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ISSUE 6:2018

Railway Automation and Safety Systems

IRZ

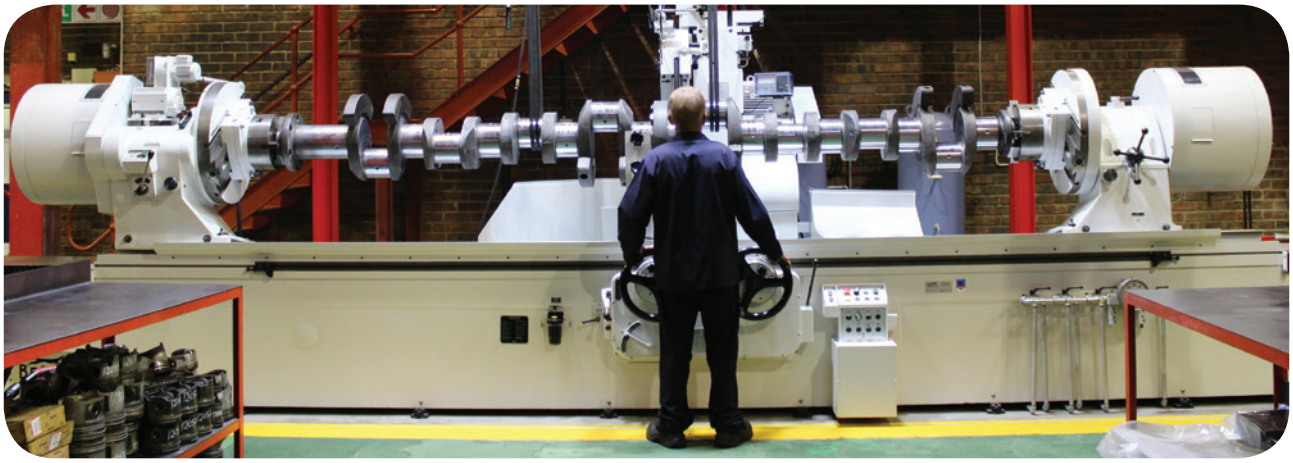
Protecting Railways From Windblown Sand

How To Build A Sustainable Safety Culture

Alstom's Gibela Joint-Venture Opens Largest Train Manufacturing Facility In South Africa

Value Creation in a Changing Rail Environment: People as an Agile Asset

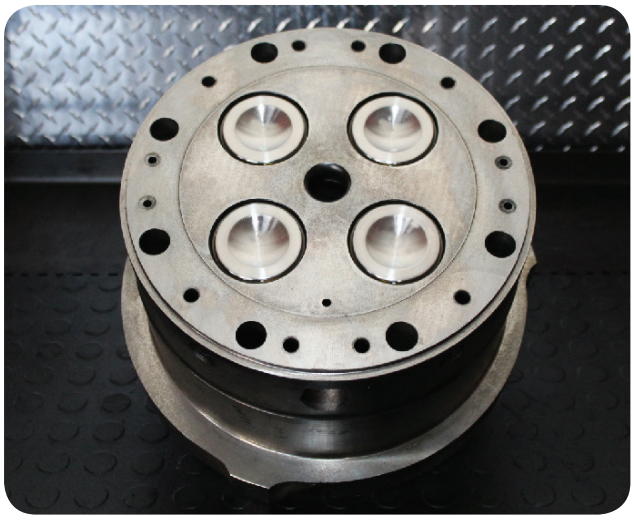
THE AUTHORITATIVE AFRICAN RAILWAY PUBLICATION

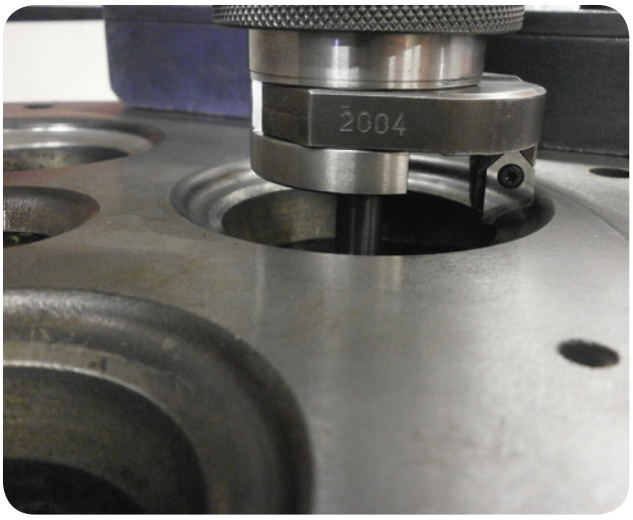


Grinding of crankshafts with lengths of up to 4.7 metres and weights of up to 5 ton

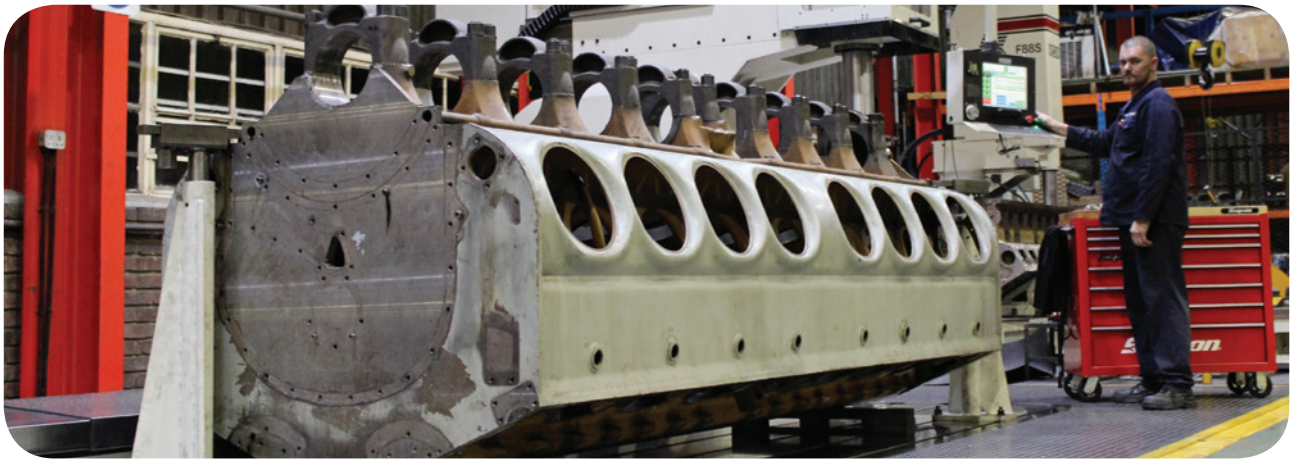
METRIC

AUTOMOTIVE ENGINEERING





Zero hour cylinder head remanufacturing



Lineboring, boring, milling, 3-axis machining and blue printing of blocks over 6 metres

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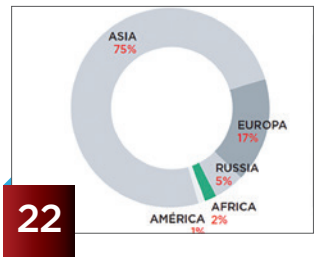
Issue 6: Highlights



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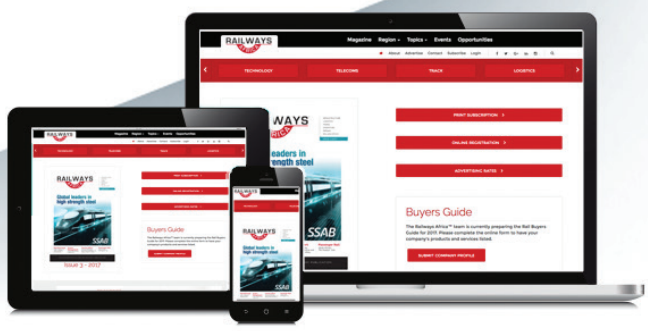

I always find Issue Six, the hardest editorial comment to write. Should it be reflection, should one speak of the year ahead, should one ignore both and choose a different topic altogether?

So, I will mix it up!

I am extremely grateful for a number of opportunities that arose during the year, firstly – Hong Kong, sadly I was not there for the opening of the bullet train, it was still under construction at that time, but, I had the opportunity to engage with different international suppliers, experience a new culture and overcome some of my travel issues! If I get the opportunity to go back next year, I will definitely try out the new train!

Berlin, for InnoTrans, now that was an incredible experience! Thank you, TMH Africa for the opportunity to see such a world class event, over 3000 exhibitors and 160,000 visitors – one really does not grasp the magnitude of this event until you see it with your own eyes! You will recall from issue 4 the announcement of Transmashholdings, "Now in Africa" – at the time they were waiting for all the legal approvals, in this issue we bring an update – The deal is done, all approvals are through and TMH Africa is open for business.

Then, from Russia with love – I have always wanted to write those words! Not so stereotypical, when you are looking at the Kremlin from across the canal! Craig and I spent an incredible week in Russia, coincidently at the same time as South Africa was hosting a high level Russian delegation. Standing on Red square, looking at Lenin's memorial, the Kremlin, the incredible architecture of the city, you can feel that history and you can see that Russia, without a doubt is open for business and expanding its presence globally, particularly in Africa – watch the rail space!

From a rail perspective, Russia has in excess of 85,200 kilometres of track with more than half already electrified. So apart from testing out their rail services, the Metro stations, by the way, are magnificent, each a museum and work of art, what were we doing post FIFA World cup. in Russia? We went to visit Izhevskiy Radiozavod – IRZ (*see page 4*) whom develop and manufacture equipment for a variety of industries including the rail sector, specifically in the areas of safety, control, telecommunication, and navigation. The company is headquartered in the city of Izhevsk, Udmurt Republic, Russia, an almost three hour flight from Moscow.

Up until the mid 80's there were no roads linking Izhevsk to other regions and this was primarily because Izhevsk was home to a number of state defence industries and a special pass was required to even be in the state and there were certainly no tourists! I wonder how many from Africa have ventured to Izhevsk?

Izhevsk is also home to the Kalashnikov rifle factory, Mikhail Kalashnikov the legendary gun maker and notoriously known as the "father" of the AK-47, the museum is just fascinating! We visited a traditional Udmurt village and experienced life from yesteryear, fascinating how the villages were structured and how people survived.

And, I had the most incredible restaurant experience in Izhevsk - I have every intention of importing Dimitri and Kare to Africa, obviously, only once I have finished compiling this issue of course!

It was an incredible week, and our sincerest appreciation and gratitude to our hosts from Izhevskiy Radiozavod – IRZ for the experience, amazing hospitality and new found friends and the front cover for this issue!

It a great pity that we didn't get to Ethiopia, as a result of visa issues, but it appears by all accounts that it was a worthwhile event and of course by the time we get to the next event, it is visa's on arrival! Ethiopia has a potential 2,300km of SGR available for possible private investment, with the ERC having already completed the feasibility studies, alignment selection and verification, detailed design, final design integration, and related environmental and social impact assessment works. In addition to development plans for Transit Oriented Development in Addis Ababa including logistic parks and railway tourism projects.

I would like to express be sincere appreciation to both our advertisers and subscribers for the support over the last year, the production of Railways Africa weekly online and in print, is not possible without you! I look forward to working with you once again in 2019 and like all of you, I look forward to seeing the continued growth in Africa and some recovery in South Africa.

Enjoy the holiday season, take a break, because 2019 is going to be a very busy year!

Till next year.

Phillippa Dean

Phillippa Dean
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"It is clear that Russia is open for business both in attracting business to their shores and looking for new markets. This year alone, has seen Russian business and political envoys to a number of countries in Africa, strengthening trade and economic relations in a variety of sectors.

In June came the announcement of Russian based, Transmashholding (TMH), initiating their footprint into Africa through the acquisition of DCD Rolling Stock and the establishment of TMH Africa (now concluded). Russia's recent trip to South Africa included a trade delegation at the end of July, and of course the BRICS summit, where the Russian Railways signed an agreement with Transnet.

Whilst the Russian President and business delegation was here in South Africa, the Railways Africa team was in Russia, taking a closer look at the products and services offered by Izhevskiy Radiozavod (IRZ)." ~ Editor

A Little History

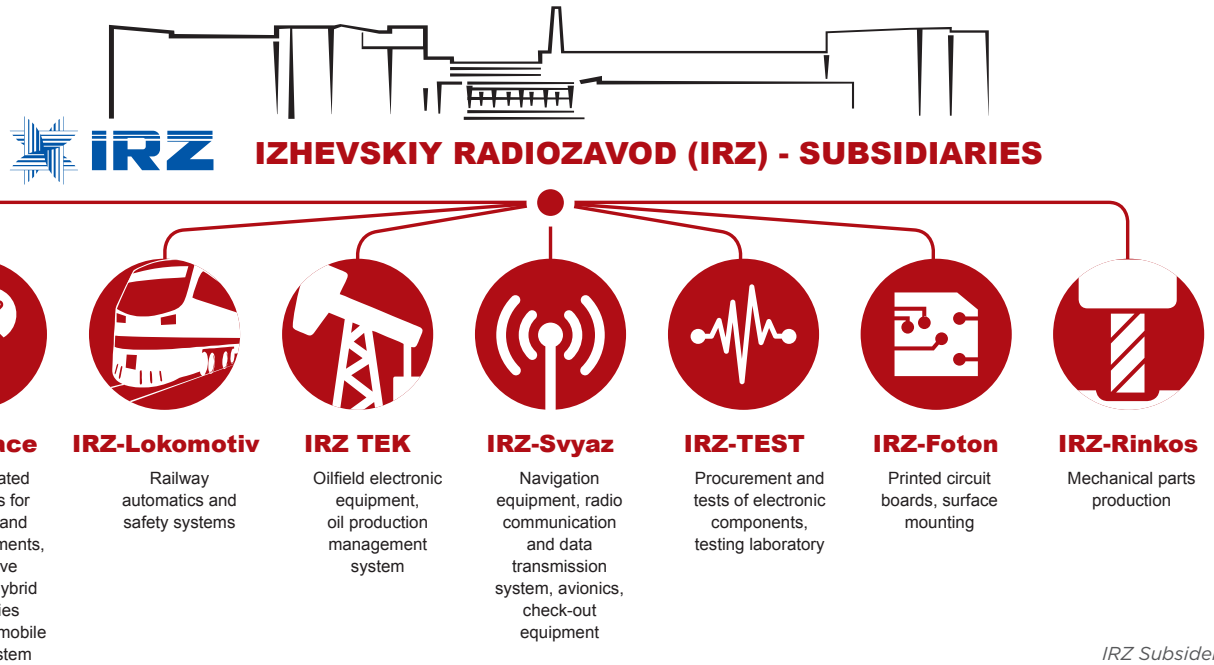
IRZ established in 1958, is situated in Izhevsk the capital city of the Udmurt Republic, in Russia. Originally owned by the Russian government, IRZ, then referred as Izhevsk State Radio Plant began simply, in carpentry, crafting the wooden housings for the iconic radio at the time, known as household receivers, before moving into the more sophisticated production of spacecraft telemetry systems in 1961.

The years between 1962 and 1976, must have been incredible and certainly the turning point of this company. The pace of product design and development specifically for the National Space Programme saw the deployment of IRZs, spacecraft telemetry systems, the serial production of equipment for the space industry and the introduction of control systems for the tracking of high-speed objects, among other highly advanced achievements.

Today, It is a 100% privately owned company with a number of sector-specific independent subsidiaries, employing 5,700 people and recently celebrating 60 years, a tremendous achievement!

What was once a single product manufacturing entity has evolved into a technology driven company meeting the challenges of the industries it serves through the design and development of bespoke engineering and application driven solutions.

The extensive history and success in the development of, state-of-the-art navigation, telemetry, safety and communication systems for the space sector, positions IRZ as a leading provider of products and solutions to the rail sector. Established in the 90's, IRZ has captured the Russian market. All trains have been equipped with safety systems from IRZ and because the Commonwealth of Independent States (CIS) markets, thanks to ex-Soviet Union days, shares the same type of infrastructure, gauge and standards, IRZ has been extremely successful in the CIS.



IRZ Subsideries

IRZ

IRZ-Lokomotiv

Breaking It Down

The solutions offered by IRZ deal with global issues found in the rail sector, from operators looking to find efficiencies in their system to move more and improve profits, through to dealing with safety issues and reducing human-error within their operations. In particular, safety issues that arise, where the railroad interacts with the public, such as level crossings. From the safe movement of freight and passengers, one at times overlooks the operational safety aspects for track repair vehicles, shunting equipment and technical crews, IRZ has the solution.

In addition to dealing with the overall system, operators are able to monitor rolling stock to ultimately extend the lifecycle of the assets, avoid costly downtime and in most cases save money, just in the reduction of fuel usage and theft alone. The technology around predictive maintenance is without a doubt phenomenal, not just in removing unnecessary downtime in the system, but by being able to plan ahead, structuring working crews and ensuring components arrive when needed and not eroding the bottom line by sitting on the shelf.

In a changing environment, technology has allowed for the ability to track, trace, avoid and predict all aspects of the rail environment, leading to smarter decision making and ultimately creating an environment where the operator can focus on meeting the needs of their customers, whilst growing additional revenue through the ability to move more, safely.

Essentially IRZ wants to ensure that their customers are at the forefront of having world-class operations, where they can improve their safety as well as overall performance without having to make a significant investment in infrastructure.

The robust range of products that IRZ has developed and deployed for the Russian and CIS markets have been proven over many decades to deliver. IRZ was the first company in Russia to achieve IRIS accreditation. The railway division has a dedicated engineering and R&D department. With over 30,000 locomotive safety systems in operations IRZ has supplied products to global OEMs. It is their mission to be the best supplier in terms of quality, reliability and functionality to their customers.

- Traffic Control and Safety Systems
- Railway Diagnostic and Monitoring Systems
- Interval Control Systems
- Railway Communication Systems
- GSM-R, LTE, 3G Telecom Systems
- GNSS Equipment, Speed Sensors
- Indication Units and DMIs
- Services

Traffic Control And Safety Systems:

Automatic Train Protection (ATP) systems are suitable for all types of rolling stock, including high-speed, and can be installed with either track circuits or radio controlled. IRZ's interval control system can be designed on the basis of axle counters and can be integrated with any type of electric interlocking system.

Train control is all about operational safety and a controlled environment, such as, ensuring speed is within track limits, preventing unauthorised movement, monitoring the driver, making sure signals are adhered to, emergency breaking and knowing where the train is at all times, just to mention a few.

