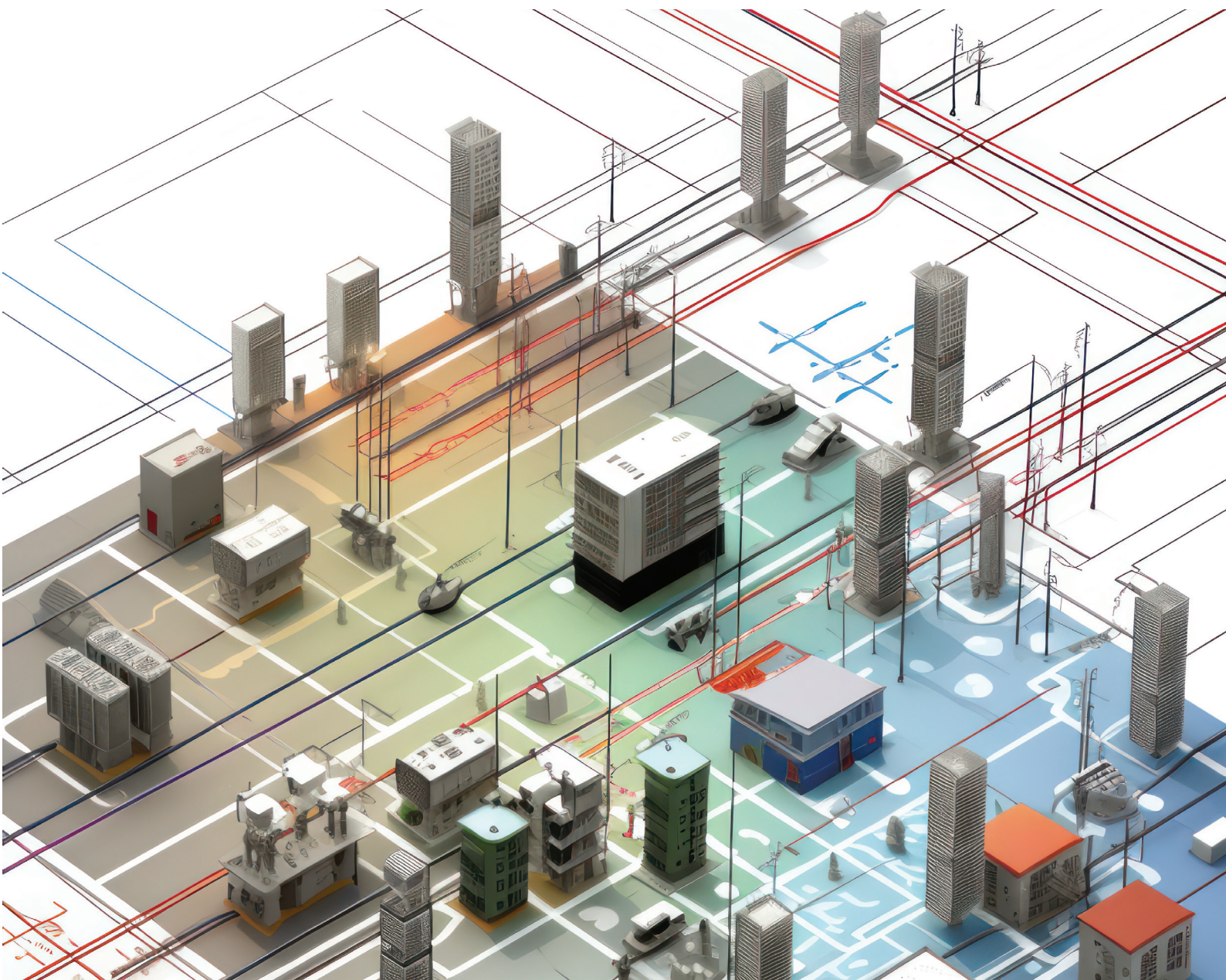


WHAT'S WATT

June
2023



Featuring: Power Islands - ACTOM's one-stop power solutions



Your One-Stop Global Energy Supply Partner

ACTOM

ACTOM performed well in the past financial year, despite adverse business conditions

The macroeconomic environment globally and in South Africa remains volatile and fluid.

South Africa continues to have major socio-economic challenges resulting from (amongst others) rising interest rates, extremely high levels of unemployment, a rapidly weakening currency and poor economic growth. We see utter chaos in many municipalities with major service delivery challenges. We need to seriously reflect on where we are and pull together as “SA Inc” to get ourselves out of this mess.

ACTOM as a group has however been able to navigate through these challenges exceptionally well – this being due mainly to the diversity of the business from a product, services and market perspective. We have concluded the financial year in March with exceptionally good results and a very good order book that positions us well for the first half of the financial year. We are very grateful to our staff for all the hard work that resulted in us achieving these results.

The company has over the past year made good strides in capital investment on the expansion of our manufacturing and services capacities. Various infrastructure projects are under way that are resulting in major demand for the group’s products and services.

During the recent Presidential Investment Summit ACTOM pledged to invest over R100-million towards the expansion of our capacity. In addition, ACTOM plans to invest over R0.5-bln in various expansion initiatives in the coming years. These comprise various expansion initiatives and the introduction of the latest technologies in our



Mervyn Naidoo had an opportunity to meet President Cyril Ramaphosa during the 2023 SA Investment Conference in Johannesburg earlier this year.

manufacturing, repairs and services businesses.

ACTOM is the perfect potential platform for the country to create jobs across our full supply chain and has the ability to assist with government’s re-industrialisation initiative for the creation of jobs. The group is very much involved in the energy transition as South Africa migrates towards renewable energy and alternative energy sources. We are currently integrally involved with the operation and maintenance of a 25MW wood-chip fired power generation plant at a customer in Mpumalanga.

As we are all aware, the challenges of load-shedding persist and we’ve embarked on alternative energy solutions at several business sites to independently obtain reliable power sources to keep our operations functional. Despite some of these challenges we need to be agile and navigate through these issues and ensure sustainability.

I’m pleased with the various developments we’ve seen through embracing digital advertising and com-

munications platforms – the group’s new modernised website in particular – to better promote the interests of the group.

I’m happy to report that our health and safety performance has been fairly good, with our current LTIFR rate at 0.60. For this I would like to thank everybody for their continued efforts in making our workplace safer.

Finally, I’d like to say I’m very optimistic about the next six months, as we’ve seen a trend towards increased demand across most of our divisions. This will boost job creation initiatives. ACTOM is actively increasing skills development and training initiatives through its various skills training centres. Initiatives are targeted at our employees as well as communities affiliated to our operations.

It’s critical that we align skills with market demands that will ultimately positively impact towards increasing the country’s economically active population and GDP growth.

Mervyn Naidoo

What’s Inside

ACTOM’s one-stop power solutions	Pg 3	GELPAG SIS switchgear ordered for new DRC mine	Pg 19
ACTOM launches new website	Pg 6	Distribution Transformers expands production capacity	Pg 20
ACTOM installs solar generation system at Knights	Pg 7	R&M helps put dump trucks back into service	Pg 21
ACTOM named best stand at Enlit Africa 2023	Pg 8	M&C completes on-site mill drive winding in Panama	Pg 22
Katlehong matriculants enrolled for apprenticeship	Pg 9	M&C modernises Cleveland coilshop	Pg 22
Sewing business launched	Pg 11	Metalplus performs intricate repairs	Pg 25
Co-generation for energy security	Pg 13	Metalplus prints 3D impellers	Pg 25
ACTOM Industry wins mine-winder contract in Ghana	Pg 16	EP’s Gqeberha Branch wins “Branch of the year”	Pg 27
Power Systems awarded GIS substation contract	Pg 17	Key appointments	Pg 28
AMV17 passes tests for mining application	Pg 18	Long-service awards 2022 highlights	Pg 29

Cover: ACTOM offers a complete turnkey power island solution.

Power Islands - ACTOM's one-stop power solutions

South Africa generates approximately 85% of its energy from coal. The national power utility, Eskom, has the capacity to generate up to 45,000 megawatts per hour. Still, it has been unable to supply even 27,000 MWh, giving rise to power cuts or load-shedding that can last several hours a day.

According to the latest news, load-shedding has cost South Africa 1.2 trillion rands since its inception and has considerably increased the cost of doing business. Households and businesses are now without power for up to 10 hours daily because of load-shedding, which leaves business owners and citizens discouraged. "The country is in a dire situation due to the lack of generation availability," said **Mervyn Naidoo**, CEO of ACTOM.

One of the most tangible effects of load shedding to everyday business owners is the extra amount they pay each month to maintain standard operational levels – whether installing solar, UPSes or fuelling large-scale diesel generators.

With South African businesses and industries feeling discouraged, ACTOM's market-leading technology and advanced products are perfectly

positioned to address the issues facing the electro-mechanical industry. ACTOM offers large-scale infrastructure installations to smaller projects and support services. With their 12 specialist and fully integrated divisions, they are committed to meeting their client's energy needs without compromising the ability of future sustainable generations.

The concept of a power island is growing substantial momentum worldwide and has already successfully been implemented in a few countries. The concept, simply put, means the independent operation of a whole network or part of a network that is isolated after being disconnected from the interconnected system and having at least one power-generating module or HVDC System supplying power to this network and controlling the frequency and voltage.

These networks offer the best solution to meet the growing electrical demands of industrialised countries. Green power islands also reduce the facilities' carbon footprint and maintain a cost-effective management plan by reducing energy costs and providing a significant return on investment.

There are two conditions under

which a power island can operate:

Synchronised mode: This is when the plant is connected to a distribution system, which in turn is connected to the utility grid. In this case, power can be given to the grid, or if required, power can also be extracted from the grid. This method is enabled in both captive and independent power plants.

Islanding mode: A power plant is said to be in islanding mode if it is dissociated from the distribution system or power grid. In this case, the plant runs on house load, i.e., a generator will generate only to cater for the in-house power requirement.

Generally, plants run synchronously with the grid because there is always some mismatch between power generation and demand. Also, if due, for some reason, a power plant trips, it requires starting power that can be drawn from the grid. But usually, plants have their islanding mode enabled, which will automatically island or isolate the plant if there is some external disturbance in the grid, such as voltage dip or erratic frequency change, thus, protecting the plant from external disturbance.

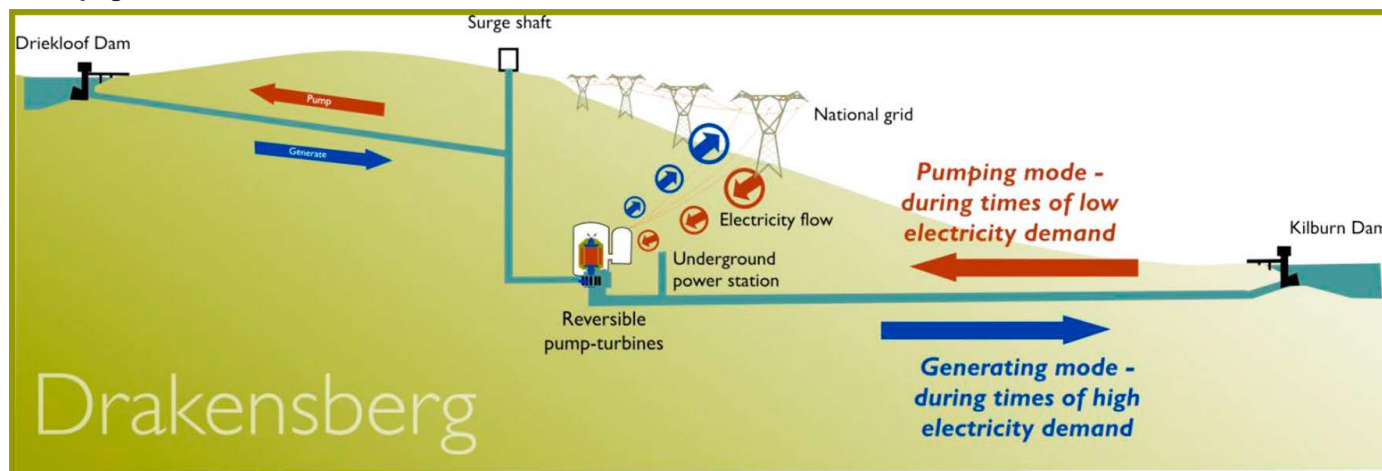
In the grid-connected mode, the

To page 4



ACTOM offers a complete turnkey power island solution and is a leading supplier of premium specifications.

