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AFRICA

INFRASTRUCTURE
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PERWAY
ROLLING STOCK

ISSUE 3:2017

Global leaders in high strength steel



SSAB

Manufacturing:

SSAB - Shaping The
Future of Railway
Manufacturing

Project Management:

Owners Need Project
Controls Too

Tractive Effort:

Transnet Engineering -
Trans Africa Locomotive and
Wagons Made For Africa

Passenger Rail:

South African -
The Peoples' Train

Transnet Engineering's Freight Wagons For Africa





Transnet Engineering is an Original Equipment Manufacturer (OEM) of freight wagons. The Wagon Business is the major rolling stock supplier to the heavy-haul, coal and iron-ore, bulk freight, automotive, intermodal and fuel tanker fleets. The Wagon Business has an extensive network of strategically positioned factories and in-service depots and remanufactures and maintains freight wagons, including heavy overhauls, conversions, upgrades, accident repairs and essential life-cycle interventions. The Wagon Business also refurbishes and upgrades bogies to achieve higher axle loads and to match different track gauges.

Examples of the Wagon Business' capabilities can historically be found in the CCR and CCL coal wagons. These are made-for-purpose 84-tonne payload, heavy-haul gondola units. These wagons have a monocoque design for reduced tare while their self-steering HS type bogies are suited to both high speed and greater stability. Their load compartments are manufactured from 3CR12 corrosion-resistant steel, which extends the life of the wagons to beyond 20 years.

In addition TE manufactures the 74,000-litre capacity ammonia tank wagon, an accomplishment of considerable technical skill. TE has produced the revolutionary all-aluminium prototype tanker wagon, which, being lighter, allows for increased payload. TE also offers a range of wagons for the transportation of vehicles, in their car carrier wagons offering additional carrying capacity and the ability to carry SUV vehicles.

TE, has built among the heaviest and longest trains in the world with tare ratios of 5:1. The Wagon Business' various wagon designs are:

- The 104 ton, monocoque design gondola tippler coal wagon with a 4.2:1 tare ratio
- The 120 ton tippler iron-ore wagon with a 5:1 payload tare ratio
- The 120 ton bottom discharge iron-ore wagon
- Oil tank wagons with internal heating
- Cement tank wagons for pneumatic discharge
- CR16 wagons for TFR general freight division for the transportation of cement clinkers
- Tilt wagons for the transportation of heavy rail turnouts used in the building and upgrading of rail tracks.

The Wagon Business manufactures and remanufactures freight wagons for African countries at globally competitive prices and has had many successes across the continent.

More recently Transnet Engineering through its into Africa strategy has developed, designed and manufactured a range of product specific wagons for the African continent, ensuring the product and application suits the conditions and the requirements of railway operators and their customers throughout the region.



Bulk Gondola Wagon



The Bulk Gondola Wagon is a custom designed open top wagon, able to operate on 1000mm, 1067mm, and 1435mm gauge and carries a minimum payload of 45 tonnes of any bulk type commodity. These wagons can be offloaded either with a back actor or a side tippler. They are fitted with the three-piece Spoorbarber - D type bogie system and features the AAR E type coupler system. The sides, end and floor plates can be welded with corrosion resistant material should the wagon be solely used to haul highly corrosive bulk commodities.

Model designation	Gondola Wagon
Fleet size	1
Date Manufactured	2016
Type of design	Open top design
Gauge	1000mm, 1067mm, and 1435mm
Length	14853mm (across couplers)
Height	2646mm
Width	2426mm
Designed for	Any bulk commodity
Tare	16,16 tonnes
Offloading method	Tippler or back actor
Min Payload	45 tonnes
Materials of construction	S355AR+JR and 3CR12
Max. mass on rail	64 tonnes
Type of bogie	Three piece, Spoorbarber D
Brake system	Air brake system
Max. operating speed	80km/h
Coupler system	"E" type coupler
Wheels/bearings	wrought steel / "D" type
Volumetric capacity	53m ³

Fuel Tanker



An optimised design for the African market, these fuel tank wagons have been designed to carry; petrol, gas, oil, crude oil, kerosene, amongst others and is able to meet the climatic and infrastructure conditions found throughout the region.

The design is based on a monocoque barrel with an optimised 8mm thickness boilerplate material, with cost optimised components and systems, including, brakes, bogies, coupler and drawgear, discharge systems and coatings.

Fleet size	1
Date Manufactured	2016
Type of design	Tank wagon
Gauge	1000mm, 1067mm and 1435mm
Length	12 945mm (Across couplers)
Height	3656mm
Width	2920mm
Designed for	Petrol, Gas, Oil, Kerosene, Crude oil
Tare	21,1 tonnes
Off loading method	Bottom discharge
Payload	50,9 tonnes
Materials of construction	ASTM A516 Gr 70
Max. mass on rail	72 tonnes
Type of bogie	Three piece, Spoorbarber D
Brake system	Air brake system
Max. operating speed	80km/h
Coupler system	"E" type coupler, double shelf
Wheels/bearings	Wrought steel / "D" type
Volumetric capacity	51,787m ³

Skeletal Container Wagon



The Skeletal flatbed container wagon has been designed to operate on gauges from 910mm through to 1435mm and carries a payload of 61 tonnes. These wagons are fitted with the three-piece Spoorbarber - D type bogie system. It is designed to carry, 6m (20ft.) and 12m (40ft.) ISO containers. The Skeletal container wagon also features the AAR E type coupler system.

Model designation	Skeletal Flatbed Container Wagon
Fleet size	1
Date Manufactured	2016
Type of design	Skeletal flatbed
Gauge	1067mm
Length	13 170mm (Across couplers)
Height	1060mm
Width	2460mm
Designed for	Standard ISO Container
Tare	13.5 tonnes
Off loading method	Straddle carrier/Fork lift
Payload	60 tonnes
Materials of construction	S 355
Max. mass on rail	63,5 tonnes
Type of bogie	Three piece, Spoorbarber D
Brake system	AAR Air brake system
Max. operating speed	80km/h
Coupler system	"E" type coupler
Wheels/bearings	34" wrought steel/5,5 x 10" AAR D

New Generation Timber Wagon



The New Generation Timber wagon (STLJ 18) is an improved design of the previous STLJ 18, it is designed for 1067mm track gauge and carries a payload of 60 tonnes. It is a flat type of wagon with fixed stanchion and sunken side middle pockets for increased timber payload. It fitted with the self steering HS type bogies for high speed and stability which provides extended wheel life, reduced rolling resistance and rail wear. The STLJ 18 features the AAR E type coupler system.

Model designation	New Generation Timber Wagon
Fleet size	1
Date Manufactured	2017
Type of design	Stanchion Skeletal flatbed
Gauge	1067mm
Length	20 383mm (Across couplers)
Height	3437mm
Width	3000mm
Designed for	Transportation of Timber logs
Tare	20 tonnes
Offloading method	Grabber
Payload	60 tonnes
Materials of construction	S355 (350WA)
Max. Mass on rail	80 tonnes
Type of bogie	HSMK VII -Self steering
Brake system	AAR Air brake system
Max. Operating speed	100 km/h
Coupler system	"E" type coupler
Wheels/bearings	34" wrought steel/5,5 x 10" AAR D

TAL 2000

TRANS AFRICA LOCOMOTIVE

Designed by Africans for Africa.

Researched, Designed and Manufactured in South Africa.





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pioneering advanced manufacturing

engineering



TAL 2001

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<https://www.facebook.com/Transnet-Engineering-Advanced-Manufacturing-2060049600886734/>

Transnet Engineering (TE) is the advanced manufacturing division of Transnet SOC Limited. TE offers researching, engineering, manufacturing and maintenance services and products to the rail industry across the globe and specifically the African continent.

TE operates six main factories situated in major city centres in South Africa, with each factory serving as a central hub for satellite depots in each region. TE remanufactures and manufactures freight wagons, locomotives and passenger coaches, as well as the maintenance and servicing of these products. In addition, TE also manufactures and maintains port equipment including haulers.

Recently the dream of developing, designing and manufacturing a homegrown locomotive for the African region became a reality with the launch of the Trans Africa Locomotive, affectionately named TAL. TAL has been designed and built specifically to accommodate the varied conditions found in Africa.

TE established that there was a strong opportunity for increased local capability and revenue which could be generated. This became an essential component for TE's expansion into Africa strategy, giving the company an edge in terms of increased product development and positively contributing to the local economy.

Africa and more than 30 years old. Considering the average lifespan is between 40 and 50 years depending on the maintenance regime, this gives a market potential for TE in excess of 7000 units, in addition to the potential demand created through commodity growth over the next 20 years.



TE is well positioned in the manufacturing value chain having partnered with leading original equipment manufacturers (OEM) to provide a broad set of quality products to market. The move to develop and produce its own locomotive positions TE as an OEM for locomotives,

TAL 2000, offers customers a medium diesel powered locomotive, able to traverse non electrified lines, light axle 16-19 tonnes/axle, suitable for use on branch lines and in shunting applications, whilst being able to provide tractive effort to customers with older rail infrastructure. Designed, originally to carry lighter axle loads and on any gauge from 1000mm - 1067mm.

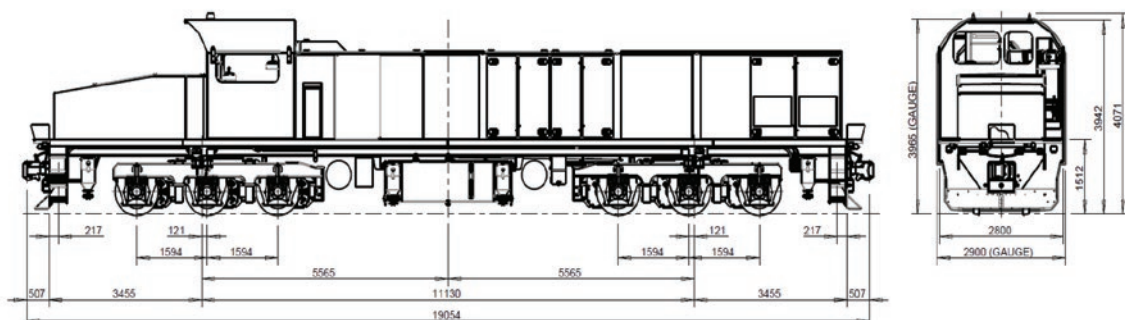
TE has over 150 years of experience in the rail engineering sector, with each decade bringing new product diversification and increased local capability, to the point where TE is considered a global exporter of rolling stock and related equipment. Therefore the advent of a "made in Africa locomotive" was the next logical step in expanding its locomotive business.

meeting the Transnet Group's strategic intent of being a catalyst for African innovation and industrialisation whilst, at the same time offering a solution for intra-African trade.

In the pre-feasibility stage and the development of the business case it was established that of the 11,873 narrow gauge diesel locomotives in the world, 1,766 were in operation in

TAL offers a state-of-the-art electronic control system, dynamic breaking down to 0/kmph. The bi-directional travel option gives TAL a unique cabin design with front and rear facing windows, allowing for movement in both directions without obstructing the driver's view, ideal for customers who cannot afford two locomotives per route. Improved adhesion, with AC traction, slow speed loading capability and event logger (Black box). The original underframe, superstructure, bogies, body, and locomotive control system have been designed to withstand the African climate.

African conditions are often referred to as the harshest of conditions, with



massive temperature fluctuations, among other issues. With track infrastructure being somewhat less than ideal in most cases, and depots for handling maintenance in most instances ill-equipped to handle the requirements of more modern locomotives. The design and specification of TAL, has been developed to overcome these challenges - easy to maintain requiring no specialised depot equipment, has no traction motors reducing the potential of vandalism in relation to copper theft and will provide the customer with a reduced obsolescence risk when it comes to spares and parts.

In addition, there is scope for customisation options for various uses, including diesel multiple unit conversions with smooth start-stop motion for public transport, cabin customisation, and engine upgrades.



On the 4th of April President Zuma officially launched the Trans Africa locomotive marking a crucial step in Transnet's and South Africa's march towards becoming a leading manufacturer and supplier of rolling stock on the continent. The Trans-Africa Locomotive, the long-standing dream of Transnet's advanced manufacturing division, is now a reality and the order book is officially open.



Features:

- State-of-the-art electronic control system.
- Dynamic Braking down to 0 km/h.
- 3/4 cab placement for acceptable visibility in both directions of travel.
- Improved adhesion with AC traction.
- Black box and event logger.
- Slow speed loading ability.
- Hotel Supply for passenger train.

Technical Specification

Number of Driving Axles:	6
Bogies:	2
Track Gauge:	1000mm - 1067mm
Axle Load:	16 tonnes per axle
Gross Power:	2667HP (2000kWm)
Maximum Continuous Tractive Effort: (kN at standard axle load)	284kN
Starting Tractive Effort - % adhesion:	370kN
Dynamic Brake Feature:	Brake force down to 0km/h
Dynamic Brake Effort:	180kN
Self-load Capacity Standard:	Full load
Braking System:	Knorr Bremse CCB II
MU capability:	AAR 27 pin
Coupler Type:	E-type
Coupler Height:	889 ±6 mm
Fuel Tank:	4000 litres
Width:	2900mm
Height:	3940mm
Curve Radius (minimum):	85m
Car Body Configuration:	3/4 Cab
Maximum Speed:	100km/h
Control System:	Transnet Engineering
Traction System type :	AC type



pioneering advanced manufacturing

engineering

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<https://www.youtube.com/channel/UCI0ncxNpkKsmP5bMjhcoY8Q>

<https://www.facebook.com/Transnet-Engineering-Advanced-Manufacturing-2060049600886734/>

I am going to start this issue with a bit of activism – and ask that you indulge me somewhat.

The theme of my advocacy is public transport, a topic that is currently at the forefront civil society and government agendas, both in South Africa and across the African continent, at present.

In South Africa, effective utilisation of public rail transport – be it the government subsidised passenger services offered throughout the country by the Passenger Rail Agency of South Africa (PRASA) or the high-end Gautrain rapid rail transit system in Gauteng – hinges on effective first and last mile solutions. “*Solving the first and last mile*” is a topic that continues to gain worldwide coverage in the passenger rail arena, but one that seems to spark some very irrational thinking in the African market.

While passenger rail remains the gambit of government subsidised services – the first and last mile is subject to the principles of free market. Much like the ability to choose from which supermarket we buy our daily bread, we – as the consumer – have a choice as to which operator we would prefer to use to get us to and from train stations, be it a Gautrain bus, a private car, an Uber or a metered taxi. It is, after all, the consumer's hard-earned cash, and therefore their choice as to which method to use.

Headlines such as “Uber is killing us” and “Uber will burn” paints a very concerning picture – where some players within the public transport sector believe that they are entitled to a protectionist government entrenching their market share under threat of civil disobedience and violence. This is – in my view – is a very short step away from the dictatorial policies that have been the downfall of human rights and outrageous abuses of authority in countries, but this is not the time for a history lesson.

Privately-run public transport is a profit-driven business and therefore should be subject to the same free market principles that are upheld by any market-driven economy. The pivotal point of the free market approach is **choice** – the consumer's right to choose their service provider, and a service provider's ability to choose what services they would like to offer. A metered taxi driver can certainly become an Uber driver, so long as they qualify for the position. A minibus taxi driver can apply to become a bus driver for a Bus Rapid Transit service, so long as they hold the correct credentials.

Every player in the industry has the right to choose how they wish to engage with passengers, and every passenger has the right to choose with whom they wish to engage.

This is how we build business, create opportunities and move forward in a modern economy.

Healthy competition drives growth, development and innovation – the backbone of a healthy economy. Protectionism drives stagnation, complacency and the corrupt business practices that have for far too long hampered growth and development in Africa. No one service provider should enjoy protection over another – be it from a government agency, legislative policy and – most especially – not because both government and civil society are blackmailed into supporting the interests of one party through threats of violence. We are all subject to the universally adopted principles of law and order – and no government that wishes to be taken seriously by the international community should negotiate with terrorists.

To illustrate my argument, a number of agents that purportedly represent the metered taxi industry recently decided to close off routes to O.R. Tambo International Airport in Johannesburg, causing chaos at Gautrain stations and seriously disrupting day-to-day activities across one of the country's most critical business hubs. Their intent – to demonstrate their dissatisfaction with Uber, the internationally renowned “new-kid-on-the-block” in transport solutions. As Uber has gained market share (and created thousands of independent, tax-paying, small business owners in the process), meter taxi drivers have taken it upon themselves to violently enforce their perceived right to



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monopolise the passenger-car taxi industry.

According to recent reports, assailants identifying themselves as meter taxi drivers have burned vehicles belonging to Uber drivers, attacked potential Uber customers and threatened the lives of drivers with fatalities I might add!. These meter taxi drivers have decided that, despite minor barriers such as the constitution, they have the right hold civil society to ransom in a bid to have their market share protected from the healthy competition introduced by Uber. One has to wonder what would happen if they channelled their apparently abundant energies into coming up with an innovative, improved business model to **win** back their market share instead of resorting to violence and law-breaking.

I had the misfortune of experiencing this phenomenon with my family on Mother's Day, and therefore have first-hand experience of the illegal, strong-arm tactics being employed by some in the meter taxi industry. Having enjoyed a wonderful day out to Magaliesburg via steam with Reef Steamers, we arrived at Johannesburg's Park station just after 18:00. We walked from the PRASA Park station through to Gautrain Park station (based on my husbands insistence on experiencing intermodality between operators). From where we ordered our Uber. A few moments later, the Uber arrived and as we departed the safety of Gautrain's station parking we

were accosted by metered taxi drivers. Our Uber driver beat a hasty retreat – reversing as fast as possible back towards the perceived safety of the Gautrain station. Unfortunately, while the Gautrain hinges a lot of their marketing on their high safety record and crime control around stations, Gautrain security staff, while present, did not feel the need to intervene. Our only option at this point was to alight our Uber vehicle and board the Gautrain from Park station to Rosebank station. We then exercised our right to use an Uber to return to the safety of our home.

The South African government is investing a huge portion of the country's GDP in establishing the public transport systems needed to realise their development goals for the future. The backbone of this public transport system will be passenger railway, enabled by the brand-new fleet of X'trapolis trains being manufactured in Gauteng, as well as the proposed expansion to Gautrain. The entire multi-billion rand enterprise of moving South Africa forward will, therefore, be entirely dependent on the service providers that carry commuters from their front doors to the train station and then to their final destinations at the end of the line. If the first and last mile solution is dominated by thugs, criminals and beneficiaries of corrupt business practices, I'm afraid that the 'backbone of public transport in South Africa' will crumble before we even have

the chance to stand up. And I strongly suggest that role players swiftly focus their minds in finding a solution!

Positive news, Kenya Railways will launch their maiden trip on the long-awaited Standard Gauge Railway (SGR) line on 1 June, and – much to my enjoyment being a woman in rail – I see they have female train drivers! The National Railways of Zimbabwe (NRZ) have their RFP ready for their much-anticipated and much-debated modernisation programme. The Nigerian FEC has given approval for further discussions with GE Transportation regarding their concession bid.

I do hope you enjoy this issue and the number of conferences and exhibitions on the go not forgetting the 2nd of June is International Level Crossing Awareness Day.



Phillippa Dean
Railways Africa™ - Editor



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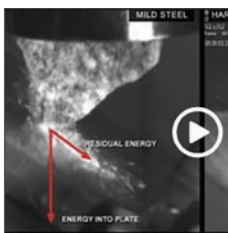
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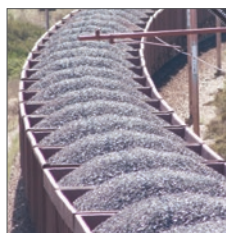
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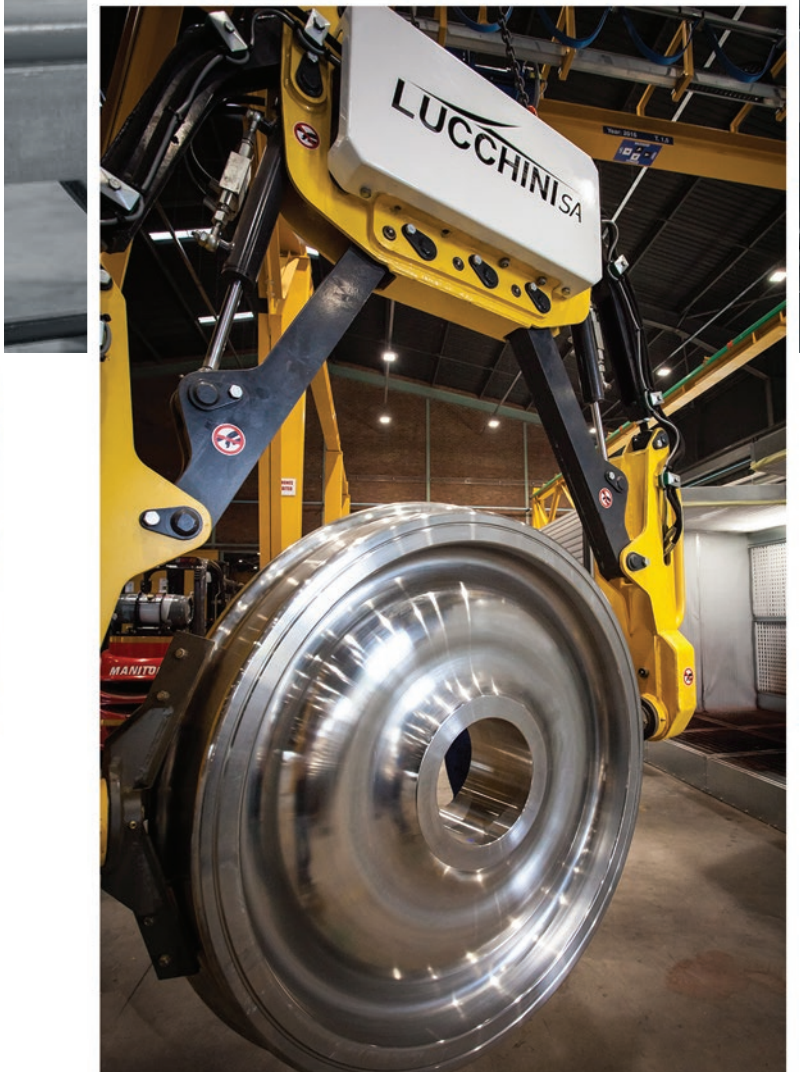
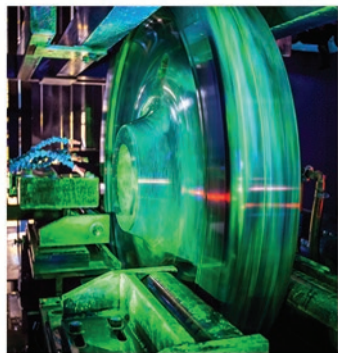


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Lucchini South Africa brings forged railway wheels with a proven track record of over 13 years in Southern Africa to these rail markets. To date over 150 000 wheels have been supplied by its parent company across the region. These include locomotive wheels, freight wagon wheels and passenger coach wheels.

Lucchini South Africa is committed to transformation and the principles of Broad-Based Black Economic Empowerment.