At the same time, ATP is also used to manage traffic, providing operators with the opportunity to increase traffic on a particular route or throughout their systems, whilst ensuring that traffic is flowing in the right direction or, should a particular stretch be occupied for maintenance, that the crew is safe.

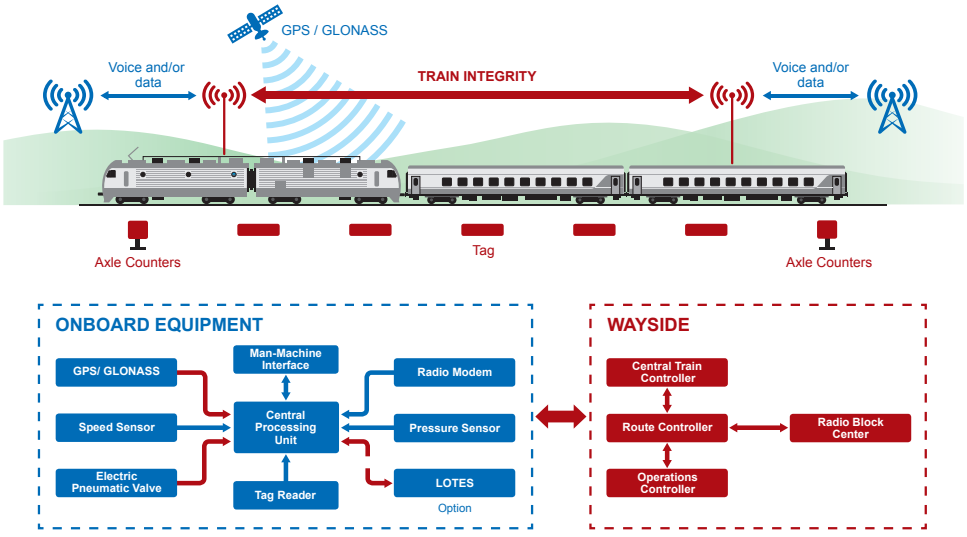
Safe operations also includes level crossings and the ability to control level crossing subsystems, such as warning and protection lights, barriers and alarms, from a central control point as part of the overall safety of the railway.

The solutions offered by IRZ include:

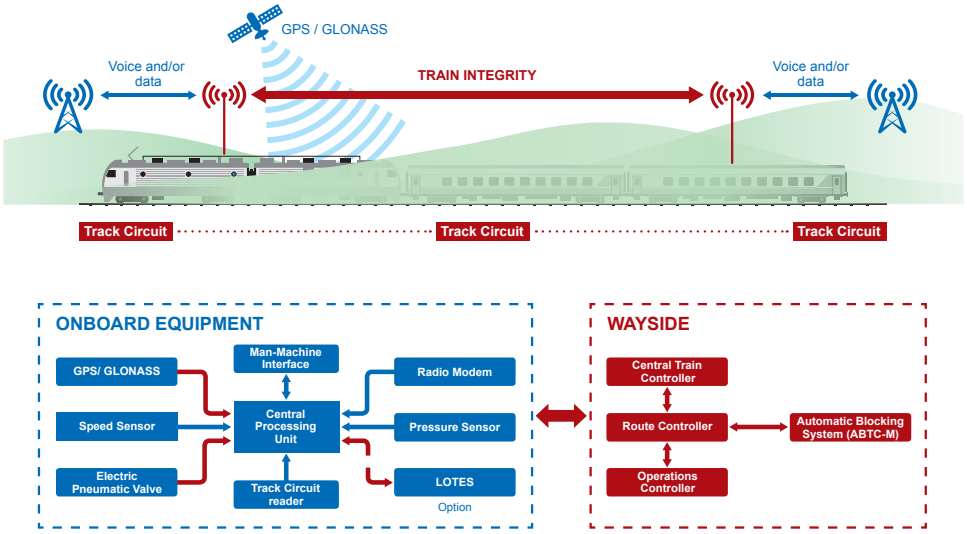
- IRCS-W Integrated Rail Control Systems – Wireless.
- IRCS-T Integrated Rail Control System – Track Circuits
- KLUB-U Automatic Train Protection System
- ABTC-M Automatic Blocking Systems

IRZ's ATP systems feature - Mean Time Between Failures (MTBF)>99,000 hrs, 30,000 units in operation, full redundancy and proven in use design.

Traffic Control & Safety Systems / IRCS-W Integrated Rail Control System Wireless



Traffic Control & Safety Systems / IRCS-T Integrated Rail Control System by Track Circuits

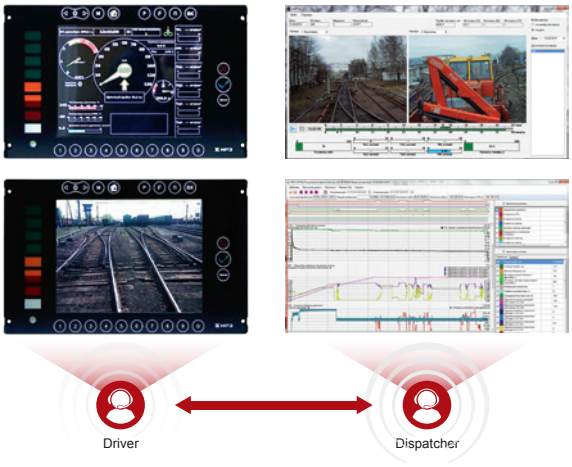


Traffic Control & Safety Systems / KLUB-U Automatic Train Protection (ATP System)

Features

- MTBF >99,000 hrs
- 30,000 units in operation
- Full redundancy
- Proven in use design

Diagnostic & Monitoring Systems / LOTES-A Locomotive Telemetry System



Application

- Collection and registration of train parameters from train systems (ECU, LCU, ATP…) and sensors (pressure, temperature, fuel)
- Data processing and transmitting to centralized server
- Real-time condition monitoring and GPS/GLONASS positioning
- Managing locomotive fleet maintenance (quick access to data)
- Video recording (optional)

Customers

- Moscow and St.Petersburg Metros
- Railways and industrial companies using diesel or electric locomotives, and other rolling stock.

Features

MTBF +30,000 hrs

Operating temperatures range – 40°C … + 50°C

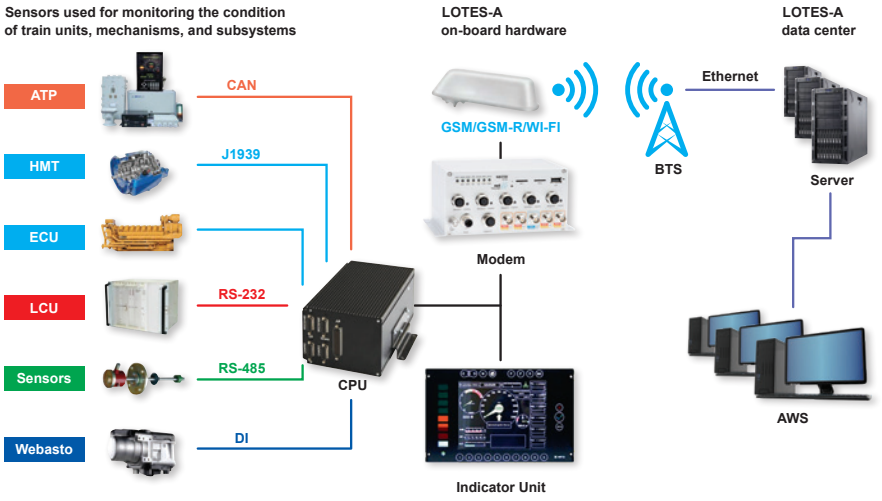
+15 years

Warranty period 3 years

Power supply 24, 50, 75, 110V

Diagnostic & Monitoring Systems / LOTES-A Locomotive Telemetry System

LOTES-A structural diagram



Diagnostic & Monitoring Systems /SKRPD Video Monitoring System

Video stream resolution

1920x1080

Frequency

5 / 18 / 25 fps

Duration

within 24 hours

Features

Power consumption less 200 W

Operating temperatures range – 40°C … + 50°C

+15 years

Warranty period 3 years

Power supply 24 VDC

Diagnostic And Monitoring Systems:

In this day and age, everything can be monitored, in real-time and recorded for easy reference. The solutions offered by IRZ provide real-time monitoring of train parameters including aspects such as fuel, pressure, bearings, vibration and airflow as well as the track conditions. Ultimately this provides an overall status of the fleet, whilst being able to detect anomalies and find faults.

The savings that are realised through the implementation of systems such as this, that prevent costly failures and predict maintenance requirements, are really what provides the return on investment for operators. In addition, the diagnostic and monitoring systems can be fully integrated with the onboard ATP system.

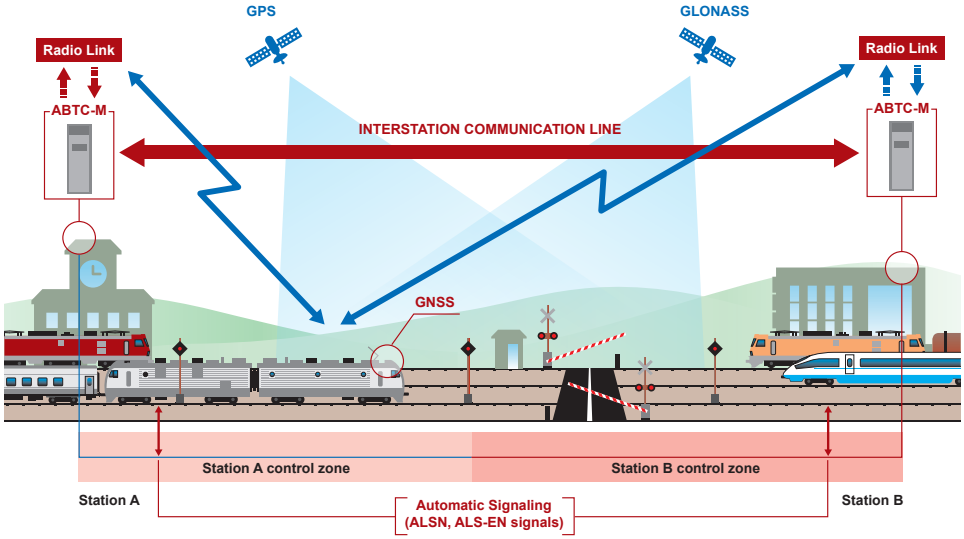
The solutions offered by IRZ can be applied on locomotives, motor cars or track machines operated on railways, subways and on industrial and guarded sites.

IRZ also offers custom monitoring solutions, designed and built around the customer's specific needs.

IRZ offers the following solutions:

- The LOTES – A Locomotive Telemetry System for predictive maintenance
- Added advantage of the SKRPD – Video Monitoring Systems.

Interval Control Systems / ABTC-M Automatic Blocking System



Level Crossing Safety Systems:

Prevention of incidents at level crossings is one of my favourite topics! It really does, in most instances come down to human error.., a truck that takes a chance and gets stuck, a taxi full of children thinking that it can beat the train (sadly this happens far too frequently). The result is deadly. It is a nigh on impossible task to get the general public to understand that the train has right of way or that a train, unlike a car, just cannot come to an abrupt stop.

IRZ offers a number of affordable solutions for the protection of level crossings. Aside from passive protection in the form of barriers, flashing lights and alarms, they offer the ability to monitor and control level crossings from a central control point 24 hours a day, stopping the train automatically, and in time, should a vehicle or other hazardous obstacle through interfere with the level crossing environment.

Level crossing solutions are modular in application catering for either a single line or multiple bi-directional lines, considered more complex in nature. Complete automated control of level crossings not only reduces the possibility of incidents, but is less disruptive to road users as vehicles stop when they are meant to.

Solutions include:
- KTSU-P Level Crossing Protection System
- Vandal/theft prevention systems

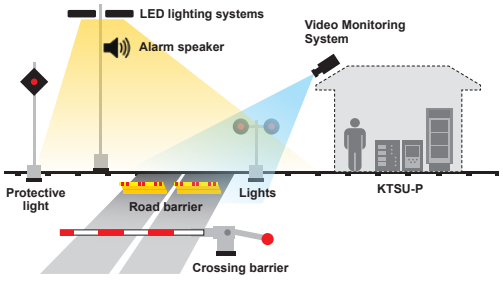
Interval Control Systems / KTSU-P Level Crossing Automatics

KTSU-P

Attended and unattended level crossings equipped with automatic level crossing signaling systems

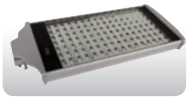
Video Monitoring System

- Audio & video recording
- 2 video cameras
- Resolution 1024x768 @ 18 fps / 24 hours



LED lighting systems

- Power consumption 150 W
- Flux 18,000 lm
- Lifetime up to 100,000 hours
- Voltage 220 VAC
- Enclosure IP65



Features

+20 years

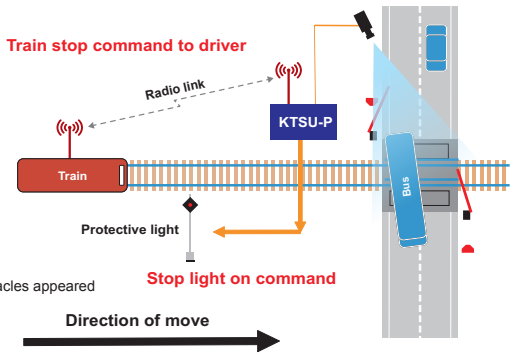
MTBF +40,000 hours

Operating temperatures range – 40°C ... + 65°C

IP Housing protection class IP 54

Level crossing occupancy control system

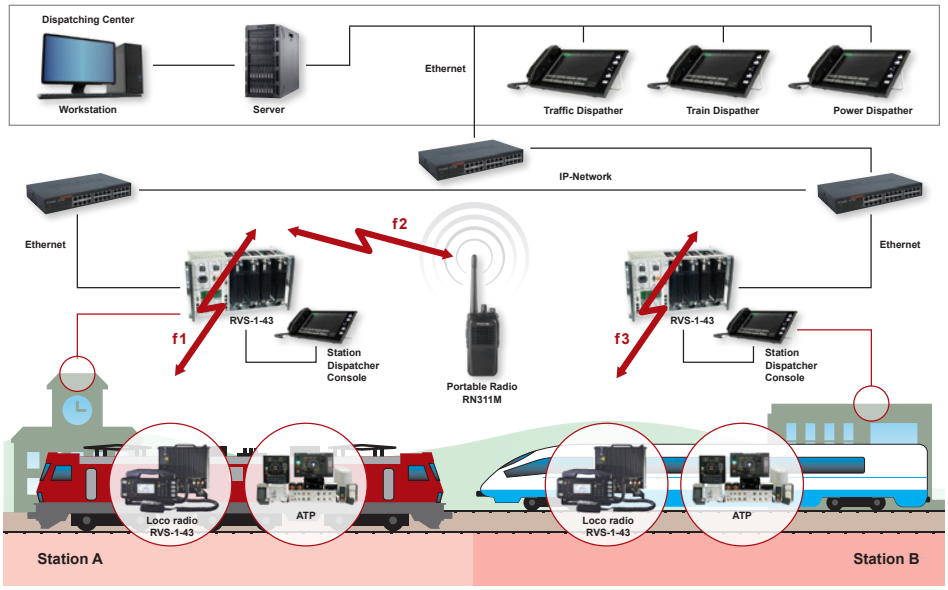
- Classifies an obstacle and accidental situation
- Turns on the protective lights and crossing lights
- Generates command to train to speed down or emergency braking



Advantages of KTSU-P with machine vision option

- 24-hours situational control at level crossing and classification of obstacles appeared
- Prompt warning of a train driver about level crossing occupancy
- Eliminates human factor in case of traffic accidents

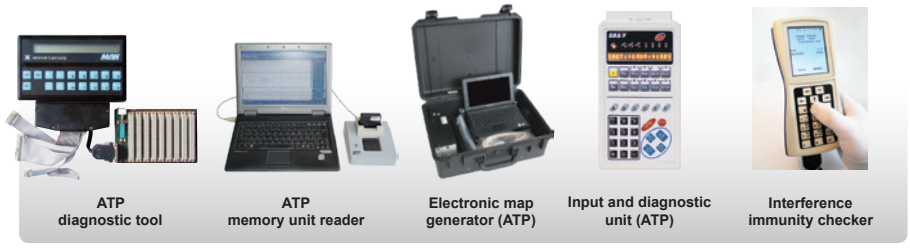
Railway Communication System / Digital railway communication network



Railway Communication Systems:

Effective communication systems are essential for safe and efficient operations, especially in the rail environment. IRZ offers wide range of solutions that have been specifically designed for railway applications. Providing both analogue and digital solutions, meeting a variety of frequency protocols (MF, VHF, SW etc,) and can be either fixed or wireless – depending on the application. A part of IRZ's vast product range, are sophisticated hand held radios that include the additional safety feature of "man down" for emergency assistance.

Maintenance Equipment



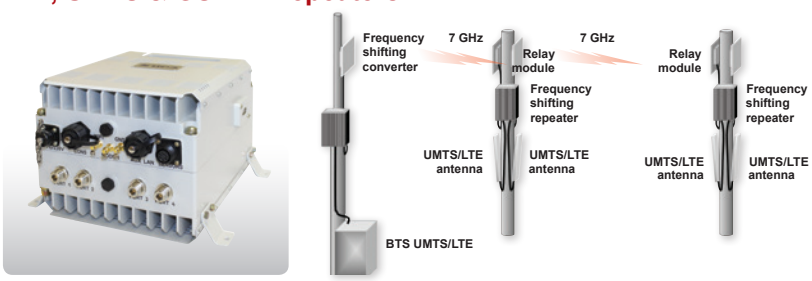
ATP diagnostic tool | ATP memory unit reader | Electronic map generator (ATP) | Input and diagnostic unit (ATP) | Interference immunity checker

ALSN signals recording unit | Display Unit for driver information systems | ALSN signals checker | ALSN signal generator and track circuits relays control

Telecom Systems:

Solution allow for affordable coverage of the full rail network 3G, GSM, LTE with the ability to extend the service through the enhanced repeaters offered by IRZ.

LTE, UMTS & GSM-R Repeaters



Features

- Construction costs of 4G (LTE), 3G (UMTS), 2G (GSM) networks are reduced by 2-3 times (depending on the system configuration)
- Operating expenses are reduced: energy consumption of the system is up to 5 times lower than that of a traditional base station (without loss of quality of the cellular network)
- The coverage area of one base station is increased up to 60 km (extended areas coverage)
- The system can be used by two operators simultaneously (RAN Sharing)
- Weatherproof (-40 / +55°C) anti-vandal housing, protection rating is IP65

Indication Units And DMI's:

IRZ manufactures and designs a comprehensive range of driver machine interface hardware as well as range of components for the railway environment.

