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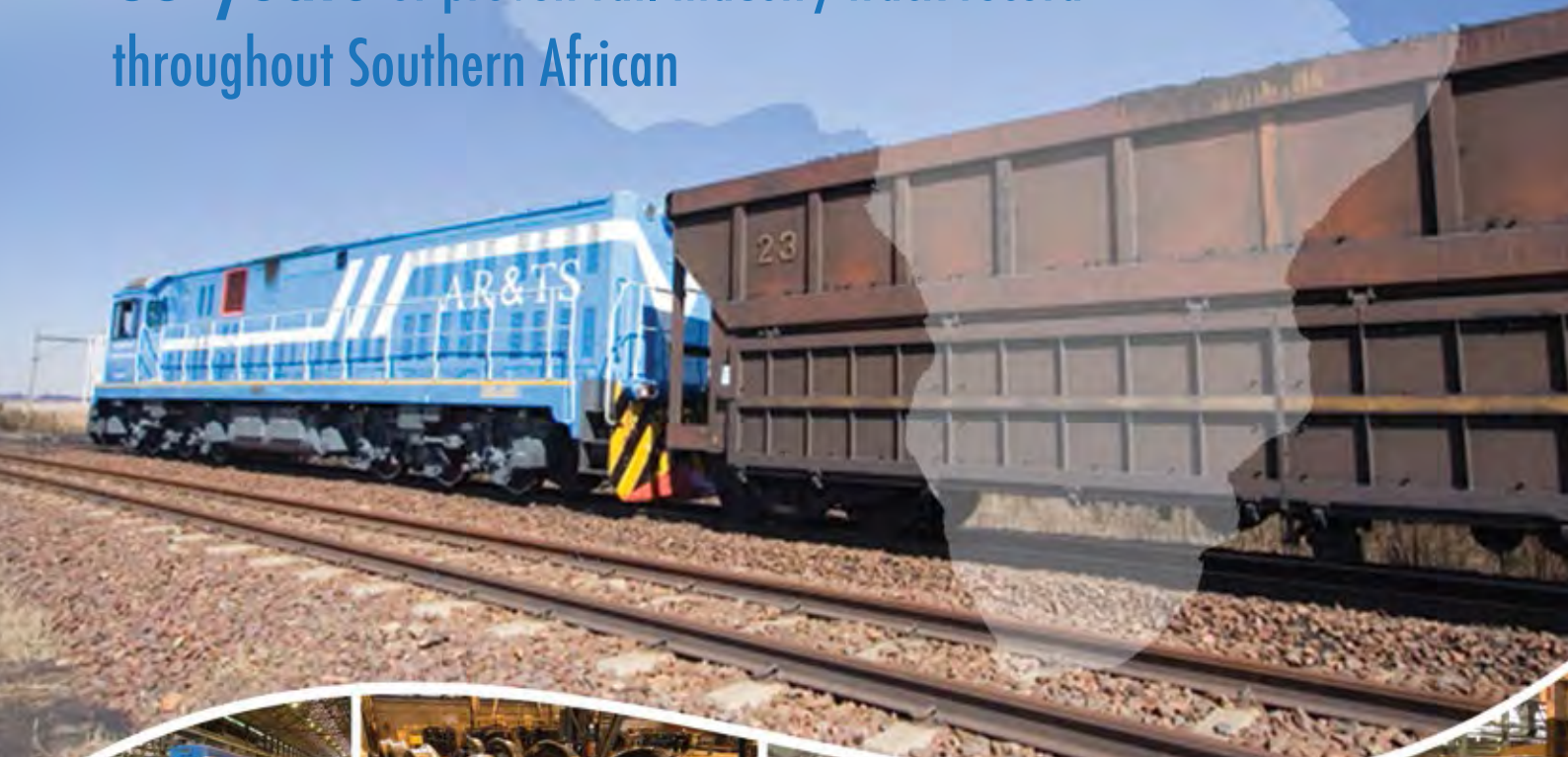
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Doubling Up

For more than 100 years, railway management in South Africa was organised under a single general manager. Deputy and assistant general managers headed divisions such as Airways, Ports and Road Transport. Financial performance was reported annually to parliament. Everybody knew exactly where everything was, and what precisely everything cost.

One by one, the divisions broke away from the unitary scheme of things. Airways - for one - had little in common with trains. It seemed logical to hive this department off and run it independently.

It isn't clear how South African Airways landed itself in seemingly endless financial trouble, being bailed out by government to the tune of hundreds of millions, more times than anyone can remember. This never happened while it was part of the South African Railways.

The biggest loss-maker and embarrassment was commuter rail. The embarrassing part was cross-subsidy. Freight was seen to be paying for commuter losses, something which would never do. Early in the nineties, commuter rail was divorced from overall railway management and made an entirely separate business - the SA Rail Commuter Corporation (SARCC).

The resultant division of actions and responsibilities was immensely complicated, with consequences largely unforeseen. To take one example, it became almost impossible, in the case of expensive accidents, to find out whom to blame, and to apportion costs.

In due course, main-line passengers went the same way, falling in with the commuters. The buses went with them. The SARCC was renamed the Passenger Rail Agency of South Africa (Prasa), which now runs all the passenger trains - except, inexplicably, the Blue Train - in the country.

Complex Situation

It is a complex situation in which some lines and stations are owned by Prasa, others by Transnet Freight Rail (TFR). One of these pays the other when it uses their tracks, or hires their locomotives.

Previously, when the crew of a freight or passenger train reached the duty-hours limit allowed, it interchanged with the crews of another trains - freight or passenger - coming the other way.

Today, in the case of a passenger train, a Prasa combi goes out with the replacements and fetches in the original crew. Maybe it passes a TFR combi along the way, doing the same thing.

Reportedly it is easier to apportion costs in terms of this new scheme of things. One would have thought it desirable - given the obsession with financial allocations - to put the buses in a company entirely separate from the railway. Prasa however, which now runs the intercity buses - in a section called Autopax - does so in competition with its own trains.

Separating the entities has given rise to endless duplication. Between TFR and Prasa there are now two of everything - two chief engineers, for instance, reporting to two different CEOs, under two separate ministries.



Vossloh's visually appealing AFRO4000- according to the recent Rail Safety Regulators report released on the 1 December 2015, "the PRASA AFRO 4000 series locomotives possess acceptable performance capabilities to operate in the South African network."

Photo: Col Andre Kritzinger.

Former Prasa CEO Montana, explaining away recent problems costing billions, put the blame on South Africa's lack of skills. If he is right, the doubling up of every department makes no sense at all - twice as many skilled people are needed now than before.

The initial criticism of Prasa's Spanish locomotives by the Rapport newspaper was rejected by Montana as racially motivated. Head of engineering Daniel Mtimkulu, who designed the locos, Montana said, was "brilliant" and somebody else said he had been headhunted "all over the world".

As a matter of fact, Mtimkulu did not design the units, which are a standard European production. He modified them for local use.

Can of Worms

Rapport's tenacious journalists, it turned out, had opened the proverbial can of worms. Mtimkulu, the possessor of fictitious qualifications Prasa hadn't bothered to check, resigned. Various bodies, the Auditor-General and Public Protector among them, unearthed a raft of costly, irregular and unauthorised expenditures.

Recent shenanigans at Prasa suggest thinking increasingly divergent from that at TFR. For many months, the tape measure brigade has been busy examining overhead wires, nearly 200 tunnels and countless overbridges, to determine whether the locomotives imported by Prasa - which exceed the South African loading gauge - can run beneath them safely. Altogether, 70 units have been ordered from Spain at a cost believed to have escalated to over R5 billion.

In some instances, notably at Denver a few kilometres east of Johannesburg's Park station, it is understood that the clearance is only 10mm (locomotive height 4.14m, overhead wire 4.15m).

Two independent and separate authorities running trains on the same railway may work in parts of the Western World. In South Africa unfortunately, it seems to have proved a disaster.

Rollo Dickson - Editor.



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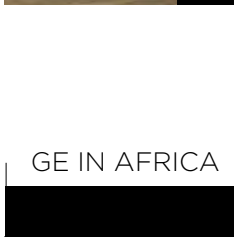
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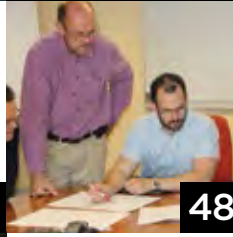
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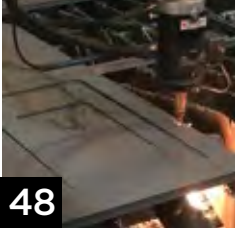
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Alstom to take 51% in the former UCW

In 1964, Union Carriage & Wagon (UCW) – a subsidiary that Commonwealth Engineering of Australia (Comeng) founded in 1957 – built its first electric locomotive for the South African Railways. Since then, the impressive 3.7 hectare plant at Nigel has supplied 14,000 locomotives, wagons, speciality vehicles and coaches, including two Blue Train sets. The completion of the 1,602th locomotive with GEC traction built at UCW between 1964 and 1985 was celebrated with a special function. Export orders have gone to Botswana, Angola, Malawi, Taiwan, Zimbabwe and Malaysia.

In the late 1990s, the firm was acquired by the Murray & Roberts group. Amongst other business, it assembled some 80 Gautrain sets, as well as building class 19E dual-voltage and 15E (50kV AC) electric locomotives for Transnet.

CTLE buys UCW

UCW was sold in 2013 to a consortium which renamed it CTLE (Commuter Transport & Locomotive Engineering). Leading shareholders were the Industrial Development Corporation (IDC) and CTE, founded in 1999 by Patricia Norris, one-time Transwerk executive, who had started by establishing a facility at Touws River for refurbishing Metrorail coaches.



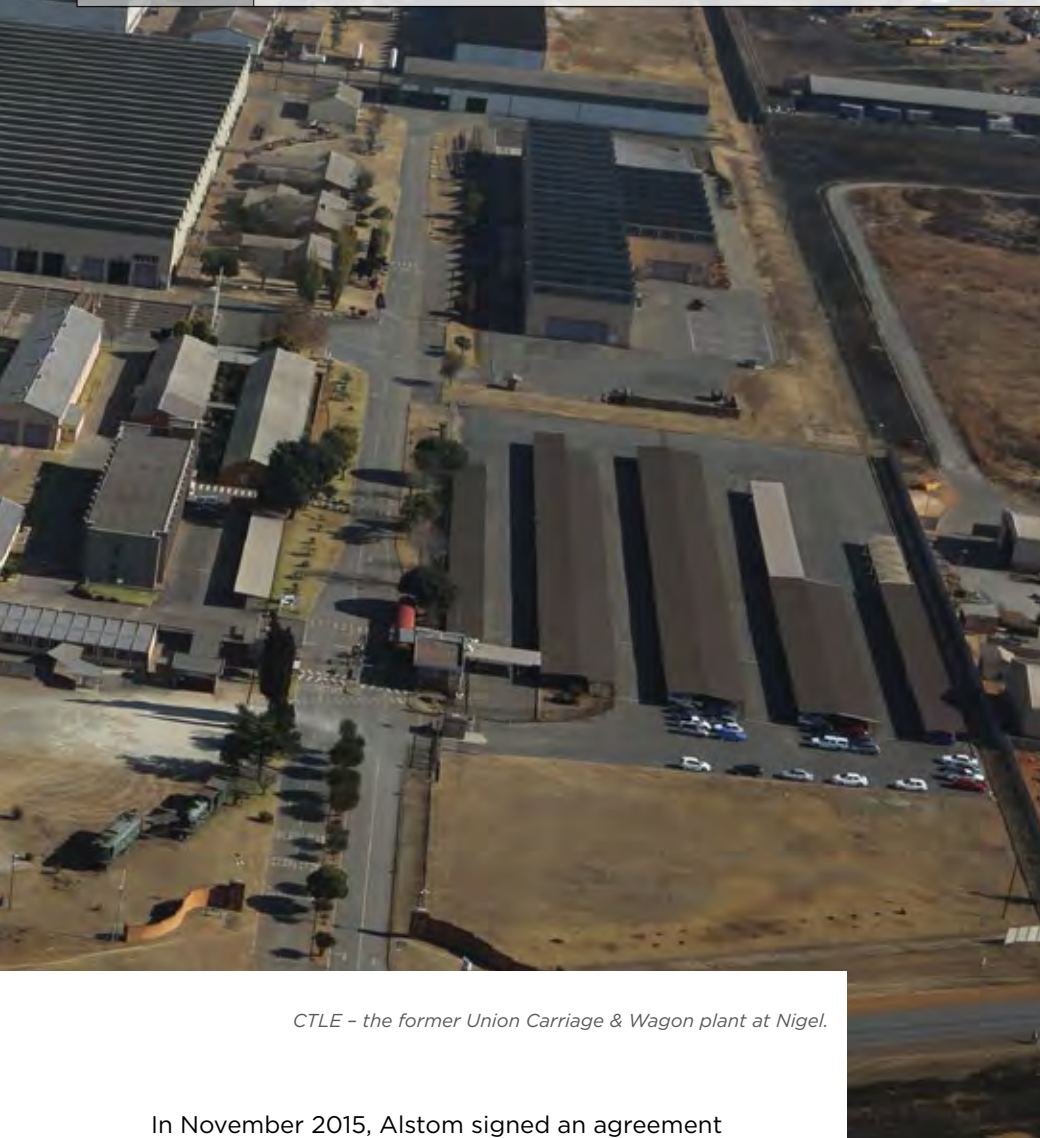
Some 80 Gautrain trainsets were assembled by UCW.



Dual-voltage class 19E locomotives, built between 2007 and 2011. Photo: Eugene Armer.



Electric multiple-unit trainset, designed and built at UCW for Taiwan.



CTLE – the former Union Carriage & Wagon plant at Nigel.

In November 2015, Alstom signed an agreement to purchase 51% of CTLE. Once this agreement is finalised, and after approval by the South African antitrust authorities, Alstom is to launch an integration project, extending the activities of CTLE and enabling it to offer a complete portfolio including infrastructure, signalling, trains and components, as well as services that fully address Southern African railway needs.

CTLE is fully compliant with B-BBEE (broad-based Black Economic Empowerment). Its 80,000m² manufacturing facility generated a turnover of more than €15 million in 2014.

According to Alstom senior vice-president for the Middle East and Africa Gian-Luca Erbacci, “this partnership will strengthen the rail sector in South Africa, boost its economy and, in the long term, address the needs of other countries in the Southern African region”. It will enable the company to obtain stronger financing capabilities, and develop its business in both domestic and export markets.

Alstom is already present in South Africa through its local joint venture Gibela and is involved in one of the country’s biggest ever transport projects through the supply of 600 X’Trapolis Mega commuter trains to the Passenger Rail Agency of South Africa (Prasa).



Blue Train lounge-car bar. UCW built South Africa’s two Blue Train sets.



Class 14E1 dual-voltage electric loco



UCW-built railcar in Botswana.



Interior view: Botswana Railways main-line coach.



UCW built these class 38 electro-diesels in 1990, able to work under 3kV DC catenary, or away from the wires.



Steloy

Forges Ahead



“I believe, that there is enough backbone in industry, in business and the public sector to overcome the current challenges and to develop a thriving engineering and manufacturing industry.”

- Danie Slabbert, Steloy
Castings CEO

Following the worrying economic downturn in 2009, with decreasing commodity prices as well as heavy electricity hikes and the fluctuating oil price, a dismal outlook faced the foundry industry in South Africa. Bronkhorstspruit-based foundry Steloy Castings however is moving forward through ongoing capital investment in new equipment and technology.

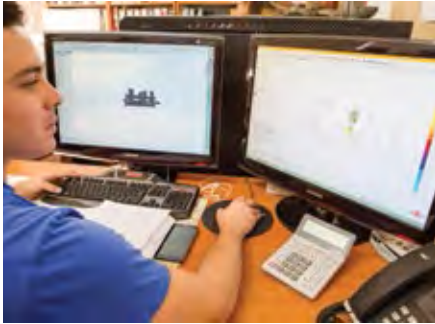
“If the country cannot withstand the headwinds of the current low demand and threats from uncompetitive imports, and cannot capitalise on the existing private and public spending programmes, we are doomed,” Steloy CEO Danie Slabbert suggested at the company’s recent 30th birthday breakfast.

“I believe,” he said, “that there is enough backbone in industry, in business and the public sector to overcome the current challenges and to develop a thriving engineering and manufacturing industry.”

In a recent interview with Railways Africa, Slabbert explained that “in the last two or so years we have been working closely with railway operators, learning that what they require is a finished, painted component which they can install in the bogie or the motor.”

According to Slabbert, customers looking to buy and use casting products apply stringent criteria when selecting a foundry supplier or partner. This is essential if the highest quality of casting is to be obtained at the best possible price in a highly pressurised environment

Steloy is able to produce and supply finished machined, accurately measured parts for the railway industry as well as a complete engineering service, from drawing to final components.



MAGMA software powered by a 64-core PC

This advancement involves considerable capital outlay. The company is investing heavily in machinery including 4-axis horizontal machining centres and 3D testing equipment. The design and development department utilises a MAGMA software solution powered by a 64-core PC.



4-axis horizontal machining centre

“We have always aimed to supply high-quality products where the requirements are stringent, so we have developed in-house testing methodology,” he explains.

Steloy is able to produce and supply finished machined, accurately measured parts for the railway industry as well as a complete engineering service, from drawing to final components.

Technology

Molding is carried out on cold box machines for castings up to 30kg fettled mass, or by means of the no-bake process for castings up to 2,000kg fettled mass. A shell molding facility is used for castings to higher tolerances. A fully automatic LP gas-fired temperature heat treatment furnace with temperature recorder, coupled to a water quench facility, makes heat treatment possible on all grades of castings produced in-house.



To further ensure the integrity of the end product, Steloy recently invested in a new optical emission spectrometer. Considered the most advanced in the local foundry industry, the Thermo Electron



Thermo Electron ARL 3460 spectrometer

ARL 3460 spectrometer from Switzerland makes possible the analysis of an unequalled variety of alloys across a wide spectral range.

Steloy makes use of the Foundry Operation Management and Information System (FOMIS) which allows them to follow a strict quality control system, ensuring accurate analysis, documentation and certification throughout the process. This enables the full traceability of their casting products from the quoting stage to delivery of the final product.

All castings are inspected and tested to ensure adherence to the prescribed standards. The following non-destructive testing can be performed:

- Dimensional inspection
- Liquid penetrant inspection
- Radiographic inspection
- Ultrasonic inspection
- Mechanical testing
- Magnetic particle inspection
- Pneumatic testing
- Hydro testing up to 30Mpa
- Positive material identification
- 3rd party local and international inspection
- X-ray examination



New sand reclamation plant



“This year, Steloy was accredited with the IRIS (International Railway Industry Standard) certification – that used by the international rail industry. We are the only foundry in the country with that accreditation,” he says. Steloy also has the following accreditations ISO 9001:2008, ISO 14001 and OSHAS 18000.