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LOOK BEYOND

SSAB High-Performance Steel - Shaping The Future of Railway Manufacturing

Steel is the world's most important engineering and construction material. It is inexpensive to produce, can be found in a wide range of grades and is suitable for a broad scope of manufacturing applications and production methods. While the construction sector remains the largest global consumer of steel, the transport industry accounts for 16% of total steel consumption in the world¹. Rapid advances in the steel industry, therefore, are having a direct and dramatic effect on the design and manufacture of railway vehicles in both the passenger and freight railway industry.

Railway operators across the globe have come to realise that lighter, more durable rolling stock has a direct effect on profitability in the railway market. Lighter wagons translates to larger payloads and lower fuel costs. Owning stronger vehicles reduces maintenance intervals, and lowers running costs. It is, therefore, unsurprising that many of the world's leading original equipment manufacturers (OEMs) are increasingly incorporating state-of-the-art high strength, low weight, weather resistant alloy steels into the design and manufacture of their railway vehicles.

In an interview with Railways Africa, SSAB the global Advanced High-Strength Steel (AHSS) producer, discussed the potential that AHSS has in shaping the future of rolling stock manufacturing in South Africa and on the African continent as a whole.

SSAB At The Forefront Of The AHSS Industry

SSAB (Svenskt Stål AB) is a highly specialised global steel company that develops high-strength steels and provides aftermarket services to customers across the world. The company is a leading AHSS producer and offers a range of Quenched and Tempered Steels (Q&T), strip, plate and tubular products, as well as aftermarket support and consultancy services.

Headquartered in Stockholm, Sweden, the company is structured across three steel divisions, which include SSAB Special Steels, SSAB Europe and SSAB America, with two subsidiaries, namely Tibnot and Ruukki Construction. SSAB employs more than 15,000 people across more than 50 countries and remains one of the world leading producers of highly advanced steel products. The company services a range of industries, including construction

and building, automotive, lifting, infrastructure solutions and transport.

SSAB offers a range of specifically designed AHSS products that are internationally certified and comply with, and in many cases exceed, the highest industry performance and quality standards and regulations. The company is committed to intensive research and development and is constantly striving to push the boundaries in high-performance, high-strength steel solutions. In addition to their product offerings, SSAB has business units that specifically focus on providing specialist advisory and aftermarket services to manufacturers who use their products. This includes **Hardox Wearparts**, a network of companies that enables the production of wear parts using SSAB's state-of-the-art AHSS. The **Hardox Wearparts** network is represented in more than 70 countries and consists of approximately 265 companies that provide spare parts and advisory services to those in the mining, quarrying, infrastructure, construction and recycling sectors, among others. The **SSAB Shape** business unit combines SSAB's premium steel products with engineering and processing services that are offered through the company's own shape centres, as well as through a worldwide network of independent plate processing suppliers. SSAB has an internal stock sales unit, which ensures reliable availability of plate and associated products on a global scale.

SSAB opened their South African branch in 1996, with offices in Johannesburg and Durban and currently provides world-leading steel products and services to a number of small to medium-scale manufacturers in the Southern African region. Area sales manager for SSAB South Africa, Kim Jernberg,

states that: "There are a number of South African companies that use our steel to manufacture products and parts for both the local and international markets. Many of these companies compete in the international arena, and by including SSAB's AHSS products and services in their design and manufacture, they remain competitive with leading equipment manufacturers from across the world." While still relatively small in scale, SSAB South Africa provides local manufacturers access to a global network that includes world-leading products, cutting-edge research and development capabilities, through-the-line support with material selection and product design as well as extensive after-sales support services.

The Changing Face Of Steel In Modern Manufacturing

While the digital revolution has changed the landscape for many traditional industrial sectors over the past decades, steel and steel-related services remain a major driver of the world's industrial economy. In fact, approximately 20 billion tonnes of steel remains in use today, and the number of applications for increasingly advanced steel products continues to grow³. Over the past two decades, however, the commercial steel industry has undergone a radical transformation. With ongoing research and development driving advances in production and manufacturing processes, there is a major shift away from traditional carbon-based steels towards newer, advanced high-strength steels.

High-strength alloy steels differ from traditional carbon-based products in that they are not manufactured to meet a specific chemical composition, but rather to meet specific predefined mechanical properties. The complex steel

chemistries and thermomechanical properties that are used to produce AHSS, result in improved strength and ductility, which in turn means that thinner, lighter gauges can be used to produce a wide range of products that remain compliant with and in some cases, exceed current international safety and performance standards and regulations.

AHSS provides extreme high-strength properties while maintaining the high formability needed for manufacturing. AHSS grades have unique combinations of material and mechanical properties, with carefully selected chemical compositions and multiphase microstructures, achieved through precisely controlled heating and cooling processes. Various strengthening mechanisms are employed during the production process to achieve a range of strength, ductility, toughness, and fatigue properties².

AHSS is among the most efficient modern construction materials – it is exceptionally strong, hardwearing and resistant to corrosion while remaining highly workable. In addition, AHSS along with more traditional steel is 100% recyclable and can be infinitely recycled, without losing strength, formability, or any other important measure of performance⁴. These new steel applications have increasingly replaced conventional materials, which have significantly contributed to the reduction of greenhouse gas emissions when the total life cycle of the application is taken into account.

SSAB AHSS Solutions For The Railway Industry

SSAB offers AHSS products specifically suited to the manufacture of stronger, lighter, more durable railway vehicles and infrastructure. The company's world-renowned high-strength, high-performance structural steel, traded under the Strenx brand name, offers one of the world's most extensive product programmes in terms of the available range of dimensions and yield strengths.

The extremely high yield strengths offered in Strenx product range allows for the design and manufacture of modern wagons that are between 20% and 30% lighter while being significantly stronger than wagons that have

been constructed using traditional materials. SSAB shape business manager for the sub-Saharan region, Raymond Rautenbach, explains that this has huge implications for railway operators. "The end user stands to gain a lot from operating lighter railway wagons," he states. "On a full load, you are able to increase the per-kg/per-km rate, as you are able to load more weight per wagon. When running on empty, locomotives hauling lighter wagons will use far less fuel, resulting in greater profits and lower operational costs for operators."

SSAB's Strenx guarantees include tight thickness tolerances, flatness

tolerances as well as bending guarantees. The company ensures that all products comply with, and in many cases, exceed industry regulations and quality standards for thickness, flatness and bendability. As a result of the company's exacting standards, as well as the unique structural composition of the material, Strenx structural steel is extremely consistent, which ensures precision and efficacy in the workshop.

In addition to high-performance structural steel, the company offers one of the highest performing abrasion-resistant steels on the market, Hardox, which boasts

THE PERFORMANCE PORTFOLIO FOR STRENX STEEL PLATE, STRIP, TUBE AND SECTIONS

Strenx hot rolled plate products							
Name	Thickness range [mm]	Yield strength $R_{p0.2}$, min [MPa]	Tensile strength $R_{m,min}$ [MPa]	Elongation A_1 , min %	Bendability Minimum punch radius R/t, transverse to rolling direction, $8 \leq t \leq 15$ mm	CET/CEV _{yield} Plate at t = 10 mm	Impact toughness [J] at -40°C
Strenx 700	4-53	700	780-930	14	1.5	0.29/0.43	69
	(53)-100	650	780-930	14			
	(100)-160	650	710-900	14			
Strenx 900	4-53	900	940-1100	12	2.5	0.36/0.55	27
	(53)-100	830	880-1100	12			
Strenx 960	4-53	960	980-1150	12	2.5	0.36/0.55	40
	(53)-100	850	900-1100	10			
Strenx 1100	4-(5)	1100	1250-1550	8			
	5-40	1100	1250-1550	10	3.0	0.36/0.55	27
Strenx 1300	4-10	1300	1400-1700	8	4.0	0.42/0.65	27

Strenx hot rolled strip products							
Name	Thickness range [mm]	Yield strength $R_{p0.2}$, min [MPa]	Tensile strength $R_{m,min}$ [MPa]	Elongation A_1 , min %	Bending radius [R/t] $3 \leq t \leq 6$ mm	CET/CEV _{yield}	Impact toughness [J] at -40°C
Strenx 600 MC	2-10	600	650-820	16	1.1	0.21/0.33	27
Strenx 650 MC	2-10	650	700-880	14	1.2	0.22/0.34	27
Strenx 700 MC	2-10	700	750-950	12	1.2	0.25/0.39	27
Strenx 700 MC Plus	3-12	700	750-950	13	1.0	0.24/0.38	40 (-60°C)
Strenx 900 MC	3-10	900	950/1200	8	3.0	0.25/0.50	27
Strenx 960 MC	3-10	960	1000-1250	7	3.5	0.28/0.51	27
Strenx 1100 MC	3-8	1100	1250-1500	6	4.0	0.30/0.50	27 (-20°C)

Strenx cold rolled products						
Name	Thickness range [mm]	Yield strength $R_{p0.2}$, min [MPa]	Tensile strength $R_{m,min}$ [MPa]	Elongation A_{10} , min %	Bending radius [R/t]	CET/CEV _{yield}
Strenx 700 CR	0.7/2.1	700	1000-1200	7	2.0	0.29/0.40
Strenx 960 CR	0.7/2.1	960	1200-1400	3	3.5	0.28/0.39
Strenx 1100 CR	0.7/2.1	1100	1300-1500	3	3.5	0.30/0.41

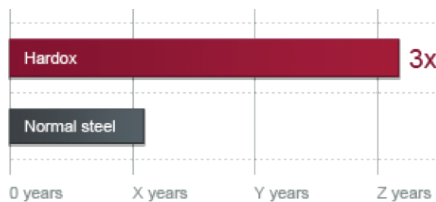
Strenx tubes and sections							
Name	Wall thickness [mm]	External dimensions [mm]	Yield strength $R_{p0.2}$, min [MPa]	Tensile strength $R_{m,min}$ [MPa]	Elongation A_1 , min %	CET/CEV _{yield}	Impact toughness [J] at -20°C
Strenx Tube 700	3-10	32.7 - 323.9 30 x 30 - 300 x 300 50 x 30 - 400 x 200	700	750-950	10	0.24/0.38	40
Strenx Tube 900	4-6	76.1 - 219.1 70 x 70 - 160 x 160 80 x 60 - 200 x 120	900	930-1200	7	0.25/0.50	40
Strenx Tube 960	4-6	76.1 - 219.1 70 x 70 - 160 x 160 80 x 60 - 200 x 120	960	980-1250	6	0.28/0.51	40
Strenx Section 650	2.5-10		650	700-880	12	0.22/0.34	40
Strenx Section 700	3-10		700	750-950	12	0.24/0.38	40
Strenx Section 900	3-6		900	930-1200	8	0.28/0.51	40

Strenx properties are covered by Strenx guarantees. For information about individual grades, please refer to the documentation available at ssab.com or from your SSAB sales contact. SSAB reserves the right to change specifications without prior notice. The tables are for reference only. The product data sheet assigned to a specific product holds all valid and guaranteed properties.

Strenx Superior Properties Portfolio

<https://www.ssab.com/products/brands/strenx#!pi=discoverE98D552DC3B442D6A9EA7667192DC954>

an unparalleled combination of hardness and toughness. Due to the product's unique mechanical properties, Hardox steel can be used in the construction of wagon bodies as well as in load-bearing parts on a number of applications, opening new possibilities for structural design innovations. The product's unique composition makes it extremely tough while remaining highly formable. Hardox steel is highly resistant to damage caused by rocks, sand, coal, minerals and other heavy haul products, as well as to shocks and jolts during operation, making it ideally suited for applications in freight rail. The yield strength of the material results in a significant reduction in wear and tear, which means that wagons remain in service for longer periods of time, and require less maintenance over their whole lifecycle.



SSAB Weathering steel has also been used to great effect in the railway industry, as the material is extremely resistant to weathering and corrosion, making it ideal for use in railway infrastructure and rolling stock for harsh environments. SSAB Weathering steel offers the widest selection of corrosion resistant steel on the market, including hot and cold rolled options as well as steel tubes. The material's unique composition provides excellent forming, machining and welding properties,

with mechanical properties and dimensional tolerances that often exceed international performance and quality standards. The product's narrow tolerances guarantee predictable performance, which reduces product waste and improves production yield for manufacturers. Products that are manufactured using SSAB Weathering are guaranteed to withstand the harshest conditions, which reduces maintenance intervals and ensures longer product lifespans for end users.

SSAB Partnering With Customers To Produce The Best Results

Critical to SSAB's business approach is their commitment to working in close collaboration with customers to optimise the application of high-strength steel in the design and manufacture of products.

As collaboration and customer consultation remains at the heart of the company's approach to doing business, SSAB's highly qualified engineers work hand-in-hand with customers to optimise the utilisation of AHSS products. Consultation occurs through-the-line, from the design phase, throughout the fabrication process and during final assembly.

Experts at the company's Knowledge Support Centre are available for queries and collaboration at any time to assist clients with post-sales queries. SSAB's Shape portfolio of premium steel products provides customers access to engineering expertise and services from design to execution. SSAB Shape centres offer custom-designed solutions that enable manufacturers to reduce the

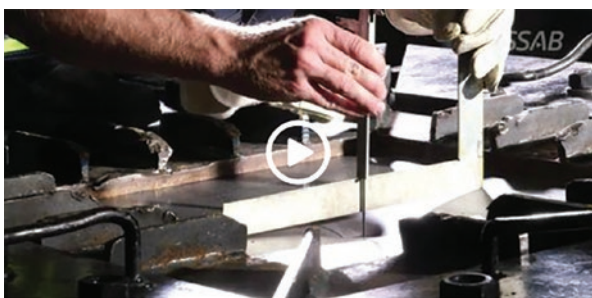
need for welding, simplify assembly and allows for the outsourcing of time-consuming prefabrication processes. Together, SSAB's broad range of after sales services result in optimal material selection, product design, fabrication processes, and final assembly. The net result is a reduction in material waste, optimal manufacturing processes and, most importantly, superior end products.

More Sustainable Steel For More Sustainable Rail Operations

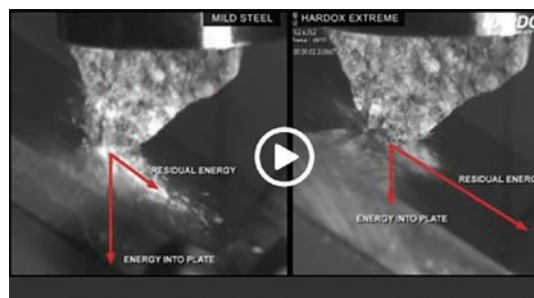
As Jernberg so aptly points out: "Steel is a dirty business, with the production of one tonne of steel producing almost two tonnes of CO₂ emissions." As a company, SSAB is mindful of the environmental impact of its steel production activities. Through constant research and development and sustainability optimisation projects including the onboarding of sustainable energy sources, SSAB aims to become one of the world's most sustainable steel companies by 2035.

One of the most important drivers of the company's sustainability efforts is the idea that sustainability and performance go hand-in-hand. SSAB works in close collaboration with their customers to continuously upgrade the material and design of applications with the view to reducing vehicle weight, improving fuel economy and extending product lifetime - all of which significantly contribute to reducing a product's lifecycle carbon footprint as well as optimising profitability for railway operators.

SSAB's unique EcoUpgrade concept helps to reduce CO₂ emissions by taking into account the reduction of



Hardox wear plate vs mild steel



How hard is hard?

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1. Organisation For Economic Co-Operation And Development (2010) Perspectives In Steel By Steel Using Industries. 68th Steel Committee Meeting, Paris.
2. Tamarelli, C (2011) The evolving use of advanced high-strength steels for automotive applications the University of Michigan - available at www.autosteel.org
3. (and 4) World Steel Association (2016) Fact Sheet: Advanced steel applications available at www.worldsteel.org

material needed to make a product, as well as reduced carbon emissions during a product's operational lifetime as a direct result of being lighter and stronger, with a longer lifespan. Looking at each specific application, SSAB can compare the potential CO₂ savings during operation to the CO₂ emitted during production, thereby identifying products that would benefit the most from an upgrade to high-strength steel.

Rail is recognised as the most energy-efficient means of land transport for both goods and people. By optimising sustainable operations, one directly supports the business case for rail as the mode of choice for sustainable transport solutions, both in Africa and across the world. Outside of the fact that wagons that are constructed using AHSS will comprise significantly less material, which already implies a reduction of CO₂ emissions, lighter railway wagons mean that an operator can increase their payloads, which has a direct effect on profitability and sustainability. Stronger wagons mean that each wagon will have fewer maintenance needs and a longer lifespan, and are therefore more sustainable and cost effective in the long run. Finally, lighter wagons mean that less fuel is needed to run wagons on empty, saving on fuel costs as well as carbon emissions. "When running empty wagons that are between 20%-40% lighter than older designs, one uses significantly less fuel per trip, which results in an immediate reduction in operating and fuel costs for the end user," Rautenbach points out.

The use of AHSS materials in modern rolling stock, therefore, not only has the potential to reduce carbon emissions emanating from the railway sector but also makes good business sense for end users. "Manufacturers are best positioned to succeed when they produce products that best serve the end user's needs. SSAB, therefore, considers the needs of the end user as much as the needs of those who are buying our steel for manufacturing purposes," Rautenbach explains.

ABB INAUGURATES TRACTION TRANSFORMER PLANT IN SOUTH AFRICA

ABB recently inaugurated a new traction transformer production facility adjacent to its South African headquarters in Longmeadow, Johannesburg. ABB CEO Ulrich Spiesshofer inaugurated the new factory with the director-general of the Department of Trade and Industry, Lionel October.



ABB, CEO, Ulrich Spiesshofer
Photo: Craig Dean.

"ABB is proud of this new traction transformer facility in South Africa, reiterating our philosophy of locating manufacturing units close to our customers," said Ulrich Spiesshofer, CEO of ABB, speaking at the inauguration event. "It reinforces our next level strategy focus on strengthening our presence in Africa and supports our ongoing commitment to sustainable mobility."

This unit will produce traction transformers to help power trains and support South Africa's growing railway network. Traction transformers feed power at safe voltages to essential train functions like traction, brakes, lighting, heating and ventilation, as well as passenger information, signalling and communication.

The 2,450 square meter facility is expected to employ 60 people by the end of 2017 and the first major order to be executed at the new facility will be the supply of traction units for 240 Bombardier electric locomotives. The local manufacturing of these traction units supports the South African government's local procurement and employment requirements.

Since 2012, South Africa has invested in the development of its rail network as an opportunity to rejuvenate the economy, create jobs and support a major shift from road to rail transport for both passenger and freight travel. The expansion of the country's rail network is also expected to contribute to its vision of becoming a key logistics center in sub-Saharan Africa.

ABB has more than 130 years of experience in producing traction transformers that are powering more than half the world's electric locomotives and train sets. As part of its ongoing commitment to innovation ABB recently launched Effilight®, its next-generation traction transformer which uses a patented high-technology cell design that can reduce the amount of oil required by up to 70 percent, without compromising functionality. To meet higher energy efficiency needs, ABB has optimised the design for a load loss reduction of 25 percent, compared with a classic transformer of the same weight.

ABB has operations in 23 African countries and employs about 5,000 people across the continent. As a pioneering technology leader serving utilities, industry and transport & infrastructure customers globally, ABB supports Africa's growth with innovative solutions designed to address local challenges, from access to electricity to industrial development to sustainable transport. As part of its commitment to Africa, ABB provides scholarships and internships for talented engineers who need financial support to complete their studies. ABB has annual sales in Africa of around \$1.5 billion and manufacturing operations in Egypt and South Africa.

Traction transformers are critical components in the traction chain, affecting both train performance and operator services. ABB supplies traction transformers for all applications: high-speed, commuter and regional trains, locomotives, tram-trains and AC metros offering different designs in terms of size, weight and power ratings. They can be mounted either in the machine room of the train, on the roof or under the floor, providing maximum flexibility and reliability in single and multiphase systems.

Most of the world's train manufacturers and rail operators rely on ABB traction transformers.



Presidential Launch Of Peoples' Trains For South Africans

President Zuma recently launched the new PRASA trains operated by Metrorail. The new trains, affectionately known as "The People's Train", are part of PRASA's modernisation programme, which will be implemented over the next 20 years.



As part of this programme, the passenger rail infrastructure and systems will also be upgraded over the period ahead. Passengers

travelling between Pretoria and Piennarspoort will now travel using the new state-of-the-art trains.

This significant milestone comes less than 10 years since PRASA was established to address the decline of passenger rail and drive the re-investment into passenger rail modernisation. In 2004, Cabinet approved the consolidation of Passenger Rail Entities from Transnet and the South African Transport Service (SATA) creating a single Passenger Rail Agency of South Africa (PRASA).

With the President's launch of the PRASA's new service, South African commuters will now experience a world-class service at affordable rates. PRASA's new trains offer faster travel times, reliable service, improved security with CCTV cameras and a fully air-conditioned

train. Once rolled-out nationally, this world-class travel experience will be available to the majority of South Africa's commuters.

The new trains are therefore the beginning of a 20-year modernisation programme in response to the mandate to modernise passenger rail. The modernisation programme espouses the National Development Plan's (NDP) vision 2030 that aims to eliminate poverty and reduce inequality by 2030.

PRASA has entered into a contract with the Gibela Rail Transport Consortium in 2013, valued at R59 billion, to deliver 600 new train-sets, with 580 to be produced locally and 20 manufactured in Brazil. The manufacturing of the locally produced train-sets will see the construction of the new



Photos: Craig Dean

train manufacturing plant valued at approximately R1 billion at Dunnottar Park, City of Ekurhuleni. This is in line with the contractual obligation for Gibela to meet a minimum 65% localisation on the manufacturing of its new trains as per the Industrial Policy Action Plan (IPAP2). The local manufacturing plant which is currently under construction will once completed, employ approximately 1,500 people, 99% of which will be South Africans, 85% historically disadvantaged and 25% of this being women. The manufacturing activities have been progressing very well, with a total of 38 local components having been used in the manufacturing of the first 20 trains that were manufactured in Brazil. Currently,

Gibela is engaging various local suppliers in preparation to enter into contracts to supply various components for local production. In addition, the manufacturing plant will, once complete, also house a training centre designed to train approximately 19,527 individuals in various rail focused skills in order to create a pool of skilled individuals to feed into the rail industry.

The local manufacturing plant will also consist of a supplier park which will house suppliers who will manufacture various train components. The supplier park will be driven by Gibela BBBEE shareholder (Ubumbano) who holds a 30% stake in the Gibela Consortium.

In early October 2016, Gibela launched Maths, Science and English classes in Duduza, Nigel and Kwa-Thema, City of Ekurhuleni. Working with the Department of Basic Education, Gibela is assisting 450 learners with classes on Saturdays for grade 10, 11 and 12 with 50 learners in each class. The support includes teaching aids for educators and learning aids for students over three years. The cost amounting to R6,7 million for the learning support is fully covered through the rolling stock programme as part of socio-economic objectives. R13 million was made available in bursaries to fund 200 students at tertiary level within various areas of rail engineering and other critical fields.





Choosing The First Deployment Corridor

The decision to roll-out the trains between Pretoria station and Piennarspoort station as the first deployment corridor took into account its low risk as an operational corridor, access to staging a yard, depot and infrastructure readiness.

The current trains will continue to run over the next 15 years while PRASA rolls out the modernisation programme for the new trains and infrastructure upgrades. During this time, PRASA will continue to upgrade the current trains and keep them operational until such time that all the current trains have been replaced.