Global Navigation Satellite Systems (GNSS)

GNSS equipment

The backbone to the technology and products offered by IRZ such as Automated Train Control, monitoring and remote communications, comes down to Global Navigation Satellite Systems and the ability of their products to connect with multiple satellite constellations signals such as GLONASS, GPS and SBAS (WAAS, EGNOS), and QZSS signals.

GNSS equipment is intended to determine the actual coordinates, location, tracking and speed of any item or system that is built and equipped accordingly.

The advantage of IRZ is the ability to connect with multiple constellations, translating into less chance of losing coverage and a reduced risk of any down time within the system.

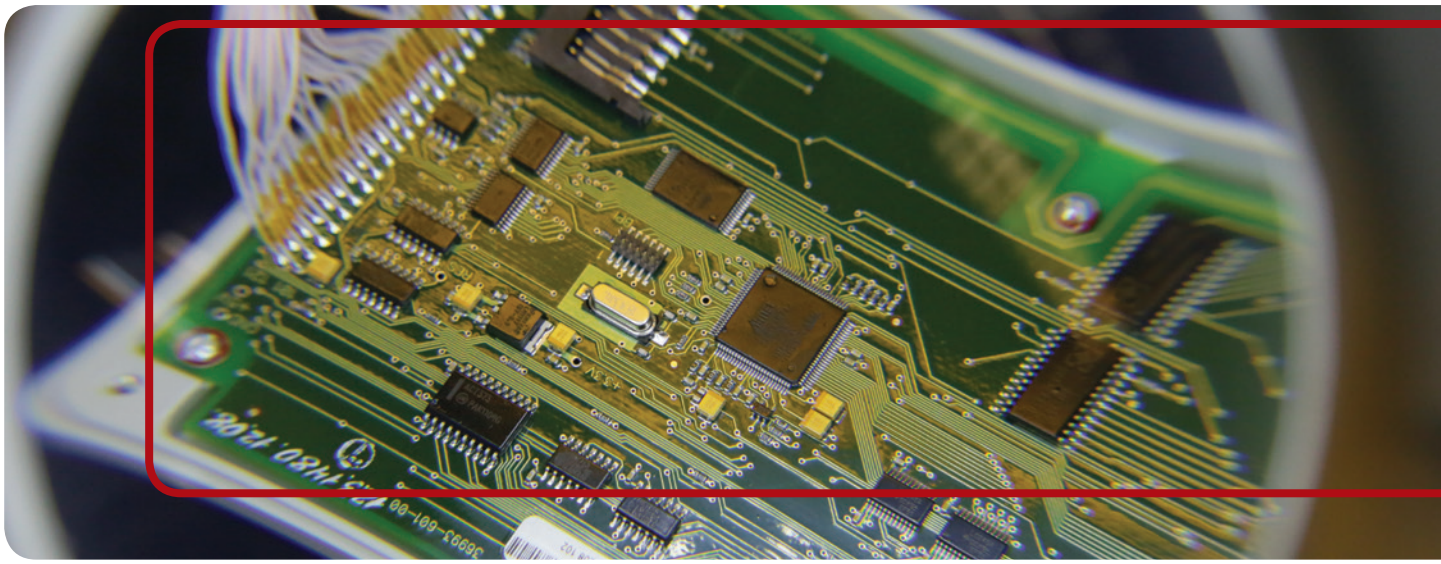
The Manufacturing Environment

IRZ, is a full-cycle company, from design through to commissioning and after-sales service. Their manufacturing facility is nothing like I have ever seen before! Aside from the sheer size of the facility, 30,000m^2 under roof, the investment in state-of-the-art equipment and their ability to go from the drawing board to a finished, certified product, impressive to say the least!

As IRZ provides high-tech equipment for space applications, what we could see was somewhat limited. However, we had the opportunity to see the manufacturing and quality process of the PC board. How the components are selected and how the CNC machines take over in a matter of seconds, the printing, welding, plaiting, treatment, through to a completed board. The quality testing throughout the process from manual checking, microscopic examination and x-ray. This consistent approach to quality management, not only removes the possibility of errors coming up in the final product but enables full traceability for each component that makes up a functional unit, including the housing, internal wiring, cables and final testing.

IRZ applies an integrated approach in manufacturing processes, it is based on a full production cycle and ensured by an integrated management system. IRZ carries the following certification and standards: ISO 9001, IRIS, ISO14001, BS OHSAS 18001, GOST R ISO 9001, GOST RV 0015-002, GOST R EN 9100-2011, OST 134-1028.

Principles of lean manufacturing and six sigma are followed throughout their facility.



The Engineering Division

There are two engineering departments, one dedicated to just the railway sector and the other is responsible for the design and development of products and applications for civil, commercial and special purpose equipment outside of the rail division.

The rail section is headed by Igor Tsvetkov, Chief Designer of Railway Automatic Systems, Igor has a team of 55 engineers comprising of electrical, mechanical and software engineers.

“Our engineering team is responsible for the design and development of railway products including the development of technical specification, testing and qualification of products, ending with serial production, commissioning and after sales support of products,” says Igor.

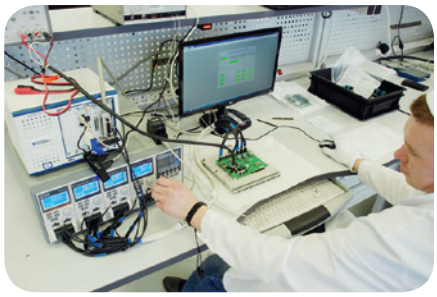
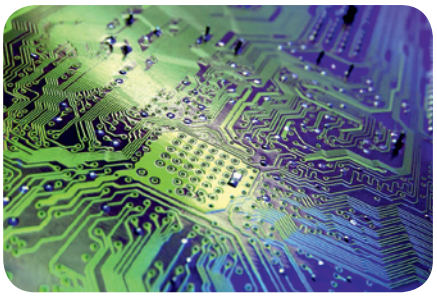
Igor continues, “Whilst we might have a set range of solutions, each customer has their own requirements, our team is here to make sure that we collaborate with the customers, in order to meet their needs. Understanding their technical requirements, developing the technical specification and adding any extra functionality that the client may request.”

The engineering team provides full technical support to the sales team, and collaboration with the clients, their involvement from the start of a project ensures that there is no miscommunication.

For each project, a dedicated project manager is assigned who takes responsibility for each stage of the project through to delivery. Once the technical specifications have been agreed upon, the initial prototype process begins. This runs as a parallel process, meaning that, the electrical, mechanical and software engineers all work together to develop the engineering model, which is then tested and approved prior to mass production, also noted as serial production.

“By ensuring that each part is developed in parallel with other parts, we prevent many errors at the start of a project and ultimately improve the final result, especially quality and the reduction of potential production errors. With the engineering model, we are able to use our test center to check the compliance to the initial requirements, be it environmental parameters, or vibration levels as an example. During the testing of the equipment, we are also checking the algorithms as well as the action/sequence of operations. Our laboratories are equipped with the latest technology in relation to our operating environment. There are occasions where a client requires specific functionality testing, if we cannot accommodate this, we would send it out to another laboratory for verification,” says Igor.

The results of the testing process informs the team if any further development or changes are required, these results are submitted to the customer for approval, prior to production. The engineering team is responsible for



IRZ conducts all types of periodic and acceptance tests using certified testing equipment, this includes operational tests, dependability and storage ability tests such as environmental tests, electric tests and mechanical tests including shock and vibration tests, linear acceleration tests and others. The tests are aimed to simulate the impact of the environmental and external factors including harsh and severe conditions and to prove the compliance of the equipment to the parameters declared.

the development and upkeep of the documentation for each product, which is ultimately used in the production of the installation, user and maintenance manuals for that specific customer.

"The safety and reliability required for the products produced by IRZ are extremely high and we do the simulation in the design phase according to operation scenarios. Our approach is usually to maximise the technical requirements of the customer so as to exclude uncertainties and undefined issues, as this is safety critical equipment. Once we have reached a certain level of technical approval we then move into the infield trial phase and this could last a few weeks to several months, depending on the client's requirements," explains Igor.

In the railway sector, there are special requirements for product acceptance which may include acceptance by the local railway regulatory authority, compliance to the railway standards of a specific territory, and of course cybersecurity. Guarantees and assurances for customers, begin with the reliability analysis, these are tests that IRZ's engineering department conduct to define the mean time between failures and if necessary carrying out critical tests within the limits of the environmental requirements. These tests form part of the evidence of compliance of the product in relation to the technical aspects and the standards of the industry of where the products are operated.

"Only once the product is approved at all levels we start preparing for serial production of the products and the training of the customers identified personnel. Our engineering support covers the lifecycle of the product, which is only considered complete when the last unit is installed and commissioned," says Igor.

Training Provided To Customers

Comprehensive training is provided to each customer, the training is customised to the solution that has been developed both in function and operation of the product, this, over and above the customary operating manuals.

Training is conducted through simulation, customers are taken through normal operating environments as well as emergency situations and hypothetical malfunction of the system. “As much as we develop products that should not fail, if there is a component failure of any kind, the customer should be sufficiently trained to deal with these situations. We have redundancy measures in place and back up algorithms inside of the equipment, which the customer is trained to activate. Once we have been notified of an issue, we are able to respond swiftly,” says Igor.

Service Department

IRZ has a dedicated service department, coordinating software updates for clients and notifies customers of upgrades available for their systems. The service department also coordinates any modifications and changes with suppliers who are servicing customers on IRZ’s behalf.

Customer Day-To-Day Service

Customers need to know that should something go wrong, that they are attended to almost immediately, it’s certainly not viable to fly out a technical expert every time a system needs to be serviced or repaired.

IRZ utilises a unique approach, creating the opportunity for the transfer of fairly specialised skills and the development of a small business, thereby localising the customer service aspect of the business within the territory of the customer. This, I foresee, will work well in Africa.

“Usually the customer selects a team that will be specifically trained to service and manage the IRZ equipment. This team is authorised to break the seal, replace components and carry out the necessary work, without voiding the warranty,” says Igor.

The authorised service provider will have all relevant user manuals, including the installation and maintenance manuals. Full documentation for all client installations is available online and accessible through the service department.

Expanding To Africa

Sergey Malyshev, First Deputy CEO of IRZ, Director of IRZ-Lokomotiv, says, “I believe the solutions that we offer, especially our ATP systems, will, enhance safety and improve reliability in a cost effective manner for our customers in Africa, so that they can meet the needs of their customers. We are extremely proud of the fact that our safety systems have over many years proven to be highly reliable with no malfunctioning of equipment in their application on Russian and CIS railways.”

IRZs proven solutions will work well on the continent, built for demanding environments, extreme temperatures and regions where technology such as mobile telecommunication are limited.

“Because of the extensive range of products offered by IRZ, we are able to bridge the infrastructure issues in relation to communication systems that some regions in Africa experience. By being able to bring the communication technology as part of the solution, the operator is able to leapfrog from outdated technology to the latest available systems. Our engineering and R&D teams ensure that customers receive solutions that are designed and developed according to their needs and operating environment,” concludes Sergey.

Global Partnerships

IRZs smart interfaces such as the KLUB-U system has been adapted for rolling stock for global manufacturers such as: Siemens (Germany), General Electric (USA), Alstom (France), Skoda (Czech Republic), PESA (Poland), Talgo (Spain), Hyundai (South Korea), Stadler (Switzerland), Zhuzhou Electric Locomotive, Datong Electric Locomotive Co., Dalian Locomotive Co. (China), Plasser (Austria).

Protecting Railways From Windblown Sand

Railway safety and serviceability must be ensured along arid regions prone to windblown sand

Supplied by Luca Bruno | SMaRT project coordinator

Railways Across The Desert

Historically, the first railways along deserts were built in Africa: the military railway from Wadi Halfa to Abu Hamed (1897–1899) over the Nubian desert in Sudan; the railway form Mecheria to Ain Sefra (1887) across the northern part of the Kenadsa desert in Algeria, further extended to Beni Ounif (1903), and to Colomb-Bechar (1906), in the framework of the never finished Trans-Saharan Railway project (1870–1941); the railway from Aus to Lüderitz (1906) over the Namib desert in Namibia.

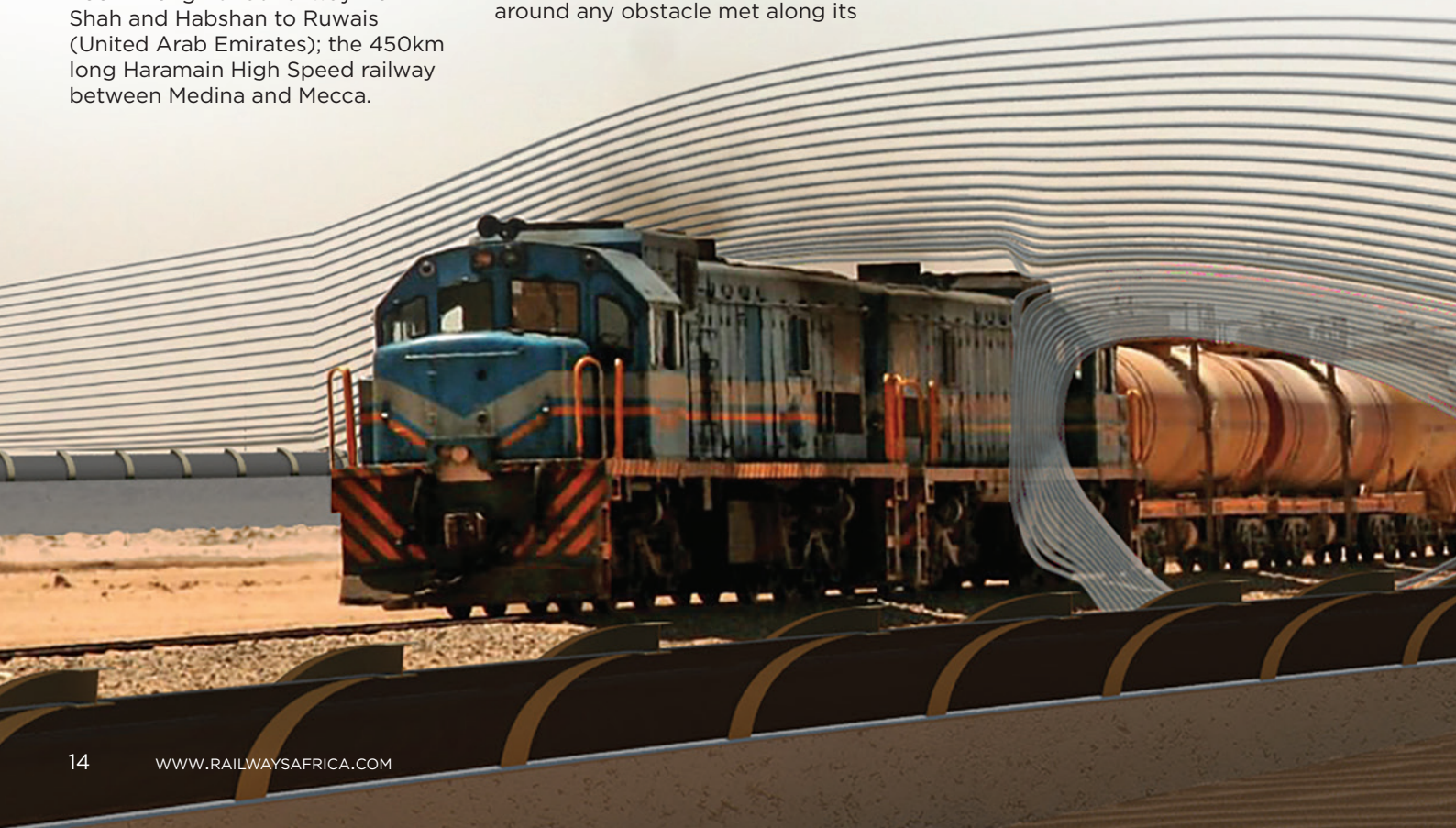
At the present time, most of the in-service railway lines crossing deserts and arid regions are located in north-western China with a total length of about 10,000km. Apart from Far East, most of the desert railways are located in the Middle East: the 550km long Dammam-Riyadh line, and the 2,400km long North-South mineral line (Kingdom Saudi Arabia); the 266km long Ethiad railway from Shah and Habshan to Ruwais (United Arab Emirates); the 450km long Haramain High Speed railway between Medina and Mecca.

In the short and mid term, railway lines in desert and arid regions are expected to rapidly grow, particularly in North Africa and Middle East region. They will carry passengers, pilgrims, freight, and minerals. For instance, the Arab Network Railway is a 30,000km long, high-speed/high-capacity railway network conceived to connect all the Arab League Countries across Middle East and North Africa. Its length is more than twice the overall European high-speed railway network currently in operation and under construction. The corresponding investments are significant: about US$260 billion up to 2030.

Figure 1 – Map of currently in service and planned railways across arid regions in Africa and Middle East.