Local Contracts

Investment in the South African rail industry has propagated Steloy Castings involvement in major projects including the recent Transnet Freight Rail (TFR) locomotive contracts awarded to Bombardier, GE Transportation, CSR Zhuzhou Electric Locomotive and CNR Rolling Stock; as well as the Passenger Rail Agency of South Africa (Prasa) contract awarded to Alstom and Gibela.


The TFR contract to build 1,064 locomotives comprises Bombardier supplying 240 locomotives; GE delivering 233; CSR Zhuzhou Electric Locomotive supplying 359 units and CNR Rolling Stock 232.

Currently Steloy is supplying components to both GE Transportation and Bombardier, and has tendered to supply the Chinese companies through Transnet Engineering.

Additionally, Steloy has been awarded a “sizable chunk” of the Alstom/Prasa project to supply 600 trainsets over a period of 10 years. The first 20 are being produced at Alstom’s Lapa plant in Brazil. Thereafter a new plant at Dunnottar, housing an engineering centre and training facility, is to manufacture 580 trainsets locally.

Almost three years ago, Alstom started auditing Steloy. “The relationship developed and we are now at the point where a contract was signed and orders placed, and we are now starting to develop their products. Those products have to be delivered in the second half of next year,” Slabbert says.

2015 marked 30 years of service excellence for this world-class foundry. Steloy has made significant strides forward, despite trying market conditions. It is currently positioned as one of South Africa’s leading foundries.



Steloy Video
<https://youtu.be/VWwyoIR10eo>



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Cape Town councillor Brett Herron

AFRICAN UNION TRANSPORT CONFERENCE

Switzerland, France and Singapore were among countries represented by more than 200 delegates attending a late October conference under the auspices of the African Union of Public Transport (UATP). The event was hosted by Transport for Cape Town, the city's transport authority. Councillor Brett Herron said that Africa is experiencing the most rapid urbanisation in the world. "Surveys indicate that up to 60% of residents will be living in cities by 2050," he told attendees. Unless a drastic shift in modal use takes place, African cities would experience constant gridlock within the next ten years, he said.

UATP president Jack van der Merwe emphasised that public transport is a social service - not something that should make money. He said: "In fact, the most efficient public transport in the world is subsidised." Interconnecting bus and train services should have coordinated timetables, he said, and there should be integrated ticketing.

TO CAIRO WITH ROVOS RAIL

We wonder whether Rovos themselves saw this one. According to a contemporary advertisement by a leading American travel agency:

"Rovos Rail, Cape Town to Dar es Salaam

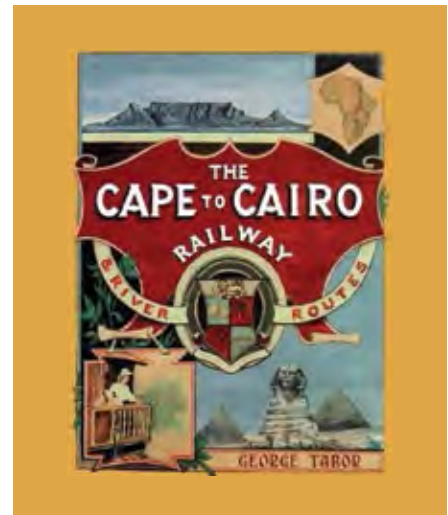
"Rovos, a luxury train company, offers this epic 14-day journey on the Pride of Africa, one of its swankest trains. Passengers traverse South Africa, Botswana, Zimbabwe, Zambia and Tanzania, and get to make plenty of stops along the way to visit historic villages, diamond towns, game reserves and Victoria Falls. A high point of the trip is the Great Rift Valley, where the train negotiates a series of dramatic tunnels, switchbacks and viaducts.

"If 14 days isn't enough, you can also ride the Pride of Africa all the way from Cape Town to Cairo in 28 days -- though the journey only departs once every two years (the next one is January 2016)."

Better take up this unique offer quickly. January 2018 is a long, long time to wait for the next train.

From the windows of the Blue Train - according to the same advert - animals may be seen "galloping across the savanna".

https://www.google.com/url?rct=j&sa=t&url=http://www.huffingtonpost.com/afktravel/11-memorable-train-journeys_b_8373936.html



To illustrate their services, Shosholoza Meyl contributed this photo of a generator van.

ALGERIA

RAIL ENGINEERING JOINT VENTURE

An Algerian rail engineering joint venture has been formed between Systra, a prominent international engineering and consulting group specialising in rail and public transport, and Société Nationale des Transports Ferroviaires (SNTF - the state railway of Algeria). A memorandum of understanding was signed on 26 October at a meeting of the Algerian-French Economic Joint Committee (Comefa).

The new JV is to carry out studies as well as monitor and manage rail projects and systems in Algeria. It intends to develop local engineering skills to support the development of a railway expected to grow from around 4,000km to 12,000km over the coming ten years.



Station at Oran, Algeria. Photo: Wikipedia

ANGOLA

NEW ROLLING STOCK

At a ceremony in Lubango on 7 November, the board of Caminhos de ferro de Moçamedes (CFM) officially took delivery of six new locomotives and 41 passenger coaches (first, second and third-class), from China. The function was chaired by Angola's minister of transport, Augusto da Silva Tomás.



Angola: Chinese-built passenger coach. Photo: L Willms/Wikipedia

BENIN

BENIRAIL UPGRADE

In terms of the 30-year concession agreement between the governments of Benin and Niger, and France's Bolloré Group, signed in August 2015, Bénirail is to upgrade and operate the existing 438km metre-gauge Cotonou-Parakou line and construct a 574km extension to Niamey, the capital of Niger. Ultimately it is planned to extend the line to join the envisaged West Africa Railway, which will connect Niamey with Ouagadougou in Burkina Faso and Abidjan in Cote d'Ivoire. The Bolloré Group owns 40% of Bénirail; the governments of Benin and Niger each hold 10%. The remaining 40% of shares are held by private investors in Benin and Niger. During September 2015, Bolloré paid 19 months' wage arrears to 629 members of staff as well as pension contributions to retired employees. Bénirail will have initial capital of \$US 122 million.



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CAMEROON

GRINDROD IN CAMEROON



Grindrod-built loco in Cameroon

South African loco manufacturer Grindrod has opened an office in Cameroon. This follows the delivery of nine locomotives to Camrail, the Bolloré group concessionaire which operates railways in the territory. The units were commissioned at a function in Douala on 19 October 2015. Grindrod Rail Cameroon Limited, managed by Michael Schoeman and Patrick Southey, aims to provide integrated rail services and logistics solutions, specifically, "freight management and the provision of specialised rolling stock, the maintenance and leasing of locomotives, the maintenance of railways and railway sidings, etc." The office will strengthen Grindrod's partnership with Camrail.



The ceremony at Douala was attended by Philémon Yang, Prime Minister of Cameroon; Edgar Alain Mebe Ngo'o, Minister of Transport; Cyrille Bolloré, CEO, Bolloré Transport & Logistics; Hamadou Sali, Chairman of Camrail's Board of Directors; Quentin Gérard, CEO of Camrail; and Mohamed Diop, Gulf of Guinea Regional Director for Bolloré Africa Logistics.

CÔTE D'IVOIRE

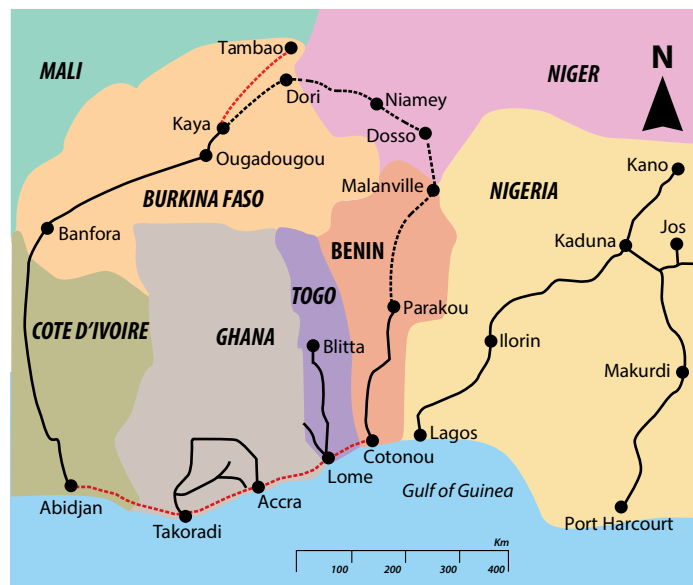
SAN PEDRO-BAMAKO CORRIDOR

Italian State Railways' (FS) engineering subsidiary Italferr has signed an agreement with the Côte d'Ivoire government to develop a 1,000km rail corridor from the port of San Pedro northwards into Mali, ending at the capital Bamako. Italferr will be drawing up a feasibility study for the line, including port links and mining zones. Later it will work with Côte d'Ivoire in all further implementation stages of the project.



LAWSUIT OVER WEST AFRICAN PROJECT

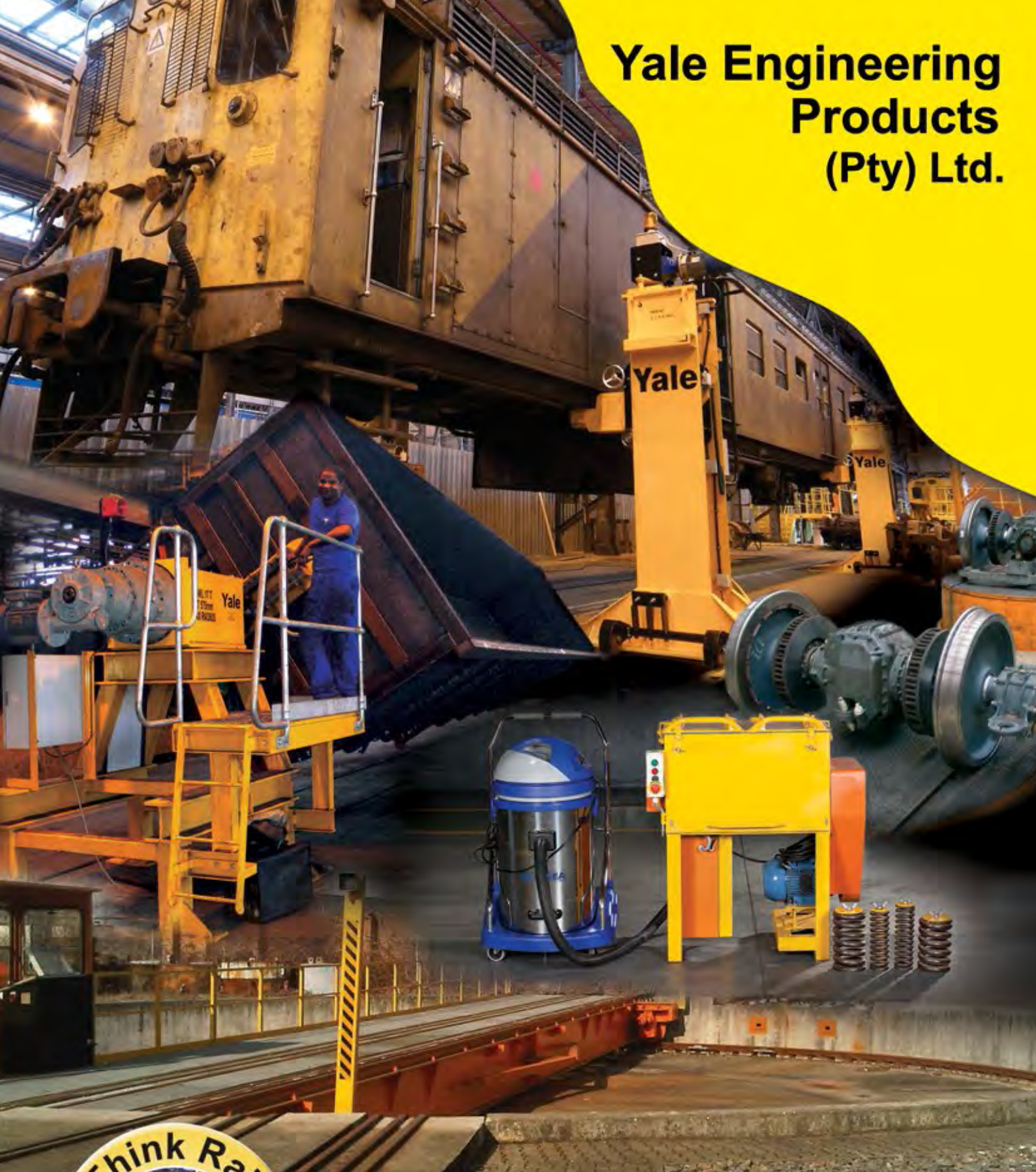
French firm Geftarail and a subsidiary in Niger have filed a lawsuit with the International Court of Arbitration in Paris asking that work on the Bolloré West African project be halted. The plaintiffs maintain that the governments of Niger and Benin granted Bolloré rights to the Benin-Niger link that overlap with their own AfricaRail project. Bolloré itself is not directly involved in the case, the defendants being the governments of the countries involved. Geftarail insists it holds the right to build a railway through Benin, Niger and Burkina Faso in terms of a concession granted in 1999 by the three governments (which was later extended to include Togo). Geftarail chairman Michel Bosio reportedly proposes a consortium be formed as one solution to proceeding with the project. AfricaRail embraces a smaller area than Bolloré's, though it could be extended.



AMBITIOUS BOLLORÉ PLANS

French entrepreneur Vincent Bolloré has ambitious plans for a railway linking Abidjan in Côte d'Ivoire to Lomé in Togo via Ouagadougou in Burkina Faso, Niamey in Niger and Cotonou in Benin. Apart from the financing as well as uncertainties about technical aspects, the rights to the project itself are disputed by other operators like the Petrolin group headed by Samuel Dossou, and AfricaRail chairman Michel Bosio. Both are reportedly planning legal action against Bolloré. Bolloré's recent launch of the new company Beni Rail Exploitation is said to remove doubts that have existed over the financing of the Niamey-Parakou railway, which Bolloré is building.

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WEST AFRICAN RAIL LOOP

The West Africa rail loop project, launched in 2013 and known also as Blue Line, will connect Côte d'Ivoire, Burkina Faso, Niger, Benin, Togo, and Nigeria. It is hoped to complete the scheme in about eight years at an estimated cost of between €2 and €2.5 billion. Vincent Bolloré and several banks – among them Goldman Sachs, BNP Paribas, Societe Generale and Credit Agricole, are preparing for a Paris listing in the first half of 2016, to partly cover financing costs.

With an involvement in Africa going back more than 50 years – about 22% of group revenue came from Africa in 2014 – the Bolloré group has rail concessions in Côte d'Ivoire (Sitarail), Cameroon (Camrail) and Benin (Benirail). The group has previously financed developments itself but the Blue Line project will require additional input.

Over 70% of the proposed rail loop's revenue would come from freight transport, the rest from passenger operations, according to projections.

EGYPT

ALSTOM SIGNALS

On 9 November, Alstom signed two contracts with Egypt's National Authority for Tunnels (NAT), for the supply of a signalling and telecommunications system and infrastructure for phase 3 of Cairo metro line 3, currently under construction and due for completion in 2022. Taken together, both contracts are worth a total of around €190 million. Alstom will provide its Urbalis signalling solution including Iconis at the operating control centre as well as points machines and station signalling equipment. The company will also provide electro-mechanical equipment including power substations to feed the third rail, ventilation and elevators/escalators. Alstom has been awarded a separate contract to modernise the signalling systems on the regional railway from Beni Suef to Asyut.



NEW INTERCITY TRAINS

In May 2014, the European Bank for Reconstruction and Development (ERDB) agreed to lend Egyptian National Railways (ENR) a loan of €126 million. It is intended to use the money for funding the acquisition of new passenger trainsets, for which tenders are to be invited before the end of 2015. The trains, which will be locomotive-hauled, are to be employed on the busy line between Cairo and Alexandria (208km) as well as to Luxor and Aswan (879km). It is intended that maintenance will be included in the contracts.

ETHIOPIA

HUNGARIAN TRAM

Dunai Repülőgépgyár (DR) of Hungary has delivered a prototype tramcar designed for the African market to Metals & Engineering Corporation (MEC) in Addis Ababa. DR is negotiating with MEC, envisaging production in Ethiopia using Hungarian components. At the same time it is talking to the Commercial Bank of Ethiopia about financing. The 35% low-floor, 50-seat tram is 33.8m in length, weighs 63.4 tonnes and has a maximum speed of 70 km/h. The capacity is 233 or 278, depending on configuration. Regenerative braking is fitted.

DR staff are in Addis Ababa to train local workers and coordinate production. Similar projects are foreseen elsewhere in Africa, with Kenya reportedly showing interest. The Chinese-built light rail line currently operating in Addis has 41 three-section, 70% low-floor trams, supplied by CNR Changchun.

NEW TRAINS FOR ETHIOPIA

Rolling stock is being put together to run on the new 1,435mm gauge railway from Djibouti to Addis Ababa, capital of Ethiopia. Two manufacturers have together supplied 315 locomotives. The Metals and Engineering Corporation built 130, while Norinco in China were responsible for the remaining 185. Construction of the line has been in the hands of the China Railway Group (CREC) and the China Civil Engineering Construction Corporation (CCECC). Overall progress on the project stood at 92% in early October, says Ethiopian Railway Corporation corporate communication affairs head Dereje Tefera. The remaining tasks mainly concern power supply and communications. About 100km of line lie in Djibouti and some 656km in Ethiopia.

WHY ETHIOPIA OUTPERFORMS AFRICA'S DEMOCRACIES

Dr Ken Opalo, Assistant Professor at the Edmund A Walsh School of Foreign Service at Georgetown University, Washington DC, explains that his research focuses on "the political economy of development, with emphasis on institutions, public finance, and electoral politics in Africa." Commenting on Ethiopia's new light rail system, he points out that it was constructed on schedule, and largely within budget. By comparison, he says, Lagos in democratic Nigeria has been building a light rail system for nearly a decade. It is over-budget and embroiled in allegations of corruption. Ethiopia's focused and disciplined elite class has the ability to manage large -scale infrastructure projects. Yes, Ethiopia is autocratic, Opalo concedes. No country probably has jailed more journalists and its human rights record is questionable. China, Vietnam, Ethiopia and Rwanda are not accountable to voters, either. They are not democracies, but they deliver on public projects.