From page 3



Eskom's Operation of Drakensberg Pumped Storage Scheme. (Image courtesy of eskom.co.za)

host grid handles frequency and voltage regulation. However, in an islanded operation, a microgrid must be able to regulate internal frequency and voltage with proper control. Droop control is the commonly accepted operation for power sharing among DERs in a microgrid.

ACTOM offers a complete turnkey power island solution and is a leading supplier of premium specifications and standard low-voltage motors, gearboxes, speed reducers and motor starters. They custom design and manufacture medium voltage motors for the mining, industrial, processing and utilities markets in South Africa and globally.

According to Naidoo, "As ACTOM, we can deliver every element of a power island. We manufacture the boiler, the turbine, the generator, and the associated switchgear and control. So, ACTOM offers the full scope of products for an effective power island".

Here, the 12 ACTOM divisions combine by delivering an integrated solution within an efficient value chain.

John Thompson, a division of ACTOM (Pty) Ltd, having a long history and success stories of their unique boiler design and manufacturing, is a global leader in energy and environmental solutions through value engineering and innovation.

They focus on serving their global

customers with tailor-made Boilers, Environmental Solutions (including Air Pollution Control), Engineering, Energy Management, Manufacturing, Spares, Maintenance and Training, and they specialise in generating power for sugar mills.

Their engineering teams can accurately simulate virtually any scenario using the latest computational fluid dynamics technology.

When maintenance is needed, ACTOM's electro-mechanical maintenance, service and repairs specialist, Marthinussen & Coutts, include the maintenance and servicing of machinery and equipment for the mining, rail transportation, utilities, marine, and oil and gas industries.

They are a specialist repairer of power generation equipment, medium and low voltage AC and DC motors, transformers and coil manufacture, and the full range of engineering, testing, diagnostics, balancing and maintenance services.

A power island will not be complete without an IoT solution. ACTOM uses IoT devices and artificial intelligence to provide tailor-made solutions to their customers through visibility in the process.

They digitise factories, equipment and design programs which include applications in protection and control and static power. They incorporate smart intelligence so that the equipment enables an increase in productivity and factory efficiency and a reduction in downtime and wastage.

Static Power specialises in the design and manufacture of AC and DC standby equipment for the Industrial, Telecomms, rail and renewable energy markets, including thyristor type charg-



Nordex engaged ACTOM to undertake the electric work at its Kouga Wind Farm renewable energy project in the Eastern Cape.

ers (Micro Process Controlled option), industrial batteries, power supplies, industrial UPS, furnace control panels, AC/DC distribution boards and battery tripping units.

Static Power has embarked on turnkey solutions for renewable Energy and battery energy storage solutions. All systems are designed and engineered to suit their purpose for local and export markets. ACTOM's success is testimony to the quality of products and services Static Power is committed to providing to the local and export markets.

Some of ACTOM's success stories are evident in their completed projects and efforts to keep the lights on.

The Ngodwana Biomass Fuel Plant biomass power plant installation, established under South Africa's Independent Power Producer Programme, was completed as a joint venture between John Thompson's Industrial Watertube Boilers, an ACTOM division – and Lesedi Nuclear Services. The 25MW power plant is adjacent to Mpumalanga's Sappi Ngodwana pulp mill. According to Russel Warren, General Manager, John Thomson, the installation took 20 months. John Thomson will operate and maintain the entire plant, comprising the boiler,

turbine, and balance of the plant, over a five-year contract period.

ACTOM Power Transformers has designed several low-cost transformers for wind farms, including 157 x 2 700kVA pad-mounted, oil-natural, and air-natural transformers. Consolidated Power Projects, the electrical BOP contractor for the wind farms, Noupoot, Khobab and Loeriesfontein, ordered their transformers from ACTOM. ACTOM had previously also supplied the Kouga Wind farm project. Newer transformers also accommodate the load-break switch and current limiting fuses inside the transformer tank by mounting them under oil instead of the usual external arrangement applied to package transformers.

This reduces the cost. ACTOM supplies electrical equipment, services and Balance of Plant to any renewable energy projects.

The Nordex Kouga Wind Farm in the Eastern Cape is a renewable energy project which makes the most of the fresh onshore breezes that sweep the Eastern Cape coastline of South Africa. Nordex engaged trusted South African contractors Power Construction and ACTOM to undertake the civil and electric work.

Marthinusen & Coutts is Africa's

largest after-market service provider of electrical and mechanical rotating machines. The division works extensively on hydropower plants and has recently been contracted to refurbish a synchronous condenser at the Inga River hydro project in the DRC. "ACTOM is involved in many power projects in the African market, including pump storage schemes like Ingula and the Drakensberg Pump Storage scheme. This reaffirms ACTOM's position in the whole power island supply chain," Naidoo added.

With renewable power generation and solutions on everyone's lips, it's evident that we should look at our local manufacturers offering their unique value chain of services.

"ACTOM offers the complete Engineering, Procurement and Construction value chain to the installation of the plant, and then beyond that, the actual operation and maintenance of the plant. We take the subcomponents from the cradle to the grave, where we have the after-market services and repairs capability. ACTOM can manufacture all these products and support it through its full life-cycle and ultimately facilitate the customer in receiving an optimised plant performance," Naidoo concluded.



The completed SAPPi Ngodwana Biomass Power Plant. (Image courtesy of Valmet.)

New ACTOM website launched, offering easier access to the group's offerings – and more!

ACTOM has launched a new website, so bringing the group's digital presence up to speed on all fronts to cover the full scope of product and service offerings, its leading-edge technologies and its global presence in a modern, visually appealing and easily accessible format.

Among the most noteworthy characteristics of the new ACTOM website, which was launched on April 3 this year, are – when compared with the group's previous website – its easier and faster navigability, its clearer presentation of the scale and scope of the group's operations and the diversity of products and services it offers to the wide range of markets it serves locally and abroad.

"The new website goes a long way towards eliminating the shortcomings of its predecessor. Its representation of the true scope and scale of the group's activities and the great diversity of its product and service offerings is magnificent," enthused **Mervyn Naidoo**, ACTOM's Group CEO.

"It accurately reflects the true value of the group in all its manifestations, including its high quality standards, its cutting-edge technologies, its high levels of expertise in numerous disciplines and its longstanding commitment to local manufacture and skills development.

He added: "Due to the improved and all-embracing image of the group and its various divisions and their respective offerings as presented on our new website, I foresee it having a very favourable impact in the many industries and markets we serve, especially due to the ease and speed with which anyone making use of it can locate what they're looking for and have their enquiry attended to promptly."

The new website was developed and designed by Sandton-based My Active Online Solutions

over a seven-month period starting in September last year and ending in March this year.

The development team spent the bulk of this period familiarising themselves with the business. Using a mock-up tool-kit, they consulted intensively with divisional CEO's and other key stakeholders to progressively change and modify the new website in accordance with the requirements of each division.

"The website development system we use is built with extensible technology, allowing us to provide for



This graphic displayed on ACTOM's new website shows in summary the extent of the group's reach, encompassing, among other key data, the scope of its manufacturing, repair, service and distribution presence locally and globally.

tailor-made features according to the specific requirements of your business," said **Adrian Floor**, My Active's Development Manager.

"We revised the website structure to provide a user journey that is based on the product, service or information that a visitor to the site is primarily looking for, instead of having it based on the division, or divisions, that offer it," he pointed out.

"A company's website is at the centre of its digital presence that should not under-represent your brand. The internet is the modern way to find information, and this is especially applicable on the international stage, which is a key market for ACTOM's global offering," he added.

Another enhancement on the new website is the introduction of several important pages that were not previously featured. These include:

- A "Careers" page that provides messaging that targets talent that ACTOM seeks to attract and a dedicated human resources-focussed interface enabling job-seekers to ascertain what jobs in the group are available and if their skills match the vacancies on offer, as well as streamlining the application process by providing a form that job applicants can fill in online.
- A "Newsroom" page, which brings together on one website page all the platforms, external and internal, where news and information about ACTOM's

newsworthy and noteworthy achievements have been published, thereby quickly and easily guiding enquirers to the publisher site where the particular items they are interested in are featured.

● A "Sustainability" page, which covers all aspects of ACTOM's commitment to sustainability, including how it positions itself to support renewable energy projects, how it seeks to develop its own expertise in-house, the innovations it embarks upon aimed at producing more future-proof products and services, and the various social responsibility initiatives it implements for the benefit of local communities, mostly involving investment in education. "Sustainability is an especially important topic for modern business of ACTOM's scale," Adrian remarked.

A further vitally important capability that forms a key part of the greatly enhanced interactivity that the new website provides is a greatly enhanced search engine optimisation (SEO) function.

"The new website enhances the SEO factor to ensure that anyone anywhere – be it in Australia, China or locally – who searches for a product, service or information related to ACTOM will have the group website presented to them closer to the top of Google's list of companies and organisations globally dealing with the issue in question," Adrian commented.

Solar generation system at ACTOM's Knights site now operational at MV Switchgear

ACTOM recently gave the go-ahead for the first solar power generation system to be installed at the group's main factory complex at Knights, Germiston.

MV Switchgear is the largest consumer of power among the various manufacturing divisions at the Knights site and was therefore selected as the first division to be equipped with a solar generation system.

ACTOM plans to progressively introduce solar generation systems at other factories on the Knights site as well as at group factories and workshops situated elsewhere in Gauteng and around the country in due course.

The solar installation at MV Switchgear, which went into operation in July this year after installation and commissioning were completed in June, is a grid-tied PV solar system that is designed to generate around 1MW of power, which is approximately the division's power consumption at peak load and about 50% of the peak load drawn by all the factories at the Knights site.

"We consequently expect the system to reduce the Knights site power consumption from the national grid by up to 50%, which represents a significant cost saving for us," commented **Rhett Kelly**, MV Switchgear's Design & Development Manager, who added that the reduction in power consump-

tion from the grid can only be roughly estimated at this early stage, since the solar generation system has not yet been in operation for long enough for a more accurate figure to be determined.

"MV Switchgear's energy consumption and thus electricity bill is expected to drop by up to 75%. This figure will naturally depend on the weather and the degree of operations carried out during the night hours when the solar system is unable to generate power," he added.

The system comprises two identical 550kW grid-tied PV solar powered inverter installations, which have been installed at the major two transformer locations respectively in MV Switchgear's network supplying power to various parts of its extensive factory, with the solar panels that are installed on the main factory roof being linked to the inverter stations located at these two transformer locations.

Each inverter station comprises five 110kW inverters, an inverter collector box and a data management system. "Each inverter system is tied into the low voltage electrical installation of its respective main distribution board. If the power generated at the inverter station exceeds the power demand at its respective location, any excess power generated is back-fed via the transformer into the Knights site 11kV ring network and can be used to sup-

plement the power demands at other locations on the site, thus ensuring that no PV generated power goes unused," said Rhett.