This brings new hope for job opportunities and growth within the rail sector that has been neglected for over 40 years. PRASA is in a unique position of striving to modernise passenger rail while continuing to deliver services to approximately 2.9 million people daily. The modernisation of passenger rail service will not be instant, but will take 20 years to achieve. The benefits, however, of skills development, local business development, and sustainable employment opportunities will leave a lasting legacy for all South Africans.



Trains Enter Commercial Service

Alstom is pleased to announce that its South African joint venture (JV) partner Gibela has seen its first 13 X'Trapolis Mega trains successfully enter commercial service on South Africa's commuter rail tracks, cementing Alstom's status as South Africa's preferred partner to revitalise its rail industry. The State President of the Republic of South Africa, Mr Jacob Zuma, unveiled the first new trains at Pretoria station in front of more than 2000 guests.

These trains are part of the 600 new, state-of-the-art fleet being built by Gibela for the Passenger Rail Agency of South Africa (PRASA). The first 20 trains have been manufactured at Alstom's Lapa factory in Brazil. They will bring modern, reliable and efficient suburban railway transport to the country's population. The X'Trapolis Mega is a brand new train in Alstom's X'Trapolis suburban range. The trains will initially run in the Koedoespoort - Rissik Corridor in Pretoria during peak and off-peak hours - a total of 146 trips a day.

"This is a historic moment for Gibela, its shareholders and the country at large as South African commuters finally have access to a service that marks the entry into a new age of rail," says Gibela CEO, Marc Granger.

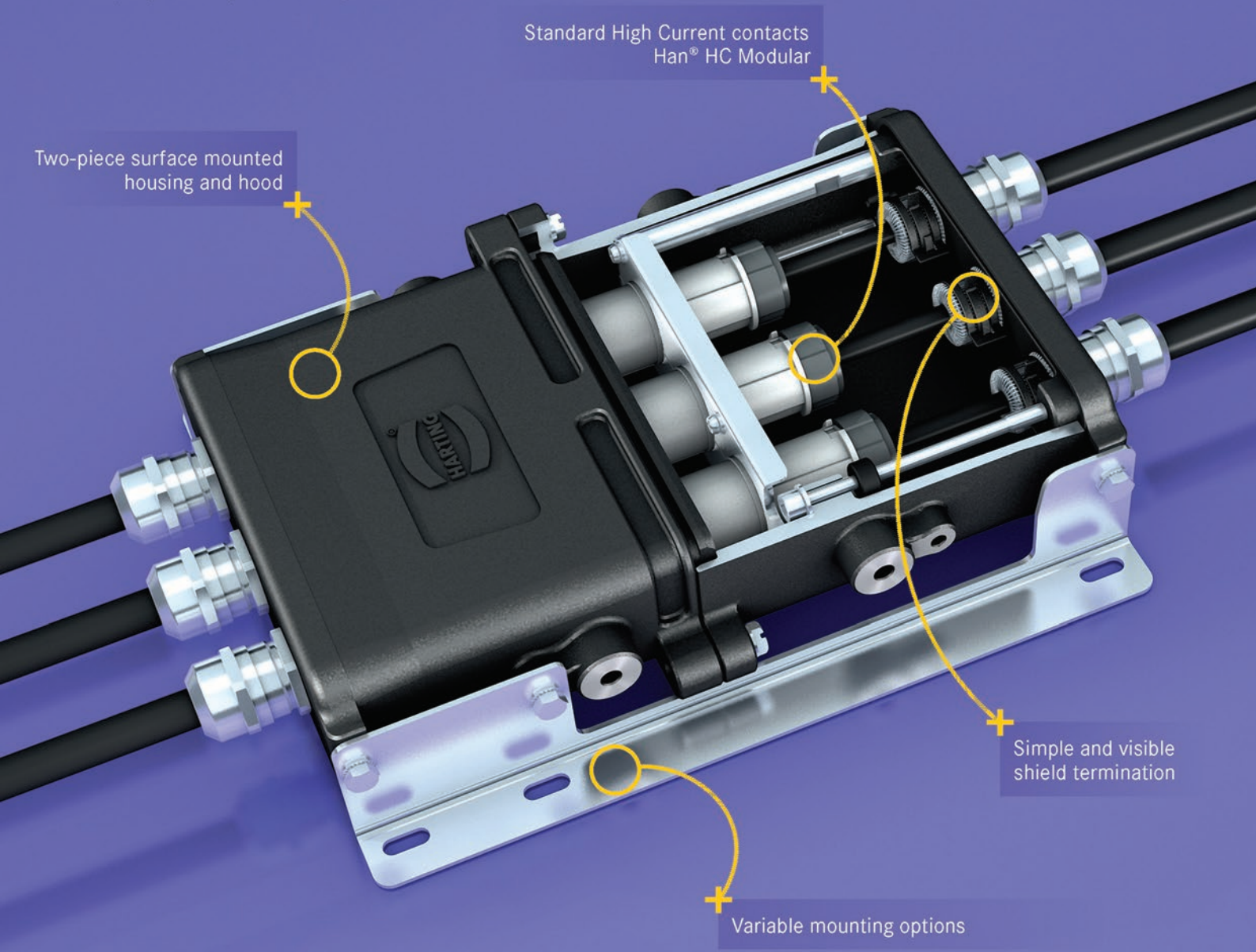
"By bringing Alstom's skills and infrastructure to South Africa, we are helping to upgrade the country's railway transport. The success of this project with Gibela positions us as a long-term rail partner in South Africa," commented Yvan Eriau, Managing Director for Alstom Southern Africa and CEO of Alstom Ubunye.

The construction of Gibela's manufacturing facility in Dunnottar is well underway and due to be completed by the end of 2017. The on-site Training Centre has already been completed and admitted its first intake of students in April 2017. At peak production, Gibela will produce 62 trains a year (each trainset comprises six cars). A panel of 200 local suppliers will be manufacturing equipment and components to the 580 locally produced trains from 2018 onwards. Local suppliers will be able to compete in global markets, opening up real potential for significant exports and foreign exchange earnings for South Africa.

As a whole, the project will boost the country's economy as it creates jobs, develops new skills, prioritises local economic development, local content and promotes black economic empowerment.

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Pushing Performance

Owners Need Project Controls Too

As we continue to work in the ever-changing world of capital projects, the opinions on how owners should perform project controls continue to alter between:

1

Duplicating everything the contractors do in an attempt to maintain control and monitor trends in the data

2

Taking the “hands off the wheel” and letting the contractors manage everything and provide all project reporting themselves

3

Hiring a Project Management Consultant (PMC) as an agent to manage and report on project progress. Although this option can suffer the same issues as the first two options and therefore isn't the magic bullet either!

None of these approaches fully achieves the goal of providing the owner with a complete method to effectively manage and monitor their project. Independent Project Analysis (IPA) research has found that the project control function typically costs between 0.3 and 3% of the total project cost (average 1.3%).

What is particularly interesting is that the IPA has also shown that for this relatively modest investment in project controls (and associated best practices), the overall reduction in risk of over expenditure can range between 6% and 20% of the total capital investment. There are also significant improvements in schedule predictability, and hence the business rate of return on the investment. Savings like that can have a huge impact on project success, so evidently it is important to find and implement the most effective project controls approach available. The need for good project controls is applicable to any project regardless of nature and size.

The Various Approaches

The first approach of duplicating the efforts of the contractors, whether Engineering, Construction, Fabrication or Vendor, is wasteful of resources and has no real impact on the owner's level of control. Additionally, the amount of detail collected from all of the different

contractors and their systems can lead to an information overload and a serious lack of clarity.

The second approach where the owner relies heavily on the contractors to manage the entire scope of work comes with a significant amount of risk. The contractor, even with the greatest intentions in the world, will act in their own self-interest, which does not always translate into what is best for the owner. Contractors also tend to be more optimistic than they should be about their ability to recover from slippage and poor productivity. Even worse, some contractors neglect to mention these problems to the owner, meaning the first time the owner may know about a delay or overrun is when it has already happened and it is too late to do anything about it. Contractors may also come in with low bids for their scope of work, putting more risk on the owner to ensure that the full scope of work is accounted for between contractors and their own costs.

The third approach, where the owner hires a project management consultant (PMC) to manage the entire scope of work on their behalf may be easy and convenient, however, there is a pitfall to acknowledge. The financial interests of the owner are not necessarily aligned with those of the consultant.

PMCs are typically contracted on a time and materials basis so project delays lead to an extension of their services – meaning more payment for them at greater cost to the owner.

The Best Approach For Owners

None of the approaches mentioned above offers an ideal solution. Luckily, there is another way. A balanced middle ground where the contractors perform their roles independently while still providing enough detailed information to the owner so that they can perform their own analysis and assess the state of the project. Because ultimately, the owner is the one with their head on the chopping block if something goes wrong within the project. The owner is responsible for everything associated with the project, so they need to be able to:

- Analyse and make decisions independently from centralised and accurate project data.
- Add their own internal costs to the project report without exposing internal details to a third party.
- Interpret what they are being told and challenge the contractors on statements they are making.
- Provide confidence to internal and external stakeholders that the project is being managed

“The contractor, even with the greatest intentions in the world, will act in their own self-interest, which does not always translate into what is best for the owner.”



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“Ultimately, the owner is the one with their head on the chopping block if something goes wrong within the project.”

“When the contract is reimbursable, the owner has a greater right and need to ask for more detailed information from the contractor.”

effectively and with strong control over cost and schedule.

- Place an emphasis on Schedule and Master Schedule to coordinate activities across the various parties and to integrate the schedule with the rest of the Project Control data.

The simplest and most effective way to meet these needs is to make use of an Enterprise Project Lifecycle Management System. With such software, owners can:

- Integrate all data into one central location, allowing for easy analysis of the project throughout its entire lifecycle.
- Achieve a superior level of control, which in turn mitigates risks on the project and ultimately leads to the successful execution and delivery of capital projects.
- Manage a level of contingency not available to the contractors so that extreme events and unlikely risks can be managed without providing a huge pot of funds to the contractors.

Types Of Contracts And Their Influence On Owner Project Controls

The level of detail that needs to be personally managed by the owner depends very much on the nature of the work being undertaken and the type of contract in place.

Reimbursable work requires a lot more day-to-day management attention than lump sum contracts.

When the contract is reimbursable, the owner has a greater right and needs to ask for more detailed information from the contractor. The owner does not necessarily need to have the information provided at the level of individual deliverables, but they do need to have the cost and progress information (in terms of actual work completed against the total work to be done) at a level that would allow them to spot anomalies and issues.

When a lump sum contract is in place, the owner and contractors may feel the owner does not need or have the right to ask for detailed information. This may be true in terms of costs incurred by the contractor in the course of delivering their scope of work, but this concern does not address the owner’s needs for information that will give them confidence that the work is progressing as expected.

If the owner is performing a coordination role, then they will need even greater detail on progress and schedule information. There may be consequences for late completion of the scope of work and

without access to progress information, it can lead to additional costs or delays further down the line. The delays can be at the contract level, for example, contractors mobilising too early as they have been misinformed about project progress, or the delays can be at the project level, where they result in:

- Lost revenues
- Lower margins due to:
 - Higher depreciation costs
 - Increased project financing costs
 - Exposure to inflation
- A strain on foreign borrowings and domestic credit
- A delay in societal and environmental benefits
- Owners failing to meet their contractual obligations.

Decisions made early on in a project can have a huge impact on execution and construction success. Therefore, there needs to be an effective project controls organisation and execution plan by end of the FEL2 (Assess) stage. In addition, there may be a need to control each project stage as if it were a project. With the right data project controls can assess the performance of contractors and manage the correction of deficiencies in performance.

It is vital for there to be a contractual mechanism that agrees on what data will be provided and provides a mechanism to influence the contractors to improve their performance when they start to slip. So it is important to have regular progress reports from the contractors and it is reasonable to expect to see the scope of work broken down alongside progress and productivity measures to provide the owner with the confidence that the work will be delivered as expected.

It is useful to make sure that the project control requirements are documented in the contract agreement so that there is no uncertainty about what data is required from the contractor. When analysing the data the owner needs to take into account the quality of the reporting for:

- **Completeness** - are they over or under reporting
- **Consistency** - are they all in the same format and providing the same information
- **Verifiability** - can the data be objectively verified
- **Compatibility** - is the data compatible and easy to integrate into the project system
- **Acceptability** - are they following industry best practices

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- **Analysis** – can that data be analysed for highlighting trends
- **Communicable** – is it being provided in a timely manner and in a format that is easy to comprehend
- **Cost/Benefit** – are the costs of reporting exceeding the benefits being provided. Studies have shown that projects that are more than 10% behind cost or schedule, even at only 25% complete, rarely recover their losses. The key to good delivery is to have the right information and the appropriate level of detail to catch issues and trends early.

Finding The Right Level Of Control

Projects are delivered successfully when proper planning and processes are implemented with the unified goal of achieving an agreed upon scope. Project control processes are needed to monitor work and identify whether the project is proceeding according to plan. Project complexity, contractor organisation maturity, team experience, cost, project importance and other factors determine the level of control needed. Demanding too much control can cause discontent amongst the contractors and cause an increase in project costs and diversion of resources from more important tasks, as the contractors strive to produce the data requested of them. Too little control can lead to unforeseen delays, errors, unwarranted and unexpected costs, scope creep and lower than required project quality.

Using a software solution that enables owners to monitor contractors and project progress at a level of control that suits both contractor and owner preference is a must. Use of an appropriate project controls system also helps to facilitate project planning. Planning ensures that the project is achievable within the budget and time allotted. The plan determines the sequence that work needs to be completed in and addresses the organisational responsibilities required. The planning component identifies what needs to be measured, how it will be measured and how progress will be properly recorded to ensure that the owner does not over spend for work.

Scheduling converts the plan into time focused action items. Critical paths are identified and all schedules are optimised to eliminate lag. A strong schedule would show that the full scope of the project has been scheduled, all the critical paths have been identified and validated, that the plan can be accomplished within the expected time,

that each activity can be measured and that slippage and the effect of slippage can be recognised and addressed.

It is also important to ensure that schedule is integrated with the rest of the project data allowing for simpler analysis of the effects of project slippage, particularly in terms of the effect on cost. Cost control starts with a plan and an estimate, and from there develops project cost into time-phased execution budgets. The integration of the budgets with the schedule ensures that each component of work has a common measurement for tracking progress. Actual project costs and changes are recorded and compared against the time-phased execution budgets and work efficiencies are trended accordingly. This information can then be used to calculate the “Estimate at Completion” by comparing the physical completion and actual costs against the current budget for the scope of work.

The Benefits Of Integrated Project Controls

Integrated project controls offer great benefits for the owners of capital projects and bring together the key elements of planning and controlling a project:

- **Planning:** Includes estimate (pricing) data that creates the basis of the estimate and the schedule, which creates the sequencing and timing of activities and should be considered the baseline schedule once all parties agree.
- **Controlling:** Includes updating and forecasting of the schedule, along with risk management, change management, physical progressing and estimate (quantities, hours and cost), progress reporting and tracking of actual cost and commitment values.

Project control comes through the ability to tie all these elements together into one structured view of the project. The un-integrated approach may provide adequate business control in each area but does not offer strong overall project controls.

Integrated project controls improve the organisation’s capability to manage the project within budget and schedule constraints. It provides early warning indicators of potential problems so that they can be assessed and managed.

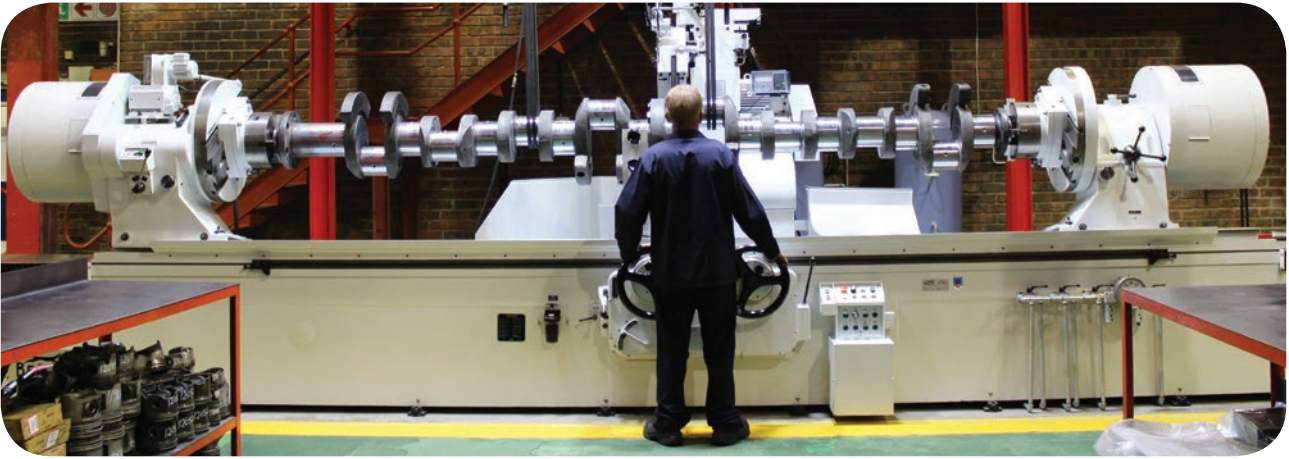
Integrated project controls focuses on improving data accuracy and reducing duplication of tasks. Using techniques

“If the owner is performing a coordination role, then they will need even greater detail on progress and schedule information.”

“It is vital for there to be a contractual mechanism that agrees on what data will be provided and provides a mechanism to influence the contractors to improve their performance when they start to slip.”

“Studies have shown that projects that are more than 10% behind cost or schedule, even at only 25% complete, rarely recover their losses.”

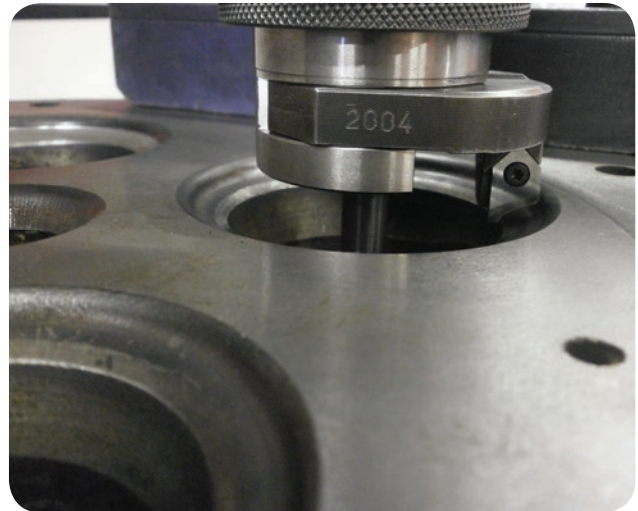
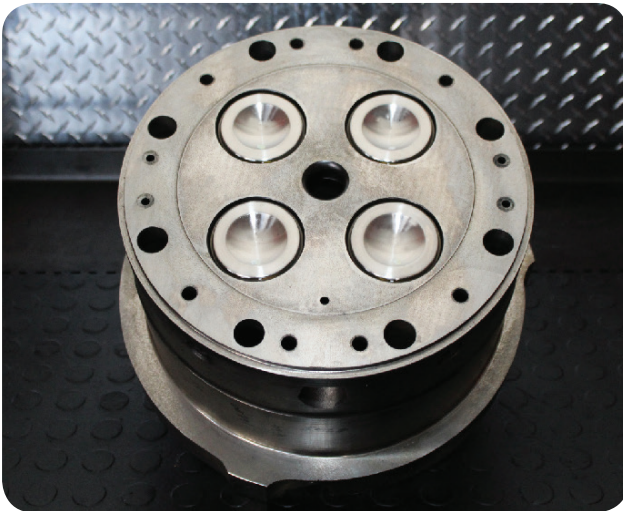
“The integration of the budgets with the schedule ensures that each component of work has a common measurement for tracking progress. Actual project costs and changes are recorded and compared against the time-phased execution budgets and work efficiencies are trended accordingly.”



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“Integrated project controls improve the organisation’s capability to manage the project within budget and schedule constraints. It provides early warning indicators of potential problems so that they can be assessed and managed.

“In order for an owner to efficiently manage their project, they need an industry standard tool that is easy to use with the power and flexibility to adapt to the various execution models that can be employed.

such as Earned Value Management, metrics can be produced that flag troubled areas that need addressing. Without the integration, these problems may go overlooked and later wreak havoc in the project’s progress.

The integrated approach to project controls allows each component of the system to be quickly referenced to the others, providing the owner with accurate answers to all of their potential questions:

What is the status of the project today? Are there any concerns management need to be aware of? What changes have been made to the project? What is the completion dates and estimated costs at completion? What obstacles exist to completing the project? What risks can impact the success of the project?

Through the integration of the key aspects of the project, the owner’s project team is provided with many advantages including:

- An objective view of the project.
- Early identification of potential problems.
- Accurate analysis of current status and likely future outcomes.

All of which provide the project team with:

- The ability to make decisions based on objective facts – not subjective opinions.
- An opportunity to correct issues while they are still small and manageable.
- A way to monitor the results of their decisions and take further corrective action if required.

Additionally, many common project risks can be managed with strong project controls including:

- **Scope Creep** – Good project controls is founded on strong change management. Ensuring that all changes follow the appropriate evaluation and approval processes confirms that scope creep is kept in check. It also ensures that the project scope and requirements remain within budget and funding limits.
- **Project Schedule Delays** – Integrating the schedule with other key components of the project highlights issues that can affect the delivery of the project before it is too late to do anything. This visibility allows the project team to find resolutions to potential schedule delays.
- **Financial Overruns** – Comparing the actual costs against the progress made in the delivery of the project highlights where there are potential overcharges, productivity issues, excessive billing rates etc.

- **Claims and Liens** – If there is a lack of good project controls then it is not easy to define an accurate scope of work and terms for each contract. A poorly defined contract is open to misunderstanding, disagreement, uncontrollable changes, and in the worst cases claims and liens from contractors for work they have completed even if the owner feels it was unwarranted.

Industry Standard Tool

In order for an owner to efficiently manage their project, they need an industry standard tool that is easy to use with the power and flexibility to adapt to the various execution models that can be employed. That is why many organisations turn to tools like ARES PRISM. PRISM is an Enterprise Project Lifecycle Management solution that:

- Can be installed and configured very quickly in the owner’s environment.
- Is capable of importing data from a multitude of other software allowing information to be easily loaded into a common database for analysis and reporting.
- Offers a flexible and comprehensive change control process.
- Can simultaneously track an approved budget and a control budget. This means that contractors can be advised of a budget to complete their scope of work while a separate reserve is held internally.
- Contains a Staff Planning function that can be used to plan and track internal resources.
- Produces reports and dashboards out-of-the-box that owners can use to compare progress and actuals at the click of a button – saving time and improving efficiency.
- Integrates with almost any software on the market. With PRISM Integrator, owners can integrate their IT systems, ERP systems and financial systems into the PRISM landscape.

Conclusions

There is no single correct answer to the question: “*How much project control do I need?*” If you’re not measuring it, you’re not managing it. So you need to identify what matters most and put in place the right processes and tools to achieve your goals.