Opalo says he recently asked his students whether they would rather live in Rwanda or Malawi. They chose Rwanda, which has a record for meeting targets. Malawi is a democracy, but very poorly run, and begging for food. It does not follow, of course, that an autocratic government is necessarily the answer - think for instance of North Korea. Democracies however often hire incompetent people then reward them with hefty salaries.

"To get there we must consciously and seriously invest in our capacity to get stuff done," Opalo says.

RAIL ACADEMY PLANNED

\$US39.3 million has been acquired from the government of China for the building of a railway training centre in Ethiopia. This has been announced by Dr Arkebe Equbay, special adviser on economic affairs to Prime Minister Hailemariam. He said qualified expertise in the field of railway engineering is needed to run the railways currently being constructed in Ethiopia. The academy would be an important element in accomplishing the goals of the country's growth and transformation plan. It could also serve as a training centre for other African countries.

GABON

SIX NEW LOCOS FOR GABON

Société d'Exploitation du Transgabonais (Setrag), the state railway of Gabon, is taking delivery of six new locomotives - part of a long-term modernisation of the country's freight rail operations. The Railserve LEAF product 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 is Railserve's first delivery of LEAF locomotives to a destination outside North America," programme manager TJ Mahoney says. "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."



New Railserve LEAF loco for Gabon

Railserve successfully modified the standard LEAF locomotive design for operation in Gabon, where specifications differ from those in North America. Cab interface markings and screens, for instance, are in French. Couplers are SA-3 - common overseas but not used in North America. Otherwise, the units are virtually identical to the more than 50 Railserve LEAF locomotives currently at work in the USA and Canada. Once the locos reach Gabon, Railserve staff will be present to commission them in conjunction with Setrag engineers. The locomotives were hauled by rail from Longview, Texas.

KENYA

KENYA STATION CONSTRUCTION BEGINS

Station construction has begun on Kenya's new standard gauge railway. There are to be stations at Nairobi East, Mombasa, Emali, Kibwezi, Mtito Andei, Maiseny and Voi.



Nairobi's existing metre-gauge station. Photo: Wikipedia



NEW RAILWAY AHEAD OF SCHEDULE

The \$US3.27 billion Nairobi-Mombasa standard gauge railway is due for completion in June 2017. The second phase, to Naivasha, is to be finished in 2019. According to Kenya Railways managing director Atanas Maina, implementation of civil works stood at 49% at the beginning of September, at which time more than 400km of the railway corridor had been constructed. This meant that the project is running ahead of schedule.

Yu Xiangdong, a project manager from the China Communications Construction Company – the parent company of China Road and Bridge Corporation (CRBR) – explains that construction of the stations, railway corridor, bridges, underpasses and overpasses has been divided into sections, each with its own construction camp.

Tracklaying between Nairobi and Mombasa is to begin before 2016, says Julius Li, CRBC's external relations and co-operation manager. The first phase will start from Mito Andei, working towards Mombasa, covering the Tsavo area. The second phase will run from Emali to Nairobi. Construction of bridges, culverts and drainage at most stations is almost complete, together with clearing part of the railway corridors.

Locomotives for the first phase have docked at the port in Mombasa. Kenya Railway Corporation hopes to have a transaction adviser from an experienced firm in place shortly, to help select a private management operator for the line.

MOROCCO

COURT RULES AGAINST SNCF IN MOROCCO

The French labour court has found Société Nationale des Chemins de fer Français (SNCF – the French national railway) guilty of discriminating against Moroccan rail workers. It was ordered to pay over €150 million in damages. The workers, referred to as Chibanis, were recruited in the 1960s and '70s as contract workers, which meant they did not have the same benefits as full employees. As a public company, the SNCF could technically only hire French people. Because the foreigners were useful, the company found a way around the rule, by hiring them as contract workers. These people, who sometimes worked 30 or 40 years, had flat careers with no promotions, very low wages and very bad pensions. The court ruling awarded an average of €200,000 per person.

ALSTOM LRVS FOR CASABLANCA LINE 2

Alstom supplied 74 Citadis LRVs for the 31km Casablanca Line 1, which opened in December 2012. Now Casa Transport has awarded Alstom a contract worth around €100 million to supply 50 Citadis low-floor LRVs for the second light rail line, 22.5km, in the city. This will link Ain Sebaa in the east with the main hospital in the central district of Hermitage, running via El Badr, Laayoune and Mers Sultan. Interchange will be effected with Line 1 at Abdelmoumen and Ibn Tachfine. Meanwhile Line 1 is to be extended 2km from its current southern terminus at Faculté to Laymoun and Lissasfa. The 32 metre vehicles will operate in pairs, carrying up to 606 passengers. They will be built at Alstom's La Rochelle plant in France, with delivery beginning in July 2017. The Moroccan government will fund 35% of the cost, the remaining 65% coming from the French government's Reserve for Emerging Countries (RPE).



Alstom Citadis tram in Casablanca. Photo: Wikipedia

MOZAMBIQUE

NEW ROLLING STOCK

At functions in Maputo and Beira on 12 October, Caminhos de ferro do Moçambique (CFM – the state railway & harbours) chairman Victor Gomes officially inaugurated 29 new passenger coaches manufactured in China. Fifteen are to be allocated to the Beira corridor, for use on the lines to Machipanda, on the Zimbabwe border, and on the Sena line to the Moatize coal basin in Tete province. The rest of the consignment will be used on the lines from Maputo to South Africa, Swaziland and Zimbabwe, including commuter trains between Maputo and Matola. According to Gomes, there are now 63 passenger carriages serving the southern routes. The new coaches feature improved safety systems.



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GE LOCOS FOR MOZAMBIQUE

General Electric (GE) of the USA, in partnership with Transnet Engineering, recently provided 16 newly built diesel locomotives to Caminhos de ferro do Moçambique (CFM – the state railway & harbours). Current expansion of railways in West and East Africa offers obvious opportunities for the supply of more locomotives assembled in South Africa, and GE sees good potential for further orders.

NAMIBIA

TRANSNAMIB TODAY

The Namibian rail network covers an operational route distance of 2,478km, with 210km of non-operational line, while construction work is under way to reconstruct the 139km link between Aus and Lüderitz. The last 60km of TransNamib's northern railway extension to Oshikango on the Angolan border was completed in the first quarter of 2012. This section – as well as the rest of the new line north of Tsumeb – was laid to 18.5 ton/axle loading standard, with 48kg/metre rails. The line contrasts sharply with much of the rest of the railway system – more than 50% – where light rails of only 30kg/metre, and years of inadequate maintenance have resulted in crippling speed restrictions, many as low as 15, 20, and 40km/h. Axle loadings on these lines is restricted to a carrying capacity of only 16.5 tons. With a market share estimated at about 10%, TransNamib currently carries approximately 1.5 million tons annually by rail. Massive investment in replacing the inferior sections of track is unavoidable if Namibia's railway is to perform satisfactorily.



Chinese-built TransNamib tankcar

NIGERIA

RAIL INVESTMENT TO STAVE OFF RECESSION

In September, economic indicators seemed to suggest that Nigeria might be heading for a recession. Acting in the belief that the answer – as far as anti-recession strategy is concerned – is to spend, not cut back, the government has plans to set up a \$25 billion fund with public and private funding to be spent on railway, electricity and agricultural infrastructure. Meanwhile ambitious standard gauge lines are being laid beside the existing Cape gauge routes and new systems are planned – notably that from Lagos eastwards through Port Harcourt to Calabar. An obvious shortcoming is the current dearth of locomotive power on both gauges.



Nigerian passenger train

CONTRACTS PROBED

A committee has been mandated by the Nigerian House of Representatives to probe the N18 billion contracts awarded for the rehabilitation of narrow gauge rail tracks, provision of new standard gauge tracks, construction of bridges and the provision of coaches, wagons and locomotives between 2010 and 2014.

This was a sequel to a motion by Solomon Ahwinawhi entitled *Need to investigate the ministry of transport and the Nigeria Railways Corporation, on the award of contracts for rehabilitation of railway tracks, maintenance of bridges and procurement/rehabilitation of coaches and locomotives from 2010-2014.*

Ahwinawhi criticised "The level of performance, with respect to the 463km Port Harcourt-Markurdi rail track rehabilitation of the eastern line with N19,963,752,330, out of which NRC has paid N4,017,054,841, while SURE-P paid N5,594,021,377 and only about 3km of ballast has been done with 400km left undone and the total money released so far is N9,611,076,218.

"The Abuja-Kaduna line had \$US841 million as the project cost, out of which the China EXIM Bank provided a loan of \$US500 million, with about 25% of the project completed, when the entire project was envisaged to have been completed in 2014."

The Lagos-Jebba track rehabilitation project, he said, was awarded at a contract sum of N12,293,390 with the payments made so far at N11,699,999,218, without any tangible work done. "The same comment applies to the section Jebba-Kano."

RWANDA

DAR ES SALAAM STD GAUGE SHORTLIST

On 17 November, the Rwanda Transport Development Agency (RTDA) announced the shortlist for the Dar es Salaam-Isaka-Keza/Kigali-Musongati (DIKMM) railway project.

The contract involves the financing, designing, building, operation and maintenance of a 1,661km railway standard gauge line, under a public private partnership, which will link Dar es Salaam in Tanzania with Kigali in Rwanda and Musongati in Burundi.

Procurement for the line is being led by the RTDA on behalf of the three countries. The shortlisted companies and consortia are:

- China Railway Group
- Sinohydro Corporation Ltd in partnership with China Railway Materials Company Ltd (CRM) and Beijing National Railway Research & Design Institute of Signal & Communication Group Company Ltd (CRSCD)
- China Communications Construction Company
- Yapi Merkezi İnşaat
- Il & FS Transportation and Frontline Development
- Grindrod Rail
- Kolin İnşaat Turizm Sanayi Ve Ticaret A Ş
- China Civil Engineering Construction Corporation
- AVENG Group in association with Arcus Gibb, Siemens, CTLE, DBSA, KfW, Deutsche Bank and Euler Hermes
- Transnet
- Mota-Engil Engenharia E Construcao Africa, S A
- NGE Contracting in partnership with TSO, Alstom and System



TAZARA BAIL-OUT

Freight volumes on the Tanzania-Zambia Railway (Tazara) have dropped alarmingly over the last 10 years, with less than 90,000 metric tonnes transported in the financial year 2014/2015, compared to about 630,000 metric tonnes recorded in the financial year 2004/2005 and the 1.27million tonnes (the line's peak performance) in 1977/1978.

Continues on page 22

TAZARA

NEW TAZARA LOCOS & ROLLING STOCK

The Tanzania-Zambia Railway Authority (Tazara) has received four new diesel-electric main-line locomotives and 18 new passenger coaches. The consignment, offloaded at the port of Dar es Salaam, is worth \$US22.4 million. The new locomotives will improve the daily availability of locomotives by 33% to an average of 16 locomotives. The new equipment was purchased in terms of the 15th Protocol of Economic and Technical Cooperation, a trilateral loan agreement signed by the governments of China, Tanzania and Zambia on 26 March 2012 in Lusaka. Funds released under the Protocols are interest-free loans to the Tanzanian and Zambian governments, with the specific aim of supporting Tazara.

Passenger operations have been characterised by poor service over the years, with delayed departures, frequent breakdowns along the journey, and late arrivals. It is hoped that the new rolling stock will result in a noticeable improvement.

The drop in performance over the years is attributed to many years of under-investment. Consequently, the Authority has suffered diminishing capacity due to deferred maintenance, aging locomotives, lack of spares and materials, reduction in the fleet of wagons and dilapidated infrastructure.

Permanent Secretary for Transport Dr Shaaban Mwinjaka and Ambassador Ombeni Sefuwe, chief secretary of Tanzania, addressed over 300 Tazara workers in Dar es Salaam on 17 October 2015. They announced that the government of Tanzania has promised to release TSh6 billion (US\$2.7 million) within two weeks to bail out the Tanzania-Zambia Railway Authority (Tazara). At the same time they confirmed that all Tazara employees are effectively on the civil service payroll, with effect from September 2015. The announcements followed demands by unionised employees of Tazara that they be addressed by Tanzanian President Dr Jakaya Mrisho Kikwete, following failure by the Authority to clear outstanding salary arrears, going back more than four months.

Ambassador Ombeni Sefuwe told the workers that the two governments attached great importance to Tazara and would never allow the company to collapse, emphasising its significant role in the economies of the two countries.



Tazara: Mbeya station. Photo: Egbert/Wikipedia

“Tazara is a symbol of true friendship and co-operation amongst the countries of China, Tanzania and Zambia. For that reason, we will never allow it to fold up,” the chief secretary said.

At a meeting in December 2014, the Tazara Council of Ministers, which comprises the ministers responsible for transport, finance

and industry in Tanzania and Zambia, noted and agreed that the performance of the Authority had fallen to record low levels due to various challenges, including liquidity and recapitalisation issues. The December Council meeting had further resolved that the situation called for immediate remedial measures to save the company from total collapse.



Tazara loco. Photo: D Brossard/Wikipedia,

TAZARA INSPECTED

On 9 October, Chinese Ambassador to Zambia Yang Youming accompanied retired Professor Yang Jiemian from the Shanghai Institute for International Studies on a tour of the Tanzania-Zambia Railway Authority (Tazara). Speaking at New Kapiri-Mposhi, the ambassador said Tazara is a viable venture that has an important role in the future development of Zambia and Tanzania. He observed that there was a bigger role for Tazara to play in future, not only in social economic development, but also in terms of the relationships amongst the states of China, Tanzania and Zambia as well as in the relationship between China and Africa as a

whole. The delegation took a ceremonial 20km test-ride from New Kapiri-Mposhi to Luansimba.

According to Ambassador Yang, the Chinese government is discussing ways to revive Tazara with the Tanzanian and Zambian governments, and how to make it operate profitably. He said he was optimistic that a lasting solution to the many operational challenges the railway firm was facing would soon be found.

Professor Yang Jiemian, who led a five-man team of experts from the Shanghai Institute for International Studies, and who is an expert in

international relations and global development, said the Chinese government attached great value to the symbolic importance of Tazara, which symbolises Chinese, Zambian and Tanzanian co-operation. Explaining that the team of international relations experts was visiting Kapiri-Mposhi to get a feel for the line and become acquainted with its operational challenges, Professor Yang said the Zambian and Tanzanian governments, should they wish to have trains with the same speed or faster than those in China, the Chinese people and government would be ready to do whatever the two nations ask them to do for Tazara.

UGANDA

TANGA-MUSOMA LINE

In terms of a 2011 agreement between Tanzania and Uganda, the existing 400km railway from the port of Tanga to Arusha was to be upgraded, and a new 480km extension built to Musoma on Lake Victoria. This was to form part of a new trade route, with goods moving beyond Musoma on lake ferries to Kampala. Estimated to cost \$US3.58 billion, the entire project included a new Mwambani port in Tanga (\$695.5m), expansion of harbour facilities at Musoma (\$72.6m) and a new Kampala port at Bukasa (\$320m).



The railway was expected to cost \$1.9 billion. According to deputy permanent secretary in the Tanzanian ministry of East African Community (EAC) co-operation Amantius Msole, the feasibility study and railway engineering designs would be complete by the end of October 2015.

In August 2013, Tanzania engaged Cowi consultants to prepare engineering designs for upgrading the existing railway from Tanga to Arusha, including a connection to the Kilimanjaro International Airport. Cowi's assignments comprised aerial mapping, geotechnical investigations, feasibility and environmental studies, preliminary design of alignment, bridges, rail systems and stations as well as tender documents.

In the same year, Tanzania contracted HP Gauff from Germany to conduct the feasibility study and preliminary design for the new Arusha-Musoma railway, including a connection to the soda ash-rich Engaruka basin, as well as the Minjingu phosphate deposit.

Tanga is claimed to be a little more than 1,200km from Kampala via the projected new route, compared with 1,300km from Mombasa. However, the cost of transshipping cargo from rail to ferry at Musoma appears likely to override any saving achieved because of the slightly shorter overall distance.

In addition, building of the new standard gauge railway from Mombasa to Kampala has begun since the Tanga-Musoma project was agreed. Its freight charges may be less than Tanga-Musoma and transit will certainly be quicker.

ZIMBABWE

CHAIRMAN LEAVES

Alvord Mabena, chairman of the National Railways of Zimbabwe (NRZ) board, appointed last year, has left the parastatal. He was a former general manager of NRZ.

AFRICAN GROWTH

AFRICAN GROWTH OUTPACING GLOBAL AVERAGE

The Institute of Chartered Accountants in England and Wales, in their Economic Insight: Africa Q3 2015 report, provide a snapshot of the region's economic performance focusing specifically on Kenya, Tanzania, Ethiopia, Nigeria, Ghana, Côte d'Ivoire, South Africa and Angola.

The total level of external financial inflows into Africa increased from \$US40.4bn in 2000 to \$192bn in 2013. This is largely attributed to China with investment going mainly into primary resource sectors and infrastructure.

Michael Armstrong, Regional Director, ICAEW Middle East, Africa and South Asia, is quoted saying: "China has approached African economies in a very different way to Europe, focusing less on official aid and engaging more aggressively through foreign direct investment and trade. This has been a game changer for the development industry, forcing European countries to rethink their strategy of connecting with the continent."

Much of the non-resource focused growth can be attributed to African infrastructure projects and investment in consumer-oriented industries including: rail projects in Uganda, Nigeria and Zimbabwe; and Ethiopia's textile, real estate, automobile and rail industries.

According to the report:

- Nigeria is expected to experience growth in the medium term helped by higher oil prices and the implementation of reforms.
- Annual GDP expansion of 8.5% is expected for Ghana by 2017.
- Côte d'Ivoire should remain on a high growth path into 2016.
- Growth in Angola is expected at 4%.

The pace of GDP expansion in South Africa is forecast to see a gradual pick-up over the next three years.

On 24 November the Southern African Railways Association (Sara) held its last board meeting for the year. One of the main topics discussed was the upcoming sixth Sara international conference and exhibition.

This event will be held on 18 and 19 May 2016 at Gallagher Convention Centre, Midrand, Johannesburg, South Africa and marks Sara's 20th anniversary.

The theme for the event is "Ports, rail and road collaboration for efficient supply chain logistics in Southern Africa"

Sara president and CEO - Swaziland Railway's Stephenson Z Ngubane - stated that this conference will be unlike any other as the issues raised can be taken onboard and implemented. Sara is looking to the industry to provide solutions.

"We promote integration and this conference allows networking amongst the stakeholders within the region," he said.

The specific objectives of the conference are:

- Raising awareness of stakeholders on the new initiatives by rail, aimed at improving railway services;
- Developing industry innovative solutions to address service demands for clients;
- Promoting integration of transport systems to ensure provision of integrated transport services;
- Networking among key stakeholders and creating opportunities for suppliers and other industry players;
- Creating awareness of rail business strategies addressing to key policy makers;
- Highlight investment opportunities in the railway industry and explore business opportunities for the private sector (Sharing information on railway projects with potential investors and financing);
- Strengthening the relationship between SADC governments and railways for their support on infrastructure expansion and maintenance.