Johan Jordaan, MV Switchgear's Technology Development Specialist, further explained: "The system operates without battery backup and therefore requires an AC (50Hz) mains supply to support the load when inconsistent or no power can be generated from the solar panels due to overcast conditions or at night. By definition, a grid-tied solar generation system without a battery storage system cannot operate in isolation, its aim and purpose being to reduce the energy consumed from the grid."

For some time the division has been well-equipped with diesel-powered generators as an alternative source of 50Hz AC power to the mains supply from the grid, such as typically – and increasingly in recent times – is the case when load-shedding occurs.

"Here again, as with mains supply from the grid, our adoption of solar generated power provides us with the opportunity to reduce our dependence on expensive diesel power generation. We cannot do without it, but now, thanks to having brought solar generation into play, we require it less than previously and are able to achieve substantial energy cost savings as a result," Johan stated.



A view of the solar panels covering MV Switchgear's factory roof.

MV Switchgear's new SBV4XE took centre stage on ACTOM's stand at Enlit Africa 2023

ACTOM MV Switchgear's newly-developed SBV4XE switchgear product introduced into the market last year took centre stage among a variety of group products and services displayed on ACTOM's exhibition stand at the two-day Enlit Africa 2023 show in Cape Town in mid-May.

ACTOM won the prize for best stand at the show, which is the leading annual power & energy conference and exhibition in Africa.

SBV4XE, successor to MV Switchgear's widely-used SBV4 and SBV4E switchgear products, incorporates a host of new advanced features.



As this picture shows, the new SBV4XE switchgear product was prominently displayed on MV Switchgear's section of ACTOM's stand at the Enlit Africa 2023 exhibition. On the right is the division's popular RMV ring main unit, which also attracted much attention from visitors to the show.

These features include:

- The spring-charging and cam-follower mechanisms are designed to incorporate less costly and more readily available alternative materials.
- The opening and closing releases require less energy to operate than in the earlier SBV models.
- With a lower parts count, the circuit-breaker operating mechanism requires less maintenance, so reducing the total cost of ownership.
- The vacuum interrupter pole assembly is more cost-competitive than the earlier models.
- Arc cooling pressure relief devices have been introduced into the housing assembly to reduce emissions released during an internal arc fault.

Power Transformers, which last year launched an innovative online condition monitoring system for its transformers in the field, had a demonstration station on ACTOM's stand that provided visitors with a customer-friendly presentation of the features and significant benefits the monitoring system offers to power transformer owners and operators.

Other ACTOM divisions and business units that participated in the exhibition were John Thompson, High Voltage Equipment, Distribution Transformers, Protection & Control, Electrical Machines and Current Electric.

NRF CEO Prof Nelwamondo named winner of 'Engineer of the Year' award for 2022

Prof Fulufhelo Nelwamondo, CEO of the National Research Foundation, was named winner of the "Engineer of the Year" award for 2022 of the SA Institute of Electrical Engineers (SAIEE) at its awards presentation evening in Johannesburg in early-March this year.

The prestigious annual award, which is sponsored by ACTOM, was presented this year by **Lee Mbenge**, General Manager of ACTOM Distribution Transformers, who is seen in the picture (left) making the presentation to Prof Nelwamondo, accompanied by **Prince Moyo**, President of the SAIEE.

Prior to being appointed to his current post, Prof Nelwamondo held the position of CSIR Executive Manager responsible for the Next Generation Enterprises and Institution Cluster and



also served as the Executive Director of the CSIR Modelling and Digital Science Unit and a visiting professor of Electrical Engineering at the University of Johannesburg.

He previously was a post-doctoral fellow at the Graduate School of Arts

and Sciences of Harvard University, having been the youngest South African to receive the Harvard-South Africa fellowship. He holds BSc and PhD degrees in Electrical Engineering in Computational Intelligence.

Prof Nelwamondo, who has been

awarded many national and international research awards, is a founding member of the SA Young Academy of Science and served on the Department of Home Affairs' ministerial advisory committee on modernisation.

Katlehong Engineering School matriculants enrolled for apprenticeship training at ACTOM

Twenty learners who matriculated from Katlehong Engineering School of Specialisation near Alberton last year have been enrolled for apprenticeship training at ACTOM's Technical Training Centre in Knights, Germiston.

Katlehong Engineering School is one of three East Rand high schools for formerly disadvantaged communities that participate in the ACTOM-sponsored Ekurhuleni School Tutoring Project, which provides extra tutoring in Maths and Science to Grades 9 to 12 learners at the schools to improve teaching and performance levels in these subjects with the aim of improv-

ing learners' opportunities to take up technically-orientated careers when they leave school.

The apprenticeship training of the selected learners is funded by the Manufacturing, Engineering and Related Services Sector Education and Training Authority (MERSETA).

The learners, who commenced their apprenticeship training at the beginning of April this year, were selected mainly on the basis of having achieved high marks in Maths and Science in their matric examinations at the end of last year. Ten are receiving apprenticeship training as electricians, while the other ten are being trained

as fitters-and-turners.

"Five members of the group have benefitted from Maths and Science tutoring through our Ekurhuleni School Tutoring Project since 2019 when they were in Grade 9 right through to matric last year," **Sylvester Makamu**, ACTOM's HR Executive pointed out.

The group is receiving fulltime apprenticeship training at the Technical Training Centre for six months and thereafter will be placed in various ACTOM divisions for the on-the-job training they're required to undergo before doing their final trade test to qualify as artisans.



Technical Training Manager Kobus Swanepoel is seen above instructing some of the newly-enrolled electrician apprentices from Katlehong Engineering School at ACTOM's Technical Training Centre.



We at ACTOM Training Centre, aim to provide holistic training, not only with practical and theoretical skills for apprentices, but also provide them with the competence and self-confidence needed to pass a Trade Test and become reputable Artisans that South Africa needs.

We help them acknowledge that their attitude is the key that provides a solution to their future.

We inspire, motivate and train apprentices to excel.

We provide a revolutionary way to train apprentices.

We deliver skills and knowledge that significantly enhances the Work-Base-Experience productivity, therefore increasing to the organisations objectives.



For more info scan this code

YOUR FUTURE STARTS TODAY.

TRAINING CENTRE



Your One-Stop Global Energy Supply Partner



2 Magnet Rd, Knights, Boksburg, 1401 | +27 (0) 11 820 5021 | tc@actom.co.za | www.actom.co.za

Sewing business launched following first course of ACTOM's Women's Empowerment Programme



Mentor Mpho Mpatane (left) together with Khonzeka Mdleleni, Nteokase Mosima and Nozuko Mtsila in front of their business they recently moved into at ACTOM's Knights site.

The South African employment landscape is slowly improving, with unemployment rates skyrocketing to over 35% in the fourth quarter of 2021, to slightly improving in the third quarter of 2022 to 32%.

Even though the unemployment rate dropped slightly, the situation remains critical. According to the Quarterly Labour Force Survey (QLFS), 4,6 million young people are looking for jobs, but not all are employable or have the required skills for employment. The Human Resource Development Council reported that 90% of the country's employment opportunities require youth with technical and vocational skills and equipping them with these skills is crucial for reducing the country's unemployment rate.

The role of entrepreneurship in economic development is substantial. After all, entrepreneurs create business opportunities and accumulate wealth and impact the economy by creating employment opportunities and developing new markets, products and services.

South African small businesses employ an estimated 50% to 60% of the workforce. In light of the country's record-high unemployment rate, it is

evident that small businesses play a crucial role in job creation. By providing millions of South Africans with the means to support their families, small businesses also contribute to alleviating poverty.

Multiple factors go into starting a successful business, including a strong concept and initial funding. However, the essential ingredient is the entre-

preneur. These individuals transform their ideas into fully operational businesses with the help of companies like ACTOM.

The first chapter of ACTOM's innovative experimental Women's Empowerment Programme, which was launched early last year in the form of skills and entrepreneurship training for

To page 12



Nteokase, Khonzeka and Nozuko are busy setting up the new sewing machines they were able to acquire with ACTOM's help.

From page 11

20 young women participants selected from local disadvantaged communities near the group's Knights, Germiston premises, has to date resulted in one new business being established by three of the participants.

"Most of the participants continue to receive training in the New Venture creation learnership portion of the programme, in which they are taught entrepreneurship skills enabling them to run businesses of their own. We anticipate that more participants will be able to launch businesses based on their newly-acquired skills in coming months," commented **Sylvester Makamu**, ACTOM's HR Executive.

The training programme got underway in January last year, with training being provided in various trade skills

of the participants' choice, including carpentry, plumbing, painting, electrical, beauty and seamstress skills. Several months later, while the skills training was still in progress, the "New Venture" creation learnership portion of the programme was introduced to teach the participants the additional skills they need to operate their own businesses, encompassing all the management, financial and marketing activities involved.

"The three young women who were trained as seamstresses turned out to be the first to succeed, with ACTOM's help, in setting up their own business," said Sylvester.

The women are **Nozuko Mtsila**, **Nteokase Mosima** and **Khonzeka Mdleleni**, who launched the sewing

company Izintombi Zodwa Trading on April 1 this year operating from one of the small houses located on ACTOM's Knights premises and made available for their use by the group at no charge.

Other assistance the group provides at discounted prices includes sewing machines and administration and accounting services. The women are being mentored by **Mpho Mpatane**, who runs her own sewing business.

The new company's business is making and repairing golf shirts, overalls and other protective clothing used in factories and workshops of various group divisions. "This will be their core business, but they are also seeking similar work elsewhere," Sylvester pointed out.



ACTOM – committed to local manufacturing, job-creation, economy and growth.



Your One-Stop Global Energy Supply Partner



Co-generation for energy security and to boost process efficiency

Introduction

Any industry using steam as a heating medium ought to consider introducing co-generation. A co-generation or a combined heat and power (CHP) installation has a better energy utilisation factor than what can be achieved in a super-critical utility scale coal-fired power station with the factory heat demand taking the place of a power station's steam condenser and putting the latent heat of the steam to good use.

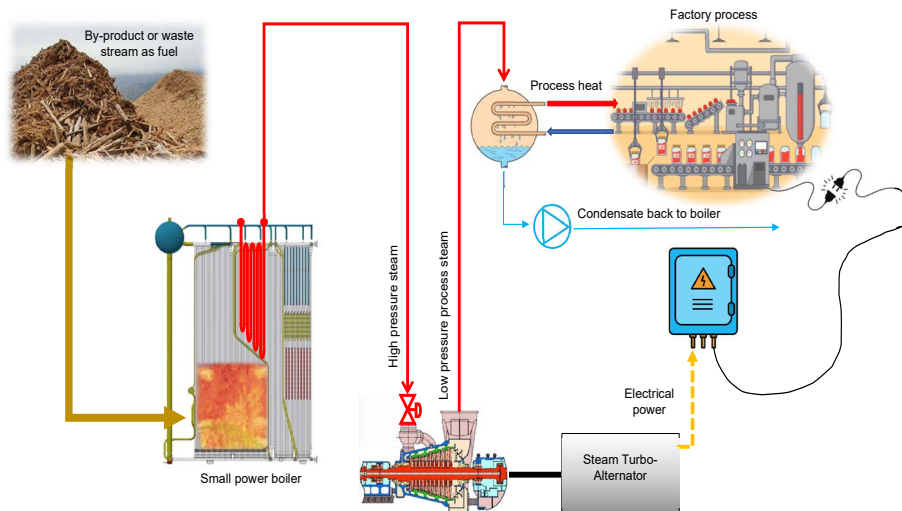
John Thompson has an installed base of more than 4 000 process steam boilers, mostly in the food and beverage industry. The majority of these boilers produce steam for process heat only without any power generation. These plants have typical electrical demands in the range of 1 to 15MW.