The answer is very dependent upon the nature of the project and the experience and skills of the owner and contractors. It is best to approach the project initially with a high degree of control and then relax as the project proceeds and the project

“It is best to approach the project initially with a high degree of control and then relax as the project proceeds and the project team becomes more comfortable working together.”

“Identifying poor trends early on in the project allows for more time to develop an approach to counter them without making matters worse.”

team becomes more comfortable working together. Trying to increase control once a project has already started is almost impossible and will leave the project controls team perpetually striving to get the right information, at the right level, with the right codes in order to report (not manage) the data requested from them.

To determine the appropriate level of control, project controls personnel need to work with management to assess the data and determine what is right for that specific project according to industry best practices. Contractors can withhold information provided to the owners – if project controls are not managed at the Owner level then issues can be hidden until it's too late to resolve them. It is critical that owners responsible for the entirety of the project do not abdicate their responsibilities to contractors or project management consultants.

The owner is accountable to the banks, the CFO, shareholders and other stakeholders. The owner has a duty to maintain oversight of the project to a level at which they can guarantee to stakeholders that they are in control. Contractors should only be responsible for the scope of work that was contracted to them and cannot be expected to “fill in the gaps” where an owner does not have the right controls. Also, project management must align their

interests with the owners. They need to recommend and adopt a project controls system that is efficient, economical and effective. In all cases, there is a need for a system that:

- Provides analytical reports in tabular, graphic and dashboard formats with drill down capabilities.
- Alerts the owner to areas not meeting key performance indicators.
- Ensures consistency between budgets, schedules, commitments, actuals, changes and cash flow.
- Facilitates the exchange of data between, contractors, the PMC and the owner.

Poor trends are difficult to reverse and recover from. Adding more resources or sustained use of overtime fails to deliver the expected improvements in schedule and often just results in increased cost, poorer performance and sometimes large implications for safety. Identifying poor trends early on in the project allows for more time to develop an approach to counter them without making matters worse. Overall, it is evident that owners need to embrace industry best practices by managing in a way that offers contractors enough freedom to complete their scope of work, while still maintaining enough control to analyse and monitor project performance.

The theory behind running this particular white paper is based on the number of rail and transported related infrastructure projects currently being rolled out or in planning, funding stage, be it modernisation or brand new infrastructure, in Africa or for that matter the rest of the world. At the end of the day, the key to maximising the long-term benefits of these projects is by keeping the project on time and within budget, even more, important is the ability to report and provide for transparency and governance throughout the project and this includes keeping all stakeholders and funders up-to-date in real time. The risk is certainly mitigated if all stakeholders are on the same platform, particularly the customer who at the end of the day is the owner.

Permission to publish this white paper has been provided by ARES Project Management LLC. The author is Simon Medley, Manager of ARES Canadian Operations. Simon has diverse project controls experience spanning over 25 years. He has worked in project management and project controls software development, implementation and support. He has also spent time working as a cost controller and as project controls and project management specialist, developing the systems, people, processes and procedures required to embed project controls efficiently in both EPC and Owner organisations.

ARES Project Management LLC, a subsidiary of ARES Holding Company, is represented in Africa through their local office ARES Africa (Pty) Ltd and their strategic partner Infracon Consulting, a level 1 B-BBEE, black female owned project management service provider.

DO YOU KNOW YOUR ABC's?

EN

The group of RMR companies and Anglo Belgian Corporation (ABC) propose a wide range of traction engines for new build, repowering and modernization projects for both diesel-electric and diesel-hydraulic locomotives!

ABC is one of Europe's leading diesel engine manufacturers and has proven to be a reliable partner in powering locomotives with over a century of engine building experience.

ABC's product portfolio consists of 6 and 8 cylinder inline engines, 12 and 16 cylinder V-engines and covers a power range from 1000 HP up to 5000 HP. They are designed to perform in all heavy duty and continuous operational conditions.

ABC's proven robust design and longevity makes them ideal in shunting and heavy duty mainline locomotive operations in all environments. ABC is constantly evolving and developing new concepts for changing and challenging times and requirements in the railway traction industry.

With its "dual fuel" engines, ABC offers eco-friendly solutions that provide significant operational advantages by operating on diesel and natural gas (CNG or LNG)!

ABC engines are long lasting, low maintenance, have long maintenance intervals and low fuel consumption while respecting all current EU and EPA emission regulations.

Let the group of RMR companies tell you more about the ABC's!

ARA

مجموعة شركات (RMR) وشركة أنجلو البلجيكية (ABC) تقترح مجموعة واسعة من محركات الجر لمشروعات جديدة لبناء وإعادة تزويد وتحديث لكلا من القاطرات الديزل والكهرباء والديزل الهيدروليكية!

ABC هي واحدة من الشركات المصنعة لمحركات الديزل الرائدة في أوروبا، وقد ثبتت أنها شريكا موثوقا في القاطرات مع أكثر من قرن من الخبرة لبناء المحرك.

تتكون محفظة منتجات ABC من 6 و 8 محركات مضمنة الأسطوانات، و 12 و 16 اسطوانة محركات (V) وتغطي مجموعة الطاقة من 1000 حصان حتى 5000 حصان.

وهي مصممة لأداء جميع الاعمال الثقيلة والظروف التشغيلية المستمرة.

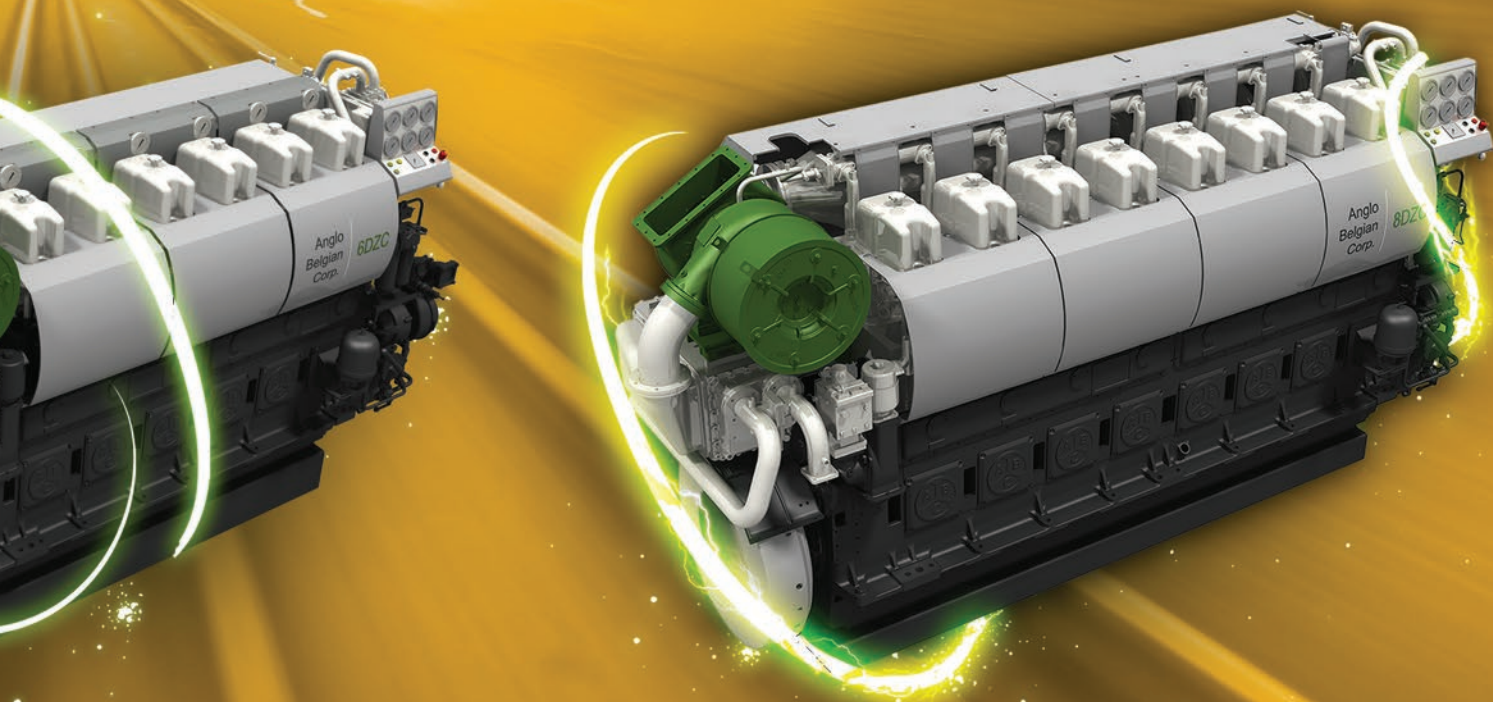
ABC ثبتت تصميمها القوي وطول العمر يجعلها مثالية في تحويل القاطرات الثقيلة واجبها الرئيسي في جميع البيئات.

ABC تتطور باستمرار في مفاهيمها الجديدة لتغيير الأوقات الصعبة والمتطلبات في صناعة الجر للسكك الحديدية.

مع محركات "الوقود المزدوج"، ABC تقدم الحلول الصديقة للبيئة التي توفر مزايا تشغيلية كبيرة من خلال التشغيل على الديزل والغاز الطبيعي (الغاز الطبيعي المسال)!

محركات ABC طويلة الأمد، صيانة منخفضة، لها فترات صيانة طويلة وانخفاض استهلاك الوقود مع احترام جميع اللوائح الحالية الاتحاد الأوروبي وإبنا الانبعاثات.

دع مجموعة RMR تعلمك أكثر عن ABC!



Let Our Global Team Power Your Future

FR

Les entreprises RMR et Anglo Belgian Corporation (ABC) proposent une vaste gamme de moteurs de traction pour des projets de nouvelles constructions, remotorisations et modernisations de locomotives diesel-électriques et diesel-hydrauliques.

ABC est l'un des principaux fabricants européens de moteurs diesel et s'est révélé être un partenaire fiable dans la motorisation de locomotives grâce à plus d'un siècle d'expérience.

Le portefeuille de produits ABC comprend des moteurs en ligne de 6 et 8 cylindres et des moteurs en V de 12 et 16 cylindres couvrant une gamme de puissance de 1000 CH à 5000 CH. Ils sont conçus pour fonctionner dans les conditions les plus ardues et en continu.

La conception robuste et la longue durée de vie des moteurs ABC les rendent idéaux dans les opérations de manoeuvre (shunting) et les opérations d'utilisation lourde de locomotives de ligne et ce dans toutes les conditions.

De plus, ABC adapte de manière continue ses produits pour satisfaire les constantes demandes de changement de l'industrie des locomotives de traction.

Avec ses moteurs « dual fuel », ABC propose des solutions respectueuses de l'environnement qui offrent d'importants avantages opérationnels en fonctionnant en mode diesel et gaz naturel (GNV ou GNL)!

Les moteurs ABC sont durables, requièrent peu d'entretien, ont de longs intervalles de maintenance et une faible consommation de carburant tout en respectant toutes les réglementations actuelles en matière d'émissions de l'UE et de l'EPA.

Les entreprises RMR se tiennent à votre disposition pour vous exposer leur offre plus en détail.

ES

El grupo de empresas RMR y Anglo Belgium Corporation (ABC) proponen una amplia gama de motores de tracción para proyectos de nueva construcción, repotenciación y modernización de locomotoras Diésel-eléctricas y Diésel-Hidráulicas.

ABC es uno de los principales fabricantes de motores diésel de Europa y ha demostrado ser un socio fiable en el suministro de potencia a las locomotoras, con más de un siglo de experiencia en construcción de motores.

La cartera de productos de ABC abarca motores de 6, 8, 12 y 16 cilindros y cubre un rango de potencia de 1400 HP hasta más de 5000 HP. Todos nuestros motores funcionan en condiciones de servicio intensivo y continuo.

El robusto diseño y longevidad de dichos motores hacen sean ideales en las operaciones de maniobras y en las locomotoras de servicio pesado para todos los terrenos. ABC está continuamente evolucionando y desarrollando nuevos conceptos para tiempos cambiantes y requerimientos desafiantes en lo que a la tracción ferroviaria se refiere.

Con sus motores de "dual fuel", ABC ofrece soluciones ecológicas que proporcionan importantes ventajas operacionales al funcionar con diésel y gas natural (CNG o GNL).

Los motores de ABC son duraderos, de bajo mantenimiento, poseen largos intervalos, con un bajo consumo de combustible y siempre cumpliendo con las normas de emisiones UE y EPA.

¡Deje que el grupo de empresas de RMR lo guíe a través del ABC!



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BACK ON THE RAILS: HOW MACHINISTS IN PENNSYLVANIA ARE HELPING DRIVE ANGOLA'S ECONOMY

A few years ago, a group of investors from Singapore planned to open a large iron mine in the Huila province in southwest Angola. The mine would create jobs and money to the local economy, but the project failed because there was no reliable way to move the ore from the mine.

This is a common story in Africa, where a lack of reliable infrastructure is holding back faster economic growth. Angola, for example, has just three rail lines and some 30 locomotives for 26-million people. The country last added locomotives 30 years ago and engineers still communicate with dispatchers over a spotty radio service, making tracking and scheduling trains difficult.

But, changes are just around the corner. The Angolan government, which is working to modernise the country's transportation infrastructure, will buy 100 new and eight upgraded locomotives from GE Transportation. The deal, valued at US\$350-million, combined with a full overhaul of Angola's tracks, will position the country as a hub among its mineral-rich, landlocked neighbours and help stimulate economic development. The government estimates that routing cargo through Angola could reduce transportation costs by as much as 50%.

GE has already started assembling the Angolan locomotives at its century-old factory in Erie, Pennsylvania. Fifty

miles down the road, workers at another GE plant in Grove City, Pennsylvania, manufacture their 3,000-horsepower engines. The first 15 locomotives are scheduled to begin service by the end of May. "These are going to be all around better locomotives than what they had in the past," says Alan Dilla, locomotive project manager for GE Transportation.

GE will also train local operators and maintenance personnel as part of the deal.

Angola isn't the only foreign country relying on the Erie plant to modernise its rails. Workers there also built components for 200 of the same C30 locomotives destined for South Africa and similar

ones for Mozambique and Pakistan.

The locomotives use alternating current propulsion technology combined with a digital control system. Because each wheel has its own motor, the digital brain can listen to feedback coming from sensors and calibrate power for individual wheel-motor pairs.

The resulting increase in safety and speed, along with greater horsepower, means these locomotives can haul trains that are 30% longer than Angola's current stock. Some of the locomotives will be also equipped with GE's Locovision product, a high-definition video recording system that helps monitor the track.



Angola signed a \$350-million deal with GE Transportation for 100 new and eight upgraded locomotives as part of the government's effort to modernise the country's transportation infrastructure.



The locomotives started arriving in Angola from GE plants in Pennsylvania this spring. Images credit: GE Transportation.

Article and images courtesy of GE reports: Sub-Saharan Africa (<http://www.gereportsafrica.com/post/160507580966/back-on-the-rails-how-machinists-in-pennsylvania>)

TUNISIA - RAPID RAILWAY NETWORK II

Under appraisal as at, 03/05/2017 is the proposed EIB finance for approximately EUR83 million, with the total approximate cost of EUR700 million - is the second operation to finance the first phase of a rapid transit system in Tunis, which includes the construction of two, 18km suburban railway lines, the construction of a maintenance and storage center as well as the acquisition of 28 train sets.

The project is an integral part of the Rapid Rail Network (RFR), a suburban rapid transit system. The RFR should comprise 5 lines and 85km in time and will be the backbone of Tunis's public transport network as foreseen in the strategy established in 2002 in the studies of the Greater Tunis Transit Network (GTCTN) aimed at reducing the increasing modal share of cars and road congestion.

Procurement

The National Tunisian Railway Company (promoter) shall implement the project in accordance with the procurement rules and procedures of the French Development Agency (AFD) and the requirements and standards agreed between the EIB, AFD and KfW in the framework of the Implementation of the Project governing the intervention of the donors of the funds in co-financing with the investment facility for the neighborhood.



JAPANESE MINISTER VISITS ACCRA

A sixty-member delegation accompanying the Japanese minister for Land, Infrastructure, Transport and Tourism, Suematsu Sinsuke has called on the minister for Roads and Highways Hon. Kwesi Amoako-Attah and the deputy minister for Transport, Hon. Daniel Titus-Glover in Accra. The courtesy call preceded a high-level conference on infrastructure scheduled to take place in Accra early in May.

The Roads and Highways Minister stated that infrastructural development is at the very core of government's policies and programmes and that government would strive to provide infrastructure without sacrificing quality. The Japanese minister disclosed that in the face of rapid development all over the world, it is crucial for governments to develop a framework of high-quality infrastructure. The Minister for Roads and Highways, Hon. Kwesi Amoako-Attah expressed Government's appreciation to the team adding that, the Government of Ghana has high regard for the bilateral relationship that exists between the two countries.

TRAIN EXPRESS REGIONAL (TER): OPERATION AND MAINTENANCE ENTRUSTED TO THE SNCF / RATP GROUPING

It is now official. SNCF / RATP will operate and maintain the Dakar-AIBD regional express train. The French National Railways (SNCF) / RATP (Autonomous Régie des Transports Parisiens) Mr Mansour Elimane Kane, Minister of Infrastructure, Land Transport and Disenclavement signed the Memorandum of Understanding with the French National Railways (SNCF) / RATP (Régie Autonome) group on 25 April 2017 in Bercy Paris Of Parisian transport). It is in the form of an amendment to prepare the operation and maintenance of the Regional Express Train (TER) project and the creation of a training center dedicated to urban mobility.



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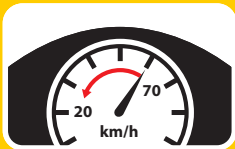
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**International
Level Crossing
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2 June 2017.**



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Slow down



Obey the road signs and signals



Stop well before LC markings and signs



Be aware of traffic jams



Never stop on tracks



Expect a train from either direction

TRANSNAMIB - APPOINTMENT OF MICHAEL FELDMANN AS INTERIM/ACTING CEO



Michael Feldmann.

At the end of April, Transnamib announced that Michael Feldmann, executive operations, had been delegated the authority to act temporarily and to perform generally the functions assigned to the position

of chief executive officer for a period of three months, or such shorter or longer period as the Board may determine.

The decision to make a change regarding the position of acting CEO, inter alio, is in line with the Board's responsibility for succession planning at EXCO level, and granting different Executives the opportunity and exposure to act in a higher position.

Mr Tjivikua, who had previously acted as CEO, returns to the position of executive strategy and stakeholder management.

In the meantime, the recruitment process for the appointment of a substantive CEO is being prioritised.

RAILWAY RELATED IPAP ACHIEVEMENTS 2016/17

Industrial Policy Action Plan (IPAP) 2017/18-19/20 is in its ninth annual iteration based on the National Industry Policy Framework and its objectives. IPAP 2017/18 places emphasis on job creation with a continuously strengthening focus on labour intensity, especially in labour-intensive sectors that link the productive sectors of the economy, across integrated value chains. IPAP 2017/18 seeks to achieve a higher impact in difficult economic circumstances. It recognises that key domestic constraints constitute a considerable break on industrialisation. IPAP 2017/18, therefore, recommends continued support for a constructive and solutions-based approach to key challenges which has been adopted by the economic cluster.

Localisation

Instruction notes for the designation of products were issued for products such as steel products, rail signalling equipment and transformers and associated equipment. Steel industry – primary steel was "undeemed" in order to be sourced locally going forward. SA's efforts to up-scale industrial capacities and capabilities in the manufacture of rail transport and components were boosted by the launch of several new facilities:

- Bombardier Transportation Propulsion and Control facility launched in Elandsfontein
- MTU South Africa unveiled its newly-upgraded workshop facility to assemble the diesel engines for the 232 diesel locomotives for China North Rail for Transnet as part of the 1,064-locomotive build programme
- China North Rail delivered two CKD diesel locomotives for final assembly at Transnet Engineering's Durban Facility
- Transnet Engineering unveiled its locally manufactured Trans-Africa diesel-powered locomotive, which is particularly suitable for use on branch lines and in shunting yards
- In June 2016, Transnet supplied fuel tanker wagons and container wagons to Swaziland Railway as well as passenger coaches to Botswana
- The Department of Science and Technology (DST) has provided funding to the value of R9 million for the Bombardier locomotive building project
- After a series of tests undertaken on the new PRASA-Gibela EMUs, PRASA accepted the first train in October 2016
- Gibela secured 32 local suppliers for the R51bn PRASA contract and seeks many more suppliers to produce 600 new passenger trains
- Public expenditure by Government increased by R14 billion to R272 billion in 2015, with R36 billion spent on power generation projects and R35 billion on railway equipment.

Not included in IPAP was the recent launch of ABBs traction transformer plant in South Africa. See page 9.

THERE IS MORE TO BEING ON TRACK THERE IS ACTOM



- Electronic Interlocking, Automatic Train Protection and Centralised Train Control systems
- Signalling equipment, systems and maintenance
- Protected level crossings
- Rolling stock equipment, service and parts. Depot machinery and test equipment.

SIGNALLING
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ACTOM



The latest IPAP document notes:

While there is a clear government programme to reduce import leakage in the rail manufacturing industry, imports of components and systems remain prevalent as the rail recapitalisation programme is rolled out.

While Government has prioritised localisation, the following impediments persist:

- Inconsistency in the implementation of the localisation programme and the continuous increase in the importation of key components within the infrastructure build programme, particularly in the designated products/sectors
- In the rail signalling industry, major challenges are inadequate testing facilities and sub-optimal software engineering and development capacity to achieve the required safety integrity level 4 – which largely explains the continuing high import content in the sector
- The rail industry structure remains fragmented, resulting in huge gaps in the value chain
- Lack of standardisation in key products across state procurement undermines broader localisation efforts and the ability of the local industry to achieve competitive economies of scope and scale.

All the above points to a lack of policy alignment and coordination. Effectively, South Africa's largest rail and energy infrastructure expansion programmes have not translated into the development of robust local supply chains. Despite government intervention frameworks such as the Competitive Supplier Development Programme (CSDP), the National Industrial Participation Programme (NIPP) and the various designation programmes, local suppliers are yet to be significantly integrated into key OEMs' global supply chains.

Opportunities

Key areas of opportunity for growing the sector or achieving higher impact include:

- The SA infrastructure build programme - including the Strategic Integrated Projects (SIPS) - presents the largest single opportunity to stimulate the industry on the back of localisation requirements and focused supplier development programmes
- Significant investments in rail network and infrastructure projects on the African continent will increase the demand for locomotives and wagons
- In addition, the African Union's pronouncement of SA as a rail Centre of Excellence for the African continent provides a crucial platform to deepen SA rail manufacturing capabilities
- Opportunities exist to integrate the rail rolling stock suppliers into the global value chain of the OEMs
- The maintenance programme for the newly procured EMU and locomotives will also provide opportunities once warranties have expired
- The move towards the green economy presents an opportunity to implement energy-saving measures in the energy intensive industries and move towards conformance to environmental requirements.

SIGNATURE IN PARIS, FINANCING AGREEMENT TRAIN EXPRESS REGIONAL (TER) DAKAR-AIBD

129, 6 billion CFA francs granted for railway rolling stock.