Wide Range Of Sand Induced Threats To Railways

The windblown sand movement results from three main physical phenomena. Wind speeds above a given threshold value induce sand erosion from the ground surface. Sand grains are then transported in air. Sand settles around any obstacle met along its



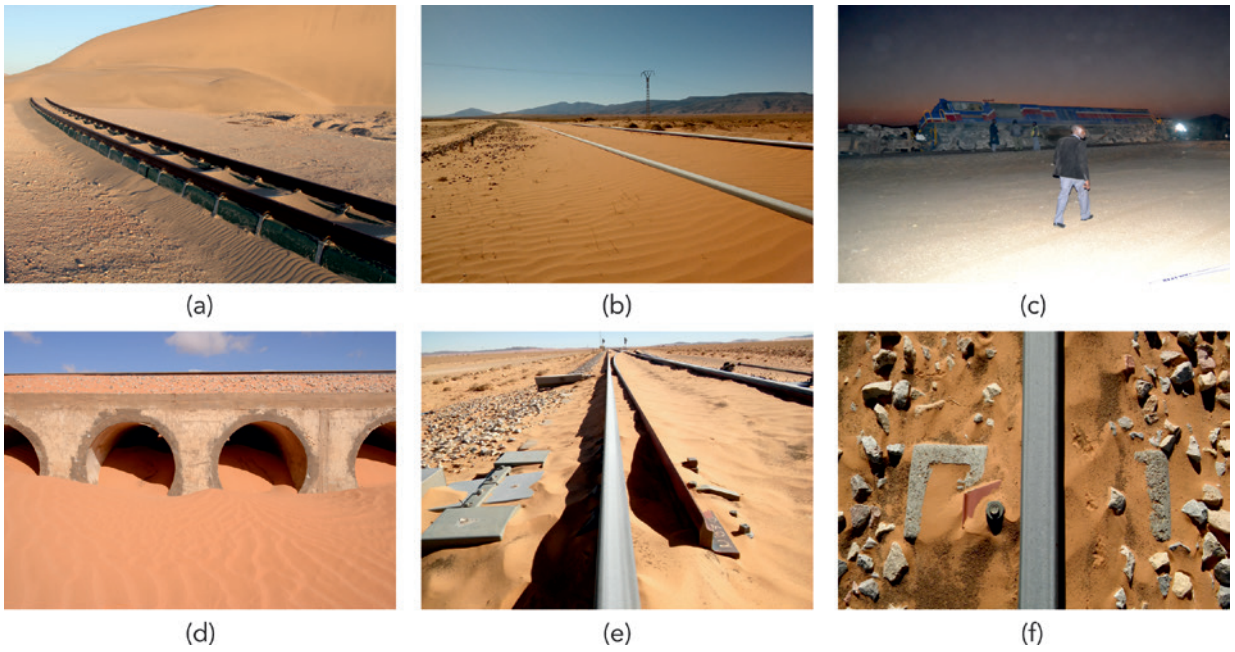


Figure 2 – Examples of Sand Ultimate and Serviceability Limit States: full sand coverage by an encroaching dune (a), partial sand coverage blown from sandy plane (b), running train derailment (copyright Namib Times) (c), partial obstruction of embankment culverts (d), jammed turnout (e), ballast contamination (f).

path, provided the obstacle locally reduces the wind speed. Long-term grain sedimentation results in sand accumulation and buried obstacle. In windy and sandy environments, the windblown sand drift may be impressive, up to 50 cubic meters of sand per lineal meter of railway per year.

The unintended sand accumulation is one of the specific key design challenges for railway infrastructure in arid environmental conditions.

Windblown sand potentially affects all the railway components, i.e. civil works (embankments, cuttings, culverts), track superstructure (ballast, sleepers, rails, fastening systems, turnouts), rolling stock (wheels), signalling system (balises, axle counters).

Sand Limit States (SLSs) are threshold performance levels, beyond which the whole railway or one of its components no longer fulfils relevant design criteria. Sand Ultimate Limit States (SULS) directly affect the safety of the railway traffic because of moving dunes intruding on the track, windblown loose sand accumulation on the railway body, trapping of parked trains, and/or derailment of running trains. Attaining Sand Serviceability Limit States (SSLS) involves railway partial loss of capacity, passenger discomfort, and/or increased maintenance costs because of ballast contamination, asymmetric rail grinding and wheel profiling induced by the sand layer on the head of the downwind rail, and covering of the signalling devices mounted on the track.

For the sake of clarity, let us refer to some real-world windblown sand-induced disasters. The Linhai-Ceke railway in China suffered a two-months service suspension,

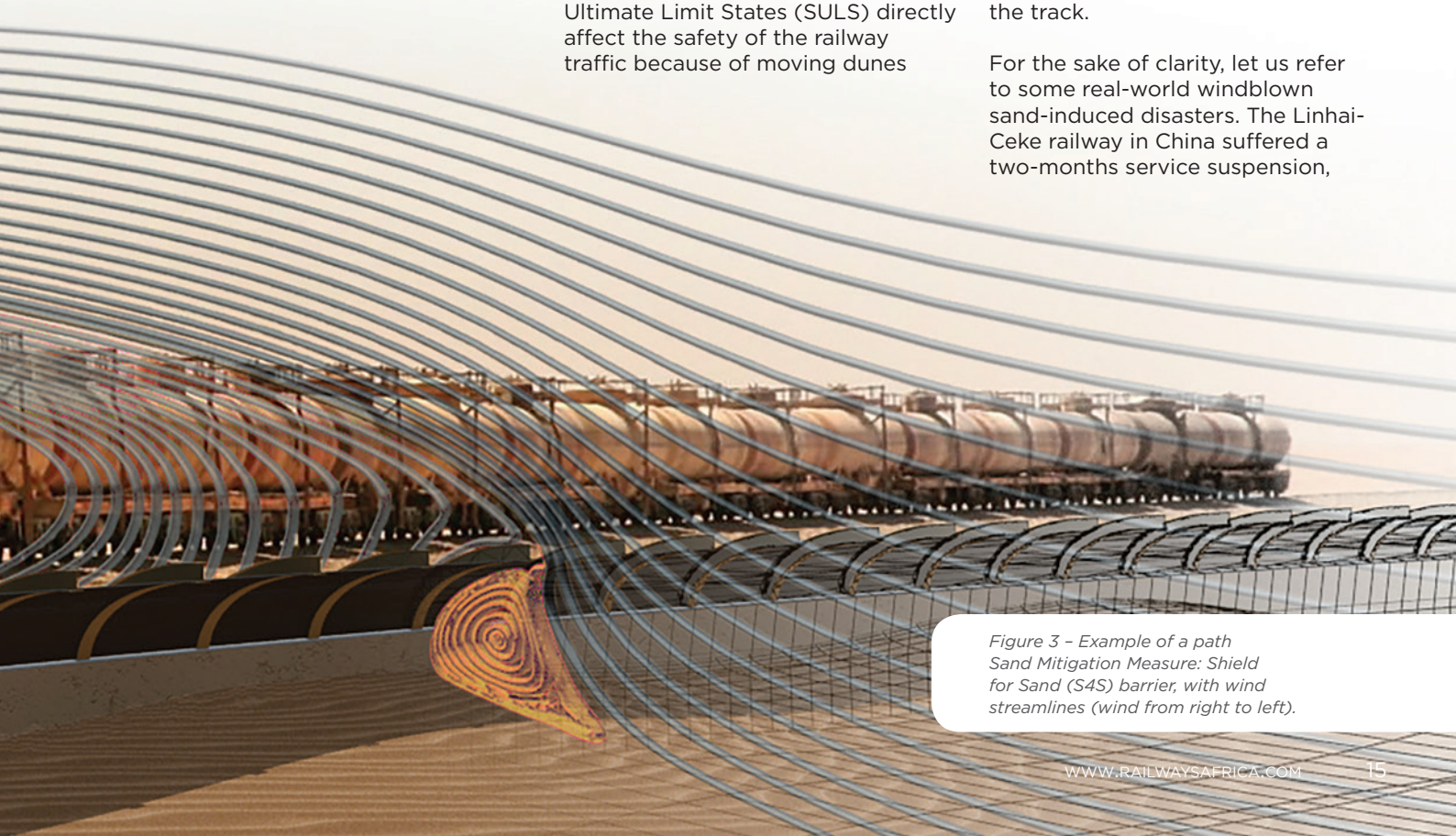


Figure 3 – Example of a path Sand Mitigation Measure: Shield for Sand (S4S) barrier, with wind streamlines (wind from right to left).

Figure 4 – SMaRT researchers at work in Algerian and Namibian deserts.

followed by 51 service disruptions in the first month of operation, and the reduction of the effective speed on 8 sections to 25km/h. In the first year of operation (2010), over 10,000 workers were mobilized and CNY 71 million was spent on windblown sand-induced maintenance. Sand-induced train derailments recently occurred in India (2005), Kingdom of Saudi Arabia (2013), Namibia (2014).

Protecting Railway Infrastructure From Windblown Sand

Effective, durable, robust and sustainable Sand Mitigation Measures (SMMs) are mandatory in order to protect railways from windblown sand at both SULS and SSLS. A number of SMMs have been proposed in the past, notably in the last decade. Source SMMs are directly located over the sand source (dunes or loose sand sheets): they are intended to prevent sand erosion, e.g. by chemical or mechanical treatment of the sand surface. Path SMMs are located along the windblown sand path from the sand source to the railway: they promote sand sedimentation far away from the railway. Receiver SMMs are directly applied to the railway: they aim at preventing sand sedimentation on the track, or at making the railway components more resistant to sand-induced wearing. The SMM rationale designing and quantitative performance assessment are needed in order to orient railway owners, engineers, general contractors and railway operators among the available technical solutions. Despite the tremendous technical effort of designers and the economic engagement of infrastructure owners, the railway protection from windblown sand has remained for a while at its infancy and in the realm of the qualitative empiricism. Funded in 2014 by Politecnico di Torino and Optiflow Company, the Windblown Sand Modelling and Mitigation international and intersectoral research group (www.polito.it/wsmm) has pioneered a systematic and scientific approach to railway sand protection.

About SMaRT

The importance of the problem was also recognised by the European Union that funded a 4-year long research project (2017-2020) named SMaRT - Sand Mitigation around Railway Tracks (www.smart-eid.eu). SMaRT is supported by the European Union's Horizon 2020 research and innovation programme.

SMaRT aims at further stepping-up research and development in Sand Mitigation. SMaRT is developing standardised techniques for assessing sand hazards to railways, conceiving new and effective Sand Mitigation Measures, and assessing their performance using innovative computational simulations and field tests.

In order to achieve these goals, SMaRT consortium consists of a multidisciplinary and intersectoral team of two top ranked Research Universities (Politecnico di Torino, IT and University of Oxford, UK) and a high skilled Consulting Company (Optiflow, FR). They offer competences in different scientific and technical fields ranging from geomorphology, applied mathematics, computational fluid dynamics, wind engineering, structural design.

Last but no least, SMaRT consortium is complemented by a panel of global players in the railway industry ranging from civil works (Astaldi), to railway equipment (Reco, Salcef group), and signalling systems (Ansaldo STS). They contribute to the project by expressing industrial needs, taking researchers on site, verifying the technical and constructive applicability of the results.

SMaRT in Africa

Africa is the preferred real world SMaRT laboratory. University of Oxford has a long term research activity in Namib desert and a fruitful collaboration with local stakeholders, such as Desert Research Foundation of Namibia, and Gobabeb Research and Training Centre. SMaRT industrial partner organisations (Astaldi, Ansaldo STS, Salcef) have played a key role in important railway infrastructure projects in Africa, and have local branches in several African Countries.

In January 2018 SMaRT researchers together with Astaldi engineers carried out detailed site visits along Redjem Demouche – Mecheria – Bechar railway in Algeria, at the gates of Sahara desert. Sand Limit States have been systematically recognized, and environmental conditions observed, such as wind speed and sand granulometry.

From August to October 2018 SMaRT Oxford team has carried out detailed, long-term in situ measurements along the Aus – Lüderitz railway in Namib desert. Collected data about wind speed, sand drift and sand sedimentation around the railway embankment will allow a deeper understanding of the railway burying process.

Acknowledgment

SMaRT is funded by the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie actions (grant agreement 721798).

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TMH Africa - The Deal Is Done!

"Globally we are developing local production sites, which enable the products to be assembled in each country, creating jobs and developing skills for the people of these countries. We invest in factories and people, and bring financing,"

~ Kirill Lipa, Global CEO, Transmashholding

TRANSMASHHOLDING

TMH Africa is a subsidiary of Transmashholding (TMH), the largest manufacturer of rolling stock in Russia. It is 30% owned by Black Economic Empowerment Partner, MJISA. With the acquisition of the rail manufacturing facility, TMH Africa and its partner MJISA will contribute towards South Africa's inclusive economy through job creation and skills development, in line with South Africa's National Development Plan's key priorities.

The rolling stock manufacturing facility will become Africa's gateway production site, which will enable the assembling, maintenance and refurbishment of rolling stock. TMH Africa's capable workforce will continue delivering innovative diesel and electric locomotives as well as coaches in South Africa and the rest of the continent.

On the successful acquisition of the 45,000m² rail manufacturing facility, Martin Vaujour, TMH International AG Chief Executive Officer said "We are very proud of closing this deal. This is a major milestone in our investment strategy to create local champions in our markets.

"TMH Africa, becomes the TMH Group - narrow gauge industrial site, and we are looking forward to serving customers worldwide from our African setup for both services and sub-assembly manufacturing".

On how the acquisition will add value to the South African rail sector, Jerome Boyet, CEO for TMH Africa said "This newly acquired renowned world class manufacturing facility demonstrates our Africa growth strategy, giving TMH an unparalleled position in the railway sector with a full suite of innovative technologies to develop services which are, African produced and African designed rolling stock solutions for South Africa and the rest of the African continent. The acquisition will unlock our global expansion strategy, which will pave the way to capture further growth opportunities for the rest of Africa," he added.

At the recent InnoTrans 2018 event, held in Berlin, Railways Africa had the opportunity to interview the JSC Transmashholding (TMH) leadership, to gain insight on their global capability, investment strategy as well as an update on their progress in terms of their investment in Africa.

TMH Global CEO Mr. Kirill Lipa: "TMH is dedicated to the production of rolling stock, we are the number one company in Russia and the CIS countries, producing all types of rolling stock, including underground and surface locomotives, passenger coaches, EMU's and DMU's and metros as well. We have a wide portfolio of products and an extensive range of expertise. The TMH business is growing both in Russia and outside of Russia, production is up 30-40% in comparison to the previous year and brings substantial numbers in terms of revenue – the equivalent of above US$5 billion. We have over 100,000 employees in different locations around Russia. The TMH business is both sustainable and profitable.

"I believe that are well positioned to be globally competitive, our global strategy is somewhat different, we are not seeking to participate in a countries tender process to just sell something once and then leave.

Mr. Kirill Lipa, Global CEO for Transmashholding

Watch on YouTube:
https://youtu.be/XezEsUCqdwU

Our tradition and belief is to build and participate in each market throughout the good and bad times.

"Our understanding is that we have to be close to the client and meet the client's needs instead of just promoting the products that we have. What we offer to our customers, is the ability to increase the reliability and availability of their current fleet, regardless of who the original OEM was. Our goal is to help customers extract maximum value out of their assets.

"Globally we are developing local production sites, which enable the products to be assembled in each country, creating jobs and developing skills for the people of these countries. We invest in factories and people, and bring financing," concludes Mr. Kirill Lipa.

In June this year, TMH announced their investment in the African market through the establishment of TMH Africa and the acquisition of DCD Rolling Stock. (*Download issue 4/2018 - http://bit.ly/2niKbqm*) Mr. Jerome Boyet, Chief Executive Officer for TMH Africa, provided an update on their activities:

"Since we last spoke in June at Africa Rail we are now at InnoTrans in Germany and TMH Africa is moving ahead with their plans. We are currently concluding the acquisition of the DCD Rolling Stock facility and we will be ready for operation shortly. We will be focusing on locally manufacturing rolling stock for OEM's, any OEM we are open to all OEMs in the market, and we are focusing on maintenance and refurbishment of rolling stock.

"On the manufacturing side we will continue to manufacturer for OEM's who want to localise in South Africa. We have the skills and a capable workforce, our already established facility is currently delivering diesel and electric locomotives as well as coaches, which we will continue with.

"On the maintenance side we will focus on diesel locomotives and coaches for the south African market and the continent, bringing innovation from our mother company, in these fields. We will use our in house engineering capacity and Moscow based expertise to make sure that we deliver for South Africa. As part of the acquisition we will continue to develop our employees and attract young people.

Jerome Boyet, Chief Executive Officer for TMH Africa

Watch on YouTube:
https://youtu.be/sIQab7n3pkk

"TMH Africa, becomes the TMH Group - narrow gauge industrial site, and we are looking forward to serving customers worldwide from our African setup for both services and sub-assembly manufacturing"

~ Jerome Boyet, CEO for TMH Africa

We will be developing our capability especially in diesel engines and coach refurbishing. This will be carried out as a training programme together with our mother company in Russia. To ensure that our team understands what TMH is all about. We will be sending 30 of our workshop welders to Russia to be trained in the factory, creating different synergies between the engineering and factory teams.

"In terms of skills development, whilst most will be conducted internally through the group training capacity – we would also like to partner in South Africa with an institution that will help us develop the ability of our people and skills base in the factory.

"We are also looking to find an ecosystem of suppliers and partners to deliver, especially on the refurbishment side, we know we cannot do everything, we will need components and suppliers to ensure that we refurbish on time and meet the localisation content threshold.

"Localisation is a requirement in South Africa and the continent, but we believe that there is enough depth to be able to source locally and not resort to external resources when we have them available on the continent. Our intention is to try and develop inter-African trade so that we have the capacity and the skills across the continent which, will ensure that we thrive.

"Africa is becoming more and more urban and it is important that continental rail operators like PRASA in South Africa, can operate efficiently and move people. This is the trend for the next 20 years in Africa.

"We foresee freight to be an enabler for the development of the continent, as it stands Africa is exporting significant volume from mining and production areas through to the ports. Much of this is happening via road which is both uneconomical and environmentally unfriendly. We believe that there is a rail case to be made in Africa and we are able to meet these needs," concludes Jerome Boyet, Chief Executive Officer for TMH Africa.

Alstom's Gibela Joint-Venture Opens **Largest Train Manufacturing Facility** In South Africa

The Alstom-led Gibela joint-venture in October, inaugurated the largest and most advanced centre for train manufacturing in Africa – the first of its kind on the continent. The facility was officially opened by Mr. Cyril Ramaphosa, President of South Africa, along with other dignitaries, such as, Dr. Blade Nzimande, the South African Minister of Transport, Gauteng Province MEC for roads and transport, Mr. Ismail Vadi, Sibusiso Sithole, CEO of PRASA, Thierry Darthout, CEO of Gibela, Didier Pfleger, Alstom Senior Vice President for Middle East and Africa, and Xavier Boisgontier, Alstom Managing Director Southern Africa, along with Gibela's partners Ubumbano Rail and New Africa Rail.

Earthworks in 2016.

Completed plant 2018. Photo courtesy Alstom.

Photo courtesy Alstom.

This manufacturing plant will be responsible for the creation of a new, modern fleet of 580 six-car X'Trapolis Mega commuter trains to be built over the next 10 years for the Passenger Rail Agency[1] of South Africa (PRASA). The 53,000m^2 site in Dunnottar, east of Johannesburg (Ekurhuleni) spread over a 78ha site, took 22 months and 2,5 million hours to complete and cost R1 billion to build. Its manufacturing workshops are designed in a modular format to enable lean manufacturing processes which will, at peak production produce 62 trains per year. The first entirely locally produced South African train is expected to roll out of the factory at the end of 2018.

