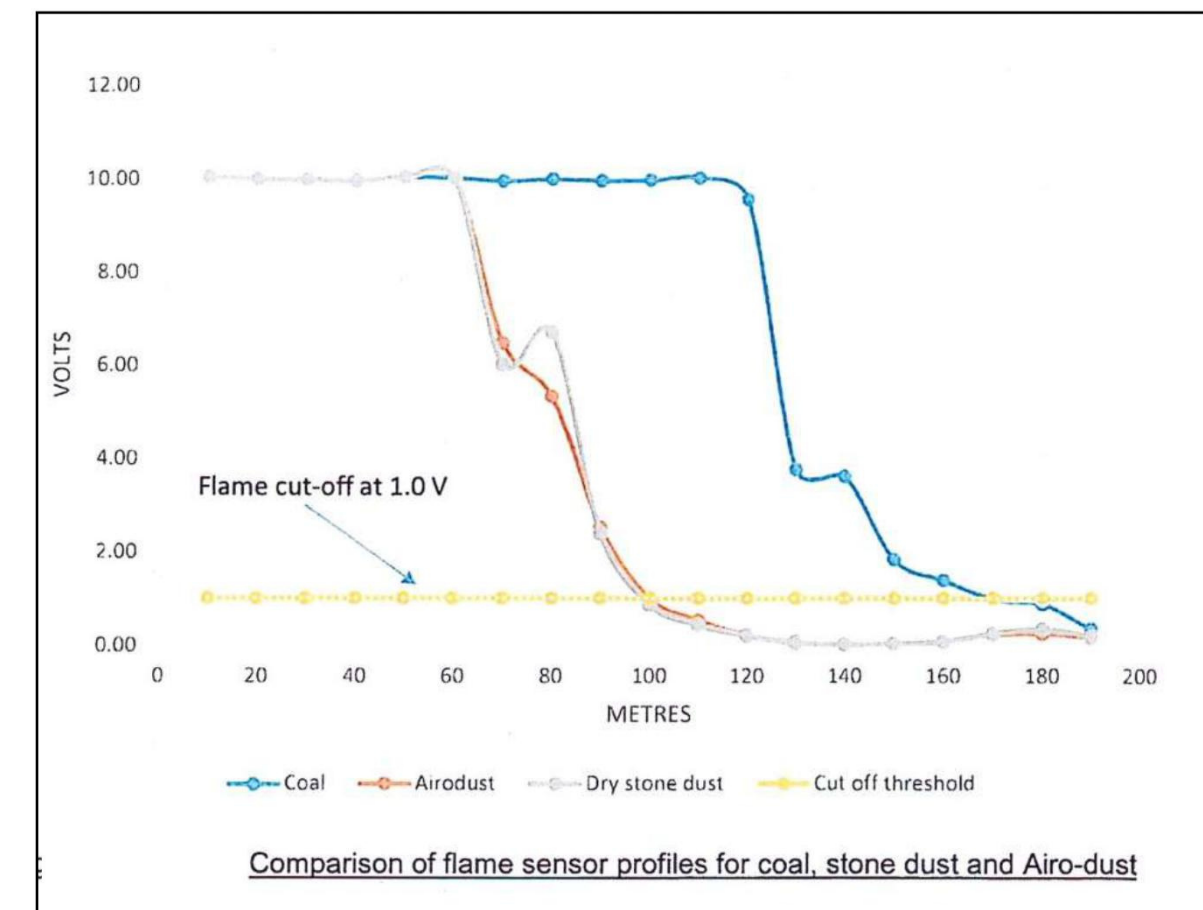
Comparison tests of dry stone dust and Airo-Dust to measure any variance in extinguishing a coal dust explosion in a 200m test tunnel*

Used in Australian Mines

- AngloAmerican (Moranbah North, Grosvenor, Grasstree)
- Xstrata (Oak Creek North)
- Whitehaven Coal, Centennial Coal,
- Ensham Resources, Kestrel Resources

Trials at SA Mines

- Completed initial trials at Anglo Coal Zibulo Mine & Sasol Syferfontein Mine
- Second phase trials in progress at Zibulo and Syferfontein Mines



* CSIR test reports

TYPICAL EQUIPMENT CONFIGURATION



Contact Bird Machines for further information: 013-7581307

Basic Specifications

- Trailer or self-propelled vehicle
- Spraybar or pipe with nozzle option
- System powered from engine driven hydraulic PTO
- Load capacity: 3000kg stone dust, 1200lt water, 30 liter additive
- Typical coverage with one load (7.5m wide x 4.5m high x all sides including floor) at 3.5mm foam thickness is ~ 110m linear meters (~160m excluding floor)
- Stone dust dry coverage 1kg/m² at foam thickness of 3.5mm and density 400gr/lt



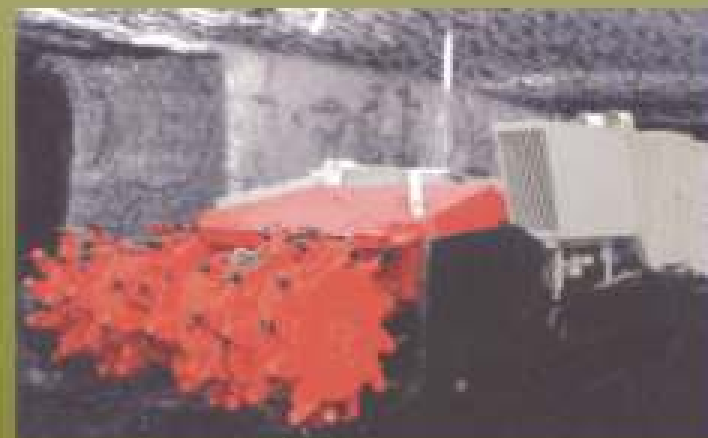


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BRAND	NUMBER OF CONTINUOUS MINERS	
	GLOBAL	SA
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Caterpillar (Bucyrus Erie)	60	3
Eickhoff	25	12
Fairchild	25	1





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Global	Over 400
South Africa	38





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- We have serviced SA Mines since the late 1930's
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- 36% Black Owned-Level 4 BEE-please see next slide
- SASOL Mining Accredited-Supply, Support & Monitor/Quality/Safety
- SASOL Supplier of the Year 2016-17
- Thungela-Fully Accredited
- EXARRO-Fully Accredited
- Seriti Resources-Fully Accredited
- The World's Leading OEM Supplier-strategically important to the SA Coal Industry