The Minister of Economy, Finance and Plan Amadou BA signed two financing agreements in Paris on Tuesday, April 25, 2017. The first was signed with his French counterpart Michel Sapin. It concerns an amount of CFAF 63 billion (€ 95 million) and concerns a financial protocol concluded between the State of Senegal and the French Republic through the French Treasury. The second agreement finalising the agreement with the AFD was signed with the Director General of the French Development Agency (AFD) Rémy Rioux, for an amount of 66.5 billion CFAF (100 million euros). These two agreements totalling CFAF 129.6 billion are for the acquisition of railway rolling stock and the shifting/renewal of the metric track, as part of the Regional Express Train (TER) project, Between Dakar and Diamniadio.

Minister Amadou BA welcomed the transparent process implemented in this draft TER and recalled the need to carry out this project in a timely manner in accordance with the instructions of President Macky SALL. He also recalled the importance of the partnership between Senegal and the AFD with which 21 agreements have been signed for the implementation of the PES, since the Consultative Group held in Paris in February 2014, for a total amount of 366 Billion CFA francs (558 million euros), a rate of concretisation of commitments of French cooperation of 130%.



One of the first new locomotives for Kenya Railways Corporation was delivered at the Port of Mombasa on 15 May 2017 in anticipation for the SGR Launch on 1 June 2017.

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ADDIS ABABA CITY ADMINISTRATION HONOURED WITH CLIMATE AWARD

The Addis Ababa City Administration was recently honoured with the C40 Cities Climate Leadership Group Award, this as a result of the Addis Ababa Light Rail Transit projects and its contribution towards mitigating carbon emission and tackling the climate change. To mark this achievement, a colourful event was staged in April, where a trophy was handed over to the Addis Ababa City Administration. The City Administration has also awarded a certificate to the Ethiopian Railways Corporation.

Dr. Eng. Getachew Betru, CEO, ERC, noted that from its inception, the Ethiopian Railways Corporation has been following a strategy that will have a meaningful impact in reducing carbon emission and climate risks.



COMPETITIVENESS BOOST URGENTLY NEEDED TO MEET AFRICA'S DEMOGRAPHIC CHALLENGES

- Without urgent action to address stagnating levels of competitiveness, Africa's economies will not create enough jobs for the young people entering the job market
- If current policies remain unchanged, fewer than one-quarter of the 450 million new jobs needed in the next 20 years will be created
- Policy priorities include reform to improve the quality of institutions, infrastructure, skills and adoption of new technology. House construction and better urban planning present opportunities for short-term competitiveness gains

The ability of Sub-Saharan Africa's economies to generate enough jobs for its young and growing population rests on the successful implementation of urgent reforms to boost productivity. This is the key finding of the Africa Competitiveness Report 2017, published recently.

Competitiveness is defined as *the set of institutions, policies and factors that determine the level of productivity – and hence future prosperity – of a country*. The biennial report comes at a time when growth in most of the region's economies has been slowing despite a decade of sustained growth and is likely to stagnate further in the absence of improvements in the core conditions for competitiveness.

Compounding the challenge to Africa's leaders is a rapidly expanding population, which is set to add 450 million more to the labour force over the next two decades. Under current policies, only 100 million jobs look set to be created during this period.

Africa's young, dynamic population does, however, possess the potential to lead an economic revival in the region, backed by targeted long- and short-term reforms in key areas, the report finds. Priority action areas for improved competitiveness include:

Continues on page 38

MBALAM-NABEBA IRON ORE PROJECT

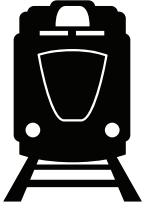
In the recently published activity report for the period ending 31 March, Sundance Resources is seeking to develop its flagship Mbalam-Nabeba Iron Ore Project, which straddles the border of Cameroon and the Republic of Congo in Central Africa. Stage One will be the production of a Direct Shipping Ore ("DSO")- quality sinter fines product averaging >62.0% Fe at a rate of 40Mtpa for approximately 14 years based on blending material sourced from the deposits in the neighbouring countries of Cameroon and Congo. Stage Two, which is currently at a pre-feasibility stage, would then extend the life of the operation by further 15-plus years producing high-grade Itabirite hematite concentrate.

In April 2011, Sundance completed the Definitive Feasibility Study for Stage One and PreFeasibility Study for Stage Two of the Mbalam-Nabeba Iron Ore Project. The Project will utilise the rail and port infrastructure to be financed, built and owned by the Government of Cameroon, a 540km rail line dedicated to the transport of iron ore through Cameroon and a dedicated mineral export terminal designed for taking bulk iron ore carriers of up to 300,000 tonnes.

Port and Rail infrastructure

Announced in early 2016, the signing of the agreed EPC contract between the selected Chinese EPC contractor and the Government of Cameroon was delayed due to the market conditions and the desire to advance financing further. Sundance and the Government of Cameroon have continued to have discussions with the contractor however, even though the contractor has continued to express confidence in Cameroon and the Mbalam Nabeba Project, the EPC contract remains unsigned.

Discussions continue with the preferred contractor, but discussions with other EPC contractors and potential funders to advance the project are also occurring. The President of Cameroon His Excellency Paul Biya was recently invited to Beijing to meet with President Xi. Sundance is hopeful that this meeting will accelerate the signing of the EPC contract.



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MINISTER FOR REGIONAL INTEGRATION AT 7TH CEEAC MEETING

The Equatorial Guinea minister for regional integration, Baltasar Engonga Edjo, took part in the 7th Extraordinary Meeting of the CEEAC (Economic Community of Central African States), held recently, together with the secretary of state, charged with financial control, Eusebio Ipico Penda.



Baltasar Engonga Edjo.

At the meeting, they spoke of the need to accelerate the process of institutional reform. The ministers for regional integration from Equatorial Guinea, Cameroon, Gabon, Congo, Angola, Democratic Republic of the Congo, Chad, São Tomé and Príncipe, Central African Republic and Burundi promised to comply with the mandate from the conference of heads of state and governments, held last November in Libreville (Gabon), the headquarters of the CEEAC.

According to this organisation which brings together ten states, they also spoke about accelerating the process of reform, and the free trade zone, together with the economic budget for 2017, and an operational budget of 1,920,702,000 Franco CFA was approved.

The council insisted on the need for the steering committee to respect the programme route map, for the period of May 2017 to August 2018.

Supplied by: Equatorial Guinea Press and Information Office.

DRC DELEGATION VISITS VOITH IN GERMANY

Michael Dreckmann Managing Director of Railway Material and Resources e.U (RMR e.U) was very pleased to hand over for delivery the Voith Turbo Hydraulic Transmissions to the visiting management team from the Democratic Republic of Congo (DRC) for their locomotive rehabilitation project.

Michael states: "This was a most challenging job, however, the teamwork between RMR e.U and the DRC project team proved that by focusing and all pulling together, that a positive result can be achieved even with difficult hurdles along the way. This has certainly strengthened and solidified the long-standing relationship between our teams and provides for a stronger relationship into the future."



Left to Right: Dreckmann (Managing Director); Hamisi (Managing Director); Boniface (Central Workshop Manager) Benjamin (Production Workshop Manager Diesel Traction); Marie-Claire, (Supply Chain Manager); and Mr. E. Luvualu (Director Sales and Marketing).

Continued from page 36

Long term:

- Strengthening institutions is a pre-condition to enable faster and more effective policy implementation; failure of implementation in the past has often been attributed to weak institutions
- Improved infrastructure, to enable greater levels of trade and business growth
- Greater adoption of technology
- Developing the right skills to remain competitive in a rapidly changing global economic landscape

Short term:

- Prioritising sector-specific reforms in labour-intensive sectors such as agri-business, construction and micro-enterprises
- Targeted support for vulnerable regions and/or populations in fragile countries
- Open trade policies to foster regional economic integration
- Developing value-chain links to extractive sectors to encourage diversification in resource-rich countries
- Increase housing construction through investment, better urban planning and less bureaucracy

"Removing the hurdles that prevent Africa from fulfilling its competitiveness potential is the first step required to achieve more sustained economic progress and shared prosperity," said the World Economic Forum's Richard Samans, Head of the Centre for the Global Agenda and Member of the Managing Board.

"To meet the aspirations of their growing youth populations, African governments are well-advised to enact policies that improve levels of productivity and the business environment for trade and investment," said the World Bank Group's Klaus Tlimes, Director of the Trade & Competitiveness Global Practice, which contributed to the report. "The World Bank Group is helping governments and the private sector across Africa to take the steps

Continues on page 41



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ASSEMBLY NODS REPORT ON RAIL INFRASTRUCTURE

The regional assembly is recommending for the improvement of the extensive rail network and penetration in the region. With the construction of the Standard Gauge Railway (SGR) underway, The East African Legislative Assembly (EALA) wants the region to enhance information sharing on the upgrade of the rail network especially that concerning the timelines by partner states given that the construction is at different levels. In the same regard, partner states should continue with the rehabilitation of the existing railway networks to complement the new ones.



Hon. Mukasa Mbidde presents the report of the Committee on Communication Trade and Investments on the oversight of the railway infrastructure to the House.

A report of the Committee on Communication, Trade and Investments adopted by the House in March recommends that partner states should set aside annual budgets to sustainably fund the implementation of railway projects in the region. The Committee further recommends that the East African Community should create an EAC infrastructure fund.

The report presented to the House by the chair of the Committee on Communication, Trade and Investment, Hon. Fred Mukasa Mbidde, follows an oversight activity of the railway infrastructure in the partner states undertaken in December. The objectives of the

workshop were to: understand the status of the Railways Master plan in the EAC; as well as that of EAC specific partner states' railway infrastructure development and thereafter develop recommendations.

The committee further reviewed the EAC Railways Master Plan identifying a number of issues including the high cost of transport, making products expensive and international trade uncompetitive. At the same time, low freight volumes, reduced market share for railways. The committee takes note of a weak business regulatory environment in the transport and rail sub-sector, calling for strategic leadership and review of national policies and laws regarding rail as well as enhanced public-private partnerships. The committee further emphasises the need for the development of excellence in railway capacity building, ICT and technology development.

According to the report, a feasibility study for the Isaka - Kigali / Keza - Musonagati railway project, was concluded in March 2009 including the Upgrade of the Dar es salaam - Isaka Railway Line and this would ideally serve the Republic of Burundi.



Hon. Makongoro Nyerere contributes to the debate on the floor of the House.

The preliminary field studies on the Dar es Salaam - Isaka line were also undertaken

to determine the requirements for converting the existing meter gauge track to an AREMA-based (North American) standard gauge track and offered suggestions.

Kenya is implementing the railway infrastructure as per the EAC Railways Master Plan. The country is constructing the SGR projects for Vision 2030, and these include the Mombasa - Malaba route in phase one while phase two includes the Nairobi - Malaba sector.

The use of local content is pegged at 40% of the Civil Works contract with an amount of KSh81 billion spent to facilitate the supply of cement, sand, aggregates, transport equipment, earthmovers, hygiene and food items, general purpose steels and timber. Similarly included are small contracts such as drainage works, slopes protection, labour contracts as well as clearing and forwarding.

The report states that in order for SGR not to disrupt the operations of the National Park, a number of mitigations are in place. The SGR according to the report crosses the park on a single line bridge spanning the total width of the Park (6.0km) and its average height starts at 8m at the entrance into the northern side of the Park and 41m at the exit on the southern end of the Park.

In Tanzania, the SGR will traverse the Northern and Tanga development corridor as well as the Southern/Mtwara development corridor.

In Uganda, the report alludes to the fast tracking of the development of SGR in order to significantly contribute to

transforming the country into a middle- income status. It is envisaged that a total of 1,724km will be constructed countywide in phases.

As provided for under Article 91 of the Treaty for the establishment of the East African Community, the partner states agreed to establish and maintain coordinated railway services that would efficiently connect the partner states within the community and, where necessary, to construct additional railway connections.

During the debate, Hon. Ole Nkanae Saoli remarked that the modern train system was going to change the rail-road sector in the Republic of Kenya. "The plan is ahead of schedule by four months and this should see the launch done soon. This is a positive move for the region", Hon. Ole Nkanae said.

Hon. Susan Nakawuki on her part remarked that 'good infrastructure was good' for the region. She, however, said the cost of transportation was still high therefore hampering the costs of setting up the automotive industry. She further lamented that the SGR should duly be a regional project and not purely undertaken on a singular or bilateral basis.

Hon. Mumbi Ngaru called for strategic political leadership at the EAC saying it was necessary for the integration process to thrive.

Hon. Makongoro Nyerere said it was necessary for the transport sector to target both cargo and passengers in order to be sustainable. He hailed the EAC Heads of State for the initiatives taken to enhance the railway.



Rt Hon. Kirunda Kivejinja, 2nd Deputy Prime Minister and Minister for EAC Affairs, Republic of Uganda contributes to the debate in the House.

"I congratulate President Uhuru Kenyatta of Kenya and President John Pombe Magufuli for being steadfast in enhancing the rail network."

Hon. Valerie Nyirahabineza said the sub-optimal infrastructure in the region had led to the increased cost of doing business and said the completion of the SGR would boost business.

Others who supported the debate were Hon. Bernard Mulengani, Hon. Dr James Ndahiro, Hon. Mike Sebalu,

Hon. Taslima Twaha and Hon. Dora Byamukama.

The 2nd Deputy Prime Minister and Minister for EAC Affairs, Rt Hon. Dr Kirunda Kivejinja representing the Chair of the Council of Ministers said complementarity was the way to go as opposed to competition among the partner states to develop the region.

About the East African Legislative Assembly:

The East African Legislative Assembly (EALA) is the Legislative Organ of the Community and has a cardinal function to further EAC objectives, through its Legislative, Representative and Oversight mandate. It was established under article nine, of the Treaty for the Establishment of the East African Community.

Continued from page 38

necessary to build strong economies and accelerate job creation in order to benefit from the potential demographic dividend."

"African cities have to update their urban plans, taking into account demographic and economic developments in the last decades. This is crucial to address the shortage of urban infrastructure and availability of land for residential housing. This is important as a massive investment is needed for the continent to lower the housing backlog, thereby improving the lives of urban residents, and to create employment for the Youth," said African Development Bank's Abebe Shimeles, Acting Director of Macroeconomic Policy, Forecasting and Research Department. "In its new business delivery model, the Bank has created a unit to specifically focus on cities and urban infrastructure."

The *Africa Competitiveness Report* combines data from the Forum's Global Competitiveness Index (GCI) with studies on employment policies and city competitiveness. It is jointly produced by the African Development Bank, the World Bank and the World Economic Forum. Also included in the report are detailed competitiveness profiles of 35 African economies. The profiles provide a comprehensive summary of the drivers of competitiveness in each of the countries covered by the report and are used by policy-makers, business strategists and other key stakeholders, as well as those with an interest in the region.

Read the full report:
<http://bit.ly/2pKMchg>

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STATEMENT BY THE MINISTER OF TRANSPORT ON THE DEVELOPMENTS OF THE MOLOTO DEVELOPMENT CORRIDOR

The Moloto Development Corridor will include investment in passenger rail services so as to offer commuters a safer, faster and more accessible connection between the three provinces.

The rail system will form the backbone of both the public transport system and the corridor development process. The rail stations and transfer facilities will become the centre points for nodal developments. All commuters and the non-commuting public will use the rail facilities around the station and the node in general as the basis and position for all commercial and other economic activities along the corridor.

The aim is that commuters must support local trade to uplift the local economy. Minister Maswanganyi also indicated the rail development corridor will facilitate the creation of new local production and services and therefore the creation of local employment opportunities.

“Our aim is also to reduce the relative number of people that will travel long distances for work and other purposes because this development will create an opportunity for a higher percentage of people that will find employment locally,” said Minister Maswanganyi.

Amongst others, the rail service design will feature:

- 13 new train stations
- 125km of double track;
- 38 road over-all rail bridges
- 9 pedestrian bridges, with the potential of being increased
- 44 river crossings;
- 3 staging yards in the corridor
- 12 car train sets
- 46 train sets
- 15,000 passengers/hour
- 1 major multi-modal interchange and
- 160km/h operational design

The rail services will comprise of a feeder service and distribution which will be complemented by a (49) Bus/Taxi routes with 681 buses and taxi stops.

Minister Maswanganyi confirmed that the Department has concluded the review and assessment of the Putco Moloto contract (IC52/97),

which included a detailed census to determine current demand.

The review proposes that a “new contract” be introduced to replace the current IC52/97 based on the outcome of the passenger census and the current demand, providing for additional trips on certain routes during peak times. The contracting authority will start to prepare for the implementation of a completely redesigned contract, which should be introduced as a medium to long term solution and can be in the form of more than one contract.

“The unbundling of the current IC52/97 will allow new entrants to participate and share in the

proposed new contract,” emphasised Minister Maswanganyi.

Given the scale of the proposed changes, an intergovernmental structure will be established to coordinate the process between National, Gauteng, Mpumalanga, Limpopo provinces and Tshwane municipality.

The R573 Moloto Road is one of South Africa’s busiest and essential economic routes connecting three provinces of Gauteng, Mpumalanga and Limpopo. Over the five-year period of the upgrade, an estimated total of 12,500 jobs will be created in these provinces and the road will not be tolled.



TANZANIA-ZAMBIA RAILWAY AUTHORITY

TENDER NOTICE

TENDER NO: TZR/HQ/CTC/2016/2017/003

INVITATION FOR BIDS

FOR THE SUPPLY AND INSTALLATION OF A MEDIUM FREQUENCY ELECTRICAL INDUCTION FURNACE AND A RESISTANCE ELECTRICAL HEAT TREATMENT FURNACE AND TRAINING OF OPERATORS

(RE-ADVERTISEMENT)

Date: 15 May 2017

1. This Invitation for Bids follows the desire by the Tanzania Zambia Railway Authority (TAZARA) to recapitalize the Mpika Workshops in the Financial Year 2016/2017.
2. The Government of the Republic of Zambia has set aside funds for the recapitalisation of the TAZARA Mpika Workshops in the Financial Year 2016/2017 and it is, therefore, intended that part of the proceeds will be used to cover eligible payments under the contract for Supply and Installation of a Medium Frequency Electrical Induction Furnace and a Resistance Electrical Heat Treatment Furnace Plus Training of Operators
3. TAZARA now invites sealed bids from eligible potential international suppliers to supply, install and train operators for the Mill Balls Furnace Equipment in lots as follows.

LOT 1: Supply and Installation of Medium Frequency Electrical Induction Furnace, plus Training of Operators

LOT 2: Supply and Installation of Resistance Electrical Heat Treatment Furnace, plus Training of Operators

4. Bidding will be conducted through the Open International Competitive Method of Bidding, whose procedures are specified in the TAZARA Procurement and Supplies Manual of November 2011.
5. Interested eligible Tenderers may obtain further information from and inspect the Tender Documents at the office of the **Supplies Manager, TAZARA Head Office**, Office No. 211, Nyerere/Mandela Roads Junction, P. O. Box 2834 Dar es Salaam or from the **Area Manager, TAZARA Lusaka Area Office**, DedanKimathi Road Lusaka-Zambia, from Monday to Friday between 08:00 and 16:30 C.A.T or E.A.T (whichever is applicable), excluding public holidays.
6. A complete set of Tender Documents in English and additional sets maybe purchased by interested Tenderers on the submission of a written application to the address given under paragraph 5 above and upon payment of a non-refundable fee of US\$200.00 or its equivalent in local currency. Payment should either be by Cash, Banker’s Draft, or Banker’s Cheque, payable to Tanzania Zambia Railway authority.
7. All Tenderers must be accompanied by a Tender Securing Declaration/Bid Security in the format as provided in the Bidding Documents.
8. All bids in one original plus two copies, properly filled in, and enclosed in plain envelopes marked “SUPPLY AND INSTALLATION OF A MEDIUM FREQUENCY ELECTRICAL INDUCTION FURNACE AND A RESISTANCE ELECTRICAL HEAT TREATMENT FURNACE PLUS TRAINING OF OPERATORS” must be addressed to the MANAGING DIRECTOR as per address below and be delivered to the Secretary of the Central Tender Committee at or before 10.00hrs C.A.T or 11.00 hours E.A.T. on 16th June, 2017. Bids will be opened promptly thereafter in public and in the presence of bidders’ representatives who choose to attend the opening ceremony at the TAZARA Head Office BoardRoom in Dar es salaam, Tanzania or TAZARA Lusaka Area office Conference Room in Lusaka, Zambia.
9. Late bids, portion of bids, electronic bids, and bids not received, bids not opened and not read out in the public at the bid opening ceremony shall not be accepted for evaluation irrespective of the circumstances.

The Managing Director
Tanzania-Zambia Railway Authority
Head Office, Nyerere / Mandela Road,
P.O. Box 2834, Dar-es-Salaam, TANZANIA
Or
The Managing Director
Tanzania-Zambia Railway Authority
Lusaka Area Office, DedanKimathi Road,
P.O. Box 31784, Lusaka, ZAMBIA

Download Tender Notice: <http://bit.ly/2pS41rp>

On average the road is used by approximately 50,000 commuters daily; including buses, taxis and heavy trucks.

The Mpumalanga and Limpopo Moloto Road sections were incorporated into the South African National Roads Agency SOC Ltd (SANRAL) network on the 3rd August 2015. Since the incorporation, SANRAL has started with a wide range of interventions in terms of road maintenance that include:

- the repair of dangerous wash-aways in the Moteti area in Limpopo;
- opening and clearing of storm water pipes/culverts;
- repairing gravel shoulders;
- repairing potholes and other pavement failures;
- cutting back vegetation along the road;
- clearing litter and debris from the road reserve and,
- repairing road signs and markings.

Minister Maswanganyi said that the Moloto Road project forms part of the programme coordinated by the Presidential Infrastructure

Coordinating Commission, which identified 18 Strategic Infrastructure Projects (SIPs) being undertaken to rejuvenate the South African economy.

“It is part of SIP1, which is designed to unlock the northern mineral belt with the Waterberg as the catalyst. It will include the development of a logistics corridor to connect Gauteng with Mpumalanga and Limpopo, said Minister Maswanganyi. The Minister said that apart from boosting the Waterberg mineral belt, SIP1 will also boost local economies along the Moloto Road - notably the Sekhukhune District in Limpopo and Dr. J S Moroka and Thembisile Hani municipalities in the Nkangala District Municipality in Mpumalanga.

On the road construction side, SANRAL has advertised and appointed two construction companies on the Limpopo and Mpumalanga sides of the road construction, whilst the road Gauteng province is yet to appoint a company with SANRAL as an implementing agency.

On the current construction contracts, 20% of the contract value is set aside for SMMEs of CIDB grading one to six. These SMMEs will be procured during the construction period.

The criteria for a targeted enterprises includes:

- A CIDB registered contractor with a grading designation from one to six;
- The contractor which has no equity holding in the targeted enterprise;
- A subcontractor who undertakes work within its registered CIDB category;
- Is registered in terms of the Company's Act, 2008 (Act No. 71 of 2008) or Close Corporation Act (Act No. 69 of 1984);
- Is registered with the South African Revenue Services; and
- Is registered with the National Treasury's Central Suppliers Database (CSD).