Sara Rail

Conference & Exhibition 2016

"Ports, rail and road collaboration for efficient supply chain logistics in Southern Africa"



18 and 19 May 2016 | Gallagher Convention Centre, Midrand, Johannesburg, South Africa

Sub-themes:

- Complementing and integrating road and rail;
- Railway operations-drive for increase in operational efficiency;
- Customer perspective - rail and rail optimisation;
- Port infrastructure and services - providing and managing the interface;
- Policy developments on surface transport modes and port services - regional perspective;
- Infrastructure development projects to meet future demand
- Use of new technology in ports, railways and road - adaptation speed;
- Joint service planning and integration (ports, railways & road);
- Cargo security from origin to destination;
- Just-in-time (jit) service delivery.

According to Sara, the current challenges to the railways in the SADC region are by no means different from the rest of the continent.

These are:

- Inefficiency of railways;
- Age-related condition of infrastructure and equipment;
- Lack of funding for current and new infrastructure;
- Insufficient capacity to cater for growing demand;
- Insufficient maintenance of rail infrastructure;
- Vandalism and theft;
- Balancing investments between maintaining the current system while migrating to modern technologies;
- Skills and management capacity - lack of railway engineering/operational management learning academies;
- Lack of appropriate institutional structures to manage rail in the region.

This conference will provide a platform for the railways in the region to discuss and share experiences and address the challenges faced.

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Predictive Maintenance

- reducing costs and increasing uptime in the transport sector

by Martin Vergunst, business solutions executive at T-Systems South Africa



Martin Vergunst,
business solutions
executive at T-Systems
South Africa

FOREWARNED IS FOREARMED

For organisations within the transport sector, the use of intelligent predictive maintenance platforms - connected to a variety of both structured and unstructured data sources - can unleash some powerful business advantages. Case studies show that maintenance costs can be reduced by as much as 30%, productivity can rocket by 25%, and downtime due to outage can be lowered by up to 45%.

Predictive maintenance platforms rely on sensors that monitor the performance of a particular component or piece of equipment. For example, on a passenger train there may be sensors monitoring the speed of the carriage, the performance of the wheels, or the delivery of electricity via the overhead power supply. In the classical (reactive) scenario, this data is fed into a database, which is then surfaced via an analytics platform, and packaged into consumable reports - to produce meaningful actions. However, predictive maintenance solutions take this a step further. They combine the data with other information (such as weather patterns or traffic congestion patterns), and build a complete picture of when a component starts to under-perform, or to break-down, for example. This information can be used to create a strong indication of when a similar problem is likely to re-occur. As the age-old adage confirms: "Forewarned is forearmed".

In fact, we can describe maintenance approaches on a spectrum, showing five levels of maturity:

1. **Reactive:** waiting for something to break before it is fixed. This approach comes with the obvious drawback of high costs and a strong likelihood of downtime.
2. **Preventative:** routine check-ups and scheduled replacements (for example, a fleet operator may check all the vehicle engines in its fleet).
3. **Predictive/condition-based:** refining the preventative approach (for example, checking all the engines that are over two years old).
4. **Proactive:** as you gather historical data and gain intelligence, you can start predicting the circumstances under which equipment may fail.
5. **Reliability-driven:** this is a fully optimised state - the "holy grail" of predictive maintenance - where the processes are in-place to prevent the causes of equipment failure as far as possible, and therefore minimise the need for on-going maintenance.

Collecting the data is often the simple part. Where the real work begins is in building the analytics layer that deals with the so-called "four Vs" of data: Volume, Velocity, Variety, and Veracity (authenticity). Producing actionable insight requires the organisation to record the historical information - that under certain conditions (a certain gradient, or temperature, or loading factor, for example) a piece of equipment is liable to fail - and then using

it to alert the team that similar conditions are about to occur. This is a prime example of transforming data into knowledge.

Phrased more colloquially, progressing through the above-mentioned spectrum means moving from a state of understanding what happened, to why it happened, to knowing when it will happen again, to preventing it from happening at all. Therefore, in which ways will transport companies derive benefits from having the foresight to know when certain components, equipment or vehicles will under-perform? By preventing failures or breakdowns, uptime is increased, the risks of contractual penalties associated with downtime is reduced, customer satisfaction is improved, and brand reputation is enhanced. Because it is now more targeted and condition-based, the actual process of maintenance becomes less costly.

The good news is that it does not necessarily require a multi-year, hugely complex and costly exercise to get started. Predictive maintenance platforms delivered as a dynamic, virtual service can be introduced rapidly with minimal upfront costs. They also benefit from being highly scalable, centrally-managed, and continually enhanced - to capitalise on the latest advancements in data science.



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Spotlight SOUTH AFRICA

FAST TRAIN TO THE AIRPORT

According to an article published in 2007, a 3.5km, R450 million new rail extension to Cape Town's international airport was being prioritised, to be ready in time for the 2010 Fifa Soccer World Cup. A station was to be provided within upgrades to the airport terminal, then in progress. The trains were to provide a special non-stop service, using an existing line to reach the new extension.

Well, it didn't happen - which is probably just as well. That existing line runs through Langa and Bonteheuwel, a section prone to lengthy service delays due to vandalism and other problems, and an unrealistic candidate for non-stop running.

Proposed rail extension to Cape Town airport



PRASA DEPOT APPOINTMENTS

The Passenger Rail Agency of South Africa (Prasa) says it has appointed Grindrod Rail Consulting and Mota-Engil Construction to undertake upgrading of the rolling stock depot at Wolmerton, near Pretoria, where the suburban commuter trainsets built by Alstom in Brazil are to be stabled. Testing the trains is the responsibility of the Gibela consortium but using a test track provided by Prasa. Prasa says the test track at Wolmerton will be ready by February.

TRANSNET INTERIM RESULTS

Acting Transnet CEO Siyabonga Gama, presenting the group's interim results to September 2015, stressed that investments made have to be in line with market requirements. During the six months covered in the review, total revenue increased by 6.4% (to R32.2 billion). Profit fell 17.1% (to R1.78 billion), attributed to an increase of 19.7% (to R6.89 billion) in depreciation, derecognition and amortisation. Capital expenditure will not be cut, as foreseen in some rumours.



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TOOLS & MACHINES

EQUIPMENT

The Market Demand Strategy (MDS) remains at R380 billion, but part may be deferred. Since the MDS was launched in 2012, some R108.9 billion has been invested. Assuming 2016 as the low point, and a gradual recovery through 2017 and 2018, it might take ten years for commodity prices to recover to 2011-2012 levels, Gama says. During the interim period Transnet invested R16.1 billion. In the six months to 30 September 2015, export coal volumes were 3% lower (35.4 million tons), than in the corresponding preceding period. It is expected that volumes for the year will come in 2% less than the 76.3 million tons transported in 2014-2015. Iron-ore volumes in the interim period recovered by 7% (to 30 million tons) and are expected to increase 0.5% for the year (to nearly 60 million tons). Getting to the original target (83 million tons) however now seems unlikely until after 2020. The South African economy has been performing well below the 3.8% growth predicted earlier – achieving only 1.4% in 2014. It is unlikely to exceed 1.5% in 2015, according to Finance Minister Nhlanhla Nene, and no more than 1.7% in 2016.



A class 9E (50kV AC) electric banking behind an export iron ore train to Saldanha. Photo: Joyce van der Vyver.

RAIL PENSIONERS MAY SLEEP AT PARLIAMENT

Around 200 people vowed to start sleeping on the pavement outside parliament in Cape Town until they are paid pensions they claim are owing to them. The issue goes back more than twenty years, when new funds were created. The claimants say more than 15,000 people are affected. They threaten to take the matter to the Constitutional Court as they are tired of being told more time is needed to investigate. The last time they complained they say they were told two months was needed to probe the matter but they were not prepared to wait any longer.

MINISTER ON NATMAP

In 2010, when the Department of Transport (DoT) presented Parliament with an early version of Natmap - South Africa's National Transport Master Plan - the estimated bill was around R750 billion. It included ambitious schemes like high-speed trains from Johannesburg to Durban (and Polokwane). The objective of Natmap is to guide development of the country's transport infrastructure to 2050. The document was referred for review and recommendations to the Presidential Infrastructure Coordinating Commission (PICC) during 2014. The process of reviewing and updating Natmap started in January 2015. The scope of work includes an update of the plan's key data and information, its alignment with the National Development Plan, reviewing and updating transport issues of national importance and Natmap's implementation plan and stakeholder participation.

MISLEADING PENSIONER CLAIMS

Transnet Freight Rail (TFR) in a prepared statement has strongly denounced misleading statements issued by a group of disgruntled ex-employees who have vowed to start sleeping on the pavement outside parliament in Cape Town until they are paid money they claim is owing to them.

The issue, Transnet says, goes back more than twenty years, to 1988 when a group of East London workers were dismissed by the then South African Transport Services after an illegal strike.

The employees confirmed at the time that they were paid all their entitlements by South African Transport Services. The only outstanding issue was their pension contributions which are administered by Metropolitan Retirement Administrators who are independent of Transnet. The Administrators advised that they paid the employees their contributions but, only in respect of those who were members at the time.

"No monies are owed to these ex-employees by Transnet and the company will gladly defend this in court if challenged to finally put the matter to rest", says Sandile Simelane, speaking for TFR.



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PRASA IS BIGGEST

According to a full-page advertisement in the October issue of a prominent British railway magazine: "As the largest rail passenger operation in South Africa, Prasa operates a 1,000km railway from Cape Town to Durban".

Prasa is indeed the largest but saying so is like claiming Eskom as the biggest supplier of electricity. Incidentally, the last time Prasa operated Cape Town-Durban was two or three Christmases ago, since when the actual distance (2,001km) appears - from the advert - to have halved. Put it down to El Nino.

One of Prasa's larger-than-life Spanish locos. Photo: Andre Kritzinger.



GIBELA FEASIBILITY STUDY APPROVED

At an Infrastructure Development Cluster (ESEID) media briefing, transport minister Dipuo Peters revealed that a feasibility study into the construction of a R1 million rail equipment factory for the Gibela consortium at Dunnottar has been approved. The plant is to manufacture 580 trains for the Passenger Rail Agency of South Africa (Prasa) and is likely to create about 33,000 direct and indirect jobs. Of the total R51 billion order for 600 sets, 20 are being assembled in Brazil and of these, 13 are already in South Africa.



Artist's impression of new R1 million train factory to be built for the Gibela consortium at Dunnottar.

TRANSNET TO IMPOSE PENALTIES

Firms that supply goods to Transnet but fail to achieve local-content obligations are to be penalised, the parastatal has announced. Speaking at an Industrial Development Corporation (IDC) conference on 20 October, acting chief supply chain officer Edward Thomas - while conceding that internal auditing capacity does need to be enhanced - said Transnet has developed systems to assess supplier performance. Penalties are to be imposed following appropriate monitoring and evaluation.

Admitting at the IDC conference that enforcing compliance with local content stipulations was "a major challenge," trade and industry deputy director-general Garth Strachan said his department would like to raise the 60% target to 75%.

ACTING PRASA CEO KHENA REPORTS

Acting Passenger Rail Agency of South Africa (Prasa) CEO Nathi Khena conceded to parliament's transport portfolio committee early in October that the R550 million in irregular expenditure incurred during the 2014/15 financial year was "indeed alarming." Managers at the agency have not been holding each other accountable, he said. "There has been no consequence management when they have done wrong." Khena promised that this would change, with any irregular expenditure resulting in consequences for management. Prasa chairperson Popo Molefe said that the board had commissioned an independent investigation by Werksmans Attorneys, and that the auditor-general was probing all payments over R10 million in the last financial year. Prasa, which reported a R1 billion loss for the 2014/15 financial year, is to spend R172 billion over the next 10 years on rolling stock fleet renewal and signalling programmes.

GAUTRAIN USERS UP 8.1% DURING FESTIVAL

Throughout October - Transport Month in South Africa - key streets in Sandton were closed to ordinary traffic and commuters were encouraged to make use of public transport. This was the keynote feature of the ecomobility festival. Gautrain reported an 8.1% rise in patronage of its trains.

The most serious hiccup during the month was the collapse of a pedestrian bridge (still under construction) across the M3 freeway. During the following day, with the road totally closed to traffic, rides on Gautrain were free.

EOH BUYS RAIL TECH FIRM

EOH, a prominent technology services company, has acquired Mehleketo Resourcing, a leading South African rail signalling, communications engineering and systems integration firm. Providing rail automation and technology solutions, it designs and builds operational nerve centres for the rail industry. It holds several long-term project, maintenance and support contracts with rail operators in South Africa. With a current annual turnover of some R300 million, Mehleketo employs a staff of 350.

The industrial technology division of EOH - of which rail technology is part of - is a "major component" of its growth strategy, CEO Asher Bohbot says. The division's services are critical for the infrastructure development needed in South Africa and indeed in the rest of Africa, he explains, "including services and solutions in energy, water, connectivity and transport/rail."

WABTEC ACQUIRES TRACK IQ

Wabtec Corporation has announced its acquisition of lineside sensor manufacturer Track IQ. Installed at more than 150 locations in many countries including South Africa, Track IQ products use acoustic sensors to monitor the condition of bearings and wheels on passing rolling stock. The company is based in South Australia, with offices in the USA and Europe.

Wabtec CEO Raymond T Betler says he sees opportunities to integrate Track IQ sensors into his company's existing train control, signalling and electronics products.

PORTFOLIO COMMITTEE IN DURBAN

Parliament's Transport Portfolio Committee visited Durban on 13 October on an oversight visit to assess the public transport system. Group leader Mxolisi Kaunda said their aim is to provide a reliable, safe, efficient and affordable transport system. If the various transport modes could be integrated with shopping malls, he suggested, this would make the lives of commuters easier. He thought it important to have Prasa link rail lines with the development of malls in the province, to make life easier for commuters, particularly to do their shopping. "This will mean they can just ride a train to a station linked to a shopping mall. That would also create job opportunities," he said.

The group visited various stations around Durban, engaging with commuters who make daily use of the trains. It was learned that several Durban stations are to get a facelift. Isipingo is to be revamped in a project expected to take two years. Durban's main station could take between five and 10 years to complete. Parking and warehousing areas at the station have already been upgraded. It is planned to make the station more retail-focused with fewer Prasa offices in the building.

KwaMnyandu station in uMlazi was visited, to check on progress. The committee was briefed on plans to improve a tunnel linking the station with the KwaMnyandu shopping centre.



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VONDELING

David Zetler and his wife took an unorthodox route when driving from Cape Town to Johannesburg recently. In the vicinity of Willowmore, they came across what is left of Vondeling station, 336km from Port Elizabeth on the line to Oudtshoorn. Photo: Hilary Zetler.

DOT PAYS R24M TO SUSPENDED EMPLOYEES

The Department of Transport (DoT) paid just under R24 million over the last three financial years on full salaries to suspended employees in its divisions, but this figure does not include the Passenger Rail Agency of South Africa (Prasa), which is also one. The information was received in reply to a question raised in parliament.

An amount of R558,925.10 was paid out in respect of the Railway Safety Regulator.

"It is well known that Prasa is in disarray," Democratic Alliance spokesman Manny de Freitas says. "Public Protector Thuli Madonsela found that Prasa tender contracts to the value of R355 million were improperly awarded. The entity also improperly incurred over-expenditure of R523,792 767."

The figure [for payment to suspended employees at Prasa] is likely to be substantial, de Freitas argues and he is to ask the minister to reveal this.

COLLUSION ON GAUTRAIN PROJECT

In May 2009, the South African Competition Commission initiated a complaint against Geotechnical specialists Dura Soletanche-Bachy for certain alleged collusive arrangements with competitors in the market for piling, lateral support, grouting and geotechnical drilling investigative services. In terms of this arrangement, projects were routinely divided among the members of the cartel in accordance with a scorecard, which largely corresponded to their market share.

Dura has agreed to pay a fine of R988 589.08 for collusive tendering on 11 construction projects. This follows a settlement agreement with the Competition Commission on these contraventions of the Competition Act.

The penalty constituted about two percent of Dura's total South African turnover in its financial year to December 2014. The Competition Tribunal has confirmed the settlement agreement.

KZN EXPRESS ON HOLD

Parliament's Transport Portfolio Committee, which visited Durban on 13 October, travelled from Durban to KwaMnyandu station aboard one of the new business express trains, intended to run between Pietermaritzburg and Durban. This facility was proposed initially in 2009 for the use of business people travelling between the two cities. It was hoped it would ease congestion on the N3 freeway. Two trainsets accommodating 300 people each were specially upgraded and an attractive lounge provided at Pietermaritzburg but - six years later - the main project has yet to come into operation. A test run took five minutes under two hours - more than twice as long as driving on the freeway, resulting in some doubt about the likely success of the scheme. Press reports say it has cost R60 million to date. Metrorail's KZN regional spokesman Zama Nomnganga says platform problems in Pietermaritzburg are being fixed, but part of the platform at Thornwood has collapsed.

Dalton Ndongeni, a spokesman for non-governmental organisation, Public Transport Voice, comments: "Government should fix trains that ordinary people use rather than get trains for the rich."