The lack of co-generation in this segment of industry in Southern Africa is a legacy of a period of relatively cheap and very reliable electricity. Due to the sharp increase in cost of electricity, combined with an increase of load-shedding, industry is now looking for ways to improve their energy security and to counter rising electricity costs.

Co-generation

Co-generation entails the use of a back-pressure turbine where the exhaust steam leaves the turbine at a pressure required by the particular industrial process, usually slightly superheated to allow for heat losses in the steam line from the turbine to the point of use. The process then utilises the latent heat in the steam and the condensate is returned to the boiler via a pre-boiler plant. Even a small co-generation plant can achieve a steam cycle utilisation factor of between 65% to 68%. Figure 1 illustrates the impact of the exhaust pressure on the electrical output of a back-pressure turbine.

At a factory with a fleet of boilers producing saturated steam, these boilers can be replaced to supply steam at higher pressure and superheated. These boilers can then be matched with a suitable back-pressure turbo-alternator, sized so that the electrical output from the alternator is less than the base load electrical demand of the factory, while supplying the full process steam requirement. This solution can reduce the factory's electrical costs by a significant margin and im-



An illustration of co-generation.

prove the overall energy efficiency of the factory.

A limitation with this solution is that it is not possible to meet both the electrical power and process steam demand across all load cases. This solution either meets the process steam demand, with a power deficit that needs to be imported from the national grid or alternatively generating sufficient power with a steam deficit that needs to be supplied from another process steam boiler.

Alternatively, a hybrid co-generation solution may be an attractive option, using either an extraction-condensing turbo-alternator or a combination of a back-pressure turbo-alternator in combination with a fully condensing turbo-alternator. It is important to note that the portion of the steam that is condensed in the condenser instead of in the process is associated with a significant energy loss to the environment.

The lost energy is proportional to the latent heat in the steam entering the condenser. To illustrate this loss, let us assume the turbine exhaust steam is saturated at 10kPa(a). This steam still has a latent heat component, expressed as the enthalpy of evaporation, $h_{fg} = 2\,392\text{kJ}$ for every 1kg of steam that must be condensed to complete the steam cycle and make it possible for the condensate to be pumped back to the boiler. The enthalpy of evaporation is the difference between the enthalpy of saturated steam at 10kPa(a), h_g , and that of the saturated condensate at 10kPa(a), h_f . To put this residual enthalpy in perspective, the enthalpy available in superheated,

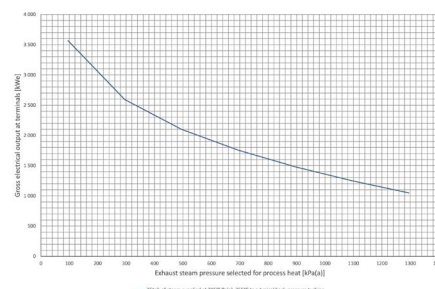
high pressure-steam leaving the boiler at 100bar(a), 530°C , $h = 3\,450\text{kJ/kg}$. The isentropic (maximum theoretical, not practically achievable) work that can be done by expanding this steam through a turbine from 100bar(a) down to 10kPa(a) saturated, is equivalent to a change in enthalpy of $h - h_g = 1\,058\text{kJ/kg}$. Clearly, there is a lot more latent heat left in the steam at 10kPa(a), than the isentropic work that can be done. The total potential energy in the high-pressure steam is represented by $h@100\text{bar(a)}, 530^\circ\text{C} - h_f@10\text{kPa(a)} = 3\,258\text{kJ/kg}$.

The energy per kg of steam lost to the condenser = $(2\,392\text{kJ/kg}) / (3\,258\text{kJ/kg}) = 73\%$

Hence, in the interest of fuel energy utilisation and as far as practically possible, one should strive to minimise the amount of steam condensed in the condenser and maximise the amount of steam condensed by the factory or process.

An extraction-condensing turbine is designed with an extraction port on the housing, often with an internal modulating element, to achieve controlled

To page 14



Electrical output from a back-pressure turbine as a function of exhaust steam pressure.

From page 13

extraction of steam at the pressure required by the industrial process, slightly superheated by a few degrees Celsius.

The rest of the steam continues through the latter stages of the turbine before it exhausts to either an air- or water-cooled condenser. Depending on the flexibility of the turbine design, this solution can meet the plant heat and power demand over a wide range of load scenarios without back-up from process steam boilers and power imported from the grid. This turbine can run in fully condensing mode, making it possible to generate power when there is zero process steam demand. However, this type of turbine always requires a minimum steam flow through the latter stages of the turbine. This ultimately impacts on the capability of this boiler and turbine combination to meet every possible plant load permutation.

Although it is typically more capital intensive, another hybrid co-generation option is to install a back-pressure turbine that is 100% controlled based on process steam demand, generating whatever is associated with the varying steam flow, while a separate fully condensing turbine makes up the power deficit. This solution often provides more flexibility, especially when dealing with a more complex process where either the electrical power or the process steam demand may lag the other. A very big advantage of this option is that the plant can be run as a dedicated power island if the factory should have such a need e.g. when it needs to start up during a grid power failure or loadshedding situation.

Steam turbo-alternator options

Steam turbines convert a part of the energy in steam into mechanical power that can drive an alternator or mechanical device. Steam turbines vary in levels of sophistication, starting from relatively crude, single wheel, impulse-type turbines right up to multi-stage combination impulse and reaction turbine rotors.

In an impulse turbine stage, steam is introduced and expanded via a set of nozzles to create a high velocity jet that impinges on curved rotor vanes. The steam undergoes a change in momentum and the resultant force acts on the vanes and in turn rotates the shaft. The rate of change in momentum of the steam impinging on the vanes provides the motive force for the turbine.

A multiple stage steam turbine consists of a stationary stator row that consists of a nozzle or guide vane ring. The stator expands the high pressure, high temperature steam to form steam jets. The shape of the stator guide vanes ensures that the steam jets enter the next rotor blade at the optimum angle.

The profile of a rotor vane can be either impulse- or reaction-type. In an impulse vane, the kinetic energy of the steam is absorbed by the shaft to produce mechanical energy. In a reaction-type vane, the kinetic and some of the thermodynamic energy is converted into mechanical energy. The number and types of stages in the turbine determines the efficiency and the flexibility of the turbine to meet the requirements of a specific application.

John Thompson has established relationships with several turbo-alternator suppliers making it possible to select the most suitable turbine technology to meet the technical and commercial requirements for every power island application. John Thompson, as the turnkey supplier, can package the complete power island to suit every need and application using one of their wide range of boilers, matched with the most suitable turbo-alternator combination.

Environmental considerations

Environmental legislation applicable to manufacturing and processing plants in all industries is becoming more stringent. When considering a new power island or co-generation plant, statutory environmental requirements must be considered, in particular with regards to plant effluent, gaseous and particulate emissions. This affects the selection of

the ash removal system, the flue gas cleaning as well as the type of cooling implemented in the steam condenser behind the turbine.

John Thompson has developed combustion equipment and boilers for optimal utilisation of fibrous and woody biomass fuels. These products provide carbon neutral boiler solutions for both process steam and co-generation applications. The greatest opportunities can be found in industries that produce a biomass by-product that can be used as a fuel feed stock for a co-generation boiler e.g. sunflower husks from the sunflower oil industry, woodchips and sawdust from sawmills and palm kernels from the palm oil industry.

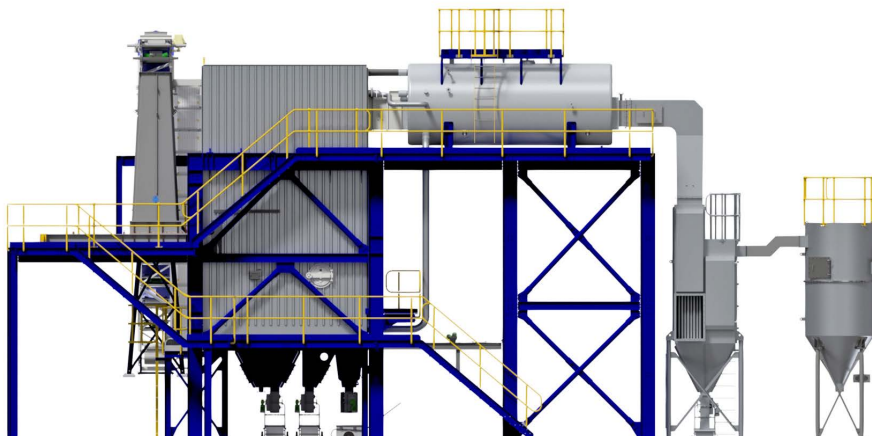
Implementing co-generation enhances the energy efficiency of the plant due to the high energy utilisation achievable by a combined heat and power plant. This higher energy efficiency results in lower fuel consumption and a reduced impact on the environment.

Conclusion

There is no one solution to fit all the co-generation or small-scale electrical generation challenges that are encountered. It is therefore essential to have a thorough understanding of which arrangement will suit a particular application best. Each combination of plant will have different levels of capital and operational costs that will in turn play a role in selecting the right solution.

Whatever solution is required, John Thompson can match a boiler and turbo-alternator to provide the optimum co-generation solution.

*By Etienne de Villiers
Divisional Technical Manager
John Thompson*



A graphic representation of John Thompson's hybrid Torripac boiler, consisting of a watertube furnace with a firetube evaporator. It is an example of a boiler that can burn sunflower husks and generate steam for co-generation.



JOHN THOMPSON

MICROGEN BOILER TECHNOLOGY FOR POWER ISLANDS



COMBUSTION TECH

Optimised fibrous biomass combustion for efficient steam generation.



DESIGN CAPABILITY

Computational Fluid Dynamics (CFD) technology is used to achieve optimum combustion and heat transfer while minimising the risk of erosion.



CO-GENERATION

Modular power boiler to produce electrical power and process steam via turbo-alternator.



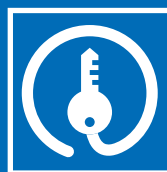
MODULAR DESIGN

The design is characterised by standard modular units for cost effective transportation and reduced installation period.



FUEL TYPE

A wide variety of woody biomass fuels can be used as feedstock.



TURNKEY SOLUTION

As part of the ACTOM (Pty) Ltd group, John Thompson acts as a turnkey supplier with the ability to deliver a complete power-island.

YOUR SOLUTIONS PARTNER IN VALUE ENGINEERING
AND INNOVATIVE TECHNOLOGY.



Your One-Stop Global Energy Supply Partner



ACTOM Industry wins contract to upgrade Ghana gold mine's winder drive and control system

After many years of trying to break into the Ghana gold mining market with its modern mine winder drive and control systems, ACTOM Industry finally achieved a breakthrough late last year when it secured an important contract to upgrade the drive and control system of a man-winder at a gold mine.

The mine is one of a number of gold mining operations in Ghana that are owned and operated by a leading international gold mining company.

"We view this contract as a substantial ground-breaking achievement for us, as we've been selected to replace original equipment manufactured and supplied by an OEM not in any way connected with us," commented **Janna Kapp**, ACTOM Industry's General Manager.

"In most of our mine winder drive and control system contracts we are

responsible for the design, assembly, supply, installation and commissioning of each system ordered, but in this instance, due to various regulations prevailing in Ghana that render it unworkable to have us participate in any of the on-site work involved, we had to negotiate a project plan with the client which would allow us to deliver and execute the project without undue risk to either party," Janna said.