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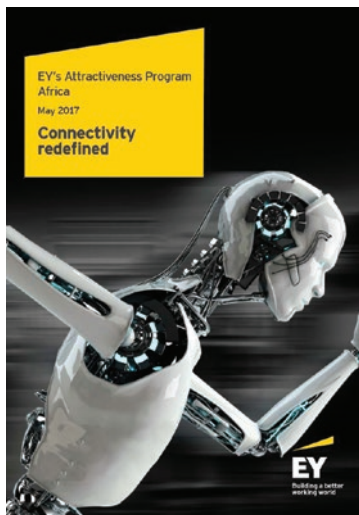
- Product in service in over 80 000 traction motors and over 15 000 rail vehicles worldwide;

- Serving the rail industry for over 100 years with over 55 years in traction motors;



- ISO 9001: 2008 certified manufacturing facilities provide exceptional production quality;

- Facilities in USA, Canada, Mexico and South Africa provide localisation - including Buy America compliant traction motors, gear boxes and global support;



Download report: APO.af/EYAfrica

Ajen Sita, Africa CEO at EY says:

"This somewhat mixed picture is not surprising to us. Investor sentiment toward Africa is likely to remain somewhat softer over the next few years. This has far less to do with Africa's fundamentals than it does with a world characterised by heightened geopolitical uncertainty and greater risk aversion. Investors with an existing presence in Africa remain positive about the continent's longer-term investment attractiveness, but they are also cautious and discerning."

Asia-Pacific Investors Are Bullish On Africa

Investors with an existing presence in Africa remain positive about the continent's longer-term investment attractiveness, but they are also cautious and discerning.

In a sign of ongoing diversification of Africa's FDI investors, more than one-fifth of FDI projects and more than half of capital investment into Africa came from Asia-Pacific in 2016, an all-time record. Most notably, Chinese FDI into Africa increased dramatically, making the country the single largest contributor of FDI capital and jobs in Africa in 2016.

Foreign Investors Refocus On Africa's Hub Economies

Egypt, Kenya, Morocco, Nigeria and South Africa (the key hub economies) collectively attracted 58% of the continent's total FDI projects in 2016.

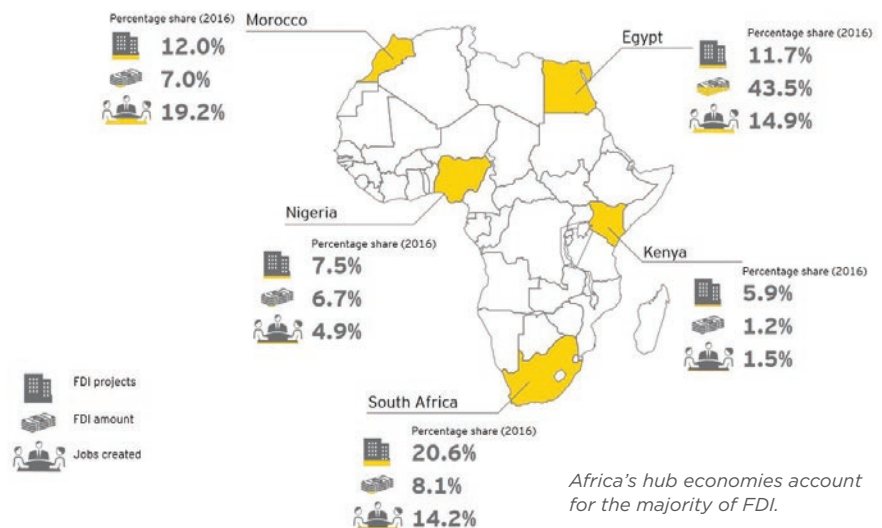
AFRICA PRESENTS A MIXED FOREIGN DIRECT INVESTMENT (FDI) PICTURE

According to EY's latest Africa Attractiveness report, heightened geopolitical uncertainty and "multispeed" growth across Africa present a mixed FDI picture for the continent.

The report provides an analysis of FDI investment into Africa over the past ten years. The 2016 data shows Africa attracted 676 FDI projects, a 12.3% decline from the previous year, and FDI job creation numbers declined 13.1%. However, capital investment rose 31.9%.

The surge in capital investment was primarily driven by capital-intensive projects in two sectors, namely real estate, hospitality and construction (RHC), and transport and logistics. The continent's share of global FDI capital flows increased to 11.4% from 9.4% in 2015. This made Africa the second-fastest growing FDI destination by capital.

Africa's hub economies account for the majority of FDI



South Africa remains the continent's leading FDI destination, when measured by project numbers, increasing 6.9%. Morocco regained its place as Africa's second largest recipient with projects up by 9.5%, followed by Egypt, which attracted 19.7% more FDI projects than the previous year.

New Investment Hubs Appear In East And West Africa

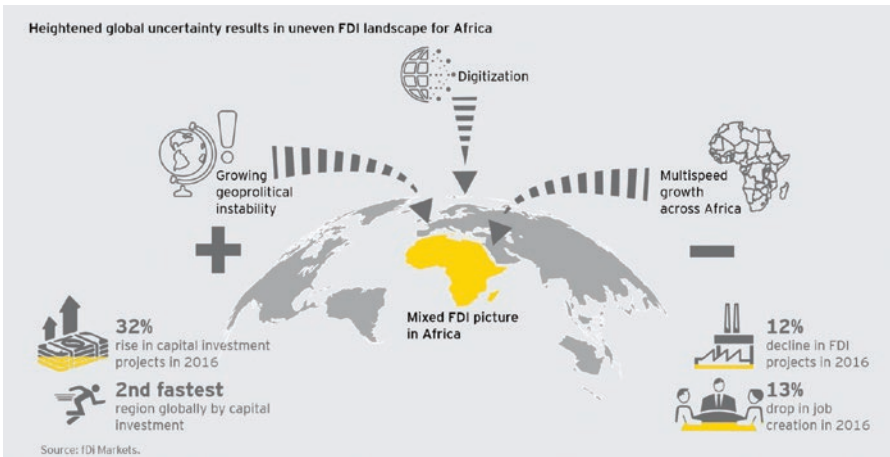
Although foreign investors still favour the key hub economies in Africa, a new set of FDI destinations is emerging, with Francophone and East African markets of particular interest.

Despite having a 31.7% decline in FDI projects in 2016, and weak growth in recent years, West Africa's second largest economy, Ghana, remains a key FDI market. The country's improving macro-economic environment and strong

governance track record has seen Ghana rise to fourth position in the EY Africa Attractiveness Index (AAI). The index was introduced in 2016, to measure the relative investment attractiveness of 46 African economies based on a balanced set of shorter and longer-term metrics.

Staying in West Africa, Cote d'Ivoire also features in the top 10 of the AAI, and with a 21.4% jump in FDI projects in 2016, this illustrates that it's becoming a country more favoured by investors.

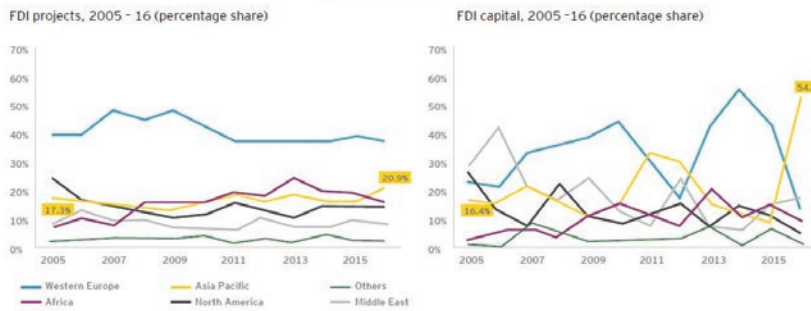
Also in the west, Senegal has emerged as a potential major FDI destination although this is not reflected in its current FDI numbers. It does, however, rank strongly on the AAI 2017, taking eighth position, due to its diverse economy, strong strides in macro-economic resilience and progress in improving its business environment.



Heightened global uncertainty results in uneven FDI landscape for Africa.

Africa's diversified FDI sources provide resilience

Asia-Pacific becomes the second-largest source of FDI projects and the largest capital investor.



Africa's diversified FDI sources provide resilience.

Sita concludes, “By 2030, Africa remains on track to be a US\$3t economy. However, growth needs to become more inclusive and sustainable to eradicate poverty at the levels that are required. If we accept the reality that physical connectivity - enabled by regional integration and the development of physical infrastructure - will remain a key stumbling block to inclusive growth across Africa for at least the next decade, then the need to actively embrace digital connectivity becomes critical. However, efforts to harness the potential of digital technologies as a fundamental driver of inclusive growth are still far too piecemeal and fragmented.

What is required is a far more collaborative effort between governments, business and non-profit organisations to adopt technological disruption, and create digitally enabled offerings with a particular focus on health, education and entrepreneurship.”

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PRESIDENT ZUMA SHIES AWAY FROM GOVERNMENT'S OBLIGATION TOWARDS PRASA

The United National Transport Union (UNTU) demands that government start filling its long overdue financial obligation towards the Passenger Rail Agency of South Africa (Prasa) so that it will enable the passenger rail operator to retain its current jobs, manufacture the new upmarket "People's Train", upgrade its outdated infrastructure and create another 8 000 jobs.

"When Prasa was established as a separate state-owned enterprise from Transnet in 2006, Government knew that they had to subsidise the passenger rail services like any other government in the world. But no, only in South Africa will our government ignore that promise, continue to subsidise South African Airways (SAA), the means of travel for only the wealthy, and ignore the plea of the poorest of the poor who are dependent on the passenger railway service to get to and from work," says Steve Harris, General Secretary of UNTU.

UNTU reacted to President Jacob Zuma's announcement recently at a press briefing in Pretoria where he said Prasa's target was to complete the 580 passenger trains by 2025, but only if there was a demand for them.

The President handed over 18 of the new world class Prasa coaches to be utilised. Zuma said Prasa has 585 train stations and a total fleet of 4,735 coaches, with an overall staff complement of 18,207. UNTU represents the majority of the employees of Prasa. Harris says Prasa often pays the brunt with furious commuter's keen to torch coaches costing the taxpayer R7 million per coach without the passenger railway service having any control over the railway line network.

Prasa must pay "rent" to Transnet for the use of the rail network, something that has never made

sense to UNTU as both are run with tax payer's contributions, says Harris. In the case of Mainline Passenger Service (MLPS), or Shosholozza Meyl as commuters know it best, Prasa must pay Transnet rent of R400 million per annum to use of the rail network.



Harris says the income Prasa generates from ticket sales of Shosholozza Meyl is not even enough to cover the salaries of its employees, let alone the "rent" of the railway network. "With Prasa on the verge of a total collapse of its services and Transnet needing to implement drastic measures to turn the ship around, the time has come for government to listen to the voice of reason and place both state-owned enterprises under the custodianship of the same minister, whether or not the Minister of Transport or of Public Enterprises, so that one Minister with one vision can get the two chief executive officers and the two boards together with one goal - improving the lives and the quality of services to all South

Africans to the benefit of the South African economy," says Harris.

Prasa started this financial year on a R1,8 billion deficit while Transnet had to offer voluntary severance packages (VPS) to its employees to save R4 billion on its wage bill over the next three years. Prasa is

prepared to offer labour a wage agreement for an 8% wage increase coupled to an undertaking that there will be no forced retrenchment in this financial year after it warned that it will have no choice other than to cut jobs to save operational costs earlier in the wage negotiations.

The negotiation team of UNTU has warned its membership that forced retrenchments might become a reality come the next financial year. Currently, a collective agreement with labour prevents Transnet from forced retrenchments for this financial year. The terms of the agreement come to an end at the end of March 2018 after which Transnet can continue with forced retrenchments.



SNCF PURCHASES 50 GRAIN WAGONS

In a deal worth seven million Tunisian Dinar, SNCF The National Railway Company has procured 50 wagons to transport grain from a Chinese manufacturer.

NEW PROGRAMME AIMS TO ENSURE SAFER RAIL TRANSPORT IN SA

The Railway Occurrence Investigation Programme (ROIP), jointly developed by Transnet Freight Rail (TFR) and the Department of Civil Engineering in the Faculty of Engineering, Built Environment and Information Technology (EBIT), at the University of Pretoria (UP). The ROIP programme will assist the business in eliminating the escalating and repetitive nature of incidents through proper investigation.

Railway incidents, such as derailments and collisions are annually costing the operators approximately R570 million in addition to the unquantifiable loss of life. 665 people were injured (20 fatalities) as a result of derailments and collisions as reported in the latest State of Safety report (2015/16).

The aim of the program is to provide TFR rail occurrence investigators with a broad and detailed understanding of all the major aspects of railways (infrastructure, operations and rolling stock) as well as their interrelationships and interdependencies within the railway undertaking.

The ROIP was developed as eight individual modules that are presented as short courses over a 12-month period.

- Introduction to Multi-Disciplinary Concepts in Railway Engineering (IMDCRE)
- Rolling Stock Technology (RST)
- TFR Railway Operations (TFRO)
- Law, Risk, Economics and the Environment (LREE)
- Railway Safety Investigation (RSI)
- Railway Infrastructure Maintenance Management (RIMM)
- TFR Rail Occurrence Investigation: Process (ROI1)
- TFR Rail Occurrence Investigation: Practice (ROI2)
- At the end of the formal training, occurrence investigators will be subjected to a summative assessment on the content of the programme.

TFR requires line managers to investigate all incidents in their areas of responsibility and therefore the following grades are recommended for the ROIP:

- Executive Managers and Chief Engineers
- Area Production Managers, Infrastructure Managers, Principal Engineers and Senior Managers
- Operations Managers, Depot Engineers and Depot Managers
- All Safety Grades.

The curriculum content of the ROIP has been aligned to the theoretical and practical course content of the Railway Safety Inspector Qualification, which is currently being developed by Enterprises, University of Pretoria, the Railway Safety Regulator (RSR) and other stakeholders. The Engineering Council of South Africa (ECSA) has accredited all modules and therefore Continued Professional Development (CPD) bearing.

ROIP is just one of many ways to achieve a state of 'no occurrences' in the railway industry. By reducing incidents, starting with derailments and collisions, the industry can save millions and ensure the safety of its users and operators.



GALISON BUILDS WAGONS FOR AFRICA

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SIEMENS SIGNS AGREEMENTS WITH UGANDA AND SUDAN

The African states signed the corresponding Memoranda of Understanding (MoU) at the World Economic Forum 2017 in the South African city of Durban.

- Memoranda of Understanding to cooperate in the areas of power supply, industry, transportation and healthcare
- Focus on infrastructure investments and partnerships between public and private sectors
- Participation in "Make IT Alliance" to promote start-ups and technology companies in Africa.

Siemens will work more closely with the African countries Uganda and Sudan in the areas of power supply, industry, transportation and healthcare. The documents were signed in the presence of Brigitte Zypries, German Federal Minister for Economics and Energy, Joe Kaeser, President and Chief Executive Officer of Siemens AG and further high-ranking personalities.

"Africa's economies are gaining ground and can develop their full potential with the right partner. Siemens wants to support their sustainable development - with solutions and projects in Africa, for Africa. The agreements with our African partners are important steps along this path," said Joe Kaeser, President and CEO of Siemens AG. "Our goal is to double our order intake in Africa to more

than €3 billion by the year 2020."

Brigitte Zypries, German Federal Minister for Economics and Energy, said: "Africa is a continent with economic opportunities and the German industry is an outstanding partner for the countries of Africa to realise these opportunities. I am very pleased that with the agreements signed today, good progress is being made towards the goal of better infrastructure and thus more growth and employment. I particularly welcome the training programme because well-trained skilled workers are a key pillar of prosperity and development. And it is precisely these elements that I also support with the 'Pro! Africa' plan."

"Siemens is a company that invests for the long term, and we are interested in the long-term fundamentals of these markets and the diversification of their economies," said Sabine Dall'Omo, CEO of Siemens Southern and Eastern Africa. "The opportunity for industrialisation in Africa is now. It is estimated that Africa imports one-third of the food, beverages and other similar processed goods it consumes. The potential exists for Africa-based companies to meet this domestic demand and in so doing create sustainable revenue streams and opportunities for job creation."

Under these agreements, Siemens and its partners will develop solutions in the areas of power supply, transportation, industry and healthcare. Another key point in

the agreements relates to continuing training programmes for various technical fields in order to create a pool of well-trained local workers. Furthermore, Siemens is joining the "Make IT Alliance" of the German Federal Ministry of Economic Cooperation and Development to promote start-ups and technology companies across the African continent. The agreement was signed in the presence of Guenter Nooke, German Chancellor's Personal Representative for Africa in the ministry.

Africa possesses vast economic potential with forecasted growth rates of up to five percent. Spending on African infrastructure has more than doubled to \$80 billion over the last 15 years, and the aspiring urban centers offer growth opportunities for the entire continent. More than a billion people worldwide have no access to electric power, and half of those people live in Africa. In Uganda and Sudan, Siemens' primary goal is to increase national power generating capacities and to connect the local population to the power grids. A reliable and extensive power supply system is the fundamental prerequisite for economic growth.

African countries need infrastructure and industrial projects that generate sustained income streams to fully exploit their own economic potential. New financing concepts and long-term investment guidelines that will remain in effect for 30 years will create a stable investment climate for international investors and help to implement planned infrastructure projects.



Signing of Uganda MOU: (L-R) Joe Kaeser, Siemens Global President and CEO; Hon. Minister of Finance Matia Kasajja, Uganda; Mesut Sahin, CEO MMEC Mannesman, Germany.

Siemens has already developed financing solutions for its mega project in Egypt and power plant projects in Nigeria and is supporting its African partners' efforts to implement these major infrastructure projects. Siemens promotes economic growth in Africa through far-reaching partnerships in the competence fields of power generation, transportation and healthcare, as well as the digitalisation of industry.

Siemens has been active in Africa for more than 157 years. Today, with more than 3,600 employees based in a total of 15 African countries, the company contributes decisively to the continent's economic development. In addition, Siemens is investing an average of €10 million per year for training programmes and is promoting programmes to increase integrity in politics and society. In the spirit of Germany's current presidency of the G20 group and the recently published Marshall Plan for Africa, Siemens is developing new projects for the continent, with the long-term goal of promoting the African economy and creating local jobs.



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ONE STEP AHEAD.

Call For Heavy Haul Industry To Encompass Entire Supply Chain

The 11th International Heavy Haul Association (IHHA) Conference being hosted in Cape Town in September, will focus on the theme of 'Advancing Heavy Haul Technologies and Operations in a Changing World' as over 1000 industry executives, engineers and rail freight professionals gather for this biennial event.

"The heavy haul rail industry may appear an odd candidate for disruption and innovation, but we recognise that now is not the time for complacency and that we have a unique opportunity to up our game and set out on a path of sustainable growth," Brian Monakali.

There's no better way to see the impact of global growth on industry supply chains, than from the driver's seat of a logistics enterprise. Caught between the coalface and exporters, and squeezed into the space between manufacturer and consumer, the heavy rail industry has been in a tough spot.

Transnet Freight Rail's executive Brian Monakali admits that his view has sparked serious introspection by sector players as to how to remain relevant and competitive.

The bigger challenge for the heavy haul industry lies in its ability to adopt a new mindset - to broaden its view so that it encompasses the entire supply chain - from the customer's stock yard to the wholesaler's warehouse. This is the ultimate innovation that the industry needs to adopt if it is to secure a sustainable future.

Such a transformation is probably more important in a country like South Africa, where only 15% of the country's rail-friendly freight is transported by rail. The predominant transportation mode for the bulk of the country's freight is road haulage, despite the clear cost advantage that rail offers.

Naturally, there are a few challenges to closing the gap between our rail yards and the so-called last mile to customers. But these are not insurmountable, as we could easily create that link through strategic partnerships with existing road freight companies.

The global slowdown, accelerated by China's cooling economy, has had a noticeable impact across all supply chains and industry sectors. It should be no surprise then that the heavy rail sector has seen declining volumes, income and profits leaving key players finding new ways to improve efficiencies.

This has forced rail operators on a drive to lower operational costs by introducing a variety of innovations. Many of these are of a technological nature, for organisations accustomed to engineering and technology solutions.

All of these interventions are focused on cutting costs as achieving efficiencies can go only so far towards improving the bottom line. For example, the ability to carry more freight in a single load has far reaching financial benefits.

A case in point are innovations by Australian operators that have nearly doubled the carrying capacity of some of their rolling stock. In South Africa, the use of new technologies that allow us to evenly distribute the power of locomotives throughout Transnet's famously-long iron ore train have helped increase speed, braking and control, while reducing wear and tear on rails and wheels.

"By adopting a more customer-centric approach, we significantly improve our reliability, availability and predictability," Monakali shares.

"We are already making strides to tighten these types of operational disciplines by using technology to monitor the condition of infrastructure and rolling stock, trace and report the whereabouts of assets, such as our rolling stock. In fact, it is difficult to think of an industry riper for the application of "Internet-of-Things" solutions to help drive improvements," he says.

Ironically, one of the challenges that we face with this new technology is finding ways to interpret the data from all the sensors in a fast, efficient and accurate manner.

The transient nature of these challenges is also evident in the fortunes of commodity prices with 2016 seeing the rapid rise in the price of gold, coal and iron ore. The impact of this is the industry has a small window of opportunity to make use of the downturn to squeeze out all possible efficiencies - essentially preparation for the eventual turnaround of local and global economies so that we're able to meet demand.

A dramatic change to revamping the entire supply chain is possible if efforts are coordinated and heavy rail operators are able to improve collaboration. The alternative is to becoming irrelevant or subservient to other logistics providers due to the lack of transformation.



"We are already making strides to tighten these types of operational disciplines by using technology to monitor the condition of infrastructure and rolling stock, trace and report the whereabouts of assets, such as our rolling stock. In fact, it is difficult to think of an industry riper for the application of "Internet-of-Things" solutions to help drive improvements."



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Mozambique - An update on Rehabilitation And Expansion Projects

The following update on expansion and rehabilitation projects in Mozambique has been supplied to Railways Africa by the Portos e Caminhos de Ferro de Moçambique.

South Rail and Port System:

Ressano Garcia Line

Location:

Ressano Garcia - Port of Maputo

Nature of Investment:

CFM, Concessionaire

Project Description:

The Ressano Garcia line forms part of the Mozambique Ports and Railways or Portos e Caminhos de Ferro de Moçambique (CFM) Sul network. The railway line is 88km long and it connects the Maputo port in Mozambique with South Africa through Ressano Garcia and with the Transnet Freight Rail (TFR) network at Komatipoort.

The infrastructure rehabilitation/upgrade interventions proposed are to be phased on the basis of the increase in the number and length of trains. The proposed phasing of infrastructure expansion is divided into two phases.

Phase 1, infrastructure rehabilitation and expansion to create sufficient capacity for traffic volumes year 2023 and Phase 2 to create sufficient capacity to accommodate traffic volumes in 2045. Phase 1 is proposed to be implemented over a period of three years (2016-2018) and Phase 2 doubling to be completed during a subsequent three-year period (2019-2021).

Project Cost:

The total capital cost to implement is estimated at US\$112.3 million in 2015 value. Phase 1, should be implemented during the next three years originally 2016 to 2018.

The Phase 2 infrastructure upgrade (doubling and complete signalling of the double line) is estimated at US\$209.1 million. A decision to implement Phase 2 will be subject to the realisation of traffic growth as expected post, implementation of Phase 1. The most probable traffic forecast, however, suggests that Phase 2 be implemented during years 2019 to 2021.