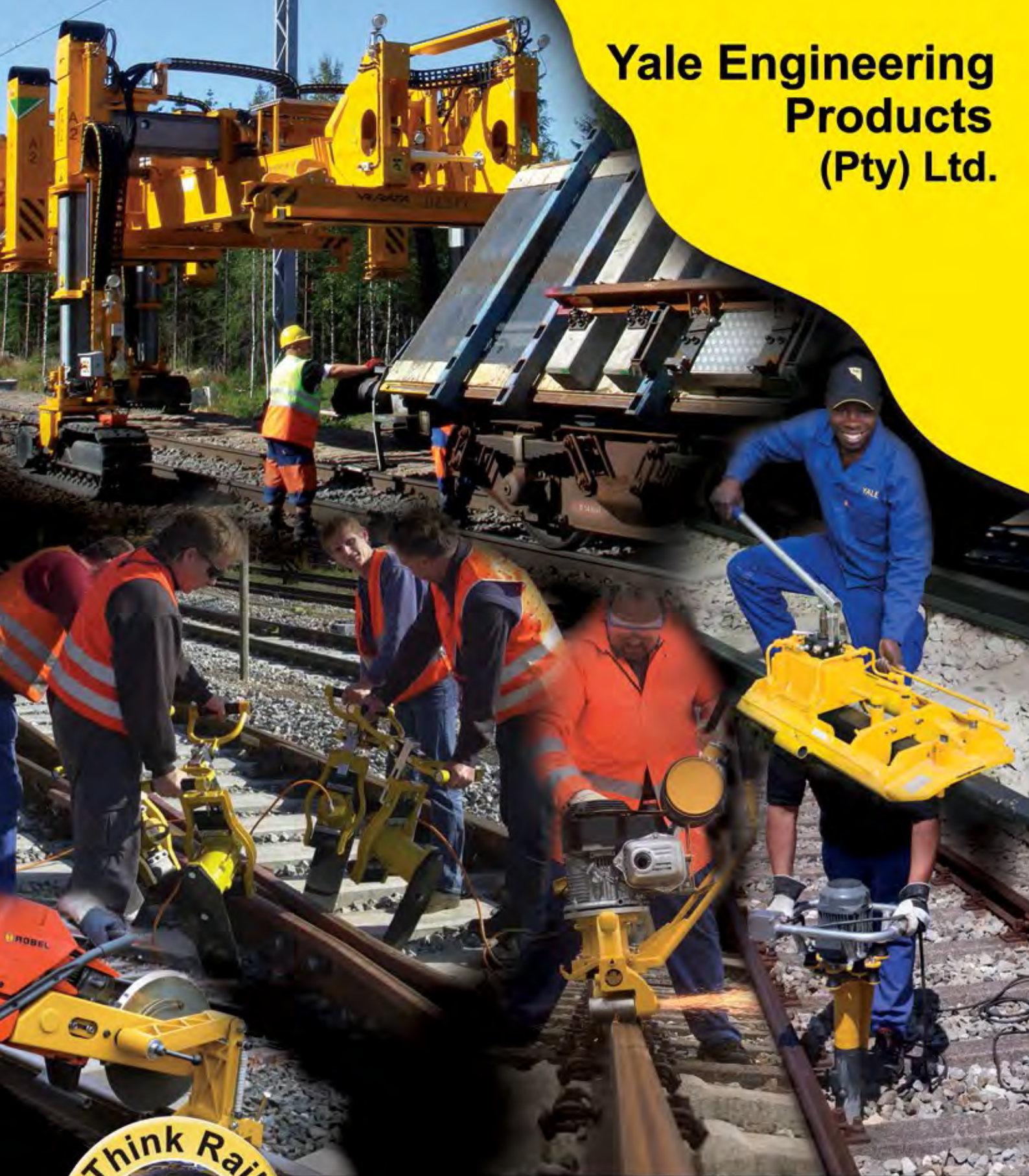
PORT SHEPSTONE

Weedkiller train at Port Shepstone.



Disused narrow-gauge tracks in foreground - and the overhead wires are gone. (Photo: Peter Bagshawe).

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GE in Africa



Thomas Konditi -
president and CEO of GE
Transportation Africa,
and GE South Africa

According to president and CEO of GE Transportation Africa - and GE South Africa - Thomas Konditi, a key driver for GE's activities on the continent is the belief in a rail renaissance.

"Looking across the continent, you can see there is a significant level of infrastructure development - whether it's new development, upgrades or the refurbishment of existing infrastructure -as well as strong government interest in using rail. This interest and activity seem to be the highest that I have seen or heard of in the last decade," he explained in a recent interview with *Railways Africa*.

"If you look at some of the numbers," he says, "you have \$US45 billion worth of projects that the Chinese are investing in, in sub-Saharan Africa. Even in spite of the commodity pressures there are projects in places like Mozambique, Angola and the DRC. It is a vibrant environment."

Though the company is primarily known for manufacturing locomotives, GE believes that it must be more than an equipment provider. Konditi outlines five focus areas that GE is pursuing to expand and strengthen its offering across the continent.

FIVE FOCUS AREAS

Equipment

Emissions standards, Konditi says, are becoming more important across the continent. GE is continuously working to improve the environmental performance of its equipment.

Services

“By the end of 2017, we will have approximately 600 brand new locomotives that will require good levels of service to maintain them for the next 30 years,” Konditi says. Currently, GE is training and placing service technicians in Mozambique, Angola, Nigeria, Kenya and South Africa, among others.

Financing

“We are working to identify creative ways to help finance the sector,” Konditi explains. Currently the company has approximately 25 professionals who focus entirely on financing.

“At the end of the day, the rail sector should be able to pay for itself. If you look at the offtake from freight haulage and at the competition in transport, financing the sector should be a really good investment,” he adds.

Local economic impact

GE has spent significant time and energy in supporting local economic impact across the African region. Taking South Africa as an example, GE has made advancements in this area where it's exceeding local content requirements.

“We have the capability to make a significant impact on local economies. Whether it is contributing to skills development, using local suppliers, increasing our local content commitments, or otherwise, we are very focused on contributing to the communities in which we operate.”

Advisory

“Advisory is a new focus for us,” says Konditi. “We are working with our customers to ask: What can railroads do to boost their operational efficiency? How can they improve their commercial capability? How can the industry better train and develop its staff? How can young people be attracted to the sector?”

FOCUS ON AFRICA

Currently, GE is working with operators in approximately 10 countries across the continent. These include: Kenya Railways, Rift Valley Railways (RVR) in East Africa, Tazara in Tanzania, Caminhos de Ferro do Moçambique (CFM), Vale in Mozambique, Transnet in South Africa, TransNamib in Namibia, Nigerian Railways Corporation (NRC) in Nigeria, Camrail in Cameroon and the Angolan National Railway Institute (ANRI), which oversees three operators – Benguela Railway, Luanda Railway and Moçâmedes Railway.

When looking at the deals and how they are being structured, Konditi refers to GE's focus on financing and investment. However, he adds, they are seeing an expansion into equipment acquisition that involves leasing.

“We are getting a fair amount of interest in the supply of locomotives, combined with full

service. This means the operator doesn't have to think about building a service capability and has the flexibility of a lease over maybe seven, ten or 12 years. Operators have the flexibility of using assets for a shorter period and not having to invest for the long term.”

He notes that GE is seeing some interest in major funds that wish to back infrastructure development on the equipment side. These are funds that are focused on Africa. “Everyone focuses on power,” he explained, “even though the rail sector is an investable area. So we are seeing some new interest in equity investing.”

“Although this mostly refers to rolling stock, GE's recent acquisition from Alstom will see GE incorporating Alstom's former steam, hydro and geothermal businesses. On the signalling side, Alstom will incorporate GE's signalling business, combining with its own into a single entity.”



PARTNERSHIP WITH TRANSNET

In 2014, South Africa's state-owned freight transport and logistics company, Transnet, announced that GE had won a contract to produce 233 locomotives for the South African rail freight network. That was in addition to the 143 locomotives that Transnet had ordered from GE since 2009. The contract formed a part of TFR's R50 billion contract, which was awarded to General Electric South Africa Technologies (GESAT), Bombardier Transportation South Africa, China North Rail Rolling Stock South Africa and China South Rail Zhuzhou Electric Locomotive.

GE is to deliver 233 Evolution series GE ES40ACi diesel-electric locomotives, the most technologically advanced of its kind in the world. Powered by GE Transportation's 12-cylinder diesel engine, the Evolution Series engine produces the same 4,400hp as its 16-cylinder predecessor — with less fuel.



This 45-degree, 12-cylinder, 4-stroke, turbocharged engine provides efficiency, fewer emissions and extended overhaul intervals. The engine uses enhanced cooling and higher-strength materials that dramatically improve reliability and allow for future increases in power and efficiency.

The Evolution series locomotive meets the most stringent emissions standards, including US EPA Tier 3 and EU IIIa. The Evolution Series Engine is also offered in a 16-cylinder configuration that delivers 6,000hp.

The programme is now at an advanced stage as the final tests are being performed on the first two locomotives that were handed over towards the end of October. According to rumour, GE is at least six months - if not more - ahead of the pack as far as delivery is concerned.

In line with its focus on local economy, many of GE's suppliers are local suppliers from South Africa. "We have had some bumps with different people," says Konditi, adding that it is "more of an education process than an issue. We are going to have 26 suppliers that are fully servicing the facility. By the end of this year, we will be on target, if not a little ahead."

Following TFR's first order of 100 GE class 43-000 type C30ACi diesel-electric locomotives six years ago, GE's local-content commitments have risen from 30% to over 55%. The company has a team of professionals committed to this area, whose sole task is to vet the suppliers and deal with their supply logistics.



"We are getting a fair amount of interest in the supply of locomotives combined with full service. This means the operator doesn't have to think about building a service capability and has the flexibility of a lease over maybe seven, ten or 12 years. Operators have the flexibility of using assets for a shorter period and not having to invest for the long term."



Class 44 003 - Koedoespoort Photo: Craig Dean

GE is to deliver 233 Evolution Series GE ES40ACi diesel electric locomotives, the most technologically advanced locomotive of its kind in the world.



Class 43 - Koedoespoort Photo: Craig Dean

Additionally, GE has established a supplier development vehicle (SDV), which invests in suppliers, enabling them to perform at the level required by GE, and resulting in a strengthened supply chain. Konditi explains "From a localisation standpoint, it is more than just 'We are buying local'; it is 'We are actually building local capacity'. We are putting our money where our mouth is."

To date, GE's actual localisation percentage is touching 55% which is in line with expectations. Apart from the control system and the engine, which are GE technology and proprietary technology, the bulk of the order - including the platforms, the traction motors, a large portion of the welding, as well as the bogies and frames - are all made in South Africa.

Although GE has, at this stage, established all the suppliers for this project, the company is always interested in alternative providers because of volume constraints.

Since its inception, the GE-Transnet partnership been structured in a way that allows GE to use Transnet's

facilities to undertake assembly and manufacturing. Over the years, this partnership has matured.

"Whereas initially it was more of a contract-based discussion," Konditi explains, "today it is going down the path of: How can we do things strategically across the region?"

"And then from a leadership standpoint," he adds, "I think we are very much in sync through ensuring that we operate as equal partners."

Looking broadly at the opportunities this partnership has created, GE believes there are two significant areas. The first, Konditi notes, is the inherent difficulties of making a public/private partnership successful. But having had the experience with Transnet Engineering and the government in South Africa, it has shown that it is possible to make it work, and for people to assume and execute the right responsibilities.

The second is the African Union which, as one of its overall visions or goals, selected South Africa as a centre of excellence for rail manufacturing infrastructure. "As

such, through our partnership with Transnet, GE is well positioned to assist in the development of the entire region. It is a relationship that we can point to with concrete results.

Furthermore, it provides the continent with a base that has the know-how, the technical expertise, the experience, and some of the financial backing to be a good provider for otherwise external equipment."

GE believes that if you want to become a world-class player, you need to have global competitiveness.

"That is at the quality level, it is at the cost level, and it is at the reliability of production level.



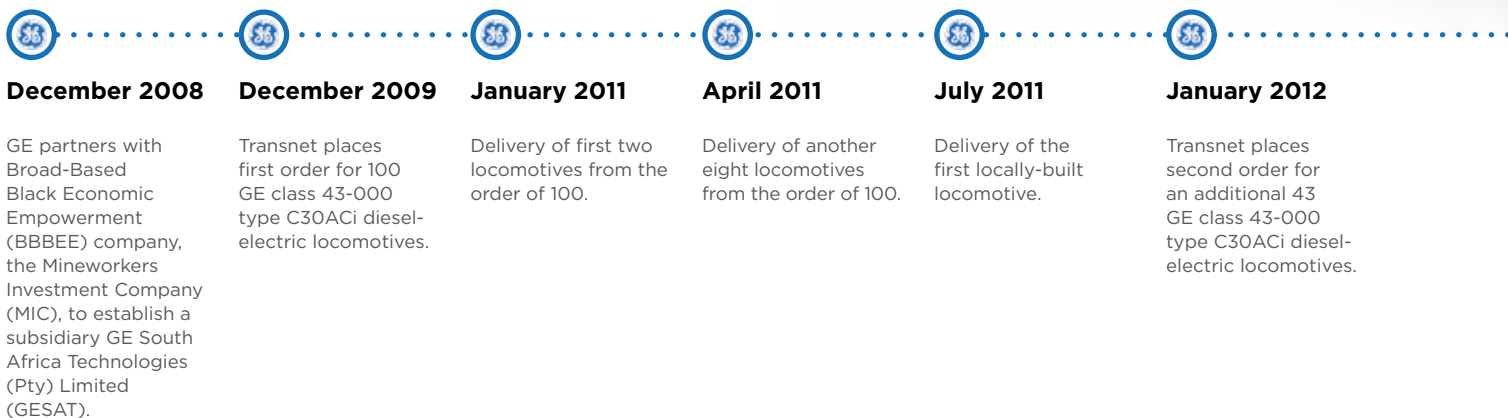
GE imagination at work

GESAT MILESTONES

In 2013, GE signed an export alliance agreement with Transnet to jointly assemble, manufacture and market locomotives locally for export to the rest of Africa.

The locomotives have over 35% local content, with the balance coming from the USA. To date, this partnership has delivered 10 locomotives to Caminhos de Ferro do Moçambique (CFM) and leased 16 locomotives to Thelo Rolling Stock for use by Vale Mozambique Limitada (Vale).

GE and Transnet have had a successful partnership over the past seven years as outlined below, and the export alliance agreement is another way that the partnership between the two has diversified and grown.



“Looking across the globe at the quality and the longevity of GE equipment, some of which has been in operation for 30-40 years, you don’t get there without having a really strong focus on both the technology and the quality of the processes.”

And according to Konditi, what GE brings to the table is that they do this in 400 facilities around the world. “We produce high quality, we produce on time, and we are very cost-competitive.” Additionally, this partnership gives Transnet the capability to deliver on its market-demand strategy.

Looking at the other players in the region, there is a vast difference in the level of quality and reliability. At this stage, our continent cannot afford to travel down a path of sourcing cheaper, low-quality products that will only last a few years.

“The Transnet-GE partnership means that we are giving the continent some of the best products on offer.” Konditi concludes.



Photo: Craig Dean



June 2012

- GE delivers 60% of the initial 100 locomotives contract ahead of schedule.
- As part of this contract, GE has delivered value-add to the customer as follows:
- 150,000 hours of skills development to Transnet workers
- 35% local content on the 90 locally assembled locomotives.
- R1.7 billion (\$170 million) preferential procurement spend as part of its competitive supplier development programme (CSDP).



January 2013

GE and Transnet sign an export alliance agreement to assemble locomotives locally in South Africa and to export to the rest of Africa.



November 2013

GE delivers six GE C30ACi locomotives to mining company Kumba Iron Ore.



December 2013

GE and Transnet’s export alliance agreement delivers its first order of 10 GE AC30Ci locomotives to Caminhos de Ferro do Moçambique (CFM), the Mozambican state railways.



March 2014

Transnet places its third order for the supply of Evolution series GE ES40ACi locomotives.



Photo: Col Andre Kritzingner

TFR CLASS 44 DIESEL-ELECTRIC

During 2015, Transnet Engineering at Koedoespoort in Pretoria took delivery of the first six of 233 class 44 General Electric type ES40ACi diesel-electric locomotives. These were built in the United States of America by General Electric in Erie, Pennsylvania in April and July 2015. In October 2015 the first of the 227 locally-built locomotives was nearing completion at Koedoespoort, while the first two of the six imported locomotives were undergoing testing on the line between Pyramid South and Warmbaths.

The class 44-000 GE type ES40ACi diesel-electric locomotive was designed by GE Rail, a division of General Electric. While the forerunner class 43-000 was, to a large extent, designed by GE for Cape gauge and bought "off the shelf", the class 44-000 was designed and built to stringent specifications prescribed by Transnet Freight Rail (TFR).

The first six of altogether 233 locomotives were built by GE in Erie, Pennsylvania in April (44-002 and 44-003) and July 2015 (44-001 and 44-004 to 44-006). They were all delivered by September 2015. The rest are being built by Transnet Engineering at its Koedoespoort shops and will be numbered in the range from 44-007 to 44-233.



Origin	
Power type	Diesel-electric
Designer	General Electric
Builder	General Electric Transnet Engineering
Serial number	GE built: 63325-63330/2015
Model	GE ES40ACi
Build date	2015 -
Total produced	233
Specifications	
AAR wheel arr.	C-C
UIC classification	CoCo
Gauge	1,067 mm Cape gauge
Wheel diameter	1,040 mm
Locomotive weight	291,010 lb (129.9 long tons; 145.5 short tons)
Fuel type	Fuel oil
Engine type	Diesel engine
Aspiration	Electronic fuel- injection system
Traction motors	Six 445 kW (597 hp) GE 3-phase AC induction
Performance Figures	
Power output	4,200 hp (3,100 kW)
Locomotive brake	Air & Dynamic braking
Train brakes	Air & Vacuum
Safety systems	Loco-cam
Career	
Operator	Transnet Freight Rail
Class	Class 44-000
Number in class	233
Number(s)	44-001 to 44-233
Delivered	2015-
First run	2015



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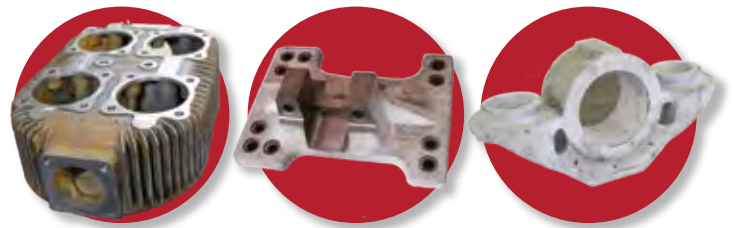


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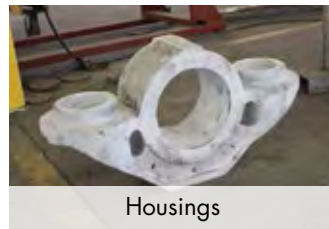
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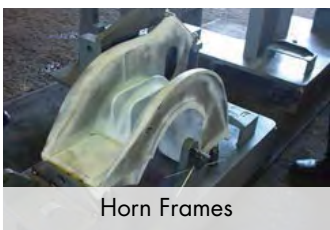
Cannon Boxes



Housings



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Front Stop



Canon Boxes



Axle Boxes



THE RAIL INDUSTRY WORLDWIDE

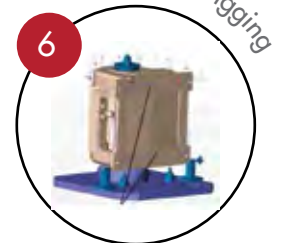
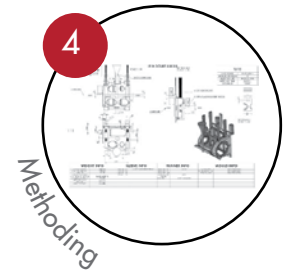
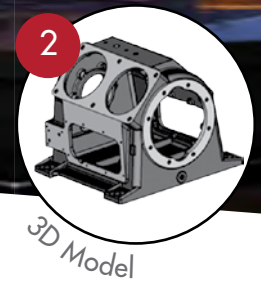
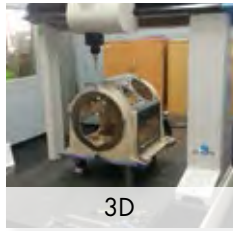
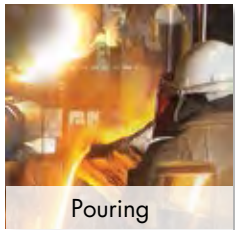
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Approximate route of heavy-haul railway from the Waterberg.