"The agreed project plan ensures that the required standards and competence for the on-site work are adhered to without the presence of ACTOM Industry's personnel in Ghana," he pointed out, adding that in terms of the project plan the client undertakes to procure and supply the labour force required for the installation work.

The contract, due for completion in the first quarter of 2024, is for the replacement of the aging and outdated

existing Ward-Leonard motor-generator set and associated electrical and control systems with ACTOM Industry's state-of-the-art DC system, comprising a thyristor converter system which regulates the DC voltage onto the retained 2 635kW motor.

Other equipment that forms part of the new system includes transformers, switchgear and a safety and control system.

"Our system is more efficient, less expensive and less maintenance-intensive than the legacy system it replaces," said Janna.

He concluded: "Now that we have succeeded in winning this important winder upgrade contract in Ghana, we believe we stand a good chance of being awarded further winder drive and control upgrade contracts for some of the other operations there soon."



In discussion in front of the newly assembled DC drive converter panels for the man-winder of the gold mine in Ghana are (from left) ACTOM Industry's Production Supervisor Ash Moodley, Production Assembler Glen Nkuna and Project Office Manager Johan Botha.

Power Systems awarded GIS substation contract for public-private partnership venture



Power Systems' Site Manager Ben Michau is shown above receiving installation instructions via a portable language translator device from the OEM Supervisor Kou Xuan at a similar 132kV GIS currently being assembled.

Power Systems has been awarded a contract valued at over R170-million to boost the capacity of an existing substation in the City of Ekurhuleni to cater to the electricity supply requirements of a new business services development nearby.

The project involves the replacement of an adjacent outdoor 44/6.6kV substation with a new expanded 132/11/6.6kV indoor gas-insulated switchgear (GIS) installation to boost the power capacity from the existing 20MVA output up to 150MVA.

The extension is being executed under the self-build principle by a self-funded private investor working in partnership with the City of Ekurhuleni, which retains ownership of the substation and will ultimately assume responsibility for ongoing maintenance and operation, once complete.

"When the extension was first mooted the establishment of a conventional outdoor AIS substation was considered, but this was soon found to be unviable due to severe space limita-

tions within the substation boundary. Consequently an indoor GIS solution was advised, since one of the greatest advantages offered by GIS is its compact footprint," said **Hannes Horn**, Power Systems' Senior Contracts Engineer, who is responsible for the contract.

The contract, awarded in December last year, is an exceptionally fast-track project, as the facility requires their power offtake by June 2024.

"What makes it even more challenging is that the existing substation has to remain live throughout. This complicates the sequencing of the works that we have to perform and compounds the space constraints that we have to work under," Hannes commented.

The contract comprises the supply of an eight bay, double-busbar 132kV GIS system sourced from Power Systems' established Chinese supplier, which is the third similar order the business unit has received for HV GIS over the past 18 months.

"We will also install four new power transformers, which are being manufactured by ACTOM Power Transformers. Two of these will couple to the old distribution switchboard to rejuvenate supply capacity to the surrounding municipal reticulation, while the other two are dedicated to power the new facility," Hannes pointed out.

All the existing MV substation infrastructure will be left intact and the new GIS expansion will be fed from a new dual 132kV infeed.

Other ACTOM business units Power Systems will utilise on the project are Static Power for the DC system comprising batteries and battery chargers and ACTOM Electrical Products for cables and cabling accessories.

"The DC system has been upgraded to withstand the envisaged impact of daily load-shedding that has become the norm in South Africa. The backup power standby capacity has resultantly been augmented with an additional 50% over what would have normally been specified," Hannes remarked.

MV Switchgear's AMV12 switchgear passes type tests to achieve a voltage rating of 17.5kV

MV Switchgear recently introduced a higher-rated version of its well-known and popular premier brand AMV12 air-insulated withdrawable pattern indoor switchgear.

The new version, branded AMV17, has been successfully type tested for applications rated up to and including 17.5kV, thereby meeting the requirements of several large mining companies operating in the local market that specify 17.5kV rated switchgear for use on systems operated up to 11kV.

"The new brand, in addition to catering to the requirements of the mining industry and other local users, is sure to be welcomed elsewhere in Africa as well. Its availability opens up the market for sales in many African countries where 15kV systems are known to be widely in use," said **Johan Jordaan**, MV Switchgear's Technology Development Specialist

AMV12, jointly developed by MV Switchgear and YIHE Electric Group, a China-based internationally recognised electrical equipment manufacturer, was originally type tested for a rated voltage of 12kV, as the majority of systems in the network are operated at 11kV. Following its launch into the local market in 2015 it has proven highly successful, having been widely adopted in both the public and private sectors.

Anglo American Platinum, when approached by MV Switchgear about a year ago, stated that the switchgear would have to be type tested to their

specification with a rated voltage of 17.5kV before they could accept it for their use.

AMV12 was designed and type tested for a 95kV rated lightning impulse withstand level as specified in South African National Standards for 12kV rated switchgear and which is the insulation level specified in the IEC standards for 17.5kV rated equipment.

"With this in mind, we were certain that the dielectric performance of our AMV12 would be suitable for systems operated at higher voltages than its current 12kV rating indicates, without any design changes being needed," Johan explained.

"Furthermore, after reviewing the vacuum interrupter design and stroke with respect to its suitability for interrupting short circuit currents with the higher transient and power frequency recovery voltages required for 17.5kV rated switchgear, we arranged to have the necessary type tests done to prove that it is indeed capable."

The short-circuit performance tests were carried out through the international certification body TUV Rheinland at the well-known ILAC-accredited XIHARI test laboratories in Xi'an, China, in September and October last year. After these tests had been successfully completed, the balance of testing required, comprising power frequency withstand tests, was carried out by SABS NETFA in South Africa in November.

A type test summary proving full compliance to Anglo American Platinum's specification was submitted to and accepted by Anglo American Platinum.

"The type tests carried out last year proved that no changes to our original product were necessary, as our initial confidence that this product meets the requirements for the 17.5kV rating specified for Anglo American Platinum's applications proved correct," **Rhett Kelly**, MV Switchgear's Design & Development Manager, pointed out, adding that the product offered for applications requiring a rated voltage of 17.5kV is now specifically branded AMV17.

"The latest type tests complement the internal arc testing MV Switchgear carried out in December 2020 on AMV fitted with arc ducting, another requirement of Anglo American Platinum's switchgear specification," said Rhett.

Anglo American Platinum subsequently placed an order with the division for the manufacture and supply of an 11-panel double-busbar AMV17 switchboard for extending one of their substations in North West Province.

The double-busbar panels are fitted with MV Switchgear's newly-developed power over Ethernet (PoE) infrared camera and display system, which provides visual confirmation of the isolating distance provided by the busbar disconnectors.



Posing for the camera after completing the inspection and testing in MV Switchgear's plant of the 11-panel double-busbar AMV17 switchboard for Anglo American Platinum are (from left) Testers Collin Smith and Reginah Shabang, Indoor Production Manager Simon Mokgolo and Apprentice Electrician Nonhlanhla Nkosi.

MV Switchgear awarded SIS switchgear contract for DRC mine's underground substations

MV Switchgear, which executed two large contracts over the past two years involving manufacture, supply and installation of numerous air-insulated switchgear (AIS) panels for 11kV substations at the extensive new Kamoakakula copper mine in the Democratic Republic of Congo (DRC), has subsequently been awarded a further contract for GELPAG solid insulated switchgear (SIS) units for more underground substations at the mine.

A total 233 of MV Switchgear's well-known and widely-used SBV4E brand of AIS switchgear panels were produced and supplied by the division to equip surface and underground substations at the new mine. They comprised 140 panels for eight surface substations and 93 panels for five underground substations.

The latest contract for 149 GELPAG SIS units for eight underground substations, awarded late last year for delivery in August this year, came about as a result of having to address changes in underground conditions at the mine as mining operations progressed.

"Harsh environmental conditions such as high levels of humidity and dust were found to be present in these underground sections, necessitating having to introduce more specialised switchgear equipped to cope with these conditions," said **Rhett Kelly**, MV Switchgear's Design & Development Manager.

"In such a situation the choice is typically between fixed pattern gas-insulated switchgear (GIS) and solid-dielectric-insulated switchgear (SIS). We were confident in recommending to DRA Global of South Africa, the engineering consultants for the Kamoakakula project, our GELPAG SIS product for



MV Switchgear wiring technicians Phyllis Morena (left) and Petra Maliga complete wiring of locally manufactured LV compartments fitted onto GELPAG SIS switchgear panels due for installation in underground substations at Kamoakakula copper mine in the DRC.

this purpose."

With MV Switchgear experiencing growing demand for GELPAG since introducing it into the local market in late-2020, it recently arranged in collaboration with its overseas-based OEM partner to commence local manufacture of some of the product's ancillary components.

"By taking this step we've substantially shortened the production lead times, as we can now manufacture the agreed locally produced components in parallel with the OEM's production of the main product, thereby speeding up both final assembly of the product in our plant as well as delivery to the end-user," Rhett said.

The Kamoakakula mine will be the first recipient of GELPAG panels in terms of the new arrangement.

Johan Jordaan, the division's Technology Development Specialist, said: "The components being manu-

factured locally now and in the future are the LV compartment, internal arc ducting and the drop-down boxes for the cable terminations.

"While not normally required for the GELPAG product range, custom drop-down boxes have been designed to accommodate the 3-core cable terminations with core balance CT's specified by the customer.

"To further speed up and simplify production and delivery, we've developed an LV connector system which allows the panel's circuit-breaker, disconnector and earth switch wiring to interface with the LV control wiring via a standard multi-pin plug-and-socket system," he added.

MV Switchgear has also developed a wiring test rig to enable it to test and verify the wiring of each LV compartment before the GELPAG panels they are to be connected to arrive from abroad.



MV SWITCHGEAR

A division of ACTOM (Pty) Ltd



Your One-Stop Global Energy Supply Partner



Distribution Transformers increases its production capacity to manufacture extended product range

Distribution Transformers has recently expanded the production capacity of its Knights, Germiston, manufacturing facility to extend the upper power and voltage capacities of its transformers to 10MVA and 88kV respectively.

This represents a significant upward leap from the previous upper limits of 6MVA and 44kV of the division's main product line of distribution transformers extending into the bottom end of the power transformer market.

"We've made this change mainly in response to the growing demand for transformers in the 5 to 10MVA range in the rapidly expanding renewable energy market, as well as in the mining industry, among others," said **Lee Mbenge**, Distribution Transformers' Divisional CEO.

"We've embarked on this move with the full knowledge and approval of the ACTOM group executive, as we have a role to play in contributing towards meeting the growing demand for power transformers in the 5 to 10MVA range with very short lead times. The two divisions ACTOM Distribution Transformers and ACTOM Power Transformers overlap each other in and around this range and with the recent upsurge in demand in this market segment we are both happy to share in supplying it," he commented.

In the extended range Distribution Transformers offers purchasers the option of units fitted with on-load tap-changers, in place of the standard de-energised tap-changers that are customarily on offer. In addition, customers have a choice between ester



Khuliso Mutheiwana, Distribution Transformers' Chief-of-Test, is shown above conducting routine tests on a 5MVA power transformer in the division's Highbay test facility.

oil filled and mineral oil filled units in this range.

Transformers for solar and wind applications will be part of the extended range of transformer offerings.

The expansion of Distribution Transformers' production and testing capacity involved the acquisition and installation of a larger LV foil-winding machine, which is still preferred for better withstand capability under short circuit conditions, and the upgrade of an existing stacking table.