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CMMSA-Strategic Value

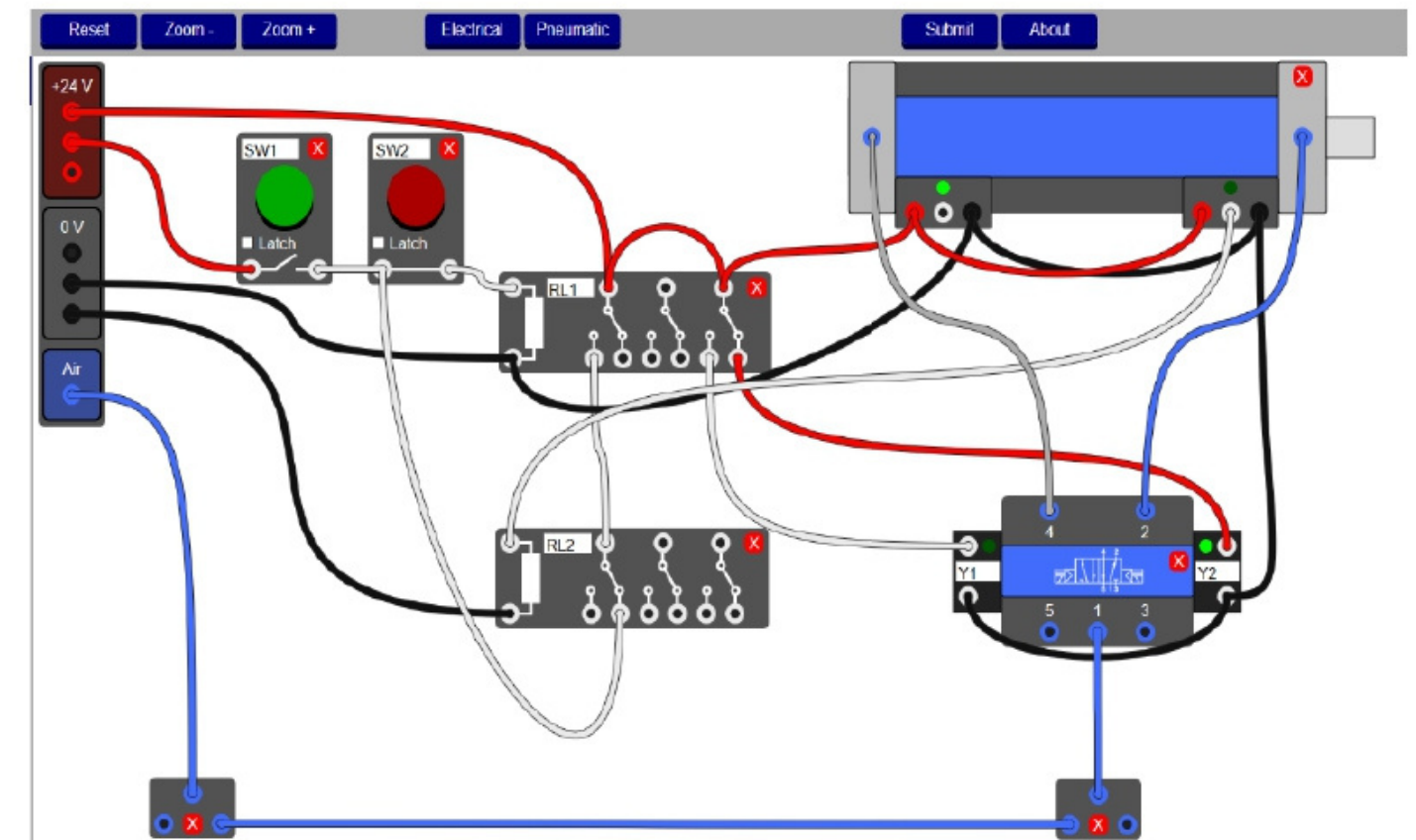
- CMMSA has serviced the Industry for over 40 Years
- Our local stock holding (R15-20m) & field service engineers have been important factors for delivering superior field performance & reliability
- Locally developed Connecting Pins, Sprockets, Drive Shafts & Feeder Breaker Conveyors have delivered massive cost savings
- Locally manufactured & imported assembled Crawler Tracks & Grousers-Cost Saving & Job Creation in our Community
- CMMSA has a 24/7 service. Delivery within the eMalahleni area within 2-3 hours
- Availability & delivery lead time is CMMSA's hallmark

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Phase 1 (Five free online courses) | Free

1. **Introduction to ARTISAN 4.0™** | Here we answer the following questions: Who is CTC? What is the Fourth Industrial Revolution? What is in the **ARTISAN 4.0™** program? What are the four digital skills that you need now to be on the program? What are the next steps?
2. **Problem Solving and Thinking Skills** | In this course we cover some important thinking and problem-solving strategies needed in a digital world of work and in everyday life. The “five whys”; Fishbone diagrams; Circuit logic problems; Resistance measurement problems; Introduction to Computer programming with Scratch.
3. **Basic Electrical Circuits** | In this course we cover the following topics: Identify and understand basic electrical components; Understand basic electrical circuits; Construct a basic circuit using CTC’s unique online simulator.
4. **Introduction to PLCs** | In this course you will cover the following topics: Know what a PLC is. Understand basic ladder logic. Create a basic program for a PLC using ladder logic with CTC’s online simulator.
5. **Introduction to electronically controlled flow systems** | In this course we cover the following topics: Identify and understand components. Understand the basic operation of flow systems. Construct basic circuits using an online simulator.



*Simulator to construct electro-controlled flow system.
Similar ones are used to construct PLC logic diagrams
and basic electrical circuits.*

ARTISAN 4.0™ program |

Phase 2 (Six online courses in collaboration with Omron) | R4 326

The purpose of this phase is to give learners the prerequisite knowledge to be able to do the practical Lab phase at a training centre.

1. **Automation Systems** | Introduction to; Introductory Course on IEC 61131-3; PLC Basics; Introduction to the Sysmac Automation platform; IEC 6113-3 Compliant ST Language Basics; Introduction to Ladder Programming; Sysmac Studio Operation; NA Basic Operation.
2. **Networks** | Introduction to Automation Open Networks; Fundamentals of Electricity for Industrial Automation; Omron FA Network Basics; EtherCAT Basics; EtherNet/IP Basics
3. **Power Supply, Relay and Switches** | Power Supplies; General Purposes Relays
4. **Safety Components** | Introduction to Safety; Safety Light Curtain Basics; Safety Interlock Basics
5. **Sensors** | Photoelectric Sensors; Proximity Sensors; Fibre Optic Sensors; Displacement and Measurement Sensors
6. **Drives and Control Components** | AC Drives Basics; Temperature Controller Basics.

Skills gained on the Omron systems will easily be transferred to the systems of other vendors. "If you learn to drive a Toyota, you should be able to drive a Mercedes Benz..."

OMRON



ARTISAN 4.0™ program |

Phase 3 (10 day practical Lab tasks on site at a suitably equipped lab) | R18 026

1. Advanced PLC training |
2. Electro-Flow circuits |
3. Pump control systems |
4. Conveyor control systems |
5. Safety systems |
6. Hands-on introduction to Autonomous Mobile Robots (AMRs) |

Mobile robots are becoming an integral part of future-oriented workplaces. They are versatile machines that can support a variety of material handling tasks. The Omron TM5-700 Cobot is paired with a LD90 AMR as an example of a robotic system to give learners a general introduction of such systems. The knowledge gained here can be generalized to various environments where robotic systems are deployed.

Learners at work at the CTC



ARTISAN 4.0™ program |

Phase 4 (On job Capstone Report) | R590

In this phase, the candidate must present a capstone report on a project that requires **ARTISAN 4.0™** skills. The presentation will be evaluated by technically qualified supervisory staff and other subject matter experts and must give evidence that the **ARTISAN 4.0™** content can be practically applied on the job

The stone at the top keeps it all together....

Go to www.ctc.emhost.org to enrol

Watch [this video](#) as well





www.exms.co.za

@ExpertMiningGroup

OUR MINING SOLUTIONS:



EXPERT MINING TOOLS is a proudly local South African manufacturing company.

With over seven decades of heritage Expert Mining Tools has expertise in mining application knowledge as well as tungsten carbide. The knowledge is used in the development, manufacture and supply of a variety of picks, borers and mining tools.

The focus of our business is to deliver the commercial benefit through cost effective solutions that enhance productivity and meet customer satisfaction

PHONE: +27 11 360 4700

E-MAIL: info@emtsa.co.za

WEBSITE: www.emtsa.co.za



EXPERT
M I N I N G T O O L S



EXPERT

MINING SOLUTIONS

Expert Mining Solutions is proud to announce the new 7" and 10" Smart Screen for the mining industry. The Smart Screen can display and data log multiple systems at the same time.