The world-class manufacturing facility and its equipment feature the latest innovations, allowing the advanced manufacturing processes necessary for the assembly of at least 10,000 parts and the linkage of 250 industrial activities. The plant boasts a bespoke training centre supporting the continued transfer of new rail-related skills to Gibela's employees and suppliers. A 1,2km test track for the dynamic testing of the new trains and an office complex complete this modern train production hub. Over 700 local Gibela employees will be ready to achieve maximum manufacturing capacity at the end of 2020.

Gibela CEO Thierry Darthout explains: "The plant provides South Africa with its own capacity to manufacture modern trains. This will have a massive, positive impact not only on South Africa's commuting public, but also on the country's economy".

"It's an honour to have Mr. Ramaphosa officially open our plant. We are all immensely proud of what we've achieved and are committed to delivering trains to the Passenger Rail Agency of South Africa. These are trains that will, first and foremost, improve the lives of South Africans. This factory is a major boost to the rail industry in the country, as South Africa will now be able to produce state-of-the-art trains locally and will become the Alstom centre of excellence for railways in Africa. This will have a positive impact not only for South African commuters, but also for the country's economy as a whole," said Didier Pfleger, Alstom Senior Vice President for Middle East and Africa.

Photo's Craig Dean.

[1] In 2013, Gibela secured the PRASA (Passenger Rail Agency of South Africa) contract to build 600, state-of-the-art, X'Trapolis mega commuter trains as well as the 19-year contract for maintenance, technical support and spare parts. The first 20 trains were manufactured in Alstom's facility in Brazil.

Value Creation in a Changing Rail Environment: **People as an Agile Asset**

This article aims to provide insight into the way people and their skills will be required to adapt in the rail industry. A sector destined for change, based on the impact of the 4th Industrial Revolution and associated global trends.

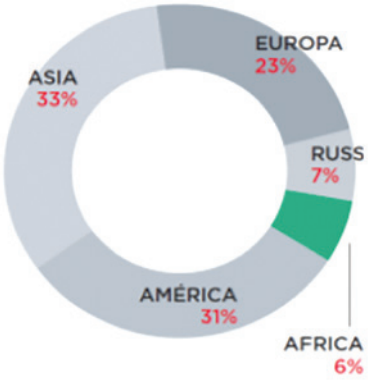

Figure 1: Distribution of World Railway Network per Region in 2011
Source: UIC International Union of Railways - A new lease of life for African Rail: Destination 2040.

The impact of rapidly-advancing technologies and digitalisation across industries poses a challenge to young individuals wishing to determine both their future careers, as well as the associated required skills.

The journey is best described by placing Africa's railways in perspective with global railways and development trends, followed by an analysis of the current reality of African railways in the context of a strong drive for social-economic development. It concludes with a challenge for the young leaders of the future to make a difference through being adaptable as well as to embrace a continuous learning ethos.

Africa In Perspective

Africa encompasses 6% of the world railway network (***Figure 1***) (out of the 35 countries possessing operating railways). It is important to understand how railways in Africa are currently positioned in terms of market share with relation to both freight and passenger volumes.

The imminence of the 4th Industrial Revolution, with the associated technologies and digitalisation, poses many exciting opportunities for Africa, should we identify and prepare for these.

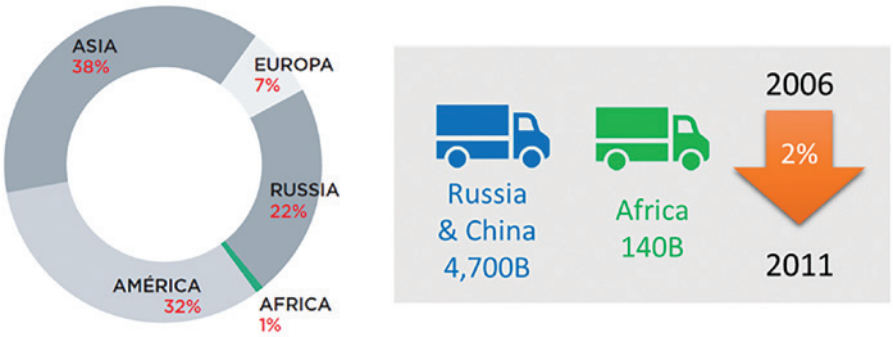

Figure 2: Freight Tonne-Km per region in 2011
Source: UIC International Union of Railways - A new lease of life for African Rail: Destination 2040.

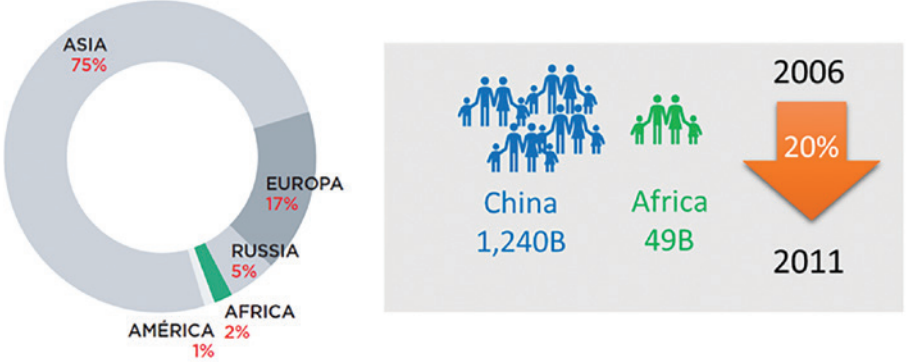

Figure 3: Passengers-Km per region in 2011
Source: UIC International Union of Railways - A new lease of life for African Rail: Destination 2040.

Anneri Robinson, B.Eng. Industrial, PrEng, Rail and Transit Practice Lead (AEM) Hatch Africa

Anneri has 25 years of supply chain and logistics experience with specific focus on rail (14 years). This includes heavy haul and passenger rail operations design and optimisation. Key areas of expertise include supply chain analysis and design, rail service design and end-to-end network modelling. With a wide range of industry experience such as coal sourcing strategies, iron and manganese ore, bulk commodities distribution and retail supply chain development, automotive warehousing and resource optimisation such as rolling stock, operational costing and operational readiness.

Project experience includes Operations Lead on the Transnet's 16Mtpa Manganese Phase 2 design and construction project responsible for the modelling validation, rail operational interfaces and logistics development components. Project lead for GMA asset audit and Mine logistics simulation studies. Anneri has developed and applied strong project management skills on both small and large-scale projects involving multi-discipline participation.

According to statistics issued in the International Union of Railways publication "Destination 2040", the rail freight market share declined by 2% over the five years from 2006 to 2011, which implies an increase in road freight volumes, as illustrated in (***Figure 2)***. It also indicates a significant potential for additional volume to move from road to rail.

In the case of passenger volumes (***Figure 3***) the market share has decreased significantly (by 20%) in the five years from 2006 to 2011 despite the growth in population in urban areas.

The above scenarios indicate that Africa has difficulty in sustaining rail-bound market share in both freight movement and passenger transport, despite the clear benefits for sustainable development in rail as a preferred mode of transport.

According to a paper published by the African Development Bank in 2015, "Financial Options for Rail Infrastructure", there is a shift to relocate industrial activity from abroad to the African continent, as shown in (***Figure 4***).

Figure 4: Industrial relocation from emerging countries to African countries. Source: African Development Bank 2015.

This potential growth in freight demand is an exceptional opportunity to increase freight volumes on rail, should railways prepare for it. The same applies for passenger rail and urban rail opportunities. According to the United Nations Urbanisation prospects (***Figure 5***) the increase of urban population from 76 million to over 105 million will not be sustainable if well planned urban and transport **orientated** design is not considered in the main African cities.

Main African Urban areas	Country	Pop. 2011 (million)	Pop. 2025 (million)	Change 2011-25
Lagos	Nigeria	11,2	18,9	68%
Cairo	Egypt	11,1	14,8	32%
Kinshasa	DRC	8,7	14,5	65%
Luanda	Angola	5,1	8,9	76%
Khartoum	Sudan	4,6	7,1	53%
Alexandria	Egypt	4,5	6,2	38%
Abidjan	Côte d'Ivoire	4,3	6,9	63%
Johannesburg	South Africa	3,8	4,7	23%
Dar es Salaam	Tanzania	3,6	7,3	103%
Cape Town	South Africa	3,6	4,4	23%
Kano	Nigeria	3,4	5,7	69%
Nairobi	Kenya	3,4	6,1	82%

Figure 5: UN prediction on population growth from 2011 to 2025.

Reality Of Change

Let's consider South Africa as an African country. Globally, South African logistics performs very well with an overall ranking of 23rd out of 155 countries according to the 2012 Logistics Performance Index published by the World Bank. South Africa made progress between 2010 and 2012, improving by five ranks and now ranks between Norway and Italy. The critical question to ask, is that, although South Africa performed well six years ago, can we adapt and "fit" the wave of change required as a global player?

Africa is constantly experiencing significant demographic growth as well as economic, political and social commotions, marked by change in institutional, political and infrastructure development plans. In order to make the best use of all the opportunities, the International Union of Railways listed the following critical components to be addressed collaboratively for the future success of railways in Africa:

- Developing seamless multimodality
- Improving the product offering for passengers and businesses
- Promote regional interdependence and confirm Africa's place on the world stage
- Good governance
- Modernisation, development and interconnectivity

At the Southern Africa Heavy Haul Association's (SAHHA) workshop in September 2018 the following question was posed: How do we move Heavy Haul Operations from **Good to Great** levels of performance?

The following key themes were the focus of discussion confirming the need to focus on embracing technologies to renew and rehabilitate a rail network for growth:

- Technological Developments
  - Developments in Track Management Technologies
  - Developments in Bridge and Tunnel Management Technologies
- Big Data And Analytics
  - Predictive Analytics
  - Data Management to enable effectiveness maintenance
  - Digital Interlocking
- Automation And Simulation
  - Electrical Overhead Line Inspection Robots
  - Building Information Modelling (BIM): From Concept to Life Cycle Management

These themes at the end of the day bring the industry leaders back to the statement: "**Development of The New Technical Skills in Line with The Themes Of The 4th Industrial Revolution.**"

Listed below are key areas Railway leaders need to focus on to get the basics right, and although this is not an exhaustive list, focusing on these technologies can significantly contribute to the successful growth of railways in Africa:

- Run longer and heavier trains
- Use of high-grade, hardened rail and wheel steels
- Better management of wheel-rail interface
- Alternating current locomotive traction with increased power
- Rolling stock and track inspections using wayside detection
- Sophisticated train planning and control tools

According to the World Economic Forum, the challenge with the 4th Industrial Revolution is "**empowering people**, *not* **the rise of the machines**". This illustrates the importance of focusing on how the skillset of the future is going to look like, in order to shape and direct the young people entering the employment market in the next five to ten years, in light of the fact that 80% of the jobs that will be required in ten years' time do not exist yet.

Lessons For The Mining Industry

Digital Transformation Improvements experienced / realised in the mining industry can provide an important indication as to the potential for benefit to the transport industry. In a technical paper named "Practically Road Mapping the Technology and Digital Transformation in Mining" written by C. Holtzhausen and T. Moodley - Hatch Africa (Pty) Ltd - the following typical benefits can be realised when digital transformation is adopted and implemented correctly:

- 10 – 15% in cost reduction through the application of asset management focussing on *real-time conditional monitoring and predictive maintenance*
- 1 – 5% in throughput improvement by enhancing autonomous execution through *machine autonomy, plant automation and operator assistance*
- 3 – 4% in revenue increase by applying transformative digital technologies, including *internet of things (IoT) platforms and sensors, big data and advanced analytics, virtual and augmented reality and mobile devices (WEF, 2017)*
- 20% in throughput improvement by integrating operations across the value chain, through focusing on *collaborative environments and enabling platforms* including, integrated operations centres and performance centres.

Although these benefits are specific to mining, a great deal can be applied to the transport industry due to the strategic link that exists with the mining industry, as well as, common challenges experienced by both industries, such as throughput improvement and process integration.

	Current	Future
Information Gap	4 – 8 hours	< 5 minutes
Impact	Reactive Reporting	Proactive Reporting
Systems	Meetings, Reports, Walkabouts	Short Interval Control, Real Time KPIs, Predictive Trending
Action Gap	4 hours	< 10 mins

Figure 6: Cultural shift required for the 4th Industrial Revolution
Source: Hatch Africa (Pty) Ltd.

There are some key cultural shifts that will realise ***(as depicted in Figure 6)***. These are significant due to the increase in tempo of change and ability to act on information as well as the manner in which people will interact with their environment.

In getting to the essence of how to prepare the workforce of tomorrow for what is required, three basic components need to be considered. The message from ***(Figure 7)*** illustrates the importance of the relationship between these three components to realise transformation to a new era.

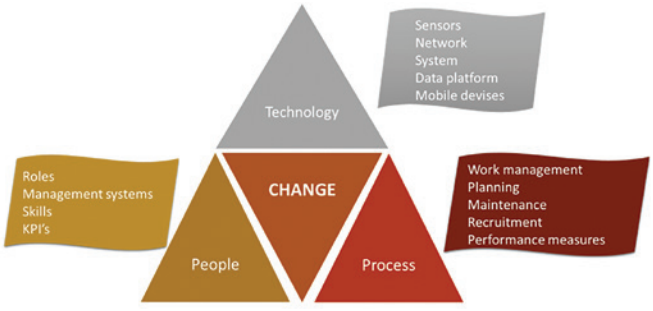

Figure 7: Relation between Technology, Process and People.

The change management process and required effort to successfully realise the benefit cannot be over-emphasised and will require critical skills such as innovation, creativity and agility, as depicted in (***Figure 8***), in an integrated manner.

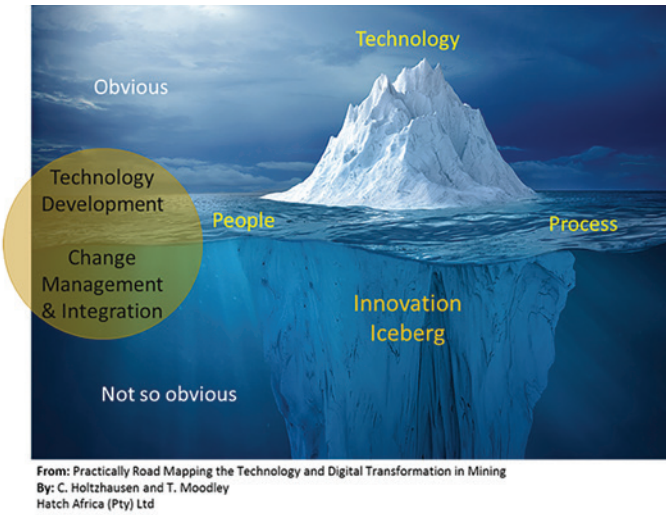

Figure 8: Innovation Iceberg.

To conclude, individuals seeking to embrace the future and maximise career growth will have to:

- Understand and act on information that affects their career paths (e.g. automated process or "new" technologies replacing current manual processes)
- Have the ability to continually learn in knowledge and embrace change as quickly as possible
- Grow and advance in a career by making successful transitions between different "jobs" frequently throughout their career.

Organisations on the other hand, should promote and encourage an on-going learning and entrepreneurial culture within their organisations and allow for young people to express their creative and innovative ideas within the organisational framework.

Should the Railway industry embrace these elements when moving into the digital transformation of Railways, the perceived "threat" to socio-economic aspects such as job retention will be managed and even create opportunities for job creation, albeit in different fields of expertise.

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The Railway Safety Regulator (RSR), is tasked with overseeing safety on South African railways and publishes the State Of Safety Report annually.

Ms Tshepo Kgare, Acting Chief Executive Officer. Photo: Craig Dean

State Of Safety Report 2017/2018

The current report provides an analysis of operational occurrences and security-related incidents in the rail environment for the reporting period of 1 April 2017 to 31 March 2018. It also identifies the main areas of concern and provides input to enable the Regulator and operators to develop strategic interventions to address the identified areas needing attention.

This year's report, the 12th to be published by the RSR, differs from its predecessors in that it analyses the risks associated with rail operations to the public, passengers and workforce by reporting on the consequences (that is, harm) of occurrences as opposed to reporting on the frequency of occurrences only. Safety profiles for each major occurrence category were produced to obtain a more holistic picture of the railway safety performance.

The safety and security occurrence data shows an increase, while traffic volumes for each of the three major operators – Transnet Freight Rail (TFR), Passenger Rail Agency of South Africa (PRASA) and Bombela (Gautrain) – illustrate a decrease.

The top five categories of occurrences reported in 2017/18 are:

1. Collisions (1027)
2. Fire (745 - 70% of which are attributed to veldt fires)
3. Platform-train interchange occurrences (744)
4. People struck by trains (588)
5. Derailments (450)

TFR contributed most to three of the aforementioned operational occurrence categories. However, by examining the consequences of all the occurrences reported in 2017/18, the top five categories of concern, which contributed the most harm, were found to be:

1. People struck by trains, (FWI= 367.4)
2. Platform-train interchange occurrences (FWI = 77.8)
3. Level crossing occurrences (FWI = 67.6)
4. Collisions (FWI = 41.2)
5. Passengers travelling outside designated area of train (FWI = 39)

PRASA was responsible for contributing most to three of the five mentioned operational occurrence categories.

FWI - "fatalities and weighted injuries" or FWI, abbreviated

FWI is calculated using the following formula: [number of fatalities] + 0.1 x [number of injuries]. It should be noted that this derivation of harm does not correspond with that used within the European Union member states.

Security-related incidents increased by 21.3% in the 2017/18 Financial Year. PRASA reported the most malicious damage (50%) to property in 2017/18. A significant proportion (73%) of personal safety at station incidents occurred in the Western Cape with 42%. The Western Cape also recorded the greatest number of assault incidents for personal safety on trains in 2017/18.

The report does make for interesting reading and can be downloaded from:

http://bit.ly/2Qp2yqs

Buttskop Level Crossing Accident

On 27 April 2018 at the Buttskop level crossing in the Western Cape - Metrorail train No. 3200 collided with a bakkie. The Railway Safety regulator has released the investigation report detailing the incident and the outcome. This is an overview of the event and the full report can be download from:

http://bit.ly/2P2HdGE

Background:
At approximately 05:46, a Metrorail passenger train No 3200 travelling from Strand to Bellville collided with a bakkie at Buttskop level crossing in Blackheath, Cape Town. There were seven occupants in the bakkie and all were fatally injured. The train was travelling at a speed of 82km/h on a railway line which has a section speed of 90km/h.

The level crossing is protected by flashing lights, stop signs and boom gates on both sides. On 25 April 2018, it was reported that an S1 remote control cable had been stolen in the section. As a result of the theft, the interlocking in the section was dysfunctional.