The following are already in place:

- A fully-equipped fabrication facility with options for differing corrosion

protection up to C5-M.

- A core and winding drying facility to cater for transformers up to 10MVA.
- A full routine testing facility, including lightning impulse testing and partial discharge testing in a screened environment.
- A 30t lifting facility.
- HV winding machines.
- A final assembly area.

"We have confirmed the support of renowned international transformer expert consultant **Dr Hugo Piovan** to vet our designs in the new extended range," Lee concluded.



ACTOM –
SOWING AFRICA'S
SUSTAINABILITY SEEDS
OF TOMORROW, TODAY!

R&M provides on-the-job training to electro-mechanical millwright apprentices from Komatsu

The past three or four years have seen a steady rise in Reid & Mitchell's business with Komatsu, based mainly on the repair services it provides on Komatsu dump truck fleets owned and operated by its many opencast mining customers.

"Komatsu is now our single largest customer, thanks to the increased business we have with them in servicing

and repairing key electrical equipment used in the Komatsu off-road dump trucks deployed in opencast mining operations throughout Southern Africa" said **Mike Shaw**, R&M's Divisional CEO.

The electrical equipment used in Komatsu trucks and other makes of dump trucks of similar size comprise electric wheel-motors, alternators and grid blower motors. R&M provides a

full suite of refurbishment options to Komatsu for this range of equipment.

"Since Komatsu takes responsibility for installing and commissioning the replacement units, they approached us recently to ask us to provide training to some of their electro-mechanical millwright apprentices, who upon qualifying will join Komatsu's field service teams," Mike stated.

"It is to our benefit that the Komatsu field service teams have the appropriate level of electrical skills to help support our equipment on site to maximise the operational performance levels for the end clients.

"We agreed to do so and have so far trained two of their apprentices for four weeks in March this year. This training forms part of the practical training that the apprentices are required to do in terms of their apprenticeships," he explained, adding that R&M is due to provide on-the-job training to more millwright apprentices from Komatsu in the near future.



Reid & Mitchell Mechanical Engineer Sphiwe Sithole explains the workings of a 788 model wheel-motor for a Komatsu 730E dump truck to two Komatsu electro-mechanical millwright apprentices.

Thanks to extended UNX programme R&M supplies wheel-motors to mining customer quickly

Last year a leading opencast mining company in Limpopo Province, after not having had contact with Reid & Mitchell (R&M) for a number of years, approached the division with a request to urgently provide refurbished 788 model wheel-motors to replace worn-out units for several of its large 190t capacity Komatsu 730E off-road dump trucks.

"Both we and the customer were in luck when they made this approach, as we were in a position to meet their request promptly," commented **René Rajzman**, R&M's Operations Executive.

During the period when it had no contact with the customer the division greatly expanded its unit exchange (UNX) programme to include the refurbishment of wheel-motors and related electrical equipment for off-road dump trucks in the 190t to 220t load capacity range, including Komatsu 730E trucks.

"Consequently, when the customer approached us in October last year to ask us to supply them with six refurbished 788 model wheel-motors to replace worn units for three of their 730E trucks, we were able to supply two units almost immediately, followed by two in December and the remaining two in January this year, thereby ena-

bling them to put the trucks back into service promptly," said René.

Prior to expanding its UNX programme, R&M had offered a limited range of wheel-motor and related electrical equipment for large dump trucks under the programme.

"At that stage the equipment we offered under the programme was confined to those for the 776 model

wheel-motor for 170t load capacity trucks, which are smaller than the Komatsu 730E's. In our subsequent extension of our UNX programme, we introduced 788 model wheel-motors, alternators and grid blower motors to cater to all off-road dump trucks with load capacities of 190t and above," René explained.



Thomas Siphiri, R&M's Mechanical Assessor, is shown above using a Faro arm for precision measuring to assess a refurbished 788 model wheel-motor for a large off-road dump truck.

M&C performs its ninth on-site gearless mill drive winding project for Cobre Panama copper mine

As it had done eight times before within the previous five years, Marthinusen & Coutts (M&C) late last year carried out on-site winding and sub-assembly of an 18MW gearless mill drive for a new ball mill at the Cobre Panama copper mine in Panama as part of expansion of its processing plant to cater to increased ore output.

M&C's seven-man on-site team, led by Divisional CEO **Richard Botton**, performed the work in 40 days during October and November last year.

"We already knew from previous experience that the working conditions at the mine are extremely tough, due to frequent heavy rain, high humidity and excessive heat, but our familiarity with the procedures involved helped to ensure that the project went according to plan and was completed on time," Richard commented, adding that due to their complexity the winding and sub-assembly have to be done on site.

"Our preparation is extensive and starts about six months prior to site establishment. The machine is transported to site from the OEM in Europe in four quadrants, each of which weighs 85 tonnes."

"We are responsible for the connecting and continuity between the four segments, which have been pre-wound by the OEM," he explained.

"About half of the tools we use



The members of Richard Botton's on-site team at Cobre Panama mine (from left): Wynand Willemse, Arno Snoer, Shadrack Mazibuko, Eugene Nekati, Gift Manyuwa and Donald Kolobe.

for the on-site work are purchased and supplied by the mine itself, while we have to supply and bring with us the remaining more specialised tools, along with the test equipment that's needed."

As previously, M&C was contracted for the latest project by the Cobre Panama mine's owners and opera-

tors, Minera Panama, the Panamanian subsidiary of First Quantum Minerals (FQM), an international mining company.

M&C has also executed four on-site winding and sub-assembly projects on gearless mill drives for FQM's Sentinal copper mine in Zambia in recent years.

M&C acquires state-of-the-art coil production equipment to upgrade its Cleveland coilshop

To further advance its already strong standing in the marketplace as a repairer and refurbisher of large and medium rotating electrical machines, Marthinusen & Coutts (M&C) has acquired four brand new state-of-the-art coil production machines for its Johannesburg coilshop.

The new machines, purchased from a manufacturer in Europe, are:

- an automated CNC coil spreader machine
- an automated looping machine
- a CNC hydraulic coil heat press
- an automated high-speed taping machine

"The automated CNC coil spreader machine represents a major advance on the manually-operated hydraulic spreader machines we've been using up to now," said **Shawn Teixeira**,

M&C's Coilshop Manager.

"It is therefore a huge game-changer for us in terms of serving the market more effectively. Both the speed of production and the product quality are vastly improved. Not only is its production rate much faster, but because the process is fully automated the product is now consistently of the highest possible quality, reliability and uniformity," he explained.

The 9t 8m long new machine, which commenced operation in M&C's Cleveland, Johannesburg, workshop in March this year, is capable of forming coils at the rate of one a minute. "This is almost 30 times faster than the rate at which we can form a coil with one of our six labour-intensive old machines, which are subject to human error and are therefore more prone to inconsis-

ency in quality," Shawn remarked.

The new machine, one of only a few fully automated coil spreaders in operation in South Africa, has been specially modified by the manufacturers to protect it from the potentially damaging effects of local load-shedding conditions.

"In addition to protecting the machine from sudden loss of power supply when load-shedding occurs, this modification also ensures that the exact spread sequence at the time of the power interruption is retained in the memory so that when the power is restored the machine can carry on operating from where it left off," Shawn stated.

Like the new coil spreader machine, the other three newly-acquired machines are speedier and more efficient than their respective predecessors.

Special feature and advantages of these machines include:

- The automated looping machine incorporates automatic measuring of the correct dimensions for the loop, automatic tensioning of the wire, and forming two loops simultaneously.
- The CNC hydraulic coil heat press removes human error factors in coil pressing and bolsters M&C's existing heat presses.
- The automated high-speed taping machine adds production capacity in coil taping to match the throughput increase in coils because of the CNC coil spreader machine's speed.

"All the advantages improve quality and efficiencies during the production of the coils, assuring faster turnaround times for customers' machines," Shawn concluded.

Coilshop Manager Shawn Teixeira (left) and Operator Mbukeleni Muzibuko with the new automated CNC coil spreader machine.



M&C Zambia performs rapid overhaul of compressor motors for Copperbelt smelter



Senior Balancer Darlington Musonda is shown above balancing the rotor of one of the two compressor motors on M&C Zambia's 12t balancing machine.

In August 2022 Marthinusen & Coutts Zambia was requested by a smelter based in the Copperbelt to provide an in-country repair solution on their two critical 4.5MW compressor motors. It was given only three weeks in which to overhaul and commission the motors.

The scope of work involved was to dismantle, clean and assess all parts,

dynamically balance the rotors at operating speed using M&C Zambia's own 12t balancing machine, supply new bearing assembly parts, assemble the motors and no-load test and laser align the motors on site.

"Upon dismantling both motors we identified that the stator coils indicated partial discharge and the stator wedges had deteriorated significantly over time.

We consequently requested M&C's workshop in Cleveland, Johannesburg to supply partial discharge treatment of the stator coils and to manufacture the stator wedges that needed to be replaced," said **Eugene Lottering**, M&C Zambia's General Manager.

To ensure that that all the work complied with international standards,

To page 24

From page 23

M&C also sent a senior technician from Johannesburg to assist the local team on the contract.

"Our team is well experienced in how to approach and action various stages throughout the overhaul of these motors. We successfully completed various medium voltage over-

hauls up to 4650kW. The motors were no-load tested at 11kV with exceptionally good results and the customer then gave us the go-ahead to commission the motors," Eugene explained.

"Installing them on site turned out to be a complicated procedure, especially the alignment of the motors to

the compressors," he added.

The motors were finally tested on load, recording satisfactory vibration levels of below 1.34mm per second.

"The motors were successfully installed and commissioned three days before the scheduled deadline for completion," Eugene concluded.

YOUR 24/7 SERVICE PARTNER

Repairs, maintenance and customised manufacture of all electrical and mechanical rotating machines.

ELECTRICAL SERVICES

Medium and low voltage, Ex certified, AC and DC motors, transformers, generators, alternators and ancillary power generation equipment up to 373 MVA.

MECHANICAL SERVICES

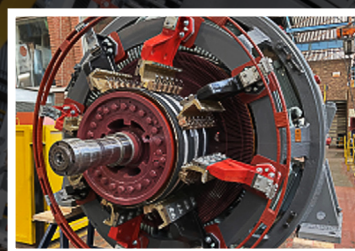
Full range of rotating machinery mechanical services. Machine shop capabilities including dynamic balancing up to 32 tons, large machining up to 40 tons, micro welding and hydraulic presses up to 1000 tons.

24 HOUR ON-SITE SERVICES

Breakdown repairs, removal, re-installation, on-site testing, dynamic balancing, alignment, vibration analysis, root cause analysis, condition monitoring, preventative and predictive maintenance, motor management programmes and maintenance contracts.

CUSTOMISED ELECTRICAL AND MECHANICAL DESIGN

Reliability improvements/enhancements, efficiency improvements, performance upgrades and root cause analyses.



Marthinusen & Coutts

A division of ACTOM (Pty) Ltd

+27 (0) 11 607 1700 | support@mandc.co.za

53 Hospital Street, Cleveland 2094, JHB

www.mandc.co.za

Metalplus applies CMT robotic welding to repair generator rotor salient poles

Metalplus has harnessed the advanced technology of its recently-acquired automated robotically operated cold metal transfer (CMT) welding system to perform intricate repairs on the coil retaining plates of the salient poles of a 45MW generator.

The generator is one of four identical units deployed at City of Cape Town's 180MW Steenbras pump storage hydroelectric power station in the Western Cape.

Marthinussen & Coutts (M&C) has the maintenance contract for the 4 x 50MVA 10-pole Siemens motor/generators and due to the age of the salient poles coils the coils had to be re-insulated.