The Smart screen can display and data log the following system information of a TMM:

KEY CONTROL:

The built in key control allows the mine management to view the following operator information:

- ▶ Medical Validity
- ▶ Induction Validity
- ▶ Operator License
- ▶ Validity
- ▶ Operating
- ▶ Authorisation

PRE CHECKLIST:

The Built in key control allows mine management to view any deviations found and also gives the ability to approve any deviation found remotely while not on site.

PROXIMITY DETECTION SYSTEM:

The screen can integrate and display any PDS system information.

PROXIMITY DETECTION INTERFACE:

The screen can data log and display all interactions that was received from the PDI system.

360 DEGREE CAMERA SYSTEM:

The Screen can display the complete 360 degree camera system and also records all the footage on its onboard memory. The Screen also allows mine management to view footage remotely.

ENGINE MONITORING:

The Screen data logs all the information of the engine monitoring system. The Screen also warns an operator of any failure and allows the operator to acknowledge the failure.

FATIGUE MANAGEMENT

THE SCREEN DATA LOGS ALL THE INFORMATION OF THE FATIGUE MANAGEMENT SYSTEM.

THE SCREEN ALSO WARNS AN OPERATOR WHEN ANY KIND OF FATIGUE OCCURS WHILE OPERATING.

The Screen software is unlimited and any system can easily be added or removed from the software. This software and screen now allows mine management to monitor all machines and systems anytime, anywhere.

The Smart Screen is certified and approved for both surface and underground application.



EXPERT

MINING SOLUTIONS

PHONE: +27 13 656 1558

E-MAIL: info@exmsgroup.com

WEBSITE: www.exms.co.za



EXPERT

CONVEYORS & GEARED SOLUTIONS

SIEMENS

FLENDER

martin
engineering

CVR
SOLUTIONS
conveyors & gears



CHEM TRUST

Solutions

PHONE: +27 13 656 1558

E-MAIL: info@exmsgroup.com

WEBSITE: www.exms.co.za

EXPERT CONVEYORS AND GEARED SOLUTIONS was established in 2020 when CVR Solutions and Power Transmissions joined ventures to form Expert Conveyors and Geared Solutions.

Expert Conveyors & Geared Solutions offers a wide range of products to suit your mining needs. We aim to supply competitively priced, high quality idlers and conveyor structures to the South African mining industry.

Manufactured to Sans 1313 specification on site at our Ekurhuleni Manufacturing plant from start to beginning.

BELT SPLICING AND PULLEY LAGGING SERVICES

- ▶ Steel cord conveyor belts
- ▶ PVC and solid woven conveyor belts
- ▶ Fabric Conveyor belts hot splicing
- ▶ Fabric Conveyor belts cold splicing "Trichloroethylene"
- ▶ Finger splicing
- ▶ Mechanical splicing
- ▶ Pulley lagging (Rubber lagging, Ceramic rubber lagging) "Trichloroethylene"



Short history of Isizwe's Components (Pty) Ltd journey

Isizwe Components (Pty) Ltd has been in the industry since 2014 and have a combined experience of over 423 years and growing. During this time Isizwe Components (Pty) Ltd has built a broad client's base. All business is done on a above board basis with the client needs always our priority. Through our considerable experience in earthmoving equipment and components we offer a wide range of solutions to our customers.

Isizwe Components Pty (Ltd) manages and brings together a dynamic team with experience on skilled qualified earthmoving equipment mechanics, to meet your organization's needs and offer support requirements for all earthmoving equipment. We offer component repairs with high efficiency, reliability and quality. We guarantee a much faster turnaround time to keep the production of your organization satisfied with our services.

Isizwe Components (Pty) Ltd is an ISO certified company that complies with ISO 9001:2015 quality standards and ISO 45001:2018 OHS standard requirements. Our goal at Isizwe Components is to supply high- quality products to our customers by means of re-manufacturing , modifying and repairing, earthmoving components to OEM or required specifications.

Office: 011 822 1180

E-mail: operations@isizwe-components.co.za

www.isizwe-components.co.za

**38 Electron Avenue,
Isando, Kempton Park**

**PO Box 8209
Edenglen
1613**

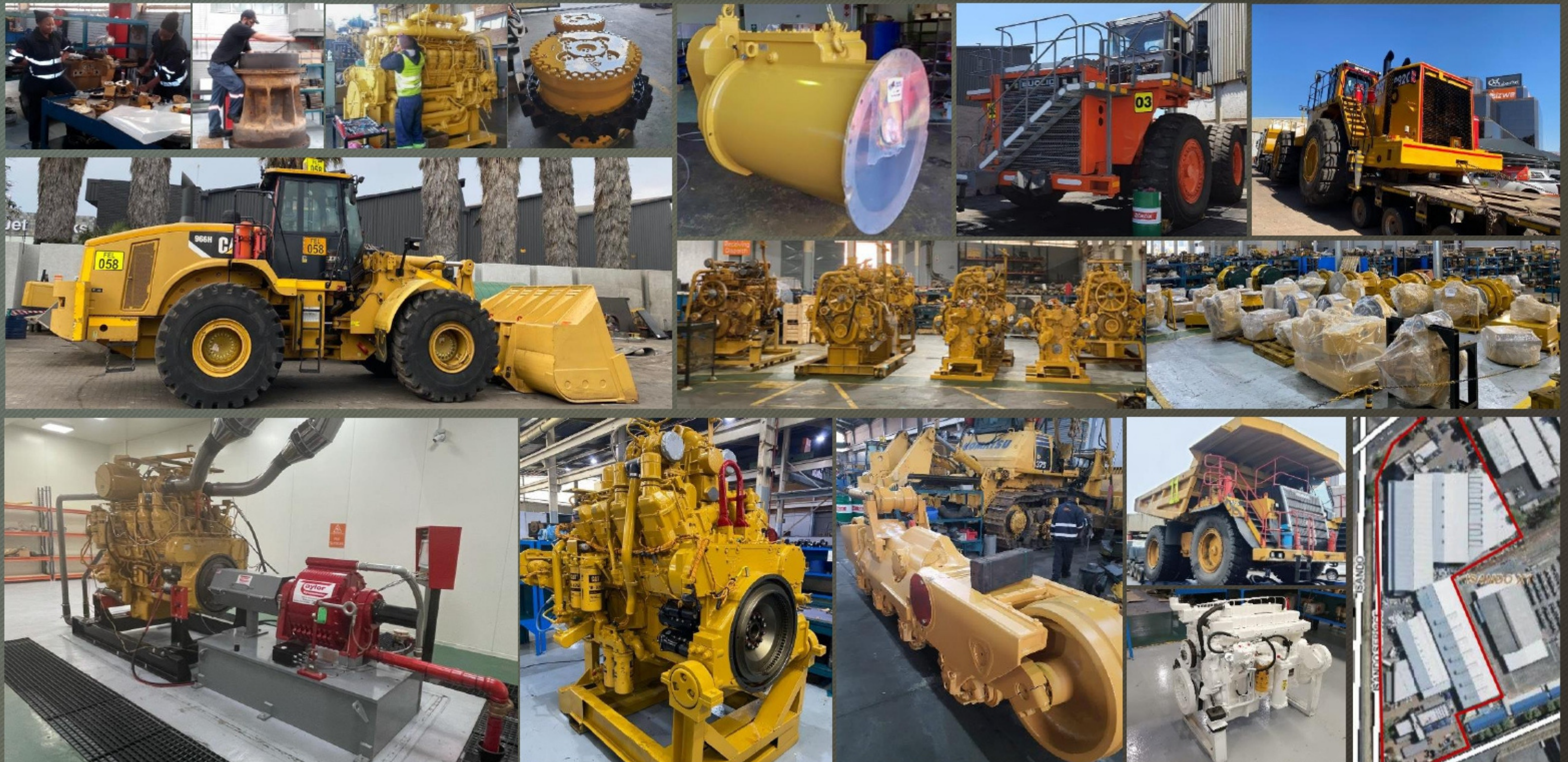
SCOPE OF SERVICES



Maintenance, repairs, rebuilds, troubleshooting and installations on all types of earthmoving machinery.