This affected the Central Traffic Control center between Eerste River and Blackheath. The Train Control Officers were unable to see the position of trains in the section and could not operate signals. The functionality of the boom gates and flashing lights at the level crossing were also affected by the cable theft.

The theft played a role in the delay of the trigger points for the flashing lights and boom gates at the level crossing, resulting in only the second trigger point closer to the level crossing being activated; the first trigger point was not activated. Trains were then manually authorised into the affected section.

The stolen S1 remote control cable played a significant role in that, under normal circumstances, it allows the level crossing protection to be triggered at a distance of approximately 1,4km away from the level crossing. The distance gives enough time for the flashing lights and the boom gates to activate before a train passes the level crossing.

On the day of the accident, the level crossing protection was only triggered by the surrounding track circuit which is approximately 400m away from the level crossing. The initial trigger– which is 1,4km – away was, therefore, not activated, which meant that the boom gates and flashing lights delayed in closing off the level crossing.

It was observed onsite that there are cameras at the level crossing which are controlled by the traffic department. It could not be determined whether the cameras captured the accident at the time the report was completed.

Functional tests of the signalling system at the level crossing were conducted and the flashing lights and the booms were working. Brake tests on the train were not conducted on site due to a broken steel vacuum pipe. The train's CPUs from the motor coaches were removed from the train to analyse the speed and train handling before the accident. The train was travelling at a speed of 82km/h and the stopping distance of the train was within the stopping distance parameters. The train was hauled to Salt River depot, where the headlights were tested, they gave visibility of about 240m.

The data from the event recorder fitted on the leading motor coach was uploaded and analysed by PRASA personnel. The report states that the event recorder was lagging by approximately seven minutes. The lagging time has an impact on the activation of the emergency brake application and the time for the collision between the train and the bakkie.

Before the occurrence, the train was travelling at 82km/h. Investigations show that the train driver applied the emergency brake application a second before or during the impact with the rear end of the bakkie.

The train was fully charged and in traction when the driver applied the emergency brake application. The vacuum pipe pressure was sitting at 62kPa, and this dropped immediately to zero after the driver applied the emergency brake application on the leading motor coach. After the emergency brake application, the train set was able to stop within 400m as designed according to the stopping distance curve for class 5M2A and 10MX coaches.

Findings:

- Though the train was travelling below the section speed of 90km/h, there was abnormal working conditions on the day of the accident due to S1 cable theft. The train could have reached the level crossing with all the protections fully activated if it was travelling at 30km/h. Therefore, the train driver was travelling above the abnormal working conditions speed restriction on the day of the occurrence.
- The trunk radios and recorders at the CTC were not working on the day of the occurrence.
- The cable was stolen three times in one week. There is a problem of vandalism in the area.
- The technicians have not been formally trained to conduct cable repair. Cable training has been identified as a skills gap.
- There is a shortage of staff to effectively attend to faults.
- Personnel have not been tested for fitness of duty since 2012 which could result in decreased health and productivity.
- The bakkie driver acted in an unsafe manner and did not ensure that the level crossing was safe before crossing.
- Some road markings are starting to fade.

Human error, a massive skills gap and an increase in theft and vandalism continues to wreak havoc on safe rail transport in South Africa.

The reports for the Geneva station level crossing incident is also available for download:

http://bit.ly/2Suk9P8

How To Build A **Sustainable Safety Culture** Of A **Distributed Workforce** In The **Fast-Evolving Rail Industry**

By Eng. Paul Ernest Kabaale, former General Manager – SHREQ (2011 – 2017), Rift Valley Railways (RVR) – Kenya -Uganda railway network concessionaire.

Case Study

The Kenya – Uganda Railway is a metre gauge railway system linking the interiors of Uganda and Kenya to the Indian Ocean at Mombasa in Kenya. The railway is essential for providing transport services for both freight and commuters.

The Governments of the Republic of Kenya and the Republic of Uganda jointly agreed to concession their respective railways in 2004. In 2006, Rift Valley Railways (RVR), through Rift Valley Railways Kenya Ltd (RVRK) and Rift Valley Railways Uganda Ltd (RVRU) were given the concession to rehabilitate, operate and maintain the former government-run rail networks as one seamless railway system. The conceded railway network has 2,350 route-km of a metre gauge track. About 1,421km of the railway network forms the main line of which 1,182 is in Kenya and 241 is in Uganda.

With the concession, came significant workforce downsizing due to:

1. Organisational re-engineering meant to achieve dramatic improvement in critical, contemporary measure of performance such as cost and operational efficiency
2. Advancement in technology upgrades within the rail industry

Just like many concessions, RVR was faced with the difficult challenge of managing changes in the workforce at a time when budgets were tight, pressures to decrease costs and improving productivity were high, and there was still an expectation to maintain safe operations.

The workforce changes necessitated allowing more employees to work remotely and independently. Establishing an organisational culture in which all employees are fully committed to the company's values, particularly regarding safety, became an even harder task. Doing so when the workers were spread across 1,300km with little contact with management added another dimension of difficulty. In this kind of situation, supervision that can bridge the gap between distributed workers and the company's culture is vital.

Background Situation

Safety is a fundamental aspect of operational excellence in a business. The lack of internalisation of safety aspects in all business processes can potentially be a fatal flaw in enabling a company to maximise returns to its shareholders.

Pre-concession, the Government parastatals, KRC and URC, managed safety from a "**technical**" and "**rule**" based approach. 'Technical' in the sense that the focus was on robustness of infrastructure and rolling stock, and functioning safety devices to eliminate the effects of human error and, 'Rule based' meant that the railway system was considered as 'clockwork' where safety was guaranteed by strict adherence to set rules and procedures with little or no room for interpretation or need for independent decision making by operators in the field, thus limiting system flexibility to a minimum.

The most vulnerable strongholds of this approach were sound technology, labour intensive operations, the retention of experience inside the organisation, and rules that work (and were partly unwritten) built up over decades. As no system can survive without adapting to new circumstances and demands, the real problem may potentially lie in the process of change itself. All too often existing systems and organisations are being dismantled, without new ones rolled out and implemented.

The above approach towards safety management may have been applicable in the 19th and 20th centuries; however, a new approach is required for the 21st century. The 21st century business model requires that all decision-making processes in an organisation reflect the safety culture in an organisation leading to higher motivation and morale,

In 2017, the Governments of Kenya and Uganda terminated the concession agreements and all railway assets reverted back to the appropriate Government parastatals. As such RVR ceased being the railway operator in 2017.

productivity and profitability. Supervisors play an increasingly important role in organisational performance as intermediaries and leaders between management and employees. Developing their functional competencies, combined with emotional communication skills and employee engagement, helps supervisors translate high-level strategy into practice so they can support an organisation's journey to a safety culture.

Impact of a Distributed Workforce on Safety Culture – the RVR Scenario

The safety performance of a distributed workforce in the rail industry is influenced by three aspects i.e. distance to the company in location, time, or organisation.

Each of the three aspects or combination thereof complicates a company's ability to successfully achieve companywide safety goals. In comparison to a "regular" workforce, distributed workers

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are typically not only exposed to more risk but are also expected to recognise and respond to risk independently. Workers must make decisions under significant time and cost pressures every single day at remote locations. In addition to the overarching safety culture of a company, distinct subcultures can develop at individual work sites or among smaller working groups. A strong safety culture among these distributed workers is therefore critical.

The Location Effect

RVR had eighteen (18) registered workplaces – 13 in Kenya and 5 in Uganda - spread across a network covering 1,300km. It was inevitable that distinct safety subcultures developed at the individual workplaces. Because of this "location effect," safety behaviour amongst these workplaces varied dramatically.

The Time Effect

A similar phenomenon was observed amongst workers within the same workplace but having asynchronous communication with leadership and the organisation's larger workforce. A classic example of this "time effect" included 2nd and 3rd shift workers who had limited personal interaction with the majority of their colleagues and even less with management which worked during "normal" business hours. Sub-groups of workers formed their own approaches to solving problems, and of greater concern, their own individual safety behaviours.

The Organisation Effect

Safety was also negatively affected by having employees, contractors and casual workers from community-based organisations working together at the same location. This "organisation effect" which was predominant at the main workshops and on the line were rehabilitation works were taking place, was a result of the contractors and casuals bringing their own cultures and values to the workplace. Integrating them into a unit with a common safety culture can be extremely challenging.

With ongoing workforce changes and the loss of operational safety experience, RVR was put under great pressure. The supervisors at the workplaces faced the greatest challenges. Increased span of control for the supervisors meant less time with their subordinates.

RVRs Strategy

The first and most important step to achieving an advanced safety culture across an entire organisation is effective leadership. Leaders must function as role models and set an example for the entire organisation by clearly demonstrating a commitment to safety.

That meant having visible safety leadership, commitment and accountability with the management engaging with shop floor staff, and thereby nurturing a system that would change the culture, enable continuous improvement and substantially reduce injuries.

In October 2011, the Executive Committee (EXCOM) and Board of Directors of RVR agreed that an action-driven plan was necessary to ensure significant improvements in the safety performance of railway operations. In this regard, the key themes of the actions that were identified were:

- Strengthening the culture of safety
- Promoting a learning industry and building internal capacity

Strengthening the Culture of Safety

RVR management identified the increasingly important need to focus on organisational factors that have an impact on the outcome of safety performance, with strengthening of safety culture recognised as having a definitive impact.

When it comes to executing on strategy, many companies tend to look at technology or processes first– often overlooking the contribution of their own workforce. Yet people are key. Supervisors play a crucial role in motivating and engaging their teams to realise the goals of the organisation.

Supervisors are positioned to lead in today's workplace by using their influence rather than the authority of their job titles. They must demonstrate felt leadership despite little direct interaction. Regardless of distance, workers must always perceive the presence of their supervisors.

To this end, RVR undertook a capacity development project mainly targeting supervisors with the aim of implementing a safe system of work that would guide the company to not only improve employee behaviour towards safety, but also establish a system that would change the culture, enable continuous improvement and substantially reduce injuries.

The supervisor capacity development project utilised a systematic approach, that involved both the lateral dimension of processes and procedures along with the vertical axis of understanding employee capabilities and behaviour. Supervisors play a critical role in translating strategy into practice and ultimately supporting an organisation's safety culture journey. In today's changing environment, that means marrying functional and technical competencies with the soft skills needed to inspire and engage their team members.

Finally, the new skills that were learnt were embedded into existing routines through coaching. This ensures that the behaviour change is long-term and that a sustainable learning organisation is established.

Promoting a Learning Industry and Building Internal Capacity

The 21st century is about empowering people to drive their governance structures. To do this people must be involved in decisions that affect their health and safety. This can only be achieved if the management understands the baseline culture upon which it can impart knowledge, skills and competency.

To achieve this, it is imperative that capacity building within an organisation be undertaken as solutions to local problems, and are best tackled using local resources in an organisation.

At the beginning of the program, 290 employees (Kenya - 190 and Uganda – 100) volunteered to be trained to take on the additional responsibilities of acting as Safety Representatives at the various workplaces in compliance to the OSH Acts. In the case of RVR, the mandatory 40hr training was done through interactive training sessions in which staff members were encouraged to highlight the issues facing safe and incident free operations of the existing railway network.

The training sessions were used for informal information gathering. During the time the training

consultants engaged the staff, they appreciated the skill, danger and difficulty of their jobs. It was during one of these informal discussions that it became clear that their definition of a “good shift” was one where they managed to load trains without them being delayed. To achieve this, they broke all the safety rules, put their lives at risk and worked heroically to meet their objective.

The overarching programme focused on improving and enhancing safe work processes, as well as building soft skills and a common understanding throughout the organisation.

Ultimately, the safety representatives needed to use peer to peer coaching and persuasive communication to strengthen bonds with co-workers, develop teamwork and improve decision-making at workplace level. This also has a powerful effect on behaviour, increases risk perception, improves judgment, and helps a distributed workforce to associate more with the organisation’s larger safety culture.

RVRs Scorecard

Rift Valley Railways (Kenya) Ltd (RVR) won the IOSH Railway Group’s International Safety Award 2015 for the most improved workplace.

The Nairobi Central Workshop as one of the 18 registered workplaces that benefited from the cultural change programme, saw the number of injuries on duty reduce by around 90%. The success followed a two-year project to change employees’ attitudes towards their working practices after it had discovered that a very high number of injuries were resulting from slips, trips and falling objects caused by poor housekeeping methods.

A ‘5S’ methodology was introduced to enhance employees’ safety and cleanliness around five key themes - sorting, setting in order, shining, standardising and sustaining. Management also trained 29 workshop staff as workplace safety representatives who acted as the go-between for workers to raise safety and health issues with management.

Because of taking these steps the number of reported injuries on duty across the workshop’s 25 shops reduced from 37 in 2011 to four minor cases in 2014. There was also a sizeable drop in the number of working days being lost through injuries or ill health.

With continuous improvement of the OHS management system, in 2017, the same Nairobi Central Workshops was recognised by the Directorate of Occupational Safety and Health Services (DOSHS) as having the Best Occupational Health and Safety Practices in the Service sector in Kenya and subsequently awarded the 1st Position National Award.

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GRINDROD'S COLLABORATION PAYS OFF IN MAPUTO

JSE listed Grindrod Limited and its partners, continue to build on its core freight management competence in improving and unlocking trade corridors. This is evident in the recent improvement in the efficiency achieved at the port of Maputo. Amongst other factors, the improvement is attributed to three major interventions which Grindrod is proud to be associated with.

Firstly, the Maputo channel dredge (port deepening) completed by the Maputo Port Development Company* (MPDC) in January 2017, at a total cost of US$85m, which allowed the largest post Panamax vessel to set sail from Maputo in June 2018 with 100,674 DWT; a record for this port. Total MPDC port volumes achieved in 2017 increased by 22% in comparison to 2016. Further investment in freight handling equipment to facilitate the more efficient loading of these type of vessels, at a cost of US$25m, will be complete in the 2nd quarter of 2019.

Secondly, the Berth Deepening and Quay Offset Project at Grindrod's Matola Coal Terminal (TCM) which now allows fully-laden Panamax vessels to berth at TCM. In recognition of the Berth Deepening project at TCM, on 12 October 2018, Grindrod, as the client, and its appointed consulting engineers, PRDW Africa (Pty) Limited, and contractor, Subtech Group Limited, jointly received a South African Institute of Civil Engineering award (SAICE) in the category of most outstanding civil engineering project (Railway and Harbour Engineering), whilst being highly commended in the category of Outstanding International Project.

Thirdly, the collaboration between key business partners Transnet Freight Rail (TFR), Mozambique Ports and Railways (CFM) and MPDC, allowed TCM to increase coal volumes by 36%. This significant increase came on the back of improved information sharing, continuous planning and commitments made in support of each of the parties' business models. The result is an improvement of 25% (to 50 wagons per train) on the coal rail-line and a 7% increase on the magnetite rail-line. In September 2018 the first 80-wagon train (a further 60% improvement on the existing coal-line) was successfully tested through the Maputo corridor.

These achievements contributed to TFR receiving a prestigious Platinum award for the Maputo Corridor at the Annual Logistics Achiever awards on 14 October 2018. The award gives top honours for: "Expanding South Africa's International Global Route-to-Market and capacity".

Andrew Waller, CEO Grindrod Limited commented: "I am extremely proud of what our logistics partners and Grindrod, in particular the Maputo teams, have done to unlock this corridor and provide an efficient solution to our customers. This not only involved the collaboration between TFR, CFM, MPDC and Grindrod, but also included the employment and on-boarding of 477 new (Mozambique nationals) employees and some +7,000 hours of training. To be associated with such prestigious awards in the process, confirms our strategic intent and human capital potential."

FIRST RAIL WAGONS ARRIVE AT GAC'S KAMSAR SITE

Guinea Alumina Corporation (GAC) SA, a major contributor in the mining sector in Guinea, has announced the safe arrival and unloading of the first rail wagons that will be used to transport bauxite from GAC's mining site to the coast at Kamsar.

The rail wagons, which were manufactured in China, each have the capacity to carry 85 tonnes of bauxite. GAC will use almost 500 of these rail wagons in total in its operations, where they will deliver bauxite ore to the new port facility at Kamsar. For fast and safe unloading at the port, specialised equipment is required, and GAC's new rail car dumper is currently being assembled after arriving in Guinea in June.

The rail car dumper will be capable of rotating two wagons at a time, tipping out bauxite which will be transported by conveyor to barges. The advanced technology used will enable GAC to unload two rail wagons every 90 seconds.

Each GAC train will consist of 120 wagons and will carry over 10,000 tonnes of bauxite.

Steeve Tremblay, Project Director at GAC, said: "With the arrival of the first of our wagons, we are a step closer to the first bauxite export. I congratulate the team on this milestone and look forward to the successful completion of the work that remains to be done."

GAC's project is one of the largest greenfield investments in Guinea in the past 40 years, with the first bauxite exports expected during the second half of 2019.

The total budgeted project cost of the GAC project is some $1.4 billion.

LOBITO CORRIDOR TRADE FACILITATION PROJECT

The government of Zambia has received a grant from the African Development Fund, in the amount of UA6,000,000.00 the equivalent of US$8,1 million to finance the Lobito Trade Facilitation Project. The project aims to accelerate growth in domestic and cross-border trade along the Lobito Corridor, through the implementation of harmonised trade facilitation instruments, strengthening coordination of joint corridor development activities, and fostering effective participation of Small and Medium Enterprises (SMEs) in value chains.

The government of Zambia intends to apply the proceeds of this grant to payments for goods, works, related services and consulting services to be procured under this project.

AFREXIMBANK HOLDS TALKS WITH ZIMBABWE, COTE D'IVOIRE AND COMOROS DELEGATIONS AT IMF/WORLD BANK ANNUAL MEETINGS

A delegation of the African Export-Import Bank (Afreximbank) led by the President, Prof. Benedict Oramah, recently, held talks with a Zimbabwean Government team led by the Minister of Finance and Economic Development, Prof. Mthuli Ncube, and the Governor of the Reserve Bank of Zimbabwe, Dr. John Mangudya, to discuss Afreximbank's support to Zimbabwe's economic recovery.

The meeting, which took place on the sidelines of the 2018 International Monetary Fund and World Bank Group Annual Meetings, highlighted the Bank's various facilities currently operational in Zimbabwe.

They discussed the modality of the $500-million Nostro stabilisation facility which Zimbabwe had requested from the Bank and agreed on the processes toward concluding that transaction by the end of October 2018.