Goba Line

The Umbeluzi Bridge along the Goba line at km 37+700 in Boane inaugurated on September 28, 2016 will allow an increase in cargo capacity on the Goba Line to 5mtpa as from 2017. The new bridge on the line connecting the Matsapa Industrial Park in the Swaziland Kingdom to the ports of Maputo and Matola can now support 27 tonnes per axle against 18,5 tonnes per axle on the old bridge.

Port of Maputo

Dredging of the Maputo Port access channel from the current 11 metres to 14,2 metres has been recently finalised and it will allow access to the port for ships of up to 80,000 tonnes, thus making the port of Maputo more competitive both in regional and international markets.

Central Rail and Port System:

Machipanda Line

- **Location:** Porto of Beira (km 0+000) - Machipanda (km 317+700)
- **Sponsors:** CFM; MRGP; CARDNO; DFID; BEI
- **Project Objectives:** Increase capacity to rail general cargo and containers up to 3mtpa and passengers up to 1,600,000
- **Project cost:**
 - Rehabilitation of the railway line US\$281 million
 - Acquisition of rolling stock US\$110 million (10 line locomotives; two passenger locomotives; 546 wagons; 33 passenger coaches.)

Sena Line

Moatize - Beira, 575km

- **Operator:** CFM and Mining Companies
- **Sena Line Present Capacity:** 6mtpa
- **Sena Line Upgrade: Stage 1:** 10-12mtpa
- **Stage 2:** 20mtpa

Beira Port

- **Project:** New Coal Terminal
- **Sponsors:** CFM and Private Sector
- **Project Cost:** US\$600 million
- **Capacity:** 15-20mtpa
- **Land:** 50 hectares

Northern Rail and Port System

Port of Nacala

Nacala-A-Velha Coal Terminal

Natural deep water port (Capesize+Panamax)

- **Capacity:** 18mtpa Coal (Coke and Thermal)
- **Rail unloading:** 1 wagon tippler 4,800tph, two simultaneous wagons
- **Stock yard:** Three lines of five piles x 97,000 tonnes = 1,455,000 tonnes (12 turns)
- **Stock yard machines:** Two stackers (4,800tph) and two reclaimers (5,100tph)
- **Conveyor belt:** capacities of 4,800tph and 5,100tph, speed 4m/s
- **Shiploaders:** Two shiploaders (5,100tph)

Moatize - Nacala via Malawi 913km

- **Project:** New railway line Moatize-Nacala via Malawi
- **Sponsors:** CFM, private sector (Vale Emirates)
- **Project Cost:** US\$3,4 billions
- **Capacity:** 22mtpa

VALE INAUGURATES THE NACALA CORRIDOR IN SOUTHEAST AFRICA

Vale CEO Murilo Ferreira and representatives of the governments of Mozambique, Malawi, Brazil and Japan inaugurated the Nacala Corridor on May 12. The implementation of this logistics corridor is part of the commitments signed by the governments of Mozambique and Malawi, Vale and Mitsui for the socio-economic development of the zone.

The implementation of the Nacala Corridor is an investment made by Vale and by the Mozambican state company CFM (Portos e Caminhos de Ferro de Moçambique) to build and rehabilitate a 912km railway connecting the Moatize Coal Mine, in Tete, to Nacala-a-Velha, in the province of Nampula, crossing the Malawi Republic. The Nacala Corridor consists of rail and port infrastructure, including the rehabilitation of existing railways in Mozambique and Malawi and a new coal port terminal in Mozambique.

The terminal has a storage yard of, approximately, 1 million tonnes of coal and takes advantage of the deep bay that exists there to receive about 150 large ships per year. The project started in 2012 and marks the company's largest volume of investments outside of the home country, totalling US\$4,4 billion.

With the implementation of the Nacala Corridor, Vale could increase coal production to up to 18 million tonnes per year. This volume is four times larger than production in 2016, 5,5 million tonnes, and almost six times greater than the production in the first full year of operations of the Moatize mine in 2012, with 3,7 million tonnes.

For the transportation of coal, the corridor has a fleet of 85 locomotives and 1,962 wagons, equipped with the highest technology of the railway branch. As a result, it is possible to

increase the carrying capacity of general cargo and people to Mozambique and Malawi, increasing the generation of revenue and jobs in both countries and helping economic growth in Southeast Africa.

Vale is investing heavily in the formation and training of local youth. More than 1000 young people have benefited from technical training in the Labor Market Readiness (PPMT) and Professional Training Programs (PFP) programs, with training in Mozambique and abroad. With a workforce of around 2,000 own employees, mostly of Mozambican and Malawian nationalities, and more than 1,400 contractors, the Nacala Corridor is already significantly transforming the employability of the local labour force and playing a key role in improving the quality of life of communities.

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ARMOURED TRAINS

The ongoing global economic downturn, amongst other factors, has resulted in an increase in lawlessness and crime being employed as a means of survival. While this is a worldwide issue, Africa remains hardest hit. According to statistics, there is an increasing trend in violent, armed attacks on various installations, including cargo-carrying vehicles.

The requests for vehicle armouring are no longer limited to motor vehicles and trucks but have extended to include requests from rail operators. Long distance passenger and cargo carrying trains are increasingly at risk especially when travelling through isolated areas between major centers. Once out of range of rapid response by private security or police, trains are isolated and at risk of attack. The high value commodities transported by freight trains and passenger's valuables offer an attractive target for criminals and, as such, the interception and robbing of trains is a factor that needs to be addressed proactively by railway operators.

Unfortunately, the weapon of choice for many criminals in Africa is the venerable AK 47 (7.62 x 39mm) assault rifle. Known for its ruggedness and reliability, it is a formidable weapon to protect against, with its variety of high-velocity ammunition and rate of fire.

Millions of dollars are lost in Africa alone, not only from the loss of cargo, and unfortunately the loss of life on occasion, but downtime to a damaged locomotive and injured crew compound the losses. It is a common belief that a train is an impenetrable force once on the move. However, this is not the case as locomotives - although solidly built - are not designed to withstand high-velocity projectiles from these assault rifles.

SVI Engineering (Pty) Ltd, established in 2004, is a licensed and highly accredited company that designs, builds or converts armoured vehicles from lightweight LDV's

to military specification armoured personnel carriers. SVI Engineering is led by a dynamic and qualified team of engineers and is home to a world-class design team. SVI has been commissioned, ahead of many other armouring concerns, to design armouring systems that specifically protect locomotives from assault rifle attacks.

Due to the remoteness of the areas where many of these locomotives operate, units cannot always be brought into the armouring facility. Therefore, SVI Engineering provides innovative, practical solutions that enable the company to send the armour to the customer where it can be fitted remotely to the locomotive. SVI's pre-made kits incorporate the highest-grade steel armour, combined with the finest ballistic glass in the world. Over the years, SVI Engineering has established an exceptional standard of excellence in materials, products, artistry and an unmatched dedication to service.

The result is that many of the worlds leading manufacturers of armouring components are committed to working with and supplying SVI with the latest and finest raw materials available.

Mutually beneficial partnerships with the likes of, American Glass Products (AGP), has resulted in SVI delivering the highest possible quality end product to the customer. Replacement ballistic glass is arguably the most important component of any armouring solutions. Not only must it have the ballistic capabilities of extremely thick steel, but also needs to have the clarity and appearance of the glass that it replaces. Along with these attributes, it must withstand the often-harsh environments that locomotives operate under - including severe weather, very hot and dry conditions to very wet and humid conditions. AGP glass is environmentally certified to perform over long periods under all types of weather and climate variations, where most other multi-layered laminated ballistic glass would fail.

All electrical and demister type components found on the original OE glass is integrated back into the replacement glass. This combined with steel armour - treated and colour coded to the original colour schemes of the unit - means that the armouring is not only fully functional but also aesthetically pleasing at the same time.

SVI Engineering has designed integrated, almost modular systems for some clients in the SADAC region and currently has orders for more than 100 locomotives to be armoured. Locomotive models catered for to date include the General Electric Dash 9, C-30, AC-30, U-20C and GT 26 units. Unique design and innovation results in solutions being built in kit format at SVI's facility east of Pretoria, South Africa. These kits are designed for easy installation by SVI's trained technicians, together with locally employed artisans. The company's solutions mean that should any part need replacement, components are sent from SVI's facility in South Africa to the fitment site, along with the required technicians.

For clients requiring specific customisations, the SVI's design team will travel to the nearest convenient facility, meet with the technical team of the customer where the specific unit can be inspected and measured using the latest state-of-the-art equipment. This combined with detailed photographic records will be used by our design team to develop a unique solution. SVI uses the latest CAD programmes and with the unmatched experience and integral armour technology knowledge of our design team will develop a solution that is as cost effective as possible, while meeting all the required parameters and standards.

Customer satisfaction and, most of all, the safety of the lives SVI is contracted to protect is of paramount importance to the pride of SVI Engineering.

By our standards, nine lives are just not enough

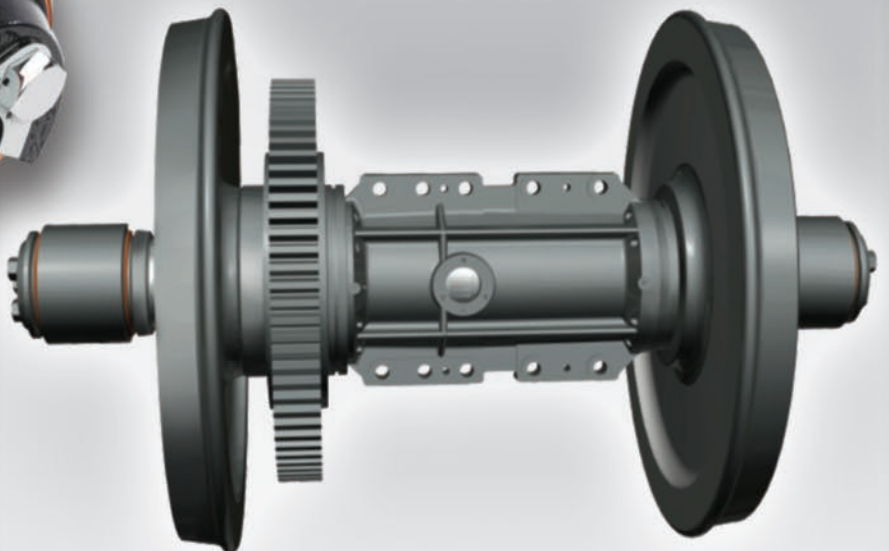


Remanufactured Bearings with Full Warranty

Infinite life is the benchmark of Timken Rail Business. On an exchange basis we do more than recondition bearings - we remanufacture them. Components that will not survive a full service cycle or pass our stringent inspection procedures are replaced with new, meaning that bearings can be returned to service time and time again.

We upgrade bearings to the latest technology and return to you a product that meets AAR specifications.

Timken remanufactured bearings carry the same warranty as new bearings at a fraction of the cost.



TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets bearings, gears, chain and related mechanical power transmission products and services.

www.timken.com

Stronger. Commitment. Stronger. Value. Stronger. Worldwide. Stronger. Together. | Stronger. By Design.

The Best Of The French Rail Industry

Business France, the French Trade Commission in South Africa, is bringing a delegation of 10 exhibitors to its French pavilion at the AfricaRail tradeshow, stand F2.

The delegation reflects the excellence and diversity of the French rail industry, some are already present in South Africa, as subsidiaries or with local partners. The show will be an opportunity to increase French contributions to the rapid development of railway infrastructure and services in South Africa, which has implemented extensive investment plans in this sector and to establish new industrial partnerships and businesses with local companies.

COELME-EGIC

Integrated to Southern States Group, COELME-EGIC are specialists in the manufacture and sale of high voltage disconnectors and switchers.

EGIC is today mainly specialised in the design, manufacture and sale of medium and high voltage switchers and circuit breakers for the railway and transmission/distribution markets.

COLAS RAIL

Colas Rail is both a Constructor and Systems Integrator of Railway Infrastructures.

As an EPC Contractor, Colas Rail propose tailor made solutions: Green Field Projects, Turnkey Projects/ Railway Tracks/ Catenaries/ Power Supply/ Control & Communication/ Electro-mechanical Equipment & Maintenance and Rehabilitation Contracts (brown fields).

CONSOLIS

Consolis Rail is a worldwide leader in designing and manufacturing concrete sleepers and bearers for railways. Consolis Rail also provides a range of engineering services. The company contributes to connecting people, places and countries by working closely with national railways and their contractors, to provide technology leadership in design and production, technical training, and the design, construction and operation of sleeper factories. Their global offer includes products and solutions for all market segments: high-speed rail, main lines, urban networks and heavy haul and mining.

CORYS

Corys is a leading supplier of train driving simulators. With over 1000 driving simulators operational worldwide, including for South Africa, Ethiopia, Egypt, Tunisia and Angola, Corys simulators represent the industry's standard, consistently surpassing the most stringent regulatory requirements and providing operators with the most authentic driver training experience.

FS GROUP

FS Group delivers safety, engineering, signalling work and training solutions for the rail environment. The FS Group is the expert integrator you need to carry your projects through to completion.

The group and its subsidiaries provide a one-stop service from design to the operating stage, including studies, provision of equipment, technical inspections, tests and staff training to help you make the world a safer place.

IMMERGIS

Immergis, an Imajing Group company, focuses on Geographical Information System (GIS) applied to railways infrastructures management. Immergis provides rail infrastructures managers with surveying services and GIS professional solutions to perform rail assets inventory, assessment and monitoring.

LOHR

Lohr is a world leader in car carrier, road to railway and sustainable urban mobility.

RATP DEV

RATP Dev is wholly owned by RATP group. As the world's fifth-largest multi-modal urban public transport group, RATP Dev is an expert in the transport chain, from design to management. Specialising in high capacity transit systems, the group handles 14 million passenger journeys a day. Leveraging the group's expertise, RATP Dev operates and maintains urban and intercity transport networks in 15 countries, on 4 continents.

SETEC

Founded by Henri Grimond and Guy Saias in 1957, Setec is a completely independent company. Its entire capital is owned by the management staff and senior engineers.

Setec sets up integrated cross-functional teams to carry out major design and construction, from studies to works to opening.

SNCF

SNCF is a global leader in passenger and freight transport services with revenue of €32.3 billion in 2016, of which one-third on international markets. With 260,000 employees in 120 countries, SNCF draws on its foundations in French rail and on its extensive experience as an architect of transport services. It aims to become the benchmark for mobility and logistics solutions, both in France and worldwide.

Come And Hear Us!

- The Rail Technology seminar - Day 1, June 13 at 10:30 at level 0
"Innovative technology for train driving simulators"
Jacques Moncorgé - Account Manager at CORYS
- The Rail Maintenance and Infrastructure seminar - Day 2, June 14 at 12:00 at level 0
"How to use technology for more effective monitoring and maintenance planning"
Vincent Lecamus - General Manager at IMMERGIS



LOCOMOTIVES



All in the Family

The GT38 Series of EMD locomotives —
Designed and Built for Africa

With more than 90 years of innovation and technology leadership, we are proud to present the next generation of the workhorse of Africa—the GT38 series of locomotives.

The GT38 covers a wide range of applications, all well-suited for every African terrain.

- EM2000 microprocessor control system
- 2200 HP EMD 8-710 engine, AC traction
- Axle load 15 to 18 tons per axle and up to 415 kN continuous tractive effort
- Fuel improvement up to 25%
- Maintenance interval up to 184 days



160070

Progress Rail

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Gabon's SETRAG Cuts Emissions, Boosts Reliability with Railserve DUAL LEAF® Gen-Set Locomotives

A fleet of fuel-efficient, state-of-the-art genset locomotives has been in operation for Gabon's state railway—Société d'Exploitation du Transgabonais (SETRAG)—since early 2016, as part of a modernisation of the country's rail freight services. Imported from the United States, the new Railserve DUAL LEAF® Gen-Set Locomotives were acquired to support Gabon's commitment to climate change mitigation, as well as to provide more efficient and reliable operations.

The Railserve LEAF uses two Cummins QSX15 gensets to minimise fuel usage and significantly reduce emissions while maintaining the performance of a traditional shunting locomotive. The DUAL LEAF is programmed to operate with only one genset under lighter loads, further reducing both fuel use and emissions.

"This was Railserve's first delivery of LEAF locomotives to a destination outside North America," says LEAF Program Manager TJ Mahoney. "In addition to its requirement for sustainable operations, SETRAG was looking to modernise its locomotive fleet and have readily available parts for future maintenance needs. The LEAF locomotive from Railserve met those requirements."

Railserve successfully modified the standard LEAF locomotive design for operation in Gabon, where specifications are different than those in North America. All cab interface markings and screens are in French. Couplers are SA-3 type—common overseas but not used in North America. Lower axle loads allowed in Gabon made it necessary for Railserve to adjust the total locomotive weight. Finally, the plows required slight modifications to fit African gauge requirements. Otherwise, the units are virtually identical to the more than 50 Railserve LEAF locomotives operating in the U.S. and Canada.

"Because this was our first delivery of Railserve LEAF locomotives overseas, our team paid close attention to the special needs of SETRAG," Mahoney says.

The six 220,000-lb. Railserve DUAL LEAF locomotives—each individually shrink-wrapped—were transported by the Intermarine M/V Ocean Grand, for the 6,000-mile ocean voyage from Houston, Texas to Libreville, Gabon.

"It took a cohesive effort—starting with our Railserve team at the manufacturing plant in Longview, Texas, and including the excellent crews from Intermarine and Breakbulk Transportation on the docks in Houston—to get the product ready to ship," Mahoney says. "Once they reached Gabon, Railserve staff commissioned the locomotives, and put them in service working with the SETRAG engineers."

Because the operations are far from Railserve's U.S. base, the locomotives include real-time diagnostic and status monitoring capability. Railserve also supplied kits of parts to cover initial maintenance needs.



Sustainable, Reliable, Powerful.

Visit us at
Africa Rail 2017

The acquisition of the locomotives was funded by a credit from the U.S. Export-Import Bank, which supports and maintains U.S. jobs by filling gaps in private export financing at no cost to American taxpayers. The Bank provides a variety of financing mechanisms—including working capital guarantees and export credit insurance—to promote the sale of U.S. goods and services abroad.

Created specifically for port, mining, industrial in-plant, and commercial yard shunting applications, the Railservice LEAF Gen-Set Locomotive maximises tractive effort while minimising fuel costs and emissions. It is available for operations around the world.

Railservice is a leading provider of in-plant rail switching and associated services. Operating in over 70 locations, it has been in business for over 30 years and is a member of the Marmon Group, a Berkshire Hathaway Company.



The Most Reliable GenSet Locomotive

Railservice LEAF® Gen-Set Locomotives do more than help you meet regulatory requirements. They work. And they work hard.

Available with Tier 2, 3, and 4 Cummins Gensets

Created for industrial in-plant and commercial yard switching, the Railservice LEAF can efficiently pull 45 cars at 10+ mph. The LEAF cuts NOx by 92% and particulates by 99%. It saves 45–60% on fuel and reduces lubricant use by 80%.

A Safer Way to Switch.



Railservice, Inc. | 1+ 800-345-7245 | www.RailserviceLEAF.biz



A Marmon/Berkshire Hathaway Company

SKF SOUTH AFRICA TRAINING SOLUTIONS RECEIVES THIRD ACCREDITATION

SKF South Africa Training Solutions is proud to have obtained accreditation through the South African Institute of Mechanical Engineers (SAIMEchE) on five of its training courses.

SKF South Africa is the first bearing manufacturer to receive SAIMEchE accreditation, which is mandated by the Engineering Council of South Africa (ECSA). It also complements the company's two other accreditations - BINDT (British Institute of Non-destructive Testing) for SKF Vibration Analysis training and MerSeta for SKF bearings and lubrication training received in November and December 2012 respectively.

Bearing reliability and lifespan are determined not only by the quality of the bearing itself but also by correct fitment and maintenance. Training plays a fundamental role in educating customers on correct bearing installation and maintenance. The value adds of training are maximised bearing reliability and lifecycle and increased uptime and production. This mindset initiated the establishment of SKF Training Solutions a number of years ago. "It is also an extension of SKF's ongoing commitment to provide excellent service," says Steve Parkinson, Training Solutions Manager for SKF South Africa.

SKF Training Solutions trains approximately 500 delegates on its various programmes annually. "Accreditation of our training programmes enables us to offer our customers, Authorised Distributors and delegates several important advantages," states Parkinson.

"Registered professional engineers are required to obtain a minimum of 25 Continuing Professional Development (CPD) points every five years in order to keep their registration status. Some engineers who need points but are limited by time, opt for a general seminar which has CPD points rather than attend SKF training."

"Our accredited courses now enable engineers to claim their attendance and CPD credits as part of their development. Furthermore, accreditation is affirmation of our ongoing commitment to our customers to provide training programmes that are of first class quality and highly relevant for the industry."

As the first business unit within the global SKF Group to accredit regional SKF training Centres, SKF South Africa currently boasts two accredited regional training centres in Cape Town and Durban respectively - West Cape Bearings (SKF Authorised Distributor), and Shukela

(a division of the SA Sugar Association). Parkinson adds that many SKF authorised distributors also have facilities to present training should there be a need for smaller groups in specific regions. Currently, approximately 70% of the training being conducted by SKF is onsite at customer premises.

SKF Training Solutions has a basket of over 40 training courses available of which 20 are products specific. Parkinson confirms that SKF South Africa is currently offering thirteen courses which cover bearings, lubrication, alignment, balancing, condition monitoring, vibration analysis and thermography. Product specific courses are also offered to customers after purchasing the products.

Supported by Training Coordinator, Nadine Schroeter, Parkinson calls on specialists from within SKF which include two application engineers and two condition monitoring experts as well as a retired SKF trainer to facilitate training.

The SAIMEchE accreditation was received in April 2017, is applicable to the following five SKF training programmes:

- **WE 201 - Bearing Maintenance and Technology (3 CPD points)** - Bearing basics; includes a

practical component for delegates to correctly mount and dismount bearing

- **WE 204 - Bearing Damage Analysis (2 CPD Points)** - Analyses of bearing failures and determination of the root causes of failure
- **WE 240 - Precision Shaft Alignment (2 CPD Points)** - Alignment methodology; practical demonstration on alignment of rotating shafts within specified tolerances
- **WI 202 - Vibration Analysis Category 1 (5 CPD Points)** - How to: Operate instrumentation, take vibration readings, conduct testing, compare all measurements, verify data collected and evaluate and report results.
- **WI 203 - Vibration Analysis Category 2 (5 CPD Points)** - How to: Select the correct measurement technique, set up instruments, perform vibration analysis, maintain a database of results, perform basic impact tests, classify, interpret and evaluate results, recommend corrective actions and recommend alternative condition monitoring techniques.

NEW GENERAL MANAGER - IEC HOLDEN PTY LTD

Pedro Adams has been appointed General Manager of IEC Holden (Pty). Pedro is a highly qualified leader having received his Bachelor's in Mechanical Engineering and more recently an MBA from Nelson Mandela Metropolitan University. He is also certified in project management as well as a Six Sigma-Black Belt.

Pedro brings decades of valuable experience from his previous positions in the areas of manufacturing, engineering, quality, and continuous improvement, and more recently, general management of locomotive manufacturing.

Pedro replaces Ralph Robinson who came out of retirement and joined IEC Holden on an interim basis in 2015 as General Manager of the South Africa operation with the goal of leading and supporting the organisation through its transition into a fully operational manufacturing facility.