- MACHINE REBUILDS
- ENGINE
- TRANSMISSION
- TORQUES CONVERTOR
- DIFFERENTIAL WHEELSTATION
- FINAL DRIVE SERVICE
- EXCHANGE UNITS PEXS
- ARTICULATION and OSCILLATION
- DROP BOX
- ROTARY HEADS
- HYDRAULIC VALVES
- HYDRAULIC PUMP
- UNDERCARRIAGES AND TRACKS
- COMPRESSOR
- FAN
- CAB REFURBISHMENT
- CYLINDER
- AIRCON
- HARNESS
- PROPSHAFT
- RADIATOR REPAIRS
- COOLER REPAIRS AND TESTING
- REPAIR OF ALL BUCKETS AND BLADES
- REPAIRS AND MAINTANANCE OF ANY AND ALL COMPONENTS RELATING TO EARTHMOVING EQUIPMENT.
- DYNO TESTING
- COMPONENT SOURCING
- COMPONENT SALES
- RENTALS
- FIELD SERVICES

GALLERY



CONCLUSION



We have passion and pride to deliver excellent services.

Isizwe Components (Pty) Ltd is built on a foundation of integrity, service delivery and quality values which will always remain the cornerstone of our business.

Our customer's success is our success



OEM Equipment



JAE 38 Continuous Miner - Wildcub



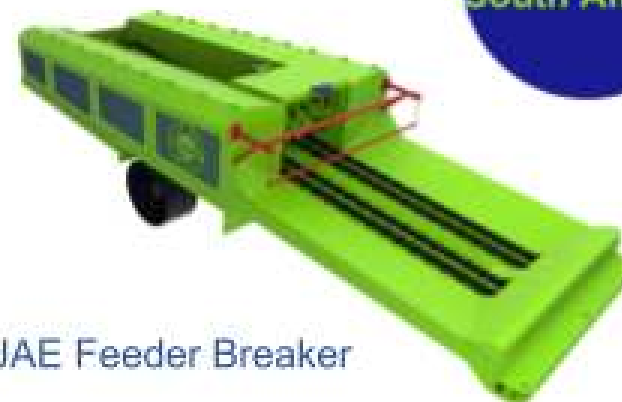
JAE 42 Continuous Miner - Wildcat



JAE 40 Continuous Miner



JAE Shuttle Car - Caracal



JAE Feeder Breaker



JAE Roof Bolter - Honey Badger



JAE Battery Scoop



JAE38 Wildcub

- JAE38 Wildcub has been designed to incorporate the design philosophies and principles of the highly saucerful JAE42 with high-cutting inertia and a solid frame reducing operating cost in tough cutting conditions.





JAE40 CM Series

- The JAE40 is a radio remote controlled, highly customisable CM range. The cutting width is 3,6m which allows for a double pass cut. It is designed to be used in typical South African room and pillar coal mining, where a high level of flexibility is required.





JAE42 Wildcat

- The Wildcat JAE42 CM is capable of transforming a high installed cutting power through the machine weight into real production and cutting performance in tough conditions.

- The Wildcat JAE42 CM is designed to be used in a typical South African room and pillar coal mining operation, where a high cutting force is required.



Overview of KBC Health & Safety

Est 2000

9 Branches Nationally

120 000 Learners trained annually

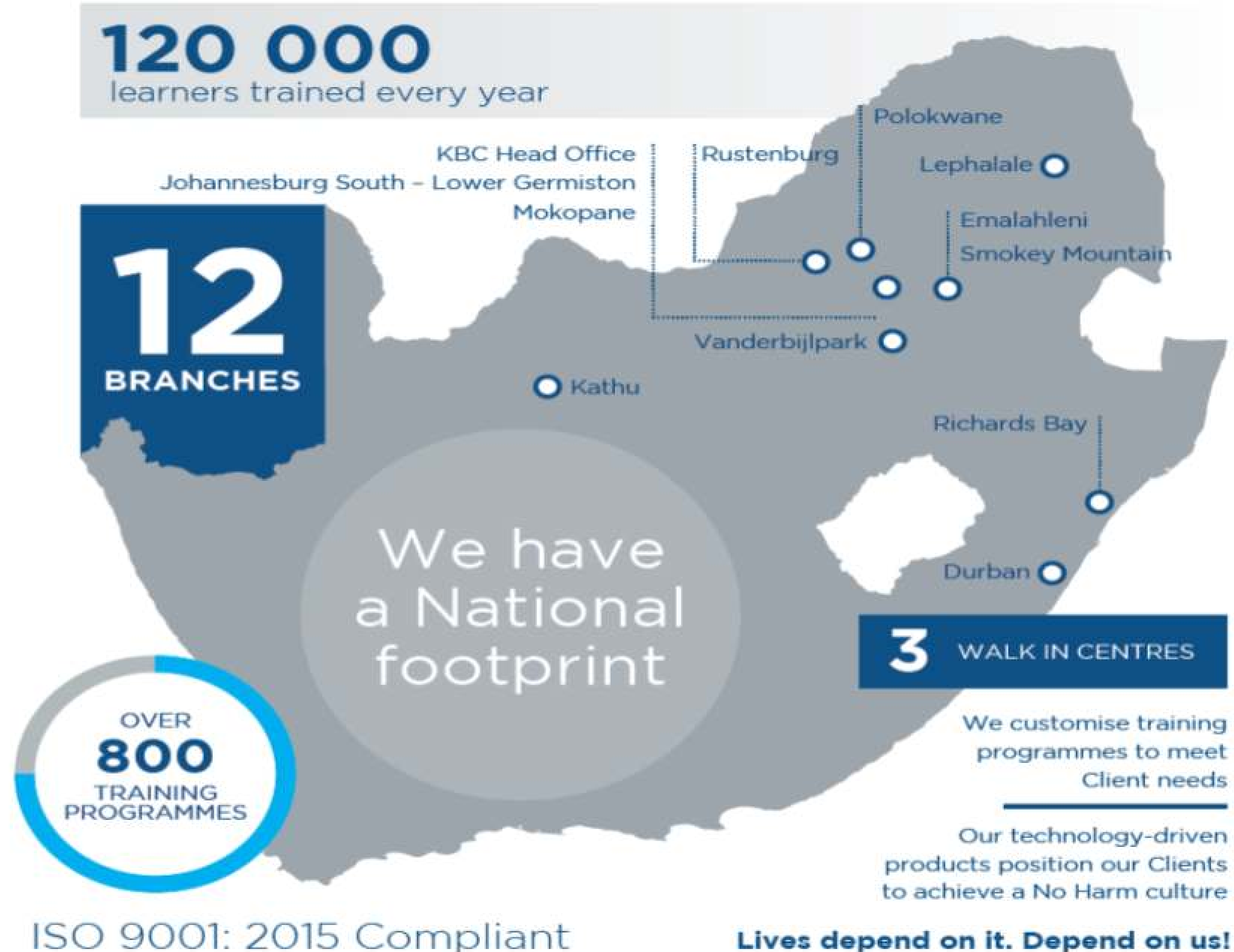
Part of the Workforce Group Limited since 2017