Mmamabula Coal

Transnet Freight Rail (TFR) recently completed its pre-feasibility study on the heavy-haul line that is to provide a new route via Swaziland for general freight - and coal - traffic to Richards Bay as well as Maputo in Mozambique.

The proposed new route would enable Botswana, which has massive untapped coal deposits at Mmamabula near Mahalapye, to export coal through the South African port of Richards Bay.

However, moving Botswana's coal to the sea is also the primary objective of the planned Trans-Kalahari Railway

(TKR). This is a cross-border infrastructure project intended to open up trade between Namibia, Botswana, the Democratic Republic of Congo, Zambia and Zimbabwe.

The projected TKR line is to run westwards from Botswana's Mmamabula coalfields to the Atlantic at Walvis Bay in Namibia. The TFR plan is to link Mmamabula via an eastward connection to its existing railhead at Lephalale in Limpopo. It will necessitate lengthy bridging - as much as three to four kilometres - across the Limpopo River floodplain. This construction would form the western extremity

of a new 560km heavy-haul railway by way of South Africa's Waterberg coalfield to Lothair near Ermelo. Here it would join the planned 146km new Swazi link line.

In a recent interview with *The Patriot* on Sunday, Botswana Railways director of business development Stephen Makuke said "although they too have vested interest in transporting coal exports from all points in the country where it is available, the new corridor that Transnet is proposing is not part of their plan."

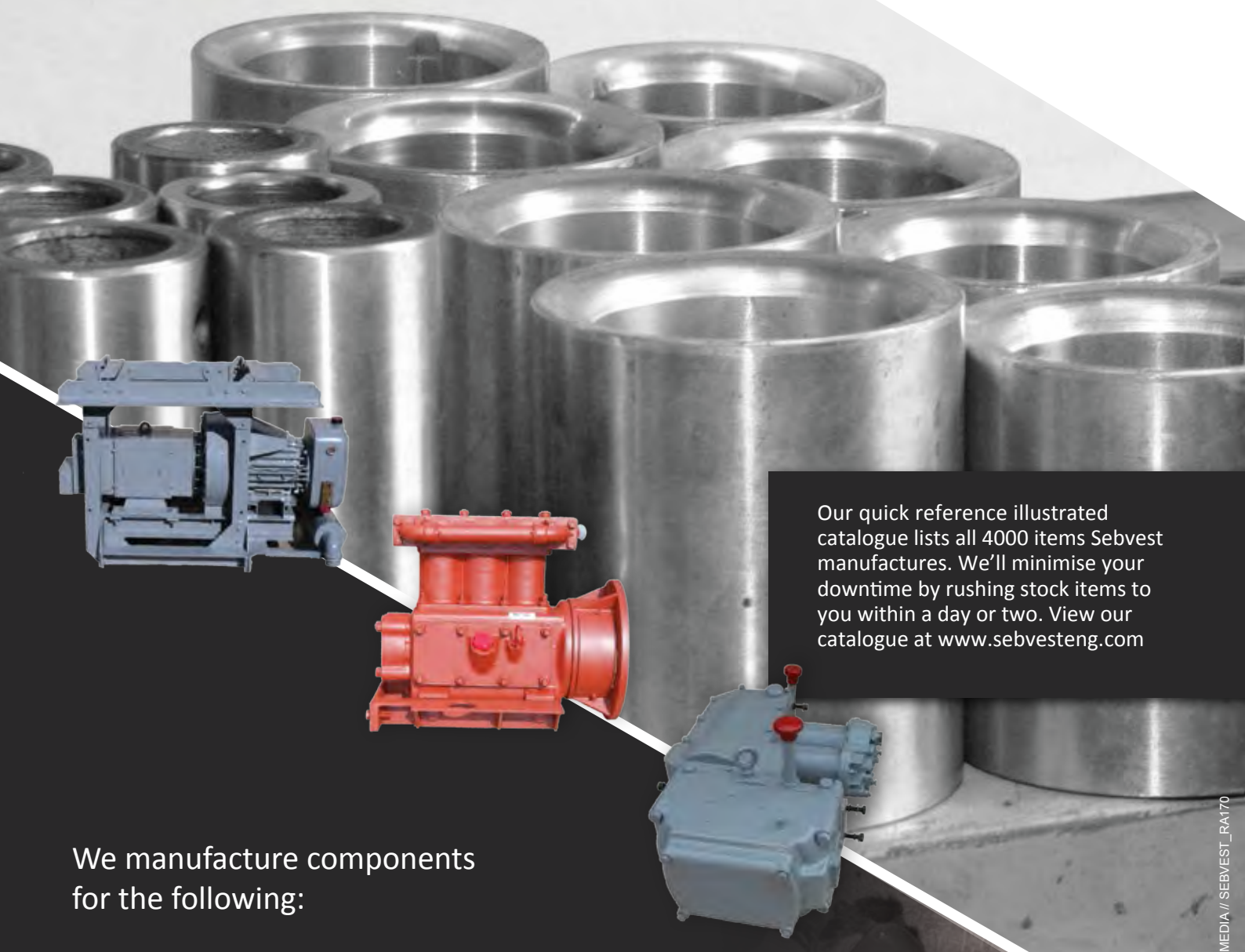
Botswana is concentrating on the development of

the TKR railway which has been fast-tracked by the presidents of both Botswana and Namibia.

The country has an estimated coal resource of 12 billion tonnes. According to Transnet, their link could transport an estimated 80 million tonnes of coal per annum. Capacity of the TKR is estimated at 65 million tonnes.

Makuke says they are handling the issue with open minds and are looking at the bigger picture. The Transnet line might serve Botswana better.

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BOOYCO ENGINEERING SECURES KEY CLASS 23E CONTRACT



Booyco Engineering has extensive expertise, experience and a strong technical team.

The award of a contract to supply HVAC systems for the 240 Bombardier TRAXX Africa, Transnet Freight Rail (TFR) class 23E locomotives being built by Bombardier Transportation is testimony to Booyco Engineering's international reputation for specialised engineering HVAC solutions.

The HVAC systems are evolved from those previously engineered for the class 15E and 19E locomotives. They have an established track record for reliable performance under harsh operating conditions in South Africa, making them suitable for the most demanding environments worldwide.

"It is significant," Booyco Engineering CEO Jeremy Pougnet says. "that Booyco Engineering is dealing with sophisticated international players whose standards and specifications are at a very high level. This contract underlines our ability to perform at this level and firmly positions us to participate in the international market on an ongoing basis."

Booyco Engineering's successful record is underpinned by verifiable data from the in-field operation of the HVAC systems, which shows that MTBF (mean time between failures) is exceeding expectations.

The new HVAC systems incorporate a number of innovations which include an integrated fresh air control that allows the fresh air inlet to be temporarily closed when the locomotive travels through areas where the ingress of outside air is undesirable. In addition, the maximum ambient temperature specification was raised and the condenser heat rejection capacity was increased accordingly. The 8.3kW cooling system is rated for an ambient temperature of 50°C, with a 4.5kW heating system. In addition to being designed to achieve low noise levels, the Booyco Engineering units are extremely robust, affording optimal reliability and availability.

In addition to the HVAC systems for the locomotives, Booyco Engineering secured the order for the 480 cooling towers which provide cooling for the transformer and converters on the locomotives. "It is our ability to understand heat transfer, air dynamics, fluid flows, pressure drops, structural design that positioned us to secure this additional order. Added to that, we have a solid understanding of the harsh operating conditions for rolling stock, which include shock and vibration," Pougnet points out.

"The order includes two cooling towers per locomotive application and the units have successfully passed all qualifications tests to date, including thermal testing in Europe. Final acceptance will be based on the vehicle test on the locomotive," Pougnet says.

"We have leveraged our extensive expertise, experience and capabilities and increased our capacity through upfront resourcing and investment to ensure that we are in a position to deliver product expeditiously. Our responsiveness, competence and technical engineering support have been duly noted by the client," Pougnet adds.

The new systems are scheduled for serial production in the fourth quarter of 2015, with the final units being delivered at the end of the first quarter of 2018.

VR LASER: FIRST IN AFRICA

South African steel processing company VR Laser Services has become the first in Africa to receive international certification, placing it in the forefront of the continent's rail infrastructure programme.

VR Laser manufactures steel products for a variety of end-users in the defence, mining, rail and transport sectors. Now, having just received its EN15085 certification, it is able to construct, manufacture and test welded railway locomotives as well as their components to international standards.

The company received its EN15085 certification from German audit firm DVS-ZERT. The certification conforms to stringent global standards with local authorities, the Southern African Institute of Welding (SAIW), having had to engage with the Germans to ensure rigorous international testing standards were applied.

VR Laser CEO Pieter van der Merwe says the issuing of EN15085 signifies a major boost, with South Africa in the midst of a massive rail infrastructure programme – at the

same time making the company globally competitive.

"The certification is significant in that it allows VR Laser to fabricate components for the railway industry to European standards - standards utilised not only by European designers but also, significantly, by the Chinese. Within Europe it is a legal requirement to manufacture to this code. This certification will allow VR Laser to actively pursue fabrication work for the railway industry, in particular for the Transnet 1,064 loco project."

FIRST HYBRID RAIL VEHICLES IN CHINA

Voith is making history with its RailPack 400DE. This drive system represents the first hybrid vehicles in and for China. The three-part vehicles are driven with two RailPacks 400DE, both with a 375kW diesel engine and a 345kW generator. The first three RailPacks have already been delivered to the customer Changchun Railway Vehicles Company Ltd (CRC). They underwent a range of comprehensive tests at the company's own test ring in Changchun and at Beijing Jiaotong University. Next year the rail vehicle is to be tested and approved by the China Railway Corporation, the national railway operator of China.

The Chinese vehicle manufacturer has planned 30 of these hybrid vehicles: a first for China. They are to be used on routes in the city suburbs that have not yet, or have only partially been electrified. Outside these areas, daily service runs smoothly with the Voith



The RailPack 400DE - for the first hybrid rail vehicles in China.

RailPack 400DE, while inside towns and cities the operator can run the vehicles with electrical drive, with zero emissions. The hybrid vehicles reach top speeds of up to 120km/h with diesel-electric drive. The RailPacks 400DE also feature a quick switching system from electric to diesel-electric.

The Voith drive system is designed to withstand extreme climate demands: it can handle temperatures down to minus 40°C.

The cooperation between CRC and Voith in this pioneering rail vehicle project is based on Voith's readiness to use existing, tried and tested system technology to develop customer-specific solutions. The Chinese partner regarded the diesel-hydraulic and diesel-mechanical RailPacks that have already been put to the test thousands of times with their reliable components as a convincing argument for the RailPack 400DE.

Voith Railpacks for railcars

Voith RailPacks are drive systems for use in single-segment and multi-segment diesel railcars for commuter, regional, national and intercity service. They can be supplied in diesel-mechanical, diesel-hydraulic and diesel-electric models. They are available with engine performance varying between 294kW and 735kW.



Before delivery, the RailPack 400DE was extensively tested.

VR Laser's certification means that Transnet and the Passenger Rail Agency of SA (Prasa) are now able to use a local manufacturer - armed with the necessary skills and qualifications - instead of importing railway parts and components.

"It is a boost for local manufacturing as we are able to offer a world-class alternative. VR Laser is the only EN15085 - CL2 certified company that can now legally supply various fabricated components for both Transnet and Prasa projects. (A CL2 company refers to one able to provide higher grade testing and stress of components.)"

CEO for certification at the SAIW Herman Potgieter says VR Laser's EN15085 certification is "a major achievement that cannot be underestimated."

"To acquire it means that it cannot be certified by local authorities, like ourselves, so we had to approach an international audit body to ensure the company subscribes to globally accepted practices and norms."

He confirms VR Laser is the only firm of its size with the necessary skills set and manufacturing expertise to acquire EN15085 in the

country. "Now our clients no longer need to go overseas to obtain quality fabricated components and parts. This implies savings in the long run as there will be no import costs and currency exchange issues."

Van der Merwe says the company underwent a rigorous certification process since March, necessitating staff obtaining international welding qualifications.

"The process required VR Laser to carry out a complete audit of all its procedures and practices

continues on page 50

- at the same time introducing many new ones. The effort and the costs involved in acquiring the certification were significant. It required training at outside bodies and certain employees obtaining various European qualifications. Without the appropriate employees it is not possible to achieve certification."

The certification, he explains, now enables VR Laser to provide an alternative to local authorities while enabling the company to embark

on a long-term international growth strategy, particularly in Africa.

"Manufacturing and localisation are key aspects of government's National Development Plan (NDP). Its infrastructure programme is aligned with the upliftment and growth of the local manufacturing sector. Thus for a company like ours to be able to compete with international competitors falls in line with the intentions of the NDP. Working with international clients, we came to realise that Africa has

the skills and know-how to compete with any country in the world. The secret however is to work hard and to have faith in local talent, in order to unlock the true African manufacturing potential."

He adds: "EN15085 is a standard requirement shown on all the European and Chinese OEM drawings. Thus we are well positioned to supply components for any project in the world that utilises the EN15085 standard on their drawings."

SKF INSIGHT



SKF has launched SKF Insight™, described as a ground-breaking innovation in intelligent wireless technologies that are integrated into SKF bearings. SKF developments in various smart

technologies now enable bearings to communicate their operating conditions continuously, with internally powered sensors and data acquisition electronics.

Condition-monitoring for bearings

"These innovations are set to revolutionise condition-monitoring for bearings, especially in critical machinery and technically challenging applications. SKF Insight technology will make condition monitoring more widely available, especially in applications where it was previously impossible or impractical," says Tom Johnstone, SKF president and CEO. "With our integrated diagnostic technology, our customers can get even better control over the life cycle of their machinery, leading to lower total costs with higher reliability and machinery uptime."

SKF senior vice president, group technology development Alan Begg adds: "Three years ago we had a vision to create an integrated, self-powered sensor package that could wirelessly communicate the condition of a bearing at any time - making a smart bearing capable of sending a message when something happens to it. Following extensive R&D work, including miniaturisation, solving power generation challenges and developing unique packaging of sensors and electronics, the introduction of SKF Insight technology makes this a reality. Making the bearing the brain, as well as the heart of rotating machinery has long been a dream of the engineering community.

Monitoring axle bearings wirelessly

SKF's intelligent bearing technology is being deployed on a railway vehicle in a new project to monitor axle bearings wirelessly. In cooperation with Statens Järnvägar (SJ - Swedish national railways), SKF recently started to run SKF Insight intelligent bearing technology on a railway vehicle. This pilot project demonstrated several technical and commercial

advantages of retrofitting SKF Insight to the wheelset axle-box assemblies used in rail passenger vehicles.

These advantages include the ability to improve the in-service availability of passenger rail vehicles, while reducing maintenance costs gradually and safely extending wheel set bearing maintenance intervals. SKF Insight is a new generation of bearing technology that integrates an intelligent, self-powered sensor and wireless device within a conventional bearing envelope. In the new rail system, this is combined with a node and gateway wireless infrastructure, enabling data from each wheel set to be gathered and transmitted in real time to a remote server for analysis. The system can easily be retrofitted to existing wheel sets without the need for modification. This enables railway engineers to move safely from a reactive or scheduled maintenance approach - where bearings are changed at regular intervals regardless of condition - to a predictive maintenance regime, where bearings are only changed when they have reached a defined level of wear. Other advantages of SKF Insight include the ability to reduce in-service incidents and the costs associated with false hot-box detection.

Pro-actively averting damage

Prior to SKF Insight, condition-monitoring techniques could only monitor damage after it had occurred. Now, by sensing directly on the bearing, SKF is able to monitor the damage from the first microscopic effect as it is happening, and with this information, customers can take remedial action to reduce the reason for damage in the bearing - adding lubricant, mitigating transient overloads, etc.

In addition, by monitoring the load directly on the bearing, SKF Insight makes it possible to measure the load the bearing actually experiences rather than that for which it was designed. This valuable information can be routed back into the design phase to improve both the system and bearing design.

With SKF Insight™ technology integrated into bearings, it is simpler and more convenient for customers to enter into condition-monitoring activities. Better operational knowledge, better maintenance planning, optimised manpower and spare part management all lead to lower cost of operations.



First Alstom carbody for Riyadh Metro

RIYADH METRO TRAINS IN PRODUCTION

Alstom has started production on trainsets for the Riyadh Metro in Saudi Arabia at its Katowice plant in Poland. As part of the contract awarded in 2013 by the Arriyadh Development Authority (ADA) to the Fast consortium - which includes Alstom - for the design and construction of lines 4, 5 and 6 of the Riyadh Metro network, the Katowice plant will manufacture all 69 Metropolis trainsets. The first three will be delivered to ADA in 2017.

The Katowice plant, which employs about 1,000, is one of Alstom's largest train manufacturing sites in the world. Every step in production, including the final static and dynamic tests, is carried out here.

A full-size mock-up of the Riyadh Metropolis trainset is to be unveiled to the city's inhabitants in the near future. It composes two cars per set and is 36 metres long. Each train features three classes: first class, family and single. The trains are driverless and 100% motorised, to cope with gradients up to 6%.

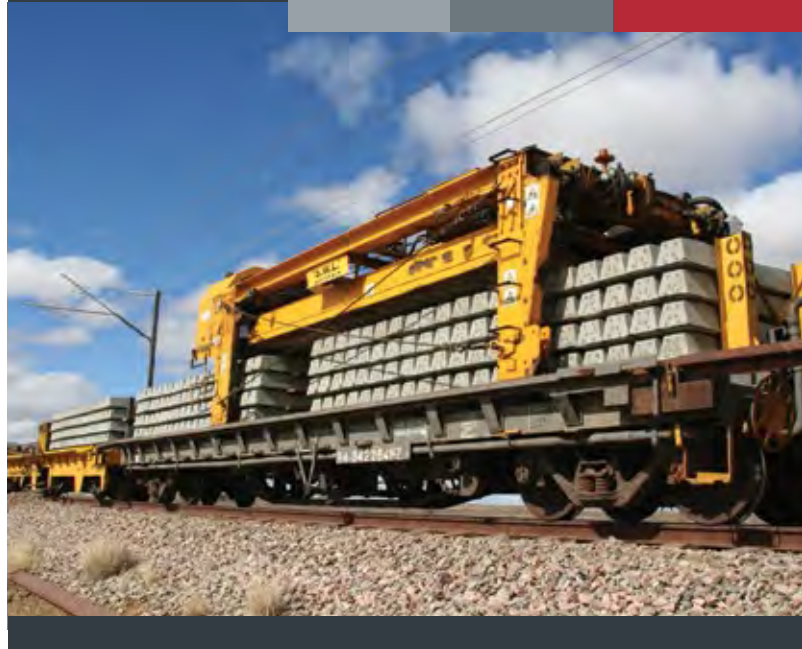
The trains will offer passengers a high level of comfort, ergonomic seating, LED lighting, air-conditioning and an advanced passenger information system. In addition to the trains, Alstom is to provide Urbalis, its CBTC3 signalling solution, as well as the power supply and the group's energy recovery system HESOP. All sub systems have been optimised together so as to reduce energy consumption.