Ralph having successfully accomplished this and a number of other goals including the development of a fantastic team at IEC Holden has now officially gone back into retirement.

Keep your Power on track!

You can't compromise on reliable engine power. Barloworld Power has one fundamental purpose: To deliver the finest, cleanest, most reliable and cost effective power for any railway application.

For more information on our Cat® engines visit www.barloworldpower.com or contact our sales experts on **0860 898 000**

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CUMMINS ENGINE FOR SIEMENS CHARGER LOCOMOTIVE

The first Cummins QSK95 engine designed specifically for the rail market began production at the Seymour Engine Plant (SEP) in the USA in September 2015. At 2 983 kW, the QSK95 is the highest-output 16-cylinder high-speed diesel engine available in the market.

Combining Cummins' latest-generation Modular Common Rail Fuel System (MCRS) technology with quad-turbocharging and integral Selective Catalytic Reduction (SCR) after-treatment, the QSK95 delivers reduced noise, excellent response and ultra-low emissions capability in a smaller footprint than the medium-speed diesel engines traditionally used in locomotives.

Cummins has delivered the first QSK95 engine built to a rail specification to Siemens for installation to its Charger locomotive, a new diesel-electric locomotive designed for the North American passenger rail market. The Charger locomotive was delivered into the market in 2016. Although it is currently being manufactured for passenger operations, the Cummins QSK95 is just as suited to freight applications, in any operating conditions.

"Cummins welcomes the opportunity to partner with customers globally to help them succeed," says Madelyn Pretorius, leader, Rail Sales & Business Development. "We are pleased that our ultra-clean diesel engine technology is helping them operate efficiently while significantly reducing emissions and improving the environment."

Cummins has 70 years of experience, with proven reliability and durability in high-speed diesels in rail. The company currently has over 13 000 engines in railway service globally. Locomotive, railcar, track maintenance and auxiliary power applications are all available in the Cummins engine product range in the rail segment, covering a complete power range up to 4400hp using the QSK95 for both new and repower needs in this sector.

"Cummins boasts extensive distributor coverage in Africa, with engine rebuild and service capability to support our product. We are able to offer best in class solutions to reduce customer total cost of ownership and still meet the harsh conditions of the African continent," adds Andy Pilkington, Director Africa Rail Business.

AECOM AWARDED THE REFERENCE DESIGN CONSULTANT 06 PACKAGE CONTRACT FOR THE KUALA LUMPUR-SINGAPORE HIGH SPEED RAIL PROJECT

AECOM has been appointed by MyHSR Corporation Sdn Bhd (MyHSR) for the civil reference design works for the High-Speed Rail infrastructure within Malaysia from the south of Iskandar Puteri Station to the International Border between Malaysia and Singapore, including the Straits of Johor crossing. The Malaysian civil rail infrastructure reference design scope, which covers approximately 335km, was divided into six Reference Design Consultant (RDC) packages by MyHSR.

"The Kuala Lumpur-Singapore High-Speed Rail is a landmark project and an important symbol for Malaysia and Singapore. We are delighted to partner with MyHSR and look forward to leveraging our local and global experience to design for this iconic project. Earlier this year, AECOM was also chosen to provide the Advanced Engineering Study for the Singapore stretch of the project," said Billy Wong, AECOM's regional executive of Southeast Asia. A joint project between the Governments of Malaysia and Singapore, the KL-SG HSR is designed to cut travel time between Kuala Lumpur and Singapore to 90 minutes when completed in 2026.

In February this year, AECOM Singapore was appointed by the Land Transport Authority of Singapore as the lead consultant to provide the complete design including architectural, civil, structural, electrical, mechanical and other associated services that are needed for the Jurong East terminus, tunnels and the bridge connecting Singapore and Malaysia at the Straits of Johor.

100 % LOCAL CONTENT - WAGON AND LOCOMOTIVE VALVES

Microvalve, a division of Microfinish has designed and developed a range of valves, with 100% local content, for the rail industry, in particular for wagons and locomotives in record time. This was achieved through the assistance provided by the Technology Localisation Implementation Unit (TLIU) an initiative of the Department of Science and Technology (DST) housed within the CSIR.

Microvalve identified which valves for the sector could be localised in line with the Department of Trade and Industry's (the dti) policy of 70% localisation for the manufacture of valves, as it is a requirement for all state-owned entities to procure locally manufactured valves per the designation.

The project was identified through constant interaction with the dti in an attempt to reduce the import of valves into South Africa and to counter the influx of exemption notes being applied for by state-owned companies (SOCs) and original equipment manufacturers (OEMs). A decision was taken by the dti to refer this project to the TLIU for assistance and this request was efficiently supported by the TLIU.

Microvalve did the design of the valves and used the Casting Simulation Network (CSN) to design the patterns using 3D modelling and MAGMASOFT casting process simulation. The consultants involved in the project were Zimtek Consulting (Pty) Ltd and Ametex (Pty) Ltd. The designs for the patterns were sent to the VUT South Gauteng Technology Park where the patterns were grown using 3D machines, the patterns were then sent to local foundries and casting started almost immediately.

Brian Naidoo the Managing Director of Microfinish said "I was so surprised that we could get the design done in a few days, have the pattern designed

within a week, grow the pattern in four days and send it off to the foundry for casting. This cut our lead-time down for the development of a new product by six weeks. Typically, it takes three to eight weeks just for the pattern maker to make a pattern depending on the size and complexity of the pattern. By using the technology available at the VUT Technology Station we were able to get the pattern made in a few days, no matter the complexity of the pattern.”

Greg Walker who runs the Microvalve division, said “It is really a fantastic achievement to bring new products to the South African market with 100% local content in such a short space of time. Normally it would take months to develop a product. It’s thanks to the TLIU, VUT and the design team at Zimtek. The best thing to come out of this project and where we are now is that we are creating jobs for young black people that were previously unemployed, teaching new skills and empowering them. We look forward to creating a lot more jobs as Transnet and other rail companies buy African instead of foreign.”

Microfinish has secured two significant orders from Transnet Koedoespoort for the supply of valves and offer the following 100% locally manufactured valves for rolling stock:

- 25mm relief valve (ball) for locomotives
- 40mm cut-out cock for locomotives
- Sander valves for locomotives
- Relief valves for the compressors on locomotives
- Angle filling valves for rail car tankers
- Safety Relief valves for rail car tankers
- Discharge valves for rail car tankers
- Seating valves for compressors on locomotives
- Relief valves for compressors on locomotives.



BOMBARDIER TRAXX locomotive's Last Mile feature enables this electric locomotive to cross non-electrified track sections.

IMPROVING EFFICIENCY WITH THE TRAXX LAST MILE LOCOMOTIVE

The Bombardier TRAXX AC last mile locomotive has proven extremely successful in commercial use, primarily due to its flexibility and energy efficiency. These advantages are, in large part, due to the TRAXX locomotive’s last mile feature that enables this electric locomotive to cross non-electrified track sections.

This last mile feature is made possible by the use of an innovative support diesel engine accompanied by a traction battery. Together, these two systems empower this electric locomotive to efficiently bridge sections of non-electrified tracks and seamlessly transition between electric and diesel operation. This flexibility and efficiency is ideal for use in places like ports, terminals, depots or factories where an additional supporting diesel shunting locomotive must be called in to help diesel trains cross the final, non-electrified, track sections known as the “last mile”.

But the last mile function’s advantages aren’t limited to ports and depots. The battery system also lets the TRAXX locomotive move about workshops and trains stations without using its diesel engine – further reducing emissions and increasing flexibility. In addition, when crossing borders between two territories that rely on different power supplies, the TRAXX locomotive’s last mile function makes shunting possible in border stations, where the voltage changes from country to country.

The TRAXX AC last mile locomotive also comes with a 400l diesel tank that provides approximately eight full hours of operation, more than enough to handle any unforeseen catenary failures. This offers operators the flexibility to develop new logistic concepts while cutting back the time and costs of freight transport.

Still, the advantages of this innovative locomotive go beyond convenience and flexibility for the operator. Their ecological benefits are also crystal clear. The locomotive’s regenerative braking system reduces overall energy consumption by around 15% while its ‘eco mode’ can cut energy consumption 5% by shutting down unneeded traction motors.

More than 2,000 TRAXX locomotives have been sold in whole Europe, Israel and South Africa. Currently, more than 1,700 of them are operating in Europe with very good performance and reliability figures, proven by an availability rate of more than 98%.

Bombardier, TRAXX and The Evolution of Mobility are trademarks of Bombardier Inc. or its subsidiaries.

NGT CARGO: WHAT FREIGHT TRAINS OF THE FUTURE WILL LOOK LIKE

Transport researchers at the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) have developed an innovative, holistic locomotive concept – the NGT CARGO.

The concept aims to make European rail freight more appealing and hence increase its market share. A high level of automation, intelligent handling and high speeds distinguishes it. In this way, rail freight transportation can be made more flexible and the capacity of the system can be increased.

Rail freight traffic in the overall transport volume does not increase. The politically intended displacement of freight traffic from road to rail is not happening. At the same time, freight traffic will continue to increase, in Germany alone by almost 40 percent by 2030. "This makes it all the more important that we develop innovative logistics, production and vehicle concepts such as NGT CARGO, to exploit the societal, ecological and economic benefits of rail freight transport," explains DLR researcher Joachim Winter, who is leading the Next Generation Train (NGT) project.



NGT CARGO locomotive.

Freight Transport À La Carte – Faster, More Flexible, More Efficient

The automatically driven NGT CARGO trains will be made up of single wagons and powerful end cars, automatically coupled together as required. "In this way, we can transport a vast range of goods flexibly, and with low use of resources, minimal deployment of personnel and short transport times," says Winter, summarising the key benefits of the concept. As the transportation of small-scale shipments, in particular, will increase significantly in the future, DLR scientists are focusing on fast, reliable freight transport.



TANZANIA-ZAMBIA RAILWAY AUTHORITY

TENDER NOTICE

TENDER NO: TZR/ HQ/CTC/2017/2018/001

INVITATION FOR BIDS FOR THE SUPPLY OF LUBRICANTS

Date: 15 May 2017

1. TAZARA has set aside funds for its operations during the financial year 2016 /2017 and it is intended that part of the funds be used to cover eligible payments under the contract for Supply of Various Lubricants.
2. TAZARA now invites sealed Bids from eligible National Suppliers for carrying out the supply of Lubricants
3. Tendering will be conducted through the Open National Competitive Tender procedures specified in the TAZARA Procurement & Supplies Manual, of November 2011 and is open to all Tenderers as defined in the Manual.
4. Interested eligible Tenderers may obtain further information from and inspect the Tendering Documents at the office of the Supplies Manager, TAZARA Head Office, Office No. 211, Nyerere/Mandela Roads Junction, P. O. Box 2834 Dar es Salaam or from the Area Manager, TAZARA Lusaka Area Office, DedanKimathi Road Lusaka-Zambia, from Monday to Friday between 08:00 and 16:30 C.A.T or E.A.T (whichever is applicable), excluding public holidays.
5. A complete set of Tender Documents in English and additional sets maybe purchased by interested Tenderers on the submission of a written application to the address given under paragraph 4 above and upon payment of a non-refundable fee of US\$200.00 or its equivalent in local currency. Payment should either be by Cash, Banker's Draft, or Banker's Cheque, payable to Tanzania Zambia Railway authority.
6. All Tenders must be accompanied by a Tender Securing Declaration/Bid Security in the format as provided in the Bidding Documents.
7. All bids in one original plus two copies, properly filled in, and enclosed in plain envelopes marked "TENDER FOR THE SUPPLY OF LUBRICANTS" must be addressed to the MANAGING DIRECTOR as per address below and be delivered to the Secretary of the Central Tender Committee at or before 10.00hrs C.A.T or 11.00 hours E.A.T, on 16th June, 2017. Bids will be opened promptly thereafter in public and in the presence of bidders' representatives who choose to attend the opening ceremony at the TAZARA Head Office Board Room in Dar es salaam, Tanzania or TAZARA Lusaka Area office Conference in Lusaka, Zambia.
8. Late bids, portion of bids, electronic bids, and bids not received, bids not opened and not read out in the public at the bid opening ceremony shall not be accepted for evaluation irrespective of the circumstances.

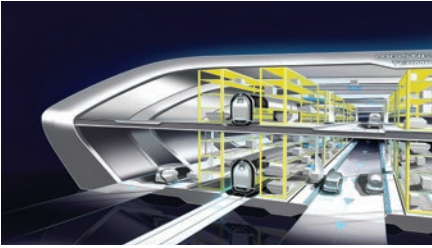
The Managing Director
Tanzania-Zambia Railway Authority
Head Office, Nyerere / Mandela Road,
P.O. Box 2834, Dar-es-Salaam, TANZANIA
Or
The Managing Director
Tanzania-Zambia Railway Authority
Lusaka Area Office, DedanKimathi Road,
P.O. Box 31784, Lusaka, ZAMBIA

Download Tender Notice: <http://bit.ly/2qMPamN>

"Freight transport is currently dominated by block trains that are not shunted and that use a large number of wagons to carry large, standard volumes of freight from point A to point B," summarises Winter. This is because, until now, a very elaborate process using rigid operating procedures underlies single wagon transport. Coupling and uncoupling wagons, picking them up and delivering them is very time- and resource-intensive and account for 30 to 40 percent of the overall costs. A large number of manual coupling processes leads to long idle periods for individual wagons and an average system speed of just 18 kilometres per hour for single-wagon transport. A lead time of approximately five days is required to make the personnel, material and routes available.

To make single-wagon transport fit for the future, intelligent freight wagons in the NGT CARGO concept have a separate drive based on electric motors and a battery that stores energy recovered during braking. This makes it possible for the single wagons to shunt autonomously, without the need for shunting staff and shunting locomotives or overhead lines. Furthermore, the individual wagons can travel the final kilometres to the respective customer automatically and autonomously. Each single wagon is equipped with the appropriate sensors to do so.

So, for example, it can be located at all times and customers can have precise details about the current status and expected arrival time of their freight. The wagons can

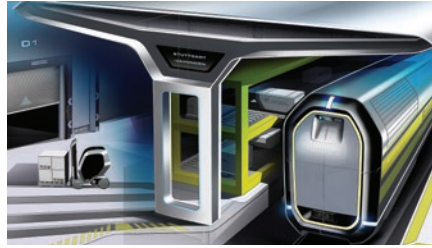


NGT CARGO logistics centre.

also be driven directly into ports, trans-shipment stations or logistics terminals, right up to the high-level racks, where they are also then loaded or unloaded automatically.

High Speeds And Optimum Line Usage

For operation in the high-speed range, the NGT CARGO single wagons form a unit and are combined with one or two end cars to form a complete locomotive. The end cars provide the necessary drive. With the appropriate infrastructure, up to 400km/h is conceivable; on existing lines, speeds of up to 160km/h or 200km/h. "One interesting application scenario for the NGT CARGO would be intercontinental freight traffic between Europe and Asia, as an alternative to transport using



NGT CARGO single wagon and loading module for short-distance transport.

container ships that have long sea routes and little flexibility in terms of freight volume, as they carry very large containers.

Multiple locomotives can be combined virtually during travel (called dynamic coupling). By doing so they form a block train, although they are not physically coupled to one another. The combination with the NGT HST high-speed passenger train is also possible. In this way, the DLR researchers aim to combine passenger and goods transportation to enable existing line capacities to be used optimally.

Following the presentation of the basic concept for the NGT CARGO, the DLR researchers are now working on developing a detailed logistics and operating concept,

designing terminals and unloading sites and improving the vehicle architecture and drive concept. In contrast to the wagons currently in use, the NGT CARGO wagons will be enclosed and aerodynamically covered. There will be no gaps between the single wagons, reducing wind resistance and generating less noise.

The DLR Next Generation Train (NGT) Project

For approximately 10 years, DLR transport research has been investigating and developing future-oriented train concepts under the Next Generation Train (NGT) project. The main goals have been to reduce travel and transport costs, save energy and reduce noise emissions, increase passenger comfort, improve travel safety and minimise the lifecycle costs of the rolling stock. The NGT train family consists of the NGT CARGO, the NGT HST high-speed locomotive, which can reach speeds of up to 400km/h on suitable tracks, and the NGT LINK, a fast Intercity locomotive that can reach up to 230km/h and is expected to transport passengers from the hinterland to main railway stations on high-speed lines.

We design and fabricate bogies that are lighter for greater efficiency.

That's amazing!

For more information, visit www.dcd.co.za

DCD

ZTR CONTROL SYSTEMS FORMS NEW SOUTH AFRICAN ALLIANCE

ZTR Control Systems is proud to announce its new partnership with Surtees Railway Supplies (Pty) Ltd part of the Surtees Rail Group in South Africa. Combined, the two companies represent almost a century of experience and expertise in the global railway industry.



As locomotive modernisation experts, ZTR revolutionised the rail industry when it first introduced its flagship product, SmartStart®, an Automatic Engine Start Stop (AESS) system to the world almost 30 years ago. SmartStart is the proven and trusted choice in AESS solutions around the globe, significantly reducing fuel consumption and cutting costs. ZTR continues to create innovative locomotive systems that promote reliability, availability and connectivity.

For example, the ZTR state-of-the-art NEXSYS™III-i control system is designed to replace ageing or archaic control systems while at the same time increase locomotive adhesion, and integrate with AESS technology. Surtees will also offer the ZTR BOA™ system, with the most advanced excitation and locomotive wheel slip protection, improving locomotive tractive effort, equipment protection and reliability for optimal locomotive adhesion and performance. Along with SmartStart, NEXSYS and BOA, ZTR and Surtees offer a suite of products and services that can extend the life of a locomotive 15-20 yrs.

“We believe that ZTR Control Systems provides an exceptional fit to our offerings for rail operators in the region. The company’s unique products will upgrade our own fleet and, through our trained and qualified technicians, Surtees will extend this service to locomotive fleets throughout South Africa and beyond. This comes at a time when cost-effective solutions for improved locomotive controls, like increased tractive effort and fuel consumption improvements, are critical in driving costs down,” says Tony Wood Director at Surtees.

“At ZTR, it’s important for us to understand our customers. As a local vendor, Surtees brings an incredible breadth of knowledge and expertise as our local representation in the South African railway market. ZTR is confident this partnership will provide hands-on, proven and cost-effective solutions to South African customers with all levels and phases of a railway project,” Says Matthew Scott, VP and general manager, ZTR Control Systems.

Since 1987, ZTR Control Systems has been an industry leader in intelligent equipment management solutions for locomotive modernisation and equipment monitoring. As locomotive modernisation experts, with thousands of installations worldwide, the ZTR innovative locomotive modernisation solutions in intelligent starting technologies, control systems, remote monitoring, and enhanced diagnostics, help improve the performance, reliability and efficiency of ageing locomotives.

Surtees has over 65 years of experience in the rail industry; the Surtees Rail Group is a renowned provider of locomotive and rail wagon spares and innovative rail solutions. Surtees continues to be highly regarded as a most dependable “one stop” source for locomotive control systems, components and parts for all types of locomotives and rail wagons as well as for rolling stock maintenance equipment in the South African Rail market.



TANZANIA-ZAMBIA RAILWAY AUTHORITY

TENDER NOTICE

TENDER NO: TZR/HQ/CTC/2016/2017/005

INVITATION FOR BIDS

FOR THE SUPPLY OF MATERIALS AND CONSTRUCTION OF LOCAL AREA NET WORK FOR THE TAZARA HEAD OFFICE BUILDING

Date: 15 May 2017

1. TAZARA has set aside funds for its operations during the financial year 2016 /2017 and it is intended that part of the funds be used to cover eligible payments under the contract for Supply of Materials and Construction of Local Area Net Work for the entire Head Office Building.
2. TAZARA now invites sealed Tenders from eligible local suppliers of materials and service providers of Information Communication Systems.
3. Tendering will be conducted through the Open National Tender procedures specified in the TAZARA Procurement & Supplies Manual, of November 2011 and is open to all Tenderers as defined in the Manual.
4. Interested eligible Tenderers may obtain further information from and inspect the Tendering Documents at the office of the Supplies Manager, TAZARA Head Office, Office No. 211, Nyerere/Mandela Roads Junction, P. O. Box 2834 Dar es Salaam or from the Area Manager, TAZARA Lusaka Area Office, Dedankimathi Road Lusaka-Zambia, from Monday to Friday between 08:00 and 16:30 C.A.T or E.A.T (whichever is applicable), excluding public holidays.
5. A complete set of Tender Documents in English and additional sets may be purchased by interested Tenderers on the submission of a written application to the address given under paragraph 4 above and upon payment of a non-refundable fee of US\$200.00 or its equivalent in local currency. Payment should either be by Cash, Banker’s Draft, or Banker’s Cheque, payable to Tanzania Zambia Railway authority.
6. All Tenders must be accompanied by a Tender Securing Declaration/Bid Security in the format as provided in the Bidding Documents.
7. All bids in one original plus two copies, properly filled in, and enclosed in plain envelopes marked “TENDER FOR SUPPLY OF MATERIALS AND CONSTRUCTION OF LOCAL AREA NET WORK THROUGHOUT THE ENTIRE TAZARA HEAD OFFICE BUILDING” must be addressed to the MANAGING DIRECTOR as per address below and be delivered to the Secretary of the Central Tender Committee at or before 10.00hrs C.A.T or 11.00 hours E.A.T. on 16th June, 2017. Bids will be opened promptly thereafter in public and in the presence of bidders’ representatives who choose to attend the opening ceremony at the TAZARA Head Office Board Room in Dar es salaam, Tanzania or TAZARA Lusaka Area office Conference room in Lusaka, Zambia.
8. Late bids, portion of bids, electronic bids, and bids not received, bids not opened and not read out in the public at the bid opening ceremony shall not be accepted for evaluation irrespective of the circumstances.

The Managing Director
Tanzania-Zambia Railway Authority
Head Office, Nyerere / Mandela Road,
P.O. Box 2834, Dar-es-Salaam, TANZANIA
Or
The Managing Director
Tanzania-Zambia Railway Authority
Lusaka Area Office, Dedankimathi Road,
P.O. Box 31784, Lusaka, ZAMBIA

Download Tender Notice: <http://bit.ly/2qmr6pD>



EXCELLENCE IN RAILWAY & MINING ENGINEERING

Surtees Engineering (Pty) Ltd based in Johannesburg, has been servicing the railroad industry in Southern Africa since 1982.

Surtees Engineering concentrates its efforts on the manufacturing, repair and machining of specialised mining, steel production and railway related products for both freight and passenger rolling stock.

Surtees Engineering specialises in the supply, refurbishing and the assembly of new wheelsets for a

variety of rolling stock applications such as hoppers, locomotives, motor and trailer coaches as well as the manufacture of axles.

In addition, the company is competent in the refurbishment and supply of a wide range of crane and rail bogies and crane wheels, carrying a comprehensive inventory of spares to efficiently cater to client needs.

Other equipment reconditioned or manufactured by the company include:

- Vacuum pumps
- Compressors
- Air, hydraulic and mechanical jacks
- Air and vacuum brake equipment
- Automatic slack adjusters
- Automatic couplers
- Drawgear assemblies
- Traction motors
- General engineering and fabrication
- And other locomotive and rail wagon equipment



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