Project and Fixed Operations Experience – 60+ Years

Implementation of Single Standard saving clients +/- R3Bn over 10 years

Creation of Reciprocity through Single Standard

Creating No Harm Cultures for Generations to Come



Streamlining Regulatory Requirements

KBC SUPPORTS OUR CLIENTS ONBOARDING AND COMPLIANCE REQUIREMENTS THROUGH OUTSOURCED TURNKEY SOLUTIONS



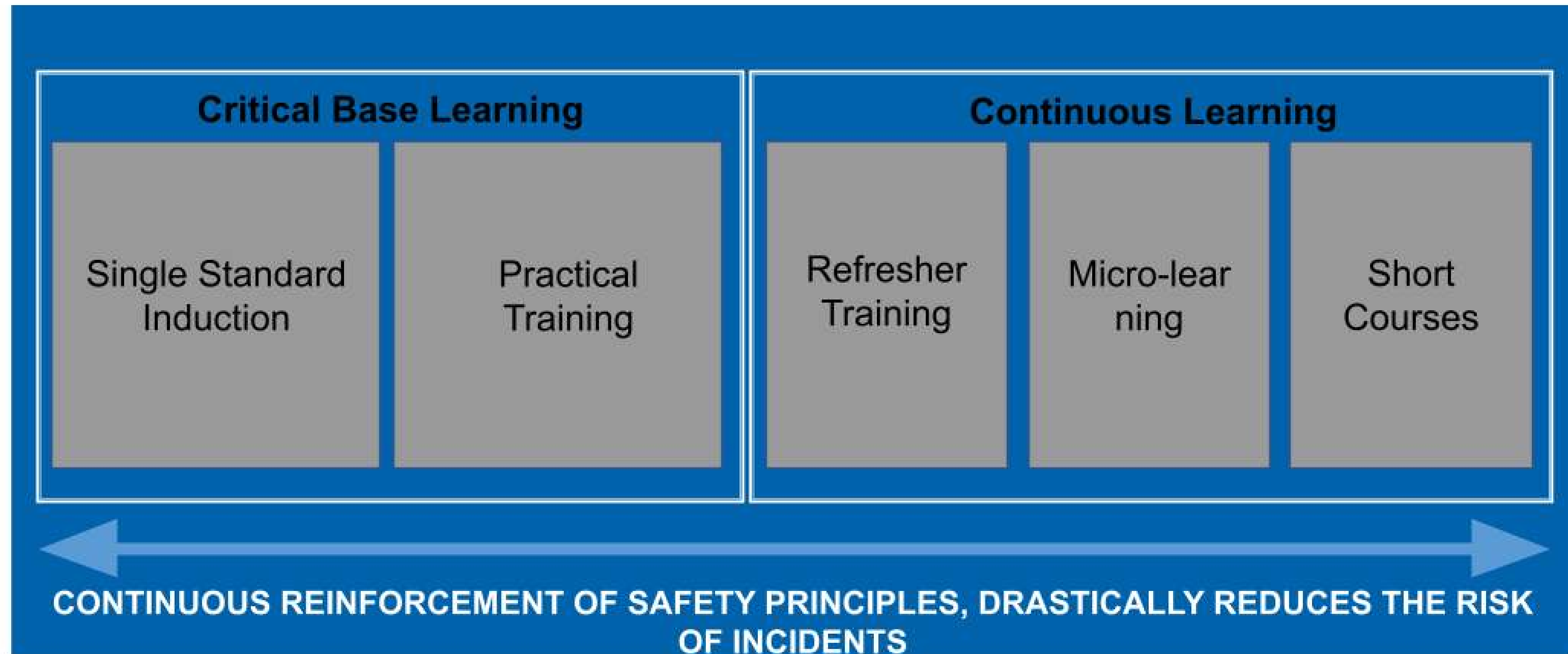
KBC – YOUR ONBOARDING AND COMPLIANCE SPECIALIST

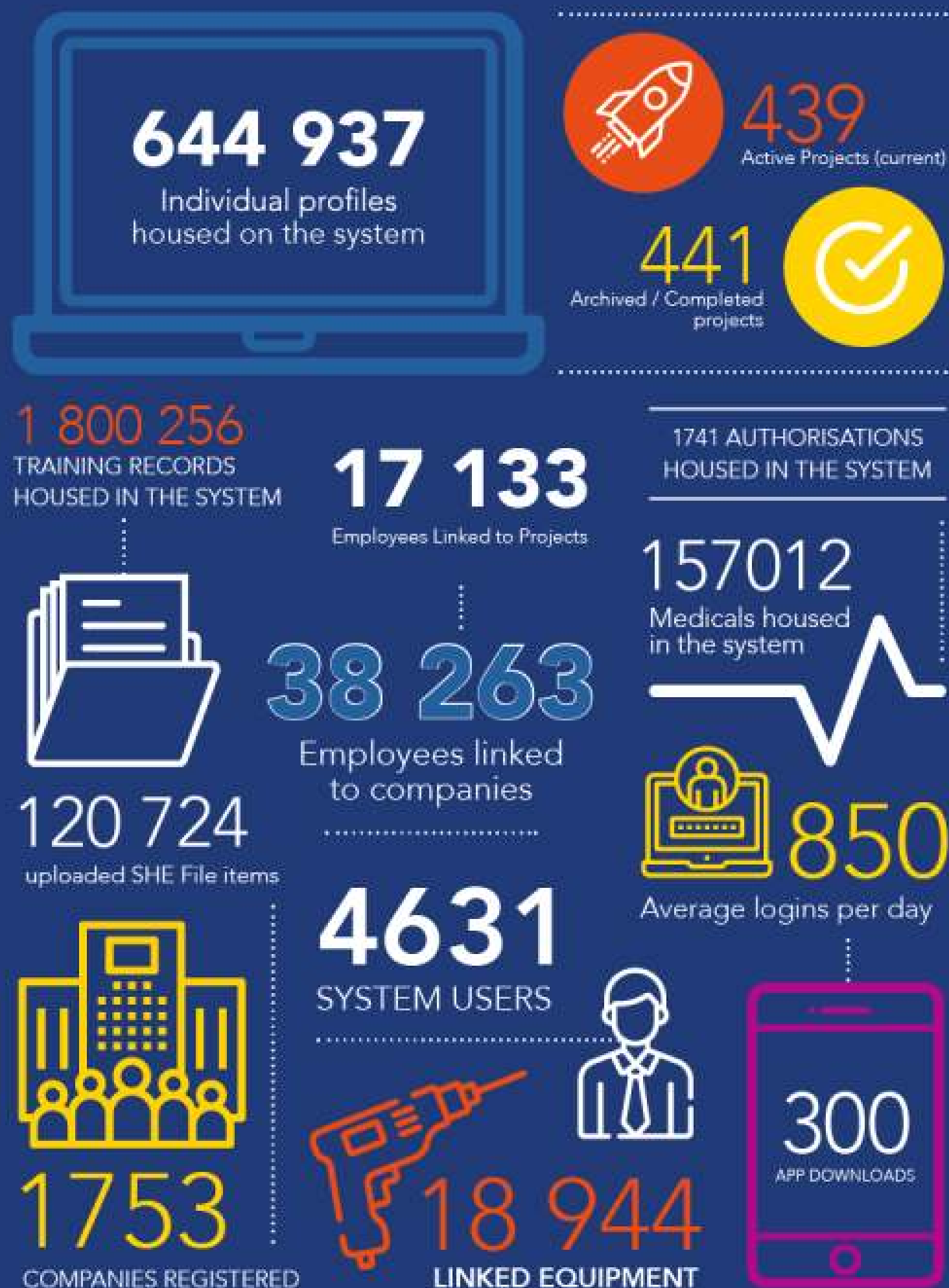
OUR BUSINESS MODEL:



OUR KEY PILLARS | TRAINING | SYSTEMS | CONSULTING | COMMUNITY | RISK SOLUTIONS

Culture Shift Interventions





Passport 360 brings you the first of its kind cloud on-boarding solution, designed to streamline and improve your contractor and safety management

Passport 360 has been supporting Clients across multiple sectors for several years

The product has grown from a need to:

- Improve information accessibility around HSE
- Support Clients on their journey to ZERO harm
- Improve cost saving and efficiency



About us

Ritchie Crane Hire was established in 1996 to serve the mining and industrial sections in Mpumalanga.

Ritchie Crane Hire has several values of which people and safety are top priority. Through these values the business has signed contracts with various mining houses.

We believe in long term sustainable business relationships and have therefore been a service provider for the likes of Anglo American, Glencore South Africa, Samancor Chrome and Eskom for the last 20 years.

Mobile crane hire is our core business and we are therefore specialists in providing lifting solutions and maintaining our fleet at very high standards.

Major repairs and services are performed by mobile crane specialists and spares are only sourced from OEM approved suppliers. We further perform regular load tests and overall inspections every 3 to 6 months.





Our Fleet

Ritchie Crane Hire's fleet consist of **41 cranes** with capacity ranges between **7 ton and 220 ton** mobile cranes.

Our fleet includes **11 x 30-Ton** Mobile Cranes, **15 x 50/55-Ton** Mobile Crane and **5 x 220-Ton** All Terrain Mobile Cranes.





Our crane operators are highly skilled and extensive training is done on an ongoing basis, they are also assessed by independent evaluators. We pride ourselves with a strong management team, highly trained technicians, riggers and representatives resulting in an **excellent safety track record**.

We live by and for our customers' **success**, we want to be their top-of-mind and top-of-heart choice.
We build lasting relationships with our clients and associates.



Advantages:

- Household name in Mpumalanga.
- Driven staff working 24/7.
- We respond promptly to hiring requests.
- Reliable fleet.
- Render superior services.
- Expert Technical Advice.
- Free onsite inspections.
- Comprehensive lift planning.
- Close proximity to the workforce should repair be required.
- We go the extra mile – LEVEL 4 Contributor to B-BBEE (more than 51% black owned).
- ISO 9001 Approved.





Why Partner With Us?

Profile

[www. Mass .kg](http://www.Mass.kg)

Seven World firsts in the Conveyor Belt Scale Industry and Counting



14/03/2021 23:5	2 411,45	2 411,45	265,66	2 137,53	2 403,19	778,92	2 642,75
14/03/2021 23:5	3 798,85	3 798,85	605,34	3 245,63	3 850,97	1 115,06	4 956,67
13/03/2021 23:5	4 225,79	4 225,79	622,19	3 563,40	4 185,59	1 289,71	4 810,05
12/03/2021 23:5	4 323,01	4 323,01	867,06	3 439,87	4 306,93	1 220,47	5 981,18
11/03/2021 23:5	2 951,30	2 951,30	365,18	2 687,42	3 052,60	956,59	3 520,58
10/03/2021 23:5	2 182,72	2 182,72	284,44	2 001,67	2 286,13	817,01	2 291,26
09/03/2021 23:5	909,56	909,56	91,33	915,52	1 006,85	376,78	968,90
	50 011,71	50 011,71	6 086,80	44 766,79	50 853,59	17 005,86	55 339,83
		50 853,59	12,17	89,51	101,68	34,00	110,65
	In vs out Raw Data	841,88	Discard % vs ROM	Product % vs ROM	Balance out	Fines bypass % vs ROM	FTP Scale vs ROM scale
	Plant balance ROM vs Product + Fines	1,68					
	Calculated Data						
	% yields and plant balance						
	Raw scale data						
			Discard x 0,79,22	Discard adjusted to Bulk test done on discard scale ONLY brings plant balance within 1%			
	50 011,71	50 011,71	4 821,96	44 766,79	50 853,59	17 005,86	55 339,83
		49 588,75	9,64	89,51	101,68	34,00	N/A
		-422,96	Discard % vs ROM	Product % vs ROM	Balance out	Fines bypass % vs ROM	
	Difference in % ROM vs Product + Discard	-0,85					
	Calculated Data						
	% yields and plant balance						
	Raw scale data						
Bulk test on Discard conveyor done on 18 march 2021 as follows							
Discard scale	23,84 tons						
Weightbridge	19,10 tons						
Difference	4,74 Difference						
Discard fast by	19,88 %						



proper engineered products!

proper accuracy!

great after sales service!



GREAT REFERENCES OUR BEST SALESPEOPLE!

diverse management team!



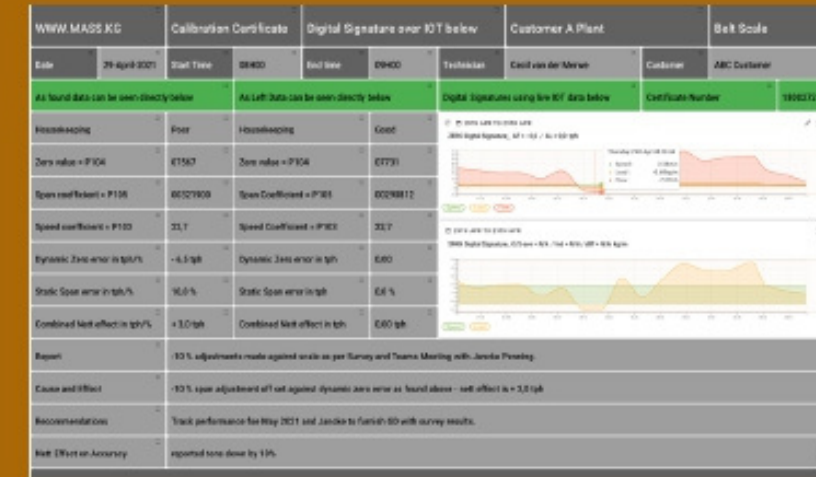
***our young CEO leading a young
innovative and yet experienced team!***



corporate social responsibility!



innovation beyond measure!



Our own NPO Glass Cliff, Partnering MASS and our Customers in Corporate social Responsibility Drives!

We make no excuses, Just accurate mass measurement that works, Dirty Scales, no problems, our customised IOT solutions developed over the past 10 years, we balance your tons from the mine to the train, in real time!

experience the MASSive experience!



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Unit 10

Middelburg 1050

Bruno's Electronics CC

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"Your machine
in our hands"



Auto-Electrical

Air Conditioning

Field Services

Man On-Site

**Mine Specification
Fitments**

**Manufacturing of:
PDUs & Harnesses**

**Refurbishing of:
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info@computruck.co.za

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Field Service / Man On-Site Air Conditioning

Our field services vehicles come fully equipped with tools and spares to provide complete service to customers. Our vehicles also comply with most safety standards and requirements. Our vehicles are also equipped with diagnostic tools such as Caterpillar E.T.