The steel retaining plates that hold the coils in place have to be removed in order to remove the coils for re-insulation. One of the biggest factors when refitting and welding the retaining plates back after the coils have been re-insulated is to ensure that there is as little heat transfer as possible into the coil windings. Heat is one of the major causes of ageing/degradation of the insulation in the coil windings.

M&C approached Metalplus – its sister division in ACTOM – to determine if it could perform the welding component of the contract to the stringent standards of workmanship required. Having been given this assurance M&C subcontracted all the welding work to Metalplus.

"In addition to the complex procedures we had to perform to meet the stringent requirements of the job, we also had to take into account the extremely short time-frame we were given to complete it in," **Roman Mornau**, Metalplus' Divisional CEO, pointed out.

The steel retaining plates also had a history of cracks in the previous welds between the salient pole core and coil retaining plates. M&C attributed the

cracks in the welds to the centrifugal forces during operation.

The first step towards performing the welding subcontract was to qualify the weld procedure on test pieces.

"To achieve this we had to programme the feed speed of the filler material and the travel speed of the robotic arm to achieve the desired weld geometry for welding a single run to complete the entire weld," Roman explained.

"After several tests we determined the ideal weld preparation dimensions of the coil retaining plate, as well as all weld parameters, and then sent the test plates to a metallurgical laboratory to analyse the weld for sufficient penetration and also to ensure that the heat input was sufficient for good sidewall fusion between the retaining plate and the salient pole core."

Care had to be taken to avoid subjecting the insulation under the retaining plate to excessive heat during the welding process.

"We therefore had to design the weld so that the filler material didn't penetrate further than the plate thickness, while at the same time the length of sidewall fusion had to be maximised," he remarked.

Once all these parameters had been correctly determined and tested, it was a relatively simple task to programme the CMT system and perform the welding work on each of the rotor's 10 salient pole cores in turn.

"We did the entire project from start to finish, including the weld testing and weld procedure specification, within two weeks, week-ends included," Roman stated.



Metalplus' Quality Controller Ric da Costa keeps a watchful eye on the CMT robotic welder as it carries out complex weld procedures in repairing a salient pole core and retaining plates.

Metalplus remanufactures thin-walled pump impellers by 3D printing

When ACTOM Turbo Machines investigated the damage caused to two multi-stage pumps that had failed while in operation it found that the pumps' thin-walled stainless steel impellers and intermediate casings had suffered extreme material loss due to rubbing.

The multistage pumps are used to pump light hydrocarbons in one of the chemical plants of a large local petrochemicals producer.

ACTOM Turbo turned to its fellow ACTOM division Metalplus to see if it would be able to perform the complex weld repair and remanufacturing work

that was required during the emergency breakdown.

Roman Mornau, Metalplus' Divisional CEO, said: "We first set out to perform the repairs using cold metal transfer (CMT) and laser welding technologies, but both proved to be

To page 26

From page 25

unsuitable for the purpose.

"We were also advised by casting experts that such thin-walled impellers couldn't be cast either, so we finally resorted to 3D printing – also known as additive manufacturing technology – which turned out to be the correct solution to the problem," Roman stated.

Due to a pressing need to produce the new components very quickly to enable the pumps to resume operation as soon as possible, Metalplus engaged with two local 3D printing operators so that they could manufacture the required components in parallel to save time. One of these was the CSIR's National Laser Centre (NLC), which 3D printed eight of the impellers by a laser-printing method. The remaining four impellers were manufactured by a local private sector 3D printing company, which applied a metal powder sintering process for the purpose.

"Before the 3D printing of the impellers was carried out, we applied reverse engineering to generate 3D graphic models for the two manufacturers to work from. In these 3D models we made provision for additional wall thicknesses to allow for final machining of all working surfaces, as well as keyway cutting and bore-grinding, as the 3D printed surface finish is not accurate enough for final use," Roman pointed out.

The 3D printing took twice as long to complete than intended – eight weeks instead of the planned four



Metalplus' Divisional CEO Roman Mornau (left) and Senior fitter Charlie Pohl inspect two of the 3D metal printed impellers prior to machining.

weeks – as it was disrupted by frequent load-shedding, resulting in a high scrap rate due to the process having to be repeated after each of the load-shedding disruptions.

ACTOM Turbo had in the meantime manufactured a new shaft and, upon receiving the newly manufactured impellers and casings from Metalplus in mid-December last year, it re-as-

sembled the pumps along with spare parts supplied to it by the customer and installed and re-commissioned them in the plant.

"When the first pump resumed operation it ran perfectly. The operator was able to restart production before the second pump's spare parts from the pump manufacturer arrived in South Africa," Roman concluded.



METALPLUS

Metalplus are pioneers in the industry and as a result of Metalplus' tremendously successful repair procedures, we are able to do repairs on a number of components



Your One-Stop Global Energy Supply Partner

A division of ACTOM (Pty) Ltd

ACTOM

Electrical Products' Gqeberha Branch wins 'Branch of the Year' award for first time

Gqeberha (Port Elizabeth) Branch won Electrical Products' "Branch of the Year" award for the very first time in the 2022/23 competition.

This was revealed at the end of the business unit's annual conference in Cape Town in mid-May when the results of the competition for the past financial year were announced.

"This result comes as no surprise to anyone who's been close to the action. In recent years Branch Manager **Prevan Moodley** and his team have been working hard to achieve this. They've got closer to making it year-by-year and at last their efforts have been crowned with success. It's well deserved," commented **Fritz Hattingh**, Electrical Products' General Manager.

"But it was a close-run race. Pretoria Branch, the previous year's winner, were the Runners-Up by a narrow margin," he added.

"In fact, all the branches performed exceptionally well. It was a successful year for Electrical Products as a whole, despite the continuing unfavourable macro-economic conditions and worsening load-shedding during the year. I'd like to congratulate everyone for an



Gqeberha Branch Manager Prevan Moodley proudly displays the "Branch of the Year" certificate in celebrating the branch's first-time win of the award, accompanied by (from left) Melany Jacobs, Debtors/Reception; Masixole Peta, Stores Assistant; Kelly Claassen, Internal Sales; Eugene Beling, Driver; Taswell Smith, Stores Controller; Danel van der Merwe, Senior Internal Sales; Terence Stubbs, Sales Representative; and Rosemary Prinsloo, Creditors.

outstanding all-round performance. Keep it up!" Fritz concluded.

Among the awards presented,

Cape Town Branch was named "Best Sales Team" and Welkom Branch won the "Most Improved Branch" award.



ACTOM Electrical Products provides supply chain management services to the ACTOM group for electrical equipment, services, and balance of plant for the REIPPP.

ELECTRICAL PRODUCTS
A division of ACTOM (Pty) Ltd



Your One-Stop Global Energy Supply Partner



Key appointments

Danie Lubbe has been appointed Group Chief Financial Officer of ACTOM with effect from April 1, 2023.

Lee Mbenge has been appointed Divisional CEO of Distribution Transformers with effect from April 1, 2023.

Kobus Strydom has been appointed General Manager of Contracting with effect from July 1, 2023.

Fritz Hattingh has been appointed General Manager of Electrical Products with effect from April 1, 2023.

Jaco Grobbelaar has been appointed Chief Operating Officer – Industrial Sector of John Thompson with effect from April 1, 2023.

Gladstone Mbili has been appointed Chief Operating Officer – Utilities Sector of John Thompson with effect from April 1, 2023.

Schalk van der Merwe has been appointed General Manager of John Thompson's Industrial Watertube Boilers business unit with effect from December 14, 2022.

Varshan Mahabel has been appointed Group IT Manager with effect from February 1, 2023.

Aadil Hassan has been appointed Financial Manager of Reid & Mitchell with effect from April 1, 2023.

Mvuyiso Mpithi has been appointed Financial Manager of Distribution Transformers with effect from March 6, 2023.

Wynand Snyman has been appointed Financial Manager of ACTOM Industry with effect from May 1, 2023.

Zolani Miller has been appointed Financial Manager of Metalplus with effect from February 1, 2023.

Marwan Davids has been appointed Divisional HR Executive of John Thompson with effect from December 12, 2022.

Lauren Barnard has been appointed Acting Engineering Manager of John Thompson's Industrial Watertube Boilers business unit with effect from February 1, 2023.

Gabriel Nel has been appointed

General Manager of LH Marthinusen's Rotating Machines division with effect from April 1, 2023.

Gladys Mbokazi Phora has been appointed Proposals Manager of High Voltage Equipment with effect from February 1, 2023.

Johan Hanekom has been appointed Manager of Protection & Control's LV business unit with effect from February 1, 2023.

Khutso Masuku has been appointed SHERQ Manager of Protection & Control with effect from April 1, 2023.

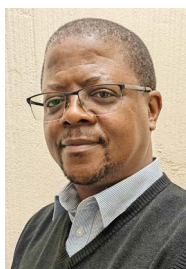
Wesley Vorster has been appointed Product Manager, Components Sales, of Protection & Control with effect from June 1, 2023.

Ahmed Bayat has been appointed Engineering Manager of Distribution Transformers with effect from April 1, 2023.

Chris Khowa has been appointed as Sales Engineer at ACTOM Industry with effect from January 3, 2023.



Danie Lubbe



Lee Mbenge



Kobus Strydom



Fritz Hattingh



Jaco Grobbelaar



Gladstone Mbili



Schalk van der Merwe



Varshan Mahabel



Aadil Hassan



Mvuyiso Mpithi



Wynand Snyman



Zolani Miller



Marwan Davids



Lauren Barnard



Gabriel Nel



Gladys Mbokazi Phora



Johan Hanekom



Khutso Masuku



Wesley Vorster



Ahmed Bayat



Chris Kowa

Some of the ACTOM employees presented with long service awards in 2022

ACTOM divisions that held long-service awards presentations at the end of 2022 included LH Marthinusen (LHM) and Distribution Transformers.

LHM's Divisional CEO **David Sullivan**, wearing attention-getting festive season gear, including a star-spangled hat, presented awards to seven employees, including three who had completed 25 years of service, among them **Kevin Knipe**, LHM's Financial Executive, who – also colourfully attired for the occasion – is shown in the picture on the right, receiving his award from David.

The others presented with 25 years' awards were **Bongani Mabizela**, Buyer, and **Kevin Kruger**, Fleet Maintenance Manager. The other four, who received awards for 20 years' service, were **Jonathan Steyn**, Key Accounts Manager, **Zunaid Miskin**, Commercial Manager, Fans Division, **Chris Naude**, Small Rotating Machines Manager, and **Elias Mkwana**, Transport Manager.



The longest serving Distribution Transformers employee among the total of 35 who were presented with

long-service awards by Divisional CEO **Alan Buchholtz** late last year was **Craig Burgess**, Local Commercial Manager for Distribution Transformers, with 25 years' service.

A total of 28 employees in the division were presented with awards for 15 years' service, while six received awards for 10 years' service.

Two further recipients of awards for 25 years' service were the Group's previous IT Manager **Paul Coppin** and Group IT Administrator **Frans Coomans**.

Paul himself presented Frans with his award in early-December last year, but the presentation of Paul's own long service award was delayed until the end of January this year when he was treated to a farewell lunch to mark his resignation and emigration to the UK, with Group Financial Director **Annamarie van Wyngaardt** presenting him with his 25 years' service award, as shown in the picture to the left.