The ultimate goal of the facility is to secure payments for essential imports and to promote exports, diaspora remittances and deposit of foreign currency. It is envisaged that this will restore foreign currency liquidity and stability in the market.

Afreximbank President Prof. Benedict Oramah (6th right) and Dr. Yani Younoussa, Governor of the Central Bank of Comoros (5th right), in group photo with some of the meeting participants, including Afreximbank Executive Vice President Amr Kamel (3rd right).

The Afreximbank delegation also met with a delegation from Cote d'Ivoire led by Adama Kone, the Minister of Economy and Finance. The President briefed the Minister on the work of Afreximbank in Cote d'Ivoire, including the development of industrial parks and provision of lines of credit to Ivorian banks, in addition to other forms of support to the economy.

KAPSCH CARRIERCOM'S STATE OF THE ART TELECOMMUNICATIONS SYSTEMS FOR THE EL GOURZI-TOUGGOURT LINE IN ALGERIA

Kapsch has planned, set up and installed Algeria´s first 420km's of GSM-R (Global System for Mobile Communications- Railways) the state-of-the-art telecommunication system for railways worldwide along the El Gourzi-Touggourt (EG-T) line. The project also included the implementation of 35 BTS-R (Base Transceiver Stations for Railways) and one BSC (Base Station Controller) as well as one core network connecting all Algerian lines. This big project was just the beginning. Until 2025 the system will be implemented on 12,500 railway kilometres in Algeria.

By using state-of-the art GSM-R by Kapsch, traffic security will be increased and more passengers and freight can be transported.

The maintenance and supervision of the system will be provided by the joint venture Rail-Telecom, which was created by the SNTF and Kapsch to make the Algerian railway system fit for the future. In addition, this joint venture foresees a know-how transfer and promising infrastructure projects to be realised within the upcoming years.

Secure, scalable and smart communications infrastructure provided by Kapsch CarrierCom already connects more than 83,000km's of railway track in Europe, Africa and Asia.

ABB TO ENABLE FIRST ELECTRIC RAIL LINK IN TANZANIA

ABB has been selected to supply substation equipment and engineering solutions for a 530km long high-speed electric line between Dar es Salaam and Makutupora. The project is part of a larger plan to link Tanzania's port cities with interior areas and neighbouring countries to stimulate regional trade and passenger travel in the region and help strengthen the economy.

The equipment will help power two separate but adjoining east-west rail lines – the Dar es Salaam – Morogoro railway line (DSM), and the Morogoro – Makutupora railway line (MDM). The new high-speed electric rail line will replace a slow, narrow-gauge line built more than 100 years ago, which is not suitable for high-speed transport of cargo and passengers.

The project will provide a crucial link between the country's most important port of Dar es Salaam and the country's interior hub, which also serves as a vital crossroads for north-south railway linkages. Tanzania, home to well-known game parks and destinations like Mount Kilimanjaro remains largely rural but aspires to become a regional transport hub between its port cities and hinterland areas and neighbouring land-locked countries.

When complete, the rail system will provide a vital link from the neighbouring countries to the global market via Dar es Salaam and will create a development corridor to sustain future growth. ABB will deliver a complete engineering solution and most of the key products, such as the substation automation control and protection system and ABB Ability™ OCC (Operational Control Centre).

The substation equipment and engineering solution will be delivered to Turkish EPC Yapi Merkezi İnşaat ve Sanayi, and the railway will be operated by the Tanzania Railway Corporation (TRC).

"ABB is pleased to be part of Tanzania's pioneering effort to build the first modern electric rail infrastructure in East Africa and encourage sustainable mobility in Africa," said Patrick Fragman, head of the Grid Integration business unit, a part of ABB's Power Grids division.

NAMIBIA - BETTER Q1-GDP RESULTS FOR THE TRANSPORT SECTOR

The Namibian Ministry for Finance in September released their Q1 GDP results, the items of significant interest for this specific publication is that of Transport and in particular rail and port. The document notes that: "The transport and communication sector is estimated to have recorded a growth in real value added of 2,5% in the first quarter of 2018, compared to 1,0% recorded in the same quarter of 2017.

The performance of the sector is mainly attributed to railway transport, port services and telecommunications subsectors which recorded strong growths of 24,1%, 12,6% and 2,7% in real value added, respectively.

Port services subsectors is estimated to have registered a strong growth of 12,6% in real value added, compared to a decline of 14,5% recorded in the same quarter of 2017. This is due to the increase in the cargo handled at the ports in the first quarter of 2018, compared to the same quarter of 2017. Total volume of cargo increased by 9,0% during the period under review.

The rise can be attributed to an increase in export activities of major commodities. However, sub sectors such as passengers transport, air transport and airport services recorded slow growths of 0,6%, 1,0% and 5,7% in real value added, compared to 1,6%, 16,4% and 11,5%, in the corresponding quarter of 2017 respectively.

Railway transport sub sectors are estimated to have registered a strong growth of 24,1% in real value added, compared to a decline of 10,5% registered in the same quarter of 2017. The performance of the sector is attributed to the volume of freight transported that has increased during the period under review, compared to the corresponding quarter of 2017."

ALSTOM BEGINS SHIPPING CORADIA POLYVALENT REGIONAL TRAINS FOR SENEGAL

Alstom is due to start the shipment of the 15 Coradia Polyvalent trains destined for Senegal from Alstom's site in Reichshoffen, France. This milestone follows successful completion of production, all on-site tests and validation by customer APIX.

The first train, which is being transported to the port of Le Havre in France for loading aboard the "Grande Angola", is expected to arrive at the port of Dakar in November. Bogies and cars will be reassembled at the rolling stock maintenance site at Colobane depot, located three kilometres from Dakar, before beginning static and dynamic tests.

"The departure of the Coradia trains for Dakar is the crowning achievement of the tests conducted at Reichshoffen. It bears witness to the commitment of all Alstom teams to meeting our customers' needs and expectations. We are proud to contribute to this important mobility project that will place Dakar among the first African cities to acquire such technology," said Raphael Bernardelli, MD North and Central Africa.

"We highly appreciate the on-time in-full delivery of Alstom. We are therefore delighted with the respect of the delivery schedule, especially for the trains, complying with the planning as previously decided by His Excellency Mr. Macky SALL, President of the Republic of Senegal. The ambition of His Excellency Mr. Macky SALL is to provide Senegal with a state-of-the-art transportation solution through the Regional Express Train," said Mr Mountaga SY, Managing Director of APIX.

Alstom's Coradia Polyvalent trains are part of the Regional Express Train Project (TER), a flagship element of the Plan for an Emerging Senegal policy framework. The 15 trains will help satisfy the increasing need for mobility in Dakar and will run on a new line connecting the centre of the city to the new Blaise Diagne International Airport. They will serve 14 stations over 55km, which they will cover in 45 minutes. The number of daily passengers is expected to be up to 115,000.

The Coradia Polyvalent for Senegal is a mainline dual-mode train (diesel and electric-25kV) capable of running at speeds of 160km/h. With a total length of 72 metres, the train has four cars and offers a maximum capacity of 531 passengers distributed through first and second class.

Alstom and its suppliers have mobilised more than 4,000 people for the manufacture of Coradia Polyvalent trains intended to Senegal. Alstom's site in Reichshoffen leads the manufacturing and validation of the trains. Five other sites in France are involved in the project: Saint-Ouen for the design, Le Creusot for the bogies, Ornans for the motors and alternators, Tarbes for the traction system and Villeurbanne for the on-board IT systems and passenger information.

Coradia Polyvalent, already adopted by SNCF and the French regions as well as by SNTF in Algeria, belongs to Alstom's Coradia range of modular trains, which benefits from over 30 years of expertise and proven technical solutions. More than 2,800 Coradia trains have been sold so far and around 2,300 are currently in service.

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ETHIOPIAN INFRASTRUCTURE REGENERATED

A crucial new railway link is expected to facilitate international trade and boost the Ethiopian economy. Keeping this route secure is paramount.

The 750km railway from Addis Ababa to the Red Sea coast provides a vital connection between landlocked Ethiopia and the Djibouti port – the strategic trade hub for Asia, Europe and the rest of Africa. As 95% of Ethiopia's imports and exports go through this port, reducing a 3-4 day road trip for haulage trucks into a mere 10-hour rail journey will have a huge impact on the development of the country's industry.

Any critical infrastructure demands effective security and the Ethiopian Railways Corporation (ERC) followed a meticulous process in establishing how to protect this strategically

significant route, keep people safe and uphold the free flow of trade. Considerable research into different technologies and suppliers was backed up by recommendations from organisations in other countries already handling similar security challenges.

Behailu Sintayehu, Chief Officer, Engineering Procurement Department, ERC, explained, "Our research confirmed that Smiths Detection is a key player, with extensive experience in ensuring the safety of people and assets. The company fulfilled our criteria of good quality equipment, reliability and reputation – plus the various tender requirements which were validated by independent technical specialists."

In support of the national security forces, a range of 39 Smiths Detection scanners will be deployed to prevent threats making their way onto trains at 16 major Ethiopian stations along the route by delivering high-speed, accurate screening for hand baggage, larger items of luggage and cargo. The equipment ranges from compact scanners for personal belongings to large X-Ray systems for goods pallets. This comprises 18 units of HI-SCAN 6040i; 12 units of HI-SCAN 9075HR; and nine units of HI-SCAN 145180-2is.

Developing The Line

The line was initially used to transport government freight, followed by commercial cargo and then passenger services. On this, the longest electrified railway in Africa, some stations are cargo only, with others handling both freight and passengers. Starting with one train each way per day, the schedule will build to three daily trains, each with a capacity of 3,500-4,000 tonnes of cargo. The Addis Ababa-Djibouti line is the first step in a vast 5,000km rail network which Ethiopia hopes to build by 2020, connecting it to Kenya, Sudan and South Sudan.

Public transportation networks, government buildings, prisons, public places and arenas are all highly susceptible to ongoing threats and attacks from a range of lethal weapons and explosive devices and Smiths Detection's solutions are designed to respond to constantly changing threats.

THE APPOINTMENT OF AN AFRICAN UNION HIGH REPRESENTATIVE FOR INFRASTRUCTURE DEVELOPMENT

Focus will be on the continental high-speed train, which is one of the flagship projects of the First Ten-Year Implementation Plan of Agenda 2063.

The Chairperson of the African Union Commission, Moussa Faki Mahamat, has appointed Honourable Raila Odinga of Kenya as High Representative for Infrastructure Development in Africa. This decision is part of the African Union's drive to expedite the integration of the continent through infrastructure, in order to promote economic growth and sustainable development. It comes against the backdrop of renewed efforts in this regard, as exemplified by the adoption, last March in Kigali, of the Agreement on the African Continental Free Trade Area (AfCFTA) and the Protocol on Free Movement of Persons and the African Passport, as well as by the launching of the Single African Air Transport Market (SAATM), in Addis Ababa in January 2018.

The High Representative will work to support and strengthen the efforts of the Commission's relevant Departments and those of the Planning and Coordinating Agency of the New Partnership for Africa's Development (NEPAD), within the framework of the Program for Infrastructure Development in Africa (PIDA), which was endorsed by the Assembly of the Union in January 2012. In this respect, his mandate includes mobilising further political support from Member States and the Regional Economic Communities (RECs) and facilitating greater ownership by all concerned stakeholders on the continent. He will also support the Commission and NEPAD initiatives to encourage increased commitment from development partners.

In the discharge of his mandate, and building on the work and leadership of the PIDA Presidential Infrastructure Champion Initiative (PICI), the High Representative will pay particular attention to the missing links along the transnational highway corridors identified as part of the Trans-African Highways Network, with a view to facilitating their development and

Continues on page 38

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Continued from page 36

modernisation. He will also focus on the continental high-speed train, which is one of the flagship projects of the First Ten-Year Implementation Plan of Agenda 2063, in the context of the relevant African Union decisions. He will interact with the current Champions of related African Union initiatives and seek their guidance, to ensure the required synergy and coherence.

The Chairperson of the Commission is grateful to Honourable Raila Odinga for accepting this important assignment. He brings with him a rich political experience and strong commitment to the ideals of Pan-Africanism and African integration, as well as a deep knowledge of infrastructure development. Honourable Odinga has served in a number of critical positions in a career spanning more than forty years. In addition to having been a Member of Parliament, he has held important ministerial portfolios, including Energy, Roads, Public Works, and Housing between 2001 and 2005. He has also served as Prime Minister of Kenya from 2008 to 2013.

The Chairperson of the Commission expresses appreciation to President Uhuru Kenyatta for his support to this decision, consistent with his commitment to African integration. He looks forward to the full cooperation of all Member States with the High Representative, as he carries out the mandate entrusted to him.

EUROPEAN UNION PROVIDES UGANDA UGX 91 BILLION TO REHABILITATE TORORO-GULU RAILWAY

The European Union has approved finance for the rehabilitation project of the Tororo-Gulu railway. A grant of €21,5 million will be disbursed from the European Development Fund (EDF) to rehabilitate this key transport infrastructure in Northern Uganda. The Government of Uganda will contribute with counterpart funding equivalent to €13,1 million.

The objective of the project is to reduce the transport costs within Northern Uganda and beyond, including South Sudan and Eastern Democratic Republic of Congo. Once rehabilitated the Tororo-Gulu railway will allow a significant part of cargo currently moving on wheels along the Northern Corridor to transfer to rail.

With this project the EU continues to support the transport sector in Uganda and the promotion of a multimodal transport plan focussing on the development of environmentally friendly transport modes such as railways and waterways. The project is also a mark of the EU's commitment to continue supporting Northern Uganda.

Together with the Gulu Logistic Hub, also funded by the EU, the Tororo-Gulu railway rehabilitation project will crucially contribute to improve performance of Northern Uganda's key value chains by facilitating cheaper import of export of products. It will contribute to achieve the overall objective of private sector development and job creation in Northern Uganda and to implement the Ugandan Green Growth strategy and Vision 2040.

The Tororo-Gulu railway line used to be a pivotal economic artery along the East African Northern Corridor linking the port of Mombasa and Eastern Uganda to Northern Uganda, as well as to South Sudan and Democratic Republic of Congo. The line has been out of service since 1993 because of unrest in Northern Uganda and unfair competition of overloaded trucks.

DCG, TAZARA SEAL AGREEMENT FOR DEVELOPMENT OF A NEW DRY PORT

The Dar es Salaam Corridor Group (DCG) and the Tanzania-Zambia Railway Authority (TAZARA) have entered into a partnership agreement for the development of a Dry Port at the terminal end of TAZARA in New Kapiri Mposhi, Zambia.

DCG emerged the winner from an open competitive bidding process and is soon expected to begin constructing the Dry Port on a Build-Lease-Transfer (BLT) Public-Private-Partnership (PPP) model.

Included in the terms are that DCG will take hold of the four (4) hectare piece of land, construct the Dry Port, operate (lease) it for 25 years and, thereafter, transfer all the immovable assets to TAZARA.

Speaking during the signing ceremony in Dar es Salaam, the Authority's Managing Director, Eng. Bruno Ching'andu thanked the investor for patiently waiting for the shareholders' approval of the Agreement.

"We are glad that the Attorneys General for both countries signed off this Agreement, but it was worth the wait because it's a significant development, being one of the first PPP models to be introduced under our strategic vision of engaging the private sector in the full utilisation of TAZARA's huge idle capacity," observed Eng. Ching'andu.

The Managing Director said that not only will TAZARA take possession of the assets after the expiry of the lease, but the

Authority would also earn regular revenue from the lease as well as from the Port's daily operations.

"Above all, this is one sure way of guaranteeing ourselves of additional freight traffic that will naturally accrue from the business generated by the Dry Port's operations," said Eng. Ching'andu.

DCG Chief Executive Officer, Mr. Jesper Sorensen commended the significance of the Agreement as a prelude to greater things to follow because the Dry Port operator intended to promote railways as the main mode of transportation in the logistics chain.

"We know that TAZARA represents a strong bond between Tanzania and Zambia and are confident that this Agreement signifies a new era in the development of logistics between the two countries," said Mr. Sorensen.

A dry port, sometimes referred to as inland port, is an intermodal terminal directly connected by road or rail to a seaport and operating as a centre for the trans-shipment of cargo to other inland destinations.

The area where the Kapiri Mposhi Dry Port is earmarked for is located on the northern side of New Kapiri Mposhi Railway station, measuring approximately 4,3756 hectares (10,81 acres), with an already installed gantry crane of 36mt lifting capacity.

About TAZARA

TAZARA is bi-national railway jointly owned by the Governments of the United Republic of Tanzania and the Republic of Zambia on a 50-50 shareholding basis. The 1,860km-railway was built as a turn-key project, with an interest-free loan from the People's Republic of China between 1970 and 1975. TAZARA connects Zambia to the seaport of Dar es Salaam in Tanzania and further provides road and railway inter-connectivity to other parts of Southern Africa. In essence, TAZARA provides a communication backbone for the three regional groupings of SADC, COMESA and the East African Community. For Central and Southern African hinterland importers and exporters with business ties to the Middle-East and Asian countries, including China. TAZARA provides the shortest route to the sea, through the Port of Dar es Salaam and is therefore a vital rail link in the logistical chain.

MADAGASCAR

Rehabilitation of the Fianarantsoa -East line is to be undertaken by the Sino-Malagasy cooperation, including the supply of new rolling stock – locomotives and wagons.

A memorandum of understanding was signed during the FOCAC summit in September, with CRBC for the development of a new railway line between, Antananarivo – Fianarantsoa.

PRASA WELCOMES THE RESCISSION OF THE SUSPENSION NOTICE

The Passenger Rail Agency (PRASA) welcomes the rescission of the Safety Permit Suspension Notice which was issued by the Rail Safety Regulator on 5 October.

PRASA had approached the Court to seek to set aside RSR's Notice to Suspend the Safety Permit, whose condition and deadline was deemed to have far reaching and dire consequences should it had been carried out.

Welcoming the Court interdict, the PRASA Board of Control, Ms. Khanyisile Kweyama, said "The rescission of the suspension notice by the Court, cannot be interpreted by management as absolving PRASA from its duty to ensure the safety of commuters and compliance with Safety Permit conditions. The decision to approach the Court was solely to avoid what could have been a national crisis if the notice was carried out. Whilst we appreciate the Court Order, it is now encumbered upon us as PRASA that we don't put this country on a knife edge ever again as a result of us defaulting on our commitment and responsibility to ensure the safety of the commuters".

Ms. Kweyama further assured the public and the commuters that, PRASA shall use all reasonable endeavours to ensure that it abides by the Court Order and that the Board shall see to it that management fully complies and carries out the necessary actions as specified by the order.