We also have a fully equipped Aircon Team



HARNES SECTION

Ultrasonic Welding: away with soldering, this new improved Technology gives a neat and 100% secure connection on splices.

Terminal Crimping: World Class technology for improved Terminal Crimping and quality control measurement for secure connection.

Wire Twisting: The Wire Twister measure the pitch required as per OEM Standard.

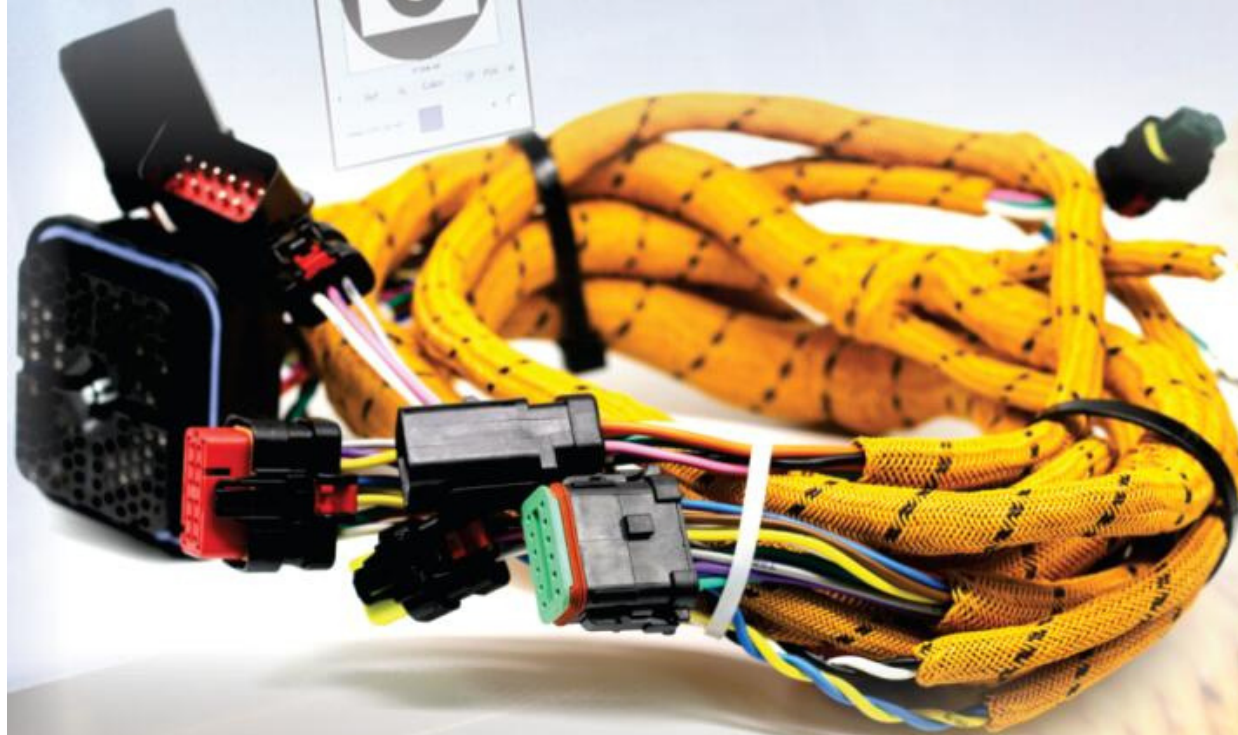
InkJet Printer: to Speed up production the InkJet printer is an integral machine to the process. As it reduce the manufacture time with 30-50%

World Class Manufacturing on Electronic Display: This French/

German Technology is the first in South Africa. The Electronic Display does not only speed up manufacturing but allows accurate assembly and swift reporting to better product costing

Danie: 082 925 3582

danie@computruck.co.za





Cab

The machine cab gets completely stripped and sprayed, new Stickers and decals get applied to the exterior and interior of the cab. Operator seats are replaced or upholstered. All windows are replaced.

Fuse box/Circuit breakers are repaired or replaced

Wiper motors, switches and other internal components are replaced

Aircin HVAC-system(heater and aircon) get repaired or replaced

The unit connected directly to the main power source either at the fuse box or the battery itself and therefore no splicing of OEM harnesses thus mitigating harness damage. It consist of an 18amp 24volt to 12volt convertor for two-way radio, reverse camera and FM radio.

The PDU has an easy to read drawing, showing where an add on need to be connected.

PDU

Lock Out

Lock out boxes provides a way to lock out and isolate batteries or to isolate the stater when technicians are busy with live testing as per Mine Safety regulations. the Lock out boxes has a jumper point to eliminate the original crocodile clamps as per Mine specifications and safety procedures.

E-Bay

We completely restore and improve Electronic bays (E-Bays). We replace fuse boxes with a circuit breakers which are more durable and almost eliminates the chance of incorrect amperage fuse being installed in circuits.

WHO ARE NAE?



Nicholas Auto Enterprises (Pty) Ltd was founded in 1997 by Eddie Nicholas and David Nicholas.

The Company has seen growth from a small concern, operating out of a single room, to an employer of thirty-four staff, which includes a team of field service technicians, dedicated to the installation and maintenance of the company products.

At NAE we supply and install audio-visual, fleet management and universal engine monitoring and protection systems to equipment, thus offering a nuisance-free, reliable information platform for efficient diagnostics and preventative maintenance to owners.

NAE specialises in the sales, installation, maintenance and repair of our EPS1300 Engine Monitoring System, along with other specialised fleet management systems for various applications and industries.

As a company, we are constantly striving to improve the efficiency of this product, and to this end we are re-designing the EPS1300 to embrace the latest electronic technology.

All of the products mentioned above are proudly South African, being developed and manufactured locally. Nicholas Auto Enterprises has secured the agency for Hella Mining LED work lights for the Africa Region.

WHAT WE OFFER

- ENGINE PROTECTION SYSTEM - EPS1300
- NAE FLEET MANAGEMENT SYSTEM – NFMS
- IN-VEHICLE VOICE NOTIFICATION SYSTEM – IZWI
- TYRE PRESSURE MONITORING SYSTEM - TYRECOP
- SUPERIOR LED LIGHTING TECHNOLOGY - HELLA

PARTNERED WITH



NAE FLEET MANAGEMENT SYSTEM

FEATURES



Dashboard

- There are various dashboards available as per client's requirements and specifications:
- Haul Truck / Dump Truck Dashboard
- Dozer Dashboard

Current shift page

- This shows the state of vehicles in the current shift
- Working
- Parked
- Idling (as per client's request)

Maps

- This shows the whereabouts (Location) of the vehicle
- Surveyor can upload mine's map with every survey conducted

Reports

- Reports are customizable as per a customer's request and can be sent daily, weekly or monthly

Alerts and Notifications

- Alerts are configured and the customers is notified via email or SMS as soon as the alert is triggered
- Idling Alerts
- Brake Test Pass/Fail

EPS Logs

- These are the EPS events/trips
- EPS Trip Message
- Engine on/off
- EPS Warning

IZWI (IN VEHICLE VOICE NOTIFICATION)

- Feature on the system that notifies the operator of the alert/event triggered via voice command

IN-VEHICLE VOICE NOTIFICATION SYSTEM

IZWI

1. When a driver turns the vehicles ignition ON:

- "Please ensure that you have completed your pre-use checklist and present a valid tag"

2. If the tag that the driver presented is not valid:

- "This tag is not valid, please contact the control room for assistance"

3. If the tag that the driver presented is valid:

- "Thank you, please drive safely and remember to fasten your seatbelt"

4. When a vehicle is exceeding the speed limit:

- "Attention, exceeding the speed limit, please slow down"

5. When the vehicle is idling for 10 minutes:

- "Attention, machine idling now exceeded 10 min"

6. When a driver turns the vehicles ignition OFF:

- "Attention, please ensure that the vehicle is fundamentally stable after parking"

7. When the weather conditions on the mine are becoming unsafe to continue operations:

- "Attention, severe weather conditions, please stop your vehicle safely and wait for further instructions"

8. When the weather conditions are safe to resume operations:

- "Attention, weather conditions are now safe, please proceed with normal operations"

9. When engine fault has been detected:

- "Engine condition fault detected; machine's engine will be stopped in a few seconds"

10. When engine is running normally:

- "Engine running normal"

11. Machine overrevving:

- "Machine overrevving, please reduce machine RPM immediately"



TYRE PROTECTION MONITORING SYSTEM TYRECOP



The TyreCOP Tyre Pressure Monitoring System (TPMS) was specifically designed for the Mining and Industrial sectors, and can be used on all tyre brands and sizes used in these sectors.