Other Alstom sites involved in the project are located in France - Valenciennes for the engineering, Le Creusot for the bogies, Villeurbanne for train control and the monitoring system, Ornans for the motors and Saint-Ouen for signalling. Plants at Madrid in Spain and Charleroi in Belgium will be responsible for passenger information and security, and the traction subsystem and auxiliary converter.

The Fast consortium includes FCC (leader), Samsung, Alstom, Freyssinet Saudi Arabia, Strukton, Setec and Typsa. The overall contract value for the consortium is €5.8 billion. Alstom's share is worth more than €1.2 billion.

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800 DOUBLE ELECTRICS FOR INDIA

In a contract worth more than €3 billion, Alstom is to supply Indian Railways with 800 double-section electric freight locomotives, together with the associated long-term maintenance. The project includes the setting up of a plant at Madhepura in Bihar state and two maintenance depots – one at Saharanpur in Uttar Pradesh state, the other at Nagpur in Maharashtra.

The locomotives are to be delivered between 2018 and 2028. The 100% foreign direct investment in the railway sector allowed by the government has provided renewed encouragement to the Indian main-line railway sector.

According to Alstom executive vice-president Henri Poupart-Lafarge, the project is one of the

biggest in Alstom's history, and a breakthrough for the group's presence in India.

The Prima locomotive for Indian Railways will be 9,000kW at the wheel rim and will run at speeds up to 120km/h. The contract positions Alstom as the number one on heavy-haul electric locomotives with over 1,200 double locomotives ordered over the last decade. The Prima range covers all market segments of locomotive from heavy-haul (mostly in China, Kazakhstan, and Azerbaijan), freight and passenger operation (Europe, Africa, Middle East, CIS) and shunting or trackwork operation (Europe).

Alstom has several sites in India including a signalling, telecoms and train engineering unit in Bangalore, a metro manufacturing facility in Sri City and a traction systems manufacturing unit in Coimbatore.



TFR AUCTION 117

Transnet Freight Rail (TFR) auction 117 took place on 12 November 2015. Peter Bagshawe provides details:



Lot 32, collision damaged 34-431 at Blaney - or the little that was left of it - remained unsold. This loco was virtually annihilated in the 20 May 2015 head-on collision at nearby Peelton. Apparently the control officer at East London admitted northbound

Shosholoza Meyl 47014 to a section occupied by southbound TFR freight 4213, which she thought she had been told had cleared. One of the two class 34 diesels hauling the goods appeared from photos as having been overridden by both the class 7E electrics heading the passenger train. The body of the leading 7E seemed to have landed some distance away from the track, with the second 7E ending up above one of the diesels' wheelsets.

At auction 117, three of the lots (51/53/54) remained unsold from Sale 116. Lot 52 comprising 92 wagons at Deal Party, Port Elizabeth, had been listed twice before, in Sales 115 and 116.

Six lots did not receive their reserves and remained unsold:

- Lot 15: a wagon at Middelburg;
- Lot 34: two coaches and a caboose at Standerton;
- Lot 35: a wagon at Greylingstad (no bids received).
- Lot 51: two cabooses at East London;
- Lot 54: a wagon at Molteno.

The lots sold raised just under R6.5 million, an average return of R1,081 per ton.

The highest return was R1,479/ton for the four class 7E locos at Bayhead, Durban (Lot 9 - E7151/7159/7182/7188 including bogies, but without traction motors except for E7182. "This was interesting," Bagshawe remarks, "in that it passed the reserve price a couple of days before the sale. About half an hour before the sale ended it was standing at R308,800, but 10 minutes later it had gone down to R192,000 and shown as reserve not met! It went eventually for R350,000)."

The lowest return was Lot 44 - a wagon and a tankcar at Vandyksdrift - which only realised R382/ton.

This continuing trend of lower prices is illustrated by the ill-fated Lot 51 (92 wagons at Port Elizabeth):

- Sale 115 19/08/2015 R1,406/ton
- Sale 116 17/09/2015 R1,309/ton
- Sale 117 12/11/2015 R1,107/ton

Prior to this sale, over R2,000/ton might have been expected.

Sundry items included a Matisa tamping machine at Cape Town Harbour which was not sold and Lots 61/62/64-72 covering various sorts of bogies including those for classes 34/37/38/6E/18E, all of which were sold.



Running through Rooiwal

BLUE TRAIN IN SEMAPHORE COUNTRY

In mid-November, temporary closure of the Cape Town-Johannesburg main-line between De Aar and Beaconsfield resulted in passenger trains diverting via Noupoot and Bloemfontein. Jacque Wepener took these unique photos of the Blue Train in semaphore signal territory, north of Kroonstad.



Near Geneva



Approaching Gunhill yard at Kroonstad, having passed through Bosrand.

Mishaps

One objective of our regular feature reporting and commenting on rail mishaps is to provide information and object lessons from Africa and abroad, in the hope that - in some cases at least - this might help avoid recurrences.

FRENCH TGV DERAILS; 14 DIE

A TGV (Train à Grande Vitesse) derailed in the Bas-Rhin area of Alsace on 14 November, the trailing power car landing up in the adjacent Marne-Rhine canal. In the accident, 11 people died and 42 were listed injured, 12 seriously. No members of the public were on board (it was a test run) but the 53 people on the train included four children - none of whom were badly hurt - believed to belong to railway employees. The remaining 49 people were train crew and technical staff. They were carrying out tests on the recently completed second phase of the TGV Est high-speed line between Paris and Strasbourg.

Driver training was to commence between January and March and it was hoped to open the line in April. That will now be delayed. Société Nationale des Chemins de fer Français (SNCF - the French national railway) says there is no evidence thus far to link the incident to the terrorist attacks that occurred in Paris the following day.



TGV power car in canal.
Photo Pi Eye/Wikipedia

COMMUTERS JUMP FROM TRAIN: 82 HURT

On 22 October, a Metrorail train ran into trouble at Ennerdale, south of Johannesburg on the line to Vereeniging. According to a resident who lives near the line, there were explosions aboard

after which the train stopped very abruptly. Commuters panicked and jumped onto the track while the train was still moving. Metrorail spokesperson Lesedi Mapheto said there was sparking in a motor coach which caused the panic. In all, 82 people were taken to hospital by paramedics who attended the incident. Most were treated for minor injuries but six were kept in hospital.

Netcare 911 media liaison officer Chris Botha said ambulances and advanced life support paramedics were dispatched to the scene of a reported accident at Ennerdale. However there was no derailment. Paramedics from various services treated the injured on the spot before transporting them to hospital.

CABLE THEFT STRANDS SHOSHOLZA MEYL

Cable theft near Beaufort West caused major delays to two Shosholza Meyl intercity trains on 22 October. Both were en route to Cape Town, one from Johannesburg, the other from Queenstown. Altogether nearly 100 passengers were transferred to buses to complete their journeys. Others who were booked in sleepers elected to remain on board.

HUMAN ERROR CAUSES MOST ACCIDENTS

According to South Africa's Rail Safety Regulator, human error was the cause of 71% of railway accidents in this country last year.

Among accidents in the period 2014/2015 - 10 May 2014: An empty manganese consist travelling towards De Aar derailed two electric locomotives and six wagons at Addo. It was found that the train crossed points restricted to 30km/h at twice the permitted speed.

26 June 2014: A 17-coach Shosholza Meyl train derailed at Port Elizabeth on crossover points. It was found that proper inspections had not been conducted. The Passenger Rail Agency of SA (Prasa) did not have enough qualified staff at the Wagon and Locomotives Maintenance Department and the train driver did not obey a signal.

17 August 2014: Thirteen commuters injured when a train from Cape Town to Worcester experienced an electrical fault and passengers panicked and jumped out of the train. The fault had been reported beforehand, but there was no record of it having been attended to.

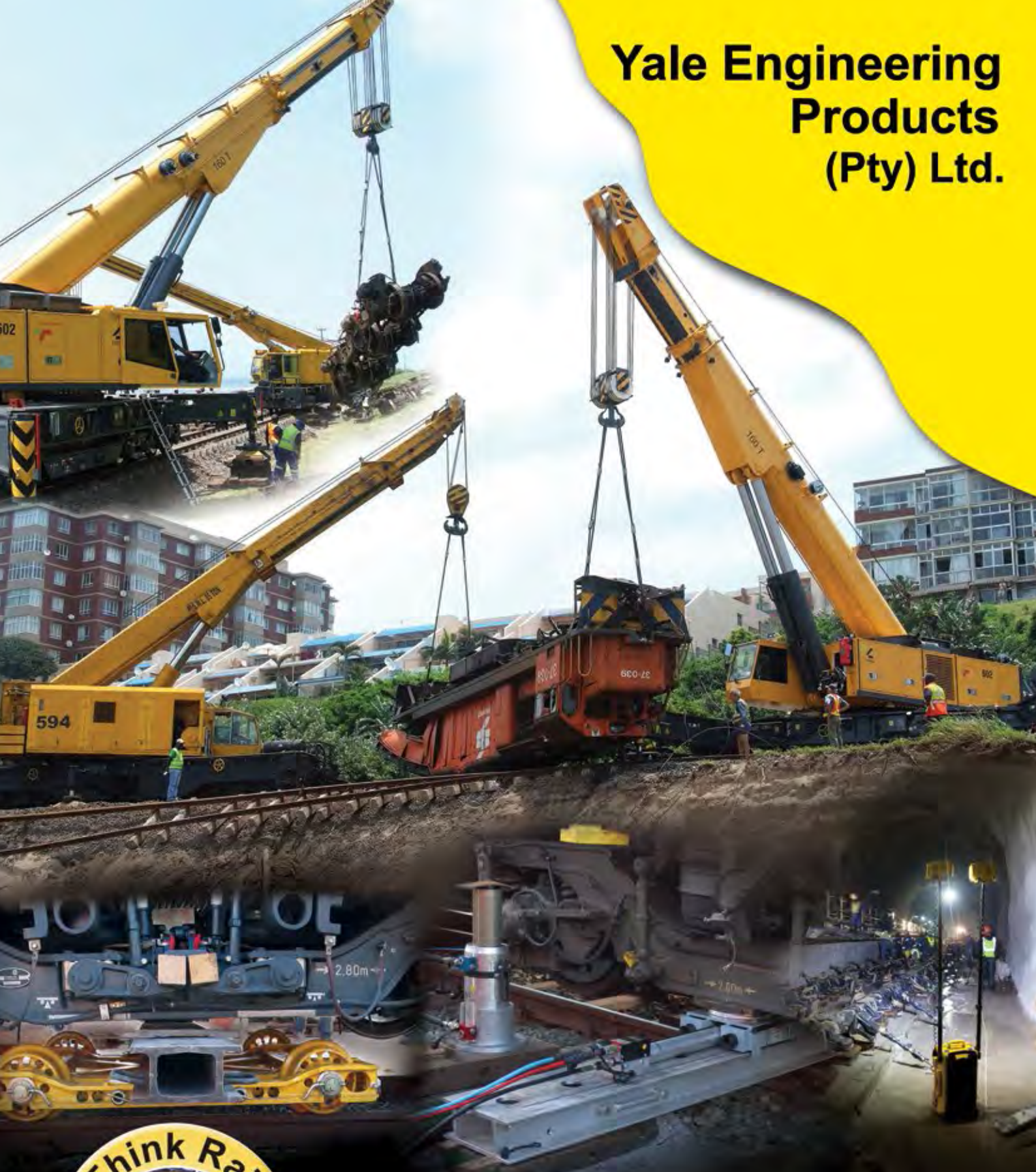
LOCO BRASS STOLEN AT WATERVAL

It is reported that copper and brass fittings have been stolen from six historic locomotives stored at Waterval Boven. These are class 25NC 3476, 19D 2526, GMA/M 4056, 15F 2909, 15F 2985 and GCA 2621. Access to the premises was gained apparently by poisoning and stabbing the guard dogs. Class 19D 2526 is believed to be privately owned, the rest by Transnet Heritage Foundation.

DERAILMENT NEAR SPANISH, ONTARIO

On 4 November, 13 tankcars in a 77-wagon Huron Central Railway westbound freight train went off the line near the town of Spanish, Ontario, about 100km south-west of Sudbury. Nobody was reported hurt in the accident and no hazardous spill occurred. The incident is being investigated by the company, by Transport Canada and Ontario's ministry of the environment

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FIRE DESTROYS CAPE TOWN TRAINS

Arsonists brazenly set fire to three trains inside Cape Town's main station on 20 October. At approximately 02:00, two trains standing side by side at platforms 9 and 10 were set alight. Four motor coaches and six plain trailers were totally burned out. Later two coaches - one a motor coach - were set alight at platform 24. In this case staff were able to disconnect the two affected vehicles and the local fire department extinguished the fire. A "sticky, flammable liquid" was found near the site.

Metrorail regional manager Richard Walker was quoted saying: "We have reason to believe that there is something that requires looking into. I do believe we are dealing with something here that requires a deeper look."

He said train services would return to normal as soon as possible,



but thousands of commuters were affected. Metrorail's efforts to improve services in the Cape Town metropolitan area had taken a severe knock. "I just wish that the people of Cape Town would begin to see the railway as a community asset.



"We have just recently launched a new line that makes it possible for people from Mitchells Plain to get to Century City by train."

The burning of trains was condemned by city officials, as well as the provincial MEC for transport, Donald Grant.

BROCKVILLE TSB REPORT RELEASED

The Canadian Transportation Safety Board (TSB) has released its findings into a July 2014 accident at Brockville, Ontario, where 26 tankcars came off the line. The investigation determined that the train derailed because of excessive "truck hunting" - or side-to-side movement of wheelsets - on an empty 80-foot centre-beam bulkhead flatcar. This type of wagon is apparently less rigid than is the case with other basically similar rolling stock. Under certain conditions, the side-to-side movement can become excessive, causing wheel-lift or wheel-climb, either capable of causing a derailment, TSB officials said. In this case, the excessive truck hunting was influenced by car type, train speed (100km/h), the worn condition of the constant contact side bearings (CCSB), as well as by the truck type. The 26 derailed wagons included 13 class 111 tankcars containing aviation fuel residue. A small amount of product was released, but there were no injuries. The damage to the class 111 tankcars was consistent with damage to similar vehicles in other TSB investigations, officials said.

"The potential for catastrophic environmental impacts and loss of life remains, thereby reinforcing the need for improved tank car design standards," the TSB press release said.

WISCONSIN OIL TRAIN DERAILMENT

An eastbound Canadian Pacific freight derailed 10 tankcars carrying crude oil in Watertown, south-eastern Wisconsin, on 8 November. According to Jefferson County office of emergency management director Donna Haugom, residents of some 35 properties were asked to evacuate their homes. No injuries were reported, but officials said some of the derailed wagons were leaking and that hazardous materials experts were on their way to the site.

MISSISSIPPI ETHANOL DERAILMENT

On 7 November, a freight train of the Burlington Northern Santa Fe Railway (BNSF) derailed 25 wagons about 3km from the town of Alma alongside the Mississippi River in western Wisconsin, spilling tens of thousands of litres of ethanol, though no one was hurt.

Work crews spent the weekend transferring ethanol from the derailed tankcars and getting them back on the line. Containment booms were placed along the edge of the river. BNSF said it expected to have the line back in service by 9 November.

CHICAGO DERAILMENT

Power was shut down on the afternoon of 31 October when one vehicle in a Chicago train derailed on the city's north side. Service on the Chicago Transit Authority's Red Line was suspended. The fire department evacuated passengers from the disabled train and had one injured person admitted to hospital.

UK DERAILMENT HALTS SERVICES

The derailment of a freight train at Wymondham on 20 October disrupted passenger services provided by Abellio Greater Anglia between Norwich, Cambridge and Peterborough. Trains were terminated at Thetford and buses were run to Norwich, lengthening travel times by an hour.

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FIRE CANCELS STATION STOP

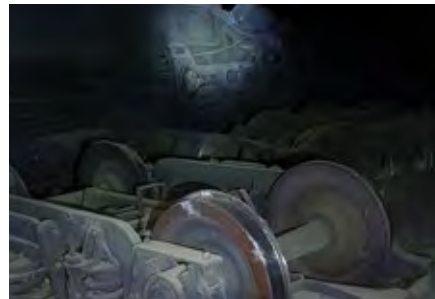
A fire in late September severely damaged a nine-megawatt substation that supplies electricity to the third rail in the Stadium-Armory station area of the US capital. The Washington Metropolitan Area Transit Authority (Wmata) hurriedly arranged a substitute power feed from smaller adjacent substations. However this was insufficient to allow Orange, Silver and Blue line trains to stop normally at the Stadium-Armory station. Instead they passed through without stopping, to reduce strain on the electrical system.

After the fire, work crews added three megawatts of electrical output at the Potomac Avenue substation, in addition to its original capacity of four megawatts. This substation now has a capacity of

seven megawatts - enough to allow Orange, Silver and Blue line trains to stop normally at the Stadium-Armory station.

SWEDISH TRAIN DERAILS AT CROSSING

Nobody was injured when a passenger train derailed during the morning peak-hour at a crossing outside Sala station, approximately 100km north-west of Stockholm.



The crossing barrier was dislodged, lineside electrical apparatus damaged and asphalt roadway torn up. Passengers on the train were evacuated and bus services arranged. It was expected that the line would be out of service for several days.

PASSENGERS EVACUATE TRAIN ON FIRE

The UK Rail Accident Investigation Branch (RAIB) has released its report on an incident involving electrical arcing and fire under a train on 30 January 2015. The 19 passengers escaped by jumping down onto the track and walking back to the station.

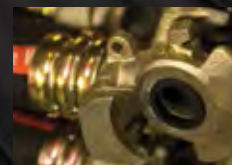
The ten-coach electric multiple-unit train left Windsor & Eton Riverside at 19:53. It had gone about 400 metres and was moving at about

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23km/h when an explosion occurred beneath the sixth coach, "followed by about 22 seconds of severe electrical arcing.