ACTOM businesses

POWER

John Thompson, Bellville: (021) 959-8400

John Thompson, Isando: (011) 392-0900

www.johnthompson.co.za

John Thompson is a leader in energy and environmental solutions through value engineering and innovation. We are firmly focussed on serving global and local markets and we offer the following products and services: design, engineering, manufacture, construction, repairs, maintenance, retrofit, installation and commissioning of industrial water-tube and packaged fire-tube boilers, and industrial air quality solutions including HVAC, bag filters, scrubbers and ESP systems. Our Boiler and Environmental business unit offers the following solutions for utility plants: maintenance, repairs and retrofit of utility plant boilers, ESP systems, FFP systems, mills, burners, ducting, HP piping and ancillary equipment - geared towards keeping large power plants operating optimally, as well as providing a plant and equipment hire solution for construction work.

John Thompson also provides outsourced steam via its Energy Management Solutions business unit. Our service further includes capacity and efficiency improvements to older boilers, supply of original equipment manufacturer (OEM) spares, reliability studies, metallurgical services and computational fluid design (CFD) modelling.

ENGINEERING PROJECTS & CONTRACTS

Industry: (011) 430-8700

ACTOM Industry, the group's Mine winder experts with modern power electronic drive, control and switchgear technology, providing turnkey solutions worldwide for specialised industrial rotating drive and power applications in mining, metals, paper and process industries. We manage projects from design to commission; inspect & maintain; provide emergency support; do repairs and we perform magnetic rope testing.

Contracting: (011) 430-8700

Contracting is the electrical and instrumentation business unit which provides turnkey solutions for electrical power and instrument & control systems in the mining and manufacturing industries as well as the public sectors.

Power Systems: (011) 430-8700

ACTOM Power Systems, the group's substation construction contractor, is ACTOM's systems integrator, responsible for turnkey projects for the electrical power, mining and manufacturing industries, as well as for public sector infrastructure. It specialises in Renewable balance of plant installations.

Transport: (011) 871-6600

Transport has three trading units:

ACTOM Signalling; design, manufacture, install and maintain railway signalling equipment and turnkey systems.

ACTOM Transport Equipment and Projects (TEP); a contractor and supplier of rolling stock equipment, parts, maintenance and specialised depot machinery and test equipment.

ARNOT Vibration Solutions (AVS); suppliers of anti-vibration products and engineered solutions to a wide range of industries, including rolling stock.

ACTOM Energy: (021) 510-2550

ACTOM Energy is a solutions business and in collaboration with various divisions within the ACTOM Group, provides electrical automation, power automation, protection and control, remote condition monitoring and fluid technologies (motion controls, hydraulic and pneumatic) system integration services across all sectors.

LH Marthinusen - Coastal

Durban: (031) 205-7211

Africa's leading maintenance partner for rotating machines - servicing traction, power generation, mining, utilities, oil & gas and general industry.

HIGH VOLTAGE EQUIPMENT

High Voltage Equipment: (011) 820-5111

High Voltage Equipment, is a designer, manufacturer, supplier and installer of high voltage equipment to power utilities, electricity generation, transmission and distribution industry, mining sector and contracting companies. Manufacturer of isolators, instrument transformers, outdoor circuit breakers and insulated phase busbars. Supplier of high voltage Gas Insulated Switchgear, Compact Hybrid Switchgear, surge arresters, substation and overhead line insulators. HVE specialises in the repairs, supply of spares and maintenance of high voltage equipment.

MEDIUM VOLTAGE SWITCHGEAR

MV Switchgear: (011) 820-5111

www.actomswitchgear.co.za

Leading manufacturer and supplier of air-insulated (AIS) and gas-insulated (GIS) switchgear for use up to 36kV. The product range consists of indoor switchgear, containerized switchgear solutions, compact substations for renewable energy applications, minisubs, free-standing outdoor kiosk ring main units and bulk metering units. The division also specializes in the repair and maintenance of electrical networks.

WPI Power Solutions: (011) 820-5111

24 Hour Emergency Service: (082) 801-3171

WPI specialises in the repair, installation, retrofitting and maintenance of electrical networks via MV Switchgear's After Sales department and WPI regional branch network that is technically well equipped and strategically placed close to the customer base. The department offers 24/7 customer support for substations, MV and LV switchgear and associated products.

Current Electric: (011) 822-2300

Current Electric designs, manufactures and supplies medium voltage current and voltage transformers to switchgear manufacturers and repairers, electrical distributors and a diverse range of end-users locally and internationally.

POWER TRANSFORMERS

Power Transformers: (011) 824-2810

Power Transformers designs, manufactures and supplies a wide range of power transformers from 2MVA to 315MVA up to 275kV to power utilities, renewables projects, electrical contractors, the mining sector, local authorities and industry locally and internationally.

DISTRIBUTION TRANSFORMERS

Distribution Transformers: (011) 820-5111

Distribution Transformers designs, manufactures and supplies distribution transformers ranging from single phase 16kVA to three phase 7MVA up to 44kV, can be Single or Dual MV or LV and NECRT's up to 44kV to power utilities, the mining sector, local authorities and industry, and renewable applications locally and internationally.

LH MARTHINUSEN

LH Marthinusen Johannesburg: (011) 615-6722

Cape Town: (021) 555-8600

www.lhm.co.za

LH Marthinusen repairs and refurbishes transformers, electric motors, alternators and industrial fans. Manufacture of electric motor components, insulation components and specialised transformers and motors. It also provides engineering services for its products to the mining, industrial and petrochemical sectors and local authorities, as well as for the export market.

REID & MITCHELL

Reid & Mitchell: (011) 914-9600

www.reidmitchell.co.za

Reid & Mitchell is a repairer and manufacturer of electrical equipment for open cast mining, steel, rail transportation and marine industries. Motors and generators for excavators, off-highway vehicles, locomotives, drilling and pumping applications. The division is also a specialist repairer of DC motors and generators, including rebuilds, rewinds and commutator manufacture.

Electrical Machines: (011) 899-1111

Electrical Machines supplies medium and low voltage motors, starters, gearboxes and speed reducers to the mining, industrial, processing and utilities markets.

Large Motors designs and manufactures medium voltage motors that include its reputable customised large UNIBOX series and its high specification MS4 totally enclosed fan-cooled (TEFC) cast-iron motors.

Laminations & Tooling manufactures laminated components and tooling for the electric motor manufacturing and repair industries.

Energy Namibia – Electrical Products: +264 (61) 423 150

Supplier of Electrical products throughout Namibia.

Namibia Armature Rewinders (NAR): +264 (64) 220 352

Repairer of electrical machines, hydraulics, boilers, transformers and switchgear throughout Namibia

MARTHINUSEN & COUTTS

Marthinusen & Coutts: (011) 607-1700

www.mandc.co.za

M&C repairs, maintains, services, and carries out specialised manufacture of HV, MV and LV, flameproof, DC and traction motors, transformers, generators, alternators and ancillary power generation equipment up to 373 MVA. M&C also provides a full range of 24/7 engineering on-site services and unique motor and generator management and maintenance solutions and programmes.

ACTOM TURBO MACHINES

ACTOM Turbo Machines: (016) 971-1550

www.actomturbomachines.co.za

ACTOM Turbo Machines is a mechanical turbo-machinery and high-speed rotating equipment service provider, for manufacturing, maintenance, overhauls, repairs, installations and commissioning of all types of steam and gas turbines, compressors, blowers, pumps, fans, gearboxes, centrifuges, as well as general fabrication and machining.

METALPLUS

Metalplus (011) 433-1880

www.metalplus.co.za

Metalplus has earned a reputation over many years in the petrochemical, power generation, machine repair, mining, and rail & transport industries, for its reliability, accuracy and speedy turnaround times in performing mechanical repairs that include submerged arc micro-welding, machining and grinding. Further to our multitude of shaft and crank shaft repairs our products extend to new shaft manufacturing, casing welding and stitching, hard facing, component manufacturing and specialised welding repairs.

ELECTRICAL EQUIPMENT

Electrical Products: (011) 878-3050

www.actomep.co.za

Electrical Products is ACTOM's trading and representation arm, with a national network of strategically located branches. The business unit supplies products produced by ACTOM divisions and other manufacturers, including cable, cable accessories, lighting equipment, heating and ventilation equipment, circuit breakers, distribution transformers, minisubs, protection and control equipment, electric motors, meters, fusegear and overhead line materials.

Satchwell: (021) 863-2035

Satchwell manufactures and supplies domestic and industrial heating elements, temperature controls, refrigeration components, solar water heating components and appliance spares to the domestic appliance manufacturing industry and the chemical, mining and construction industries, among others.

Genlux Lighting: (011) 825-3144

www.genluxlighting.co.za

Genlux Lighting is a leading designer and manufacturer of luminaires for roadway lighting, floodlighting, outdoor commercial lighting and industrial applications. It produces a wide range of high quality products in both HID and LED technologies.

ACTOM SMART TECHNOLOGIES

Protection & Control: (011) 820-5111

A market leader in the supply of protection, metering and low voltage solutions to the electrical industry. Our offering includes a comprehensive range of automation systems, protection relays, credit, smart and prepayment metering systems and hosted services as well as LV motor control centres and power DB's, variable speed drives (VSD's) and components and accessories.

ACTOM Kenya: Pedro.adams@actom.co.za

The product offering includes the supply of transmission and distribution equipment including power transformers, distribution transformers, MV Switchgear, HV products and protection and metering equipment. Under the John Thompson business it also includes the sale of steam (biomass boiler, ancillary equipment).

Static Power: (011) 397-5316

Static Power specialise in the design and manufacture of AC and DC standby equipment for the Industrial, telecomms, rail and renewable energy markets including thyristor type chargers, (Micro Process Controlled option), industrial batteries, power supplies, industrial UPS's, furnace control panels, power distribution boards and battery tripping units. All systems are designed and engineered to suit their purpose for both the local and export markets. We offer specialized technical training to enhance practical and theoretical knowledge of our products. After Sales division to support and maintain installed equipment in the field.

COM 10: (011) 552-8368

COM10 is a local assembler and integrator of Alpha switchmode rectifiers, DC/DC Converters with sophisticated supervisory controllers, Lead Acid Batteries, stands, battery cubicles and power enclosures.

Alkaline Batteries: (011) 397-5326

Alkaline Batteries is the South African distributor for ALCAD and SAFT nickel cadmium and Lithium Ion batteries as well as the Intelli Connect battery monitoring systems for the industrial, telecoms, rail and re-newable energy markets. The local assembly plant on the East Rand includes a collecting point for spent nickel cadmium batteries for recycling. Services offered include Installation and Commissioning, Battery Sizing, Testing, Investigations, Maintenance and Repairs, Maintenance and Service Contracts, Discharge Tests and Training.

What's Watt is published by ACTOM (Pty) Ltd to inform staff, customers and other stakeholders of developments within the group.

Editorial contact: Julian Kraft, J Kraft Public Relations
Tel: (011) 472-6686, mwkraftj@mweb.co.za
Feature story editorial contact, Minx Avrabos
Tel: 082 467 3962, minxavrabos@gmail.com

Produced by: Jeroen Luyk, In Africa
082 951 5049, inafrica@saol.com

ACTOM contact:

Mamiki Matlawa, Tel: +27 (0)10 136-0200
mamiki.matlawa@actom.co.za

Disclaimer:

This publication is designed, compiled and produced on behalf of ACTOM (Pty) Ltd. Whilst the compilation and production of What's Watt is done with care and with every effort being made to avoid errors, ACTOM, its shareholders and staff do not accept responsibility for any errors or the consequences thereof.

ACTOM

OFFERS THE FULL SCOPE OF PRODUCTS AND SOLUTIONS FOR AN
EFFECTIVE POWER ISLAND.



Your One-Stop Global Energy Supply Partner

ACTOM