Poor tyre pressure maintenance and severe underfoot conditions are the primary killers of tyres.

The highly adaptable TyreCOP Tyre Pressure Monitoring System (TPMS) records pressure, internal tyre temperature and road impacts 24/7, giving you complete peace of mind in knowing that one of your most important assets is managed effectively.

FEATURES AND BENEFITS

FEATURES

- Tyre safety
- Optimizing tyre life
- Ease of use
- System adaptability
- Reducing down-time
- Real-time reporting
- Reliability
- Affordability

BENEFITS

- Improving Tyre Safety on your mine
- Increased tyre performance
- Reducing premature tyre failures
- Reducing down time / increasing machine availability
- Heightens efficiency of tyre & road maintenance crews
- Customized reporting allows management to act quickly and implement corrective actions
- Identifying training needs by monitoring operator habits

STANDARD FEATURES

- GSM and Ethernet communication
- 24/7 Tyre pressure and temperature monitoring
- Instant SMS & Email Alerts
- Live Website – Multiple Users with unique username & password
- Fleet Dashboard
- Individual Machine Detail
- Fleet and Individual Health Status
- Latest Report Downloads
- Automated Reporting to all stakeholders
- Set-up per customers frequency preference: per shift; per day; per week; per month
- Health Status Report
- Road Impact Report



LED MINING LIGHTS HELLA



NAE are proud distributors and installers of a wide variety of **HELLA** mining lights, as well as being distributors of an extensive range of automotive lights.

HELLA is recognized as a world leader in lighting technology.

This is achieved through products that offer greater safety, lower operating costs, greater productivity, predictable service and better value.



- HELLA Mining has developed the ZEROGLARE™ optical system to bring the safety and comfort of highway driving to mining operations! The ZEROGLARE™ optical system ensures no light from oncoming traffic will be directed into the eyes of oncoming drivers, eliminating the occurrence of discomfort or disability glare. The innovative optical system has a sharp horizontal cut off to control the light onto the ground in front of the vehicle and not into an oncoming operators field of vision.
- HELLA Mining utilized the HELLA Automotive LED optical developments for high-end LED headlights for luxury cars, and developed an extremely robust work light which offers all the benefits of highway driving.
- Most work light manufacturers active in the Mining Industry do not have the capability to design and develop in-house optics. Optical systems, typically used, are "off the shelf" components from household downlights or outdoor flood lights. This means as light of the light going into the oncoming operator's eyes. This was such an issue that a lot of mine sites that had tested LED work light reverted back to the original lighting systems, despite the many benefits of LED technology.
- HELLA mining products are covered by a one year warranty which covers faults in material or workmanship only and provided that the product is used for its intended purpose except for bulbs, ballasts, fuses and sealed beams, which are on fitment. All HELLA Mining LED products are covered by a five-year warranty on light output, excluding environmental and physical damage.

OVERVIEW

- Sisonke Hydraulics were established in 1989 by Ray Mordt and Shane Sheehan and are a value added supplier
- Sisonke Hydraulics is and ISO 9001 accredited hydraulic supplier for the design, development, manufacturing and reconditioning of hydraulic cylinders, pumps valves and motors, serving the mining, construction and earth moving industries.



UNIQUE IN THE INDUSTRY

Control System.

- Unique paperless and operating systems
- Master quote with fixed prices linked to costing, inspection, buying, workshop and failure reports
- allowing for consistent prices and accurate turnaround times
- Wireless workshop operating system allowing availability of technical data at work-stations
- Design and development capabilities
- ISO accreditation - Manufacturing and reconditioning plus design and development
- KPI (key performance indicators) system on Sisonke, supplier and customer
- Vast drawing database

Technical Capabilities

- State of the art hydraulic stripping bench.
- Honing up to 1m internal diameter and length up to 12m's
- Magnetic particle inspection and ultra sonic testing with angle probe on rod welding
- Horizontal cylinder assembly bench allowing for guaranteed alignment and assembly control
- PLC cylinder and pump test benches with variable speed control up to 600 bar - no human intervention.
- Authorized / approved repair facility and distributor for Parker Hannifin.
- CNC Machine shop.
- PEX and consignment stock control
- OEM Supplier
- Parker – Dennison Gold Cup and Helac repair facility

HYDRAULIC STRIPPING BENCH

- Hydraulic stripping allows cylinders to be stripped horizontally, this system ensures that there is no chance of secondary damage that occurs to cylinder components during the stripping process
- All parts are hard stamped with the job number for traceability and identification.



WORKSHOP AND MACHINERY

Our workshop are fitted with state of the art machinery.

- 6 x CNC Lathes
- 3 x CNC Machining Centres
- 1 x 4 Axes CNC machining centre handling up to 1.5m in length and 4 tons in weight.
- 10 x machining Lathes
- 1 x Honing machine that can handle up to 12m in length and 1m in diameter.



Who We Are

WHO WE ARE

Since 1921, Komatsu has stood for unrivaled quality and reliability. With each brand and company added to the Komatsu family, we expand our capabilities, leveraging our global teams to push beyond what can be done and create what can be imagined.



SLQDC

We optimize the business by prioritizing
Safety, Law, Quality, Delivery and Cost



Innovation

We leverage our advanced technologies and dantotsu solutions to transform the mining business



Service

We work to be the indispensable partner
of choice for our customers

**Revolutionizing
mining for a sustainable
future together**

Value Proposition

- **INCREASED SAFETY**

- Increased knowledge base of artisans - safer working habits
- Providing tools/information for pre-work risk assessments

- **INCREASE IN PRODUCTION**

- Increase in machine reliability - correct maintenance procedures
 - Improved productivity
 - Overall machine performance

- **REDUCTION IN COST**

- Improved fault-finding process and repair time
- Utilization of inhouse technical workforce

- **IMPROVED STAFF CAPABILITY AND MORALE**

- Increase technical work force's machine knowledge using new methods and interactive devices
 - Increase in general technical knowledge of the basics - skills that can be used elsewhere

Customized Training Packages - DTS

- **Confidence Evaluation** – Establish skills gap – determine the way forward
- **eLearning Lessons** – Packaged per product and operating system
- **Instructor Led Training** – Classroom training – local or remote – latest technology used to enhance interaction
- **On-the-Job Training** – Operator & Technical Simulators – Relevant machines
- **Mixed Reality Application**



On the Job Coaching – Phase 4

SME and Group A



Familiarization



Assessment





Contact Us

We'd love to talk about all things mining.

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