"The brakes applied because of damage to air pipes, and the train stopped very rapidly. Some smoke entered the carriages through ventilators. The driver contacted the signaller by radio to ask for the electric power to be switched off. While he was doing this, the floor of the sixth carriage was penetrated by fire, and smoke rapidly filled the vehicle. A few minutes after this, the lights in the rear five carriages went out." The local fire brigade attended and confirmed just under an hour later that the fire had been put out.

"None of the passengers were hurt, but the guard of the train was taken to hospital and treated for smoke inhalation.

"The fire occurred because a joint between three power cables, located under the floor of the sixth carriage, had not been secured correctly when the carriage was reassembled after being rebuilt and refurbished in 2014. Electrical arcing had developed at the loose joint, and this damaged the ends of the cables and eventually led to the arcing which badly damaged

the structure of the train. This in turn caused a fire that penetrated the floor."

The RAIB made four recommendations. "One, addressed to Wabtec Rail Ltd, covers the review and improvement of quality assurance arrangements at the factory where the refurbishment work was done. The second, addressed to Network Rail, relates to the need for changes to the rules relating to the conditions under which passengers are evacuated from trains after incidents. The third and fourth, addressed to South West Trains, concern the way in which the emergency lighting on the trains is configured to operate in the event of a loss of external power, and the need to review the risks associated with power cables and the joints between them.

"The investigation also identified four learning points for the railway industry, relating to the design of electrical junction boxes, the need for train crew to be fully aware of how on-train equipment works, the organisation of train conversion projects, and the importance of ensuring that records relating to train design are accurate and kept up-to-date."

- RAIB Report 18/2015: Crown copyright.

MONTREAL DERAILMENT: BUILDING EVACUATED

Several wagons came off the line when a Montreal freight train derailed on 29 October. The wagons collided with a building which was evacuated. No injuries were reported in the accident.

DURAND DERAILMENT OF 14 WAGONS

Main Street in Durand, Missouri, was closed following the derailling of 14 vehicles in a 135-wagon Canadian National Freight train on 30 October. No injuries were reported. Headed west from Port Huron to Battle Creek, the train was carrying motor cars; no hazardous materials were involved.

TRACK DEFECTS MAINLY TO BLAME

Experts are trying to discover why so many oil trains have been derailling across the United States. A review of 31 incidents since 2013 places most of the blame on track failure. In fact track problems were blamed for 59% of the crashes, more than double the overall rate for freight train accidents, according to an analysis of reports. Investigators and rail safety experts are looking at how the weight and movements of oil trains may be affecting the issue, and if these are

CAR TRAIN DERAILS

It is reported that the dedicated car train, conveying new vehicles from the Eastern Cape to Gauteng, derailed somewhere near Colesberg, between Noupoort and Springfontein, in mid-October. Photographs taken at the scene suggest a heavy repair bill.

Car train derailment near Colesberg.



causing higher than expected track failures. The growing number of trains hauling crude oil from Canada and the Northern Plains are among the heaviest in North America. Many comprise 100 wagons or more, with a cumulative mass of over 19,000 tons.

DERAILMENT IN NORTH BALTIMORE

A CSX freight train derailed in a North Baltimore (Ohio) yard early on 13 October. Nobody was injured but no further details were available – number of wagons involved, etc. The incident is being investigated. North Baltimore is about 51km north of Toledo.

SIMMS IN TEXAS: 13 WAGONS DERAIL

No injuries were reported when a westbound Union Pacific freight train derailed 13 wagons about 9km south-west of Simms in Texas, 56km west of Texarkana, on 9 October. There was no danger from hazardous cargo as only sand was being carried.



LOCO DERAILED BY ROCKSLIDE

A CSX locomotive heading a 104-wagon freight train derailed when it ran into debris from a rockslide in Lynchburg, Virginia. The consist included empty crude oil tankcars and two wagons containing industrial sand, one of which was damaged.

SULPHURIC ACID IN 11 DERAILED WAGONS

A 115-vehicle Union Pacific train derailed 11 wagons carrying sulphuric acid in the town of Big Sandy, Texas, on 15 October. About 170 metres of track was damaged and had to be replaced before trains

could run again. Hazmat crews attended but there were no leaks.

Big Sandy had a population of 1,288 in the 2000 census – Wikipedia

SHOOTING AT CAPE TOWN STATION

On 13 October, two men dressed in female Islamic attire with only their eyes visible, one armed with a gun, entered platform 24 on Cape Town station from the Marine Drive entrance and began shooting – apparently at random, though nobody was hurt. Witnesses said they heard gunshots and ran for cover. Cornered by security guards, one of the men shot himself dead. Metrorail's Riana Scott, saying the incident was unprecedented at the station, said police cordoned off the scene, but train services were not affected.

DERAILED BY LANDSLIDE, 5 COACHES IN DITCH

One of seven passengers hurt when an Amtrak express hit debris on the track in Vermont was airlifted to hospital on 5 October. The train



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was travelling at 92km/h at the time. Six others went to hospital by ambulance from the site, 16km south of Montpellier. The rest of the 104 people on the train, many elderly, scrambled up a steep hillside after the crash. The train was en route to Washington DC.

CEMENT TRUCK ON GAUTRAIN LINE

On 28 November, the driver of a cement truck lost control of his vehicle on an incline in Muckleneuk, Pretoria, breaking through bridge railings and falling onto railway tracks below. He was trapped in the crushed cab for about thirty minutes before being freed by paramedics and taken to hospital. At this point there are two Gautrain tracks and two Metrorail tracks, running parallel in a cutting.



Both Gautrain and Metrorail services were halted, with buses supplanting trains between Pretoria and Hatfield. Sensational press reports applauded a Gautrain driver for stopping his train "just in time" as he approached the accident scene. Gauteng MEC for roads and transport Ismail Vadi told reporters that "the front cabin of the train has been slightly damaged." By Tuesday 1 December only one Gautrain track had been reopened.

WOOTTON BASSETT SPAD: RAIB REPORT

The following report by the UK Rail Accident Investigation Branch (RAIB) is reproduced here because of its instructive nature, eg it illustrates the dangers associated with overriding safety measures. The incident, which occurred at around 17:25 on Saturday 7 March 2015, involved train 1Z67, the 16:35 West Coast Railway Company Ltd (WCRC) steam-hauled charter from Bristol Temple Meads to Southend, and occurred on the approach to Wootton Bassett junction, Wiltshire.

The train left Bristol Temple Meads at 16:38. The crew consisted of the driver, fireman and two members of the locomotive's support crew who were also present in the cab. Witness evidence suggests that the journey to Wootton Bassett junction was uneventful with the exception that the driver was experiencing poor visibility forwards through his windscreen. This was because the locomotive's exhaust was being blown towards the left hand side of the boiler, where it was accumulating and blocking his view. It is also probably the case that condensation from a steam leak was forming on the driver's windscreen, further degrading his visibility. In order to improve his sighting, the driver decided to drive the train with his head positioned outside of the cab's side window.

The driver controlled the train's brakes throughout the journey using the vacuum brake controller valve. This had the effect of controlling the brakes on the locomotive, its tender and the twelve coaches connected to the automatic vacuum train pipe. At around 17:24, train 1Z67 was approaching signal SN43 at 95km/h, when it passed over the portable AWS (advance warning

system) magnet associated with a temporary speed restriction (TSR). Around a second after this, the AWS horn sounded and the orange light connected to it began to flash in the locomotive's cab. Data from the locomotive's on train data recorder (OTDR) shows that it took the driver 4.2 seconds to acknowledge this warning, by which time the AWS system had already demanded a full brake application.

The AWS system is designed to maintain a brake demand for at least 59 seconds and this should have resulted in the train being brought to a stand. In these circumstances, the railway rule book requires the driver to immediately contact the signaller. The driver indicated to the fireman that an AWS brake demand had occurred. His expectation was that the fireman would open the AWS isolating cock in order to by-pass the AWS brake demand and release the brakes. The fireman has stated that he believed that he was following the driver's instructions when he subsequently crossed the cab and opened the AWS isolating cock. Witness evidence suggests that the AWS isolating cock was not sealed before the fireman opened it. The railway rule book permits drivers to isolate the AWS system only if it has become defective or if it is inoperable due to the configuration of the infrastructure. In these circumstances, the railway rule book requires drivers to immediately bring their trains to a stand and then contact the signaller. Certain conditions must then be met before the train can proceed any further.

However, in this case, the train was not brought to a stand and instead continued on its journey. OTDR data shows that the brake demand made by the AWS system ceased to be effective around 12 seconds after it was initiated. The brief brake

application which resulted from the AWS brake demand before it was bypassed reduced the train's speed by a total of 13 km/h. Witness evidence and OTDR data show that the AWS isolating cock remained open during the remainder of the incident; this had the effect of making any subsequent AWS or TPWS (train protection and warning system) brake demands ineffective.

During this 12 second period, a second AWS warning occurred. This was created by the fixed AWS magnet located around 275 metres on approach to signal SN43, which was displaying a single yellow caution aspect. This warning occurred around 2.5 seconds after the AWS warning from the TSR had been acknowledged; OTDR data shows that it was acknowledged by the driver within 0.5 seconds. Witness evidence suggests that the driver was unaware that he had received two separate AWS warnings and that he instead believed that he had received a single warning. Because he had seen the TSR warning board, he also believed that the warning he had acknowledged

was associated with a TSR. The driver did not see signal SN43 and, therefore, was not aware that it was displaying a caution aspect.

Just over a minute after the AWS brake demand had been triggered, train 1Z67 approached signal SN45, which was displaying a red danger aspect, at a speed of around 84km/h. As it did so, it passed over the first TPWS OSS (overspeed sensor system) for this signal, located approximately 750 metres on the approach. This OSS is configured so that the TPWS system fitted on any train passing it at a speed greater than 105km/h will demand a brake application. Because the train was travelling more slowly than this set speed, the TPWS system on the locomotive did not generate a brake demand.

Train 1Z67 then passed over the second OSS at a speed of around 85km/h. This OSS is located approximately 360 metres on the approach to the signal and has a set speed of 74km/h. The TPWS system correctly identified that the train was travelling over the set

speed and demanded a full brake application. However, because the AWS isolating cock was still open, this demand had no effect on the train's braking systems.

At some point on the approach to SN45, the driver of 1Z67 saw that the signal was at danger and fully applied the train's brakes. Analysis of the OTDR data available suggests that the earliest point which the driver could have applied the brakes would probably have been around 220 to 230 metres on approach to the signal. By the point where the driver applied the brakes, there remained insufficient distance to bring the train to a stand at signal SN45. The train subsequently came to a stand around 550 metres beyond the signal, standing on both the crossovers and the up and down Badminton lines, at just after 17:26.

- RAIB Report: Crown copyright.

The fact that the junction was clear and that nothing serious took place was purely fortuitous. There could easily have been a really nasty accident.

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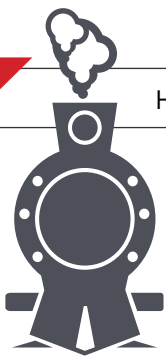
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Railway Preservation

By the editor

SOUTH AFRICAN GARRATT IN TEXAS

South African narrow-gauge Garratt NG50 has found a new home in Hempstead, Texas, where she was steamed for the first time on 15 November 2015. Situated some 80km north-west of downtown Houston, Hempstead - noted for its watermelon crop - is the county seat of Waller County. The population was 4,691 in the 2000 census.

In 1927, Hannoversche Maschinenbau AG (Hanomag), in consultation with the South African Railways (SAR), designed the 2-6-2+2-6-2 class NGG13 Garratt as an improved version of the class NGG11, with trailing wheels added to each engine unit, outside bar frames instead of plate frames, round top fireboxes instead of Belpaire, and larger dimensions in most respects except the grate area.



In steam at Hempstead, Texas, on 15 November 2015: Hanomag-built Garratt class NGG13 no NG50, dating from 1928. Photo: Trevor Heath/Wikipedia.

The initial order was for three class NGG13 locomotives, NG58-NG60, delivered and placed in service in 1927. These locomotives were superheated and notable for their compact Walschaerts valve gear and outside bar frames. The pilot wheels were

arranged as conventional pony trucks, while the inner carrying wheels were built to the Gölsdorf system that allowed the axle some lateral movement.

Altogether twelve class NGG13 Garratt locos entered service on the

Langkloof and Alfred County Railway 610mm gauge lines in 1927 and 1928.

NGG13 tests impress

Performance trials proved the class NGG13 both powerful and free-steaming, despite having a smaller grate area than

FORMER RR DE2 TO BE RESTORED

Sandstone Estates in the eastern Free State has announced its intention to restore ex-Rhodesian Railways class DE2 diesel-electric locomotive no 1207 to running order in the course of the next 12 months. The first DE2, no 1200, entered service on 22 June 1955. This unit is currently preserved in the Bulawayo Railway Museum.

The 35 class DE2 diesel-electric locomotives (1Co-Co1, double cab) were built for Rhodesia Railways by English Electric in two batches - nos 1200-1222 in 1955 at Preston, and 1223-1234 by the Vulcan Foundry, Newton-le-Willows in 1958.

The engine originally fitted was the EE 16SVT. This was rated 2,000hp (1,491kW) at sea level but the service rating - allowing for altitude and climatic conditions - was 1,710hp (1,275kW). Eight locomotives were later fitted with ex-British Railways class 40 V16 engines.



Former Rhodesian Railways class DE2 locomotive



Class NGG13 no 59 at Mid Illovo in 1973. Photo: Bruno Martin.



Class NGG13 no 77 on 23 February 1985 with one of the last trains on the Mid-Illovo branch from Umlaas Road. Photo: Bruno Martin.

the NGG11. This resulted in an immediate order for another two locomotives, numbers NG49 and NG50, and even before these were delivered, another seven, numbered NG77-NG83. The second and third orders were both delivered in 1928.

Locomotives NG49, NG50 and NG58-NG60 were used almost exclusively on the narrow gauge lines in Natal. Some of these routes had curves of 45 metres and gradients as steep as 1:33, but the Garratts were well suited to hauling the diverse freight traffic of pulpwood, sugar cane and bananas.

ACR privatisation

The 122km line from Port Shepstone to Paddock

via Izotsha was eventually privatised as the Port Shepstone and Alfred County Railway (ACR) after the SAR ceased operations there in 1986. The ACR ran both freight and tourist operations, the passenger train becoming known as the Banana Express

The third order of seven locomotives, nos NG77 to NG83, all went to the Avontuur line where most of them remained for their entire service lives. These locos worked out of Loerie, hauling limestone trains or doing duty on the Patensie branch.

The 283km line to Avontuur, running from Port Elizabeth through the Langkloof, became known as the Apple Express

after the main crop it transported. The line also carried pulpwood, as well as limestone to the cement factory in Port Elizabeth.

When the class 91 diesel-electric locomotives arrived in 1973, the NGG13 locomotives were removed from service. At about the same time,

the Natal locomotives were also progressively withdrawn.

Tow NGG13 locos were plinthed - NG80 at Joubertina station and NG81 at Patensie. NG49 is maintained in excellent running order at the Sandstone Estates near Ficksburg.



Class NGG13 no 81 plinthed at Patensie. Photo: H G Graser/Wikipedia

STEAM-HAULED EXCURSIONS AT CERES

The first of the steam locos being rehabilitated at Voorbaai and allocated to the scenic Michells Pass-Ceres line - class 19D no 3321 - arrived here in mid-October. A day or two later a test train carrying passengers headed into Michells Pass from Wolseley.

Public service began in November: Trains leave Demeter station in Ceres (where there is secure parking, with sign-in security) as follows:

- 19 December 2015 at 09:30 and 14:30
- 26 December 2015 at 09:30 and 14:30
- 2 January 2016 at 09:30 and 14:30
- 9 January 2016 at 09:30 and 14:30

Trains turn round at Wolseley but stop at Waverley Hills on outward and return trips. A hamper which must be pre-ordered when booking provides all that is needed for a top-rate picnic lunch. The Waverley Hills stop includes wine tasting, and wine is on sale.

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Ceres excursion train.

BRIEF ENCOUNTER

In the 1945 film *Brief Encounter*, filmed at Carnforth in Lancashire seventy years ago, the station announcer was Noel Coward – who wrote the script. Starring Celia Johnson and Trevor Howard, the movie was much acclaimed. It was nominated for two Academy Awards, shared the 1946 Grand Prix at the Cannes Film Festival and came second in a film institute poll of the top 100 British films, in 1999. Some 60,000 people are said to visit the Carnforth station heritage centre every year. Many stay to watch the film in the centre’s cinema. The well-known scene in the station restaurant was actually a set in a film studio. It has been recreated in the station, to the delight of fans. Other names in the credits include Stanley Holloway, Valentine Dyall and Alfie Bass. Music was by someone called Rachmaninoff (his second piano concerto).



Celia Johnson and Trevor Howard in Brief Encounter.

TOUR TO CASTEL GANDOLFO

The pope traditionally spends the summer months at Castel Gandolfo, a picturesque hilltop town 25km south-east of the Italian capital. This year, the 17th century Apostolic Palace is to be regularly opened to the public for the first time in its history. A special train tour taking people from the Vatican to the Pontifical Villas at Castel Gandolfo was introduced on 12 September, at a round trip fare of €40. It includes a visit to the Vatican Museums, the

Vatican Gardens and the Sistine Chapel. Participants then spend an hour in the Vatican Gardens. From there, it is a short journey to the tiny Vatican City station at the back of St Peter’s Cathedral, normally used for freight traffic and, very occasionally, by the pope himself. The train departs here for Albano Laziale.

The new “Full Day in the Vatican” tour is the first time the Vatican station has offered a regularly scheduled passenger train, and audio-guides for the entire tour will be offered in Italian, English and Spanish. Press and dignitaries were treated to an inaugural ride on 11 September, in a vintage train hauled by a 1915 steam engine and carriages from the 1920s and 1930s, including a luxury coach normally reserved for the Italian president. “The old train can be chartered,” says Luigi Cantamessa, head of the Heritage Foundation of the Italian Railways.

E-CIGARETTES BANNED

Bay Area Rapid Transit (Bart) in San Francisco, the Los Angeles County Metropolitan Transportation Authority (Lacmta) and the San Diego Metropolitan Transit System (MTS) have all banned e-cigarettes from their public transport vehicles and stations. San Diego was the most recent to announce the restriction, applicable in all areas where regular tobacco products are prohibited, ie in trams and buses, or within 25 feet (a little over seven metres) of any tram or bus stop. A first offence incurs a fine of \$50, the second \$75 and any subsequent infringement \$100.



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~ LRD



San Francisco’s Bay Area Rapid Transit (Bart): no e-cigarettes.



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