According to the Group CEO, Mr. Sibusiso Sithole, the setting aside of the Safety Permit Suspension Notice is a huge relief to PRASA but is not a decision that can be taken lightly by management as it comes with clear deliverables, "Compliance with the RSR Safety Permit Conditions is non-negotiable; not only because it is the basis through which we get our Operating Licence, but because it also guarantees the safety of our commuters. I personally will be putting stringent monitoring measures that will guarantee the safety of our operations and that of the commuters we serve" said Mr. Sithole.

The Court Order comes with very clear and stringent measures that would require PRASA to be vigilant in ensuring compliance and fulfilling the requirements as detailed in the Order.

APPROVAL FOR THE EXPANSION OF THE GAUTRAIN RAIL NETWORK NOT IMMINENT

A feasibility study for the proposed Gauteng Rapid Rail Integrated Network Extension Plan has been completed. This includes extensions to the existing Gautrain system and the feasibility study concludes that the extension project will provide significant economic and transport related benefits to the Province, however the decision for the extensions is not imminent and currently the Gautrain Management Agency (GMA) is engaging with the National Treasury on additional Revenue Models and Demand Studies. The GMA is also engaging with the National Department of Transport Steering committee as well as the SIP7 Steering committee. The GMA has just started with the Preliminary Route Alignment study for the Gautrain extension.

TRAFIGURA GROUP HELPS TO RE-ESTABLISH HISTORIC AFRICAN TRADE ROUTE

First shipment of copper successfully arrives in the Angolan port of Lobito by train from the democratic republic of the Congo

Trafigura Group Pty Ltd ("Trafigura"), one of the world's leading independent commodity trading companies has successfully taken the first step towards reopening one of Africa's most historic trade routes, with an epic train journey that ended in the Angolan port of Lobito on Saturday 22 September this year.

A cargo of 800 tonnes of copper blister, purchased by Trafigura from the Copperbelt mining region of the Democratic Republic of the Congo (DRC), made the nearly 1,800km journey by train from Kolwezi to Lobito.

"Although the volume carried is small in relation to total copper exports from the DRC, this was an operation of significant importance for both the Trafigura Group and the region," said Julien Rolland, a member of Trafigura's management committee.

"This train carried the first consignments of copper to travel along the Lobito corridor from the DRC to Angola's Atlantic coast in more than 40 years. It has the potential to mark the beginning of a new chapter in the history of a railway line that dates back more than a century and once took millions of tonnes of cargo from the mines of Congo to the ocean port of Lobito," said Julien. We intend to play a leading role in re-establishing this route, which still needs investment in the DRC railway. A properly functioning Lobito corridor would take days off the journey time to a world class port that offers the fastest access to American and European markets."

Currently copper is exported from the DRC east via Dar es Salaam in Tanzania or Beira in Mozambique, and more recently south via Durban in South Africa, a journey that takes two weeks or more. As export volumes have increased from the DRC, the roads have become more congested and delays at the border more protracted. This new export corridor exploits existing national rail infrastructure, removes trucks from the roads and offers an alternative route to markets.

Impala Terminals has significant warehouse facilities in the DRC copper belt enabling material collection, loading and dispatch of trains. "This is a classic case where Trafigura trading and Impala Terminal's assets can come together to offer superior service for our customers on a strategically important and commodities route that we have now proved is viable," said Craig Mynhardt, Impala's General Manager Africa. "The investments made along the Angolan leg of the line by DT Group, an Angolan focused Trafigura affiliate company, will also help to build traffic and improve returns."

GRINDROD SCALING-UP ITS SHIPS AGENCY AND WAREHOUSING BUSINESSES

Following Grindrod's recent interim results reflecting a 5% increase in revenue, a 23% improvement in headline earnings on the prior year and the spinoff of its Shipping Division, Grindrod's Freight Services division is making strides in cementing its strategy of adding scale and refocusing on its core expertise to provide tailored solutions for customers.

Grindrod, recently announced the acquisition of the Novagroup (Nova) from Pescanova. Established in the sixties to deliver support services to the maritime industry, the business has grown to be leading providers of marine and aviation rescue and survival equipment, container storage, shipwright, depots, bespoke engineering and support services.

The services provided by Nova dovetails with Grindrod existing businesses, specifically the provision of marine and aviation rescue and survival equipment and Nova's United Container Depot (UCD) business. These businesses complement Sturrock Grindrod Marine Tech (SGMT) and Grindrod Intermodal respectively.

Said Andrew Sturrock, CEO Sturrock Grindrod Maritime: "The intention is to strengthen our position in the niche marine technical market. This acquisition will enable us to leverage off the respective sales and servicing agreements of both SGM and Nova, with a view to enhance our already impressive range of services and to increase our comprehensive product offering to the marine and shore-based industries we serve."

Over and above providing a more comprehensive product offering in the marine technical market, the integration of Nova's businesses will introduce further complementary services to SGM's customer base serviced by its 60 offices in 14 countries.

Newly appointed CEO Grindrod Intermodal, Mahmood Simjee said: "We are very pleased to be in a position to provide the solutions required by Shipping Lines from a wider footprint in southern Africa."

Grindrod Intermodal currently have warehousing and depot facilities in Johannesburg, Durban, Cape Town, Port Elizabeth and Mozambique with a total area of 411 600m^2 and a throughput of 350,000 TEUs per annum. The integration of UCD will provide further depot facilities in Cape Town, Johannesburg, Durban and Port Elizabeth totalling an area of 78,000m^2.

"We have advised that we are looking to "scale up" our businesses. It is important that these acquisitions support our existing core expertise and that they contribute to unlocking trade corridors for our valued customers", said Andrew Waller, CEO Grindrod Limited. "This acquisition of a good footprint, agencies and people will do exactly that. We continue to look at further opportunities to enhance our service offering to customers", continued Waller.

BOTSWANA RAILWAYS

Botswana Railways (BR) Mr. Leonard Makwinja, Chief Executive Officer presented an update on their rail network at the recent Africa Ports and Rail Evolution conference held in Durban, in October.

Currently BR has a mainline track of 640km, branch lines 280km on the 1067 gauge. 45 diesel electric locomotives, 1300+ revenue earning wagons on book and 37 passenger coaches.

Mr. Makwinja, explained that they have for a number of years, pondered on the best way to expand the BR network. Part of their plan includes a line from Mosetse in Botswana, connecting to Zambia and beyond through the Kazungula bridge, known as the Mosetse-Kazungula Rail Link. This will provide a gateway to North African markets as well as connect these regions to maritime ports in South Africa. Various concerns have been raised with regard to this link, including the possibility that it may be in competition with existing corridors such as Beitbridge. Mr. Makwinja has a different view; his view is that this would be a complementary development offering an alternative route to move cargo North and competition brings about efficiency.

"There is a requirement for an alternative, if you want to move to the north there is currently only one route and this new route will provide an alternative. We envision a minimum of five million tonnes per annum," says Makwinja. The line is approximately 400km long and it is estimated that it would cost about US$1 billion to build. Currently this is in discussion between the government of Botswana and the Chinese.

The second line in planning, is a short line between Botswana and South Africa, the Mmamabula – Lephalale Rail Link. This line will unlock the estimated 200 billion coal deposits found in Botswana and will have a significant impact on the economy of Botswana. BR is in discussion with Transnet to see how quickly this 120km heavy haul line could be executed and is awaiting sign off of the MoU from the Minister. The line is estimated to cost US$300 million to build and judging from the previous days finance and investment discussions, there is plenty of money available to fund the project. There will be a requirement to build a rail bridge across the Limpopo river, the capacity of the line is estimated at 15mtpa and will provide the shortest route for NSC if coupled with the Mosetse-Kazungula line.

Mr. Makwinja says, "Next year we will be talking about the start date for these two projects."

The Trans-Kalahari Rail Link project is an ongoing project in discussion and will probably take another few years before there is any movement. The line would provide a direct link between Botswana and Walvis bay.

The preparations of projects such as those mentioned is in line with the strategic plan of privatising Botswana Railways.

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PIONEERING VIRTUAL REALITY ALONG SETRAG

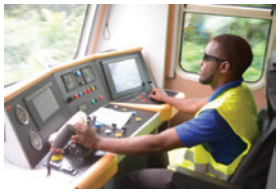
The course of Transurb's project with SETRAG for the EMD SD40 and GM GT46A Compact Simulators is proceeding according to plan. Focused on improving the training experience of their students, SETRAG entrusted Transurb with the integration of Virtual Reality (VR) within the scope of their simulation project.

VR For Troubleshooting And Out-Of-Cab Procedures

Transurb will equip both Compact Simulators with a Virtual Reality Headset that will be used in the context of troubleshooting and out-of-cab procedures. This innovative technology will be the perfect complement to the simulators since it will offer another level of immersion and further develop driver's skill set regarding critical tasks of their training curriculum.

Solving The Gap Between In-Cab And Out-Of-Cab Representation In A Simulator

The VR plug-in of the simulators will offer driver trainees a complete, engaging and immersive learning experience. Indeed, while driving simulators generally focus on the physical reproduction of the driving desk and cab environment, the advantage of VR is to enlarge these features to the rest of the train and its surroundings. The virtual reproduction of the locomotives offers the possibility to walk inside and around the train, identify faults and resolve them as they should be in the day-to-day operation of the actual train.



Innovating With SETRAG

SETRAG will be the first client to take advantage of Transurb freshly developed VR Simulation add-on presented at Innotrans 2018. The growing relationship between SETRAG and Transurb will allow both to climb up the ladder of rail training innovation solutions.

TRANSMASHHOLDING-HUNGARY, A RUSSIAN-HUNGARIAN CONSORTIUM TO DELIVER 1,300 PASSENGER CARS TO EGYPTIAN NATIONAL RAILWAYS

Transmashholding-Hungary Kft., a Russian-Hungarian consortium and Egyptian National Railways (ENR) signed a supply contract covering the delivery of 1,300 sitting passenger cars. The supply contract duration is 5 years from the date of its execution, according to the information of Transmashholding Communications Department.

The contract awarded to the consortium following the bid called by ENR in 2017, was signed by Mr. Ashraf Raslan, Chairman of ENR and Mr. Sergo-Shakhzada M. Kurbanov, Vice-President of Transmashholding.

Manufacturing companies from China, Italy, India and Romania were among the bidders. The overall cost of the rolling stock to be produced and delivered under the contract exceeds €1 billion. The contract became the largest deal in the history of Egyptian railways.

It is planned that Tver Carriage Works (TVZ, an entity of JSC Transmashholding), being a part of the consortium, will become the key manufacturer of components. It will be also in charge of technology transfer and industrial organisation. TMH Engineering LLC (an entity of JSC Transmashholding) will play the role of design authority responsible for project technical review. The Hungarian member of the consortium will be the manufacturing and financial partner in the project. It is expected that half of the awarded quantity will be manufactured at the Hungarian facility Dunakeszi Jarmujavito Kft. in cooperation with TVZ, the rest of cars will be produced by TVZ on a stand-alone basis.

The project also anticipates the delivery of components and sub-assemblies for final car fitting at a car building plant, which will be created by TMH International AG (an entity of JSC Transmashholding) in partnership with National Organisation for Military Production in the Arab Republic of Egypt.

Car design will be developed according to the TDA and the request of Egyptian rail operator. According to the contract, the following five types of cars will be produced and delivered:

- 3 class, with forced ventilation – 500 cars
- 3 class, with air conditioning – 500 cars
- 2 class, with air conditioning – 180 cars
- 1 class, with air conditioning – 90 cars
- 2 class, with air conditioning and cafeteria – 30 cars

The project is supported by the Governments of Egypt, Hungary and Russia, and personally by Abdel Fattah Saeed Hussein Khalil el-Sisi, the President of the Arab Republic of Egypt. The parties look positively at the growth of international cooperation and are confident that further improvement of trade and industrial relationships will make a solid platform for even more ambitious projects in future.

TRANSNET FREIGHT RAIL SUCCESSFULLY RUNS A 375 WAGON MANGANESE TRAIN

In an unprecedented move, Transnet Freight Rail (TFR) successfully ran a 375 wagon manganese train. The testing of the train took place on Wednesday, 5 September 2018 over a distance of around 861km, from Sishen to Saldanha. The test train is 4km long and will be a production train with the highest number of wagons in the world, followed by the one currently operating within the same Transnet corridor, which is a 342 wagon Iron Ore Train. This initiative will break TFR's own record and a world record.

Commenting on the success of the test, TFR Chief Operating Officer (COO) Mr. Lloyd Tobias said, "This is in line with TFR's business objective of applying the Heavy Haul operating, maintenance, design, construction and best practice principles on General Freight operations, and Transnet Strategy of migrating traffic from Road to Rail".

The project will maximise the manganese volumes railed between the mines in Hotazel via Sishen to Saldanha. This will be achieved by optimising the use of existing assets, locomotives and wagons, within the installed infrastructure constraints, doing more with what is currently available. Furthermore, the Heavy Haul Technology, Radio Distributed Power, is used in line with Transnet's 4.0 strategy which is to enable the running of these long trains.

TFR General Manager for the Iron Ore and Manganese Business Unit, Mr. Russell Baatjies explained that there was an option of increasing manganese's rail capacity to respond to customer demand by upgrading the existing railway feeder lines and build new rolling stock. "That option would have cost us significant capital. The project team was challenged to explore the use of technology through Industry 4.0 solutions, to achieve the same objective at minimum cost. Applying distributed power technology to increase the train length to 375 wagons will reduce capital requirements by over 90% of the initial estimate".

Following this successful execution of the test train, Transnet will embark on a journey to operationalise the 4km long train, which is meant to meet the needs of manganese customers within the Hotazel area and emerging miners. This phase will include further customer engagements and official launch of the train.

TFR General Manager, Mr. Brian Monakali who is also the Chairman of International Heavy Haul Association said, "This is another breakthrough for the Heavy Haul Railway Industry. Rio Tinto, Australia, recently started with the implementation of Driverless trains in their Iron Ore railway system. Transnet has now successfully tested a 375 wagon train, soon to be operationalised. The collaboration on technical research and sharing of best practice by Heavy Haul operations worldwide will surely keep pushing the operations, safety and rail capacity envelope to new levels through application of breakthrough technology".

These longer trains represent an opportunity to increase volumes railed and drive the strategic imperative of moving bulk traffic back to rail.

AVENG ENTERS AGREEMENT FOR SALE OF AVENG RAIL

"This is another step forward in our announced strategic intention to give effect to the sale of non-core assets for value. We believe Mathupha Capital has the necessary expertise and market knowledge and is therefore ideally positioned to steward Aveng Rail into its next phase of sustainable growth and development." Eric Diack, Aveng's Executive Chairman.

Aveng has entered into a sale and purchase agreement with 100% black-owned Mathupha Capital Proprietary Limited (Mathupha Capital) for Aveng's Rail business for a cash consideration of R133 million. In terms of the agreement, Aveng will establish a limited liability private company (Aveng Rail NewCo) to which the agreed tangible and intangible assets of Aveng Rail, including the short and long-term borrowings relating to the business, will be transferred as a going concern.

Aveng Rail employees will also be transferred to the new entity. Mathupha Capital will then acquire 100% of Aveng Rail Newco from Aveng. The proceeds from the sale will be used to strengthen the financial position of the Group and will contribute to the overall reduction of Aveng's debt. The proposed transaction is subject to the normal consents and conditions precedent associated with a transaction of this nature, including the conclusion of the final and binding agreements and all statutory and regulatory approvals, as well as Competition Commission approval.

The transaction is expected to close no later than 31 December 2018, after all the conditions have been met. Aveng Rail is the pre-eminent track work contractor in southern Africa, and is focused on the development, construction, rehabilitation and maintenance of regional track work systems. The company owns and operates an extensive fleet of mechanised track maintenance equipment geared to undertake all aspects of track construction, rehabilitation and maintenance.

Mathupha Capital is a Level 1 BBBEE investment company which invests in strategic companies that design, engineer and construct transport infrastructure and manufacture products supplied to the rail sector. As part of Mathupha's growth strategy, it has been actively exploring opportunities in the rail sector to enable the company to become a fully-fledged railway solution provider and the proposed transaction will be an integral part of giving effect to that strategy.

Following the robust and thorough strategic review of the business, Aveng adopted a new and focused strategy to be an international infrastructure and resources group operating in selected fast-growing markets, capitalising on its considerable knowledge and experience. This resulted in identifying the businesses and assets that support its overall long-term strategy and will, therefore, be core to the Group.

At the same time, the strategic review identified certain businesses that would be more successful in the hands of new owners. The creation of liquidity through the sale of certain non-core assets and properties remains an overriding priority in the achievement of the strategic action plan.

NRZ - FULL SALARIES

The National Railways of Zimbabwe (NRZ) will be able to pay full salaries to its workers, if freight volumes reach 100,000 tonnes a week, the General Manager Engineer Lewis Mukwada has said.

Addressing a planning seminar to come up with the organisation's plans for 2019 attended by representatives from various branches and sections, he said it had been management's desire to pay full salaries by the end of this year. Eng. Mukwada said freight volumes had been averaging between 70,000 and 80,000 tonnes a week during the year although in August they reached 89,000 tonnes in one week.

He said the company was relying on a few core customers for most of its business and was failing to meet their needs resulting in the loss of tonnage every week due to a dwindling resource base. The general manager said the company had also made a pledge to pay the balance of the 2015 bonuses in the second half of the year and at current performance levels cannot pay both full salaries and bonuses at the same time.

Eng. Mukwada said although the NRZ was leasing equipment from Transnet under the Interim Solution agreement pending the finalisation of the Recapitalisation Agreement with the Diaspora Infrastructure Development Group (DIDG) / Transnet Consortium, the equipment comprising 14 locomotives, 200 wagons and five coaches was yet to benefit the organisation fully. "That equipment we are paying for monthly in foreign currency and the expectation is we sweat that equipment. As of now in terms of current performance we need to improve to get the full benefit of that equipment," he said.

The general manager said the company had been reviewing salaries since last year from 50% - 60% to the current 80% - 90%. "One of the major things we wanted to do this year was to pay full salaries by the end of the year. Starting from last year we have been reviewing the net disbursements and trying to improve them. There is a need to push business up if the salary disbursements are to be sustained without adversely affecting cash flows.

Eng. Mukwada said the company's safety record also needed to be improved as accidents were resulting in huge revenue losses. "Safety is a major issue. The rate of accidents has increased. We are getting to a point where every day three, four accidents are reported and the disruption to operations is devastating," he said.

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