

What's Wattt

December 2019



Featuring: ACTOM's
approach to new
technology and
business
development



ACTOM

Group shows resilience and innovativeness in challenging economic conditions

The economic environment in SA has been challenging over the past year and is expected to continue into the next few months.

Issues around policy certainty in SA and the prevailing global issues have contributed towards the state of our economic climate. GDP forecasts for SA have been reduced to approximately 0.6%, as has been the slowdown in global economic growth. Factors such as Brexit and the trade war between the USA and China have been contributing substantially towards the global economic slowdown.

Regarding the recent spate of unrest in SA, the current unemployment levels in the country are exceptionally high at approximately 30%. This unemployment in recent times has been the stimulus towards social unrest and the recent spate of violence that has adverse effects on foreigners and various businesses. SA sits with a crisis in unemployment, which if not addressed on an urgent basis will lead to increasing incidents of violence, as witnessed in recent times. It is imperative for us at ACTOM to support job creation and skills development initiatives wherever possible in order to help alleviate this national crisis.

On a macro-economic level, the new leadership in SA under **President Ramaphosa** has taken various steps towards countering the effects of state capture and establishing various structures within government to take action against the perpetrators of such acts who have drained the economy. I have come to the realisation that our economic turnaround will take longer than what was initially expected.

Our business continues to achieve relatively good outcomes, given the current macro-economic environment. It is imperative of the leadership of our organisation to remain focussed and to continue managing items within our control as best we can. A key focus area in such times is the management of our working capital and cash.

Although the current environment appears chaotic we need to be innovative and creative, as there are substantial opportunities which can be realised. We continue to grow in the renewable energy sector and have also evolved various new products and services through our operating divisions.

We are proud to have retained our black ownership status and shareholding, which has increased to 51.97%.



Our health and safety records remain at an exceptionally good standard. I'd like to commend management of our operating divisions for their efforts in creating and maintaining a safe working environment. Safety remains an absolute priority in our business.

A key strategic objective of our group is to grow exports into the African continent by forming industrial hubs at key geographic locations in West and East Africa. We have initiated discussions which could culminate in us setting up an industrial presence in Ghana. This would be the platform for us to evolve into West Africa.

I would like to highlight a few noteworthy achievements by divisions/business units:

- ACTOM Turbo was one of five large service providers in various categories to be selected by Sasol at their 2019 awards ceremony for "Top Performing Service Supplier: Large Enterprises".

Chris Bezuidenhout, ACTOM Turbo

Managing Director, and his team are commended for this prestigious achievement.

- Our MV Switchgear business are in the process of concluding a contract with Tutuka power station which is worth in excess of R1-bln. This initiative is something that has been traditionally outside their comfort zone. I would like to commend **Martin Kelly, Okkie van Zyl** and their management team in MV Switchgear for their innovative approach which has led to this milestone contract. Their performance over this year has been absolutely superb in a really challenging economic environment. They've grown in leaps and strides through innovative thinking.

I'd like to thank all staff members for their contributions over the past year in what has been a very tough year and wish you a blessed festive season and a prosperous New Year.

Mervyn Naidoo

What's Inside

New technology and business development	Pg 3	Medupi's generator units synced to grid	Pg 18
ACTOM Transport exhibits at Africa Rail	Pg 6	LHM repair power station ID fans	Pg 19
ACTOM Turbo Machines receive Sasol award	Pg 7	Metalplus applies continuous welding process	Pg 20
Group participates in Katlehong Tech's Open Day	Pg 8	M&C's boost Power Generation workshop	Pg 21
ACTOM empowers local businesses	Pg 9	M&C upgrades rotating machines test facility	Pg 22
Utility Boilers launches equipment hire business	Pg 11	ACTOM Turbo appointed channel partner of BH TPS	Pg 23
HVAC Systems performs complex upgrade of plant	Pg 13	Genlux supplies LED streetlights for Gauteng	Pg 24
ACTOM Industry achieves market breakthrough	Pg 14	Key appointments	Pg 26
Signalling upgrade level crossing systems	Pg 15	Getting into the spirit of Mandela Day	Pg 27
Nampower orders give HVE a boost	Pg 16	Heritage Day celebrations	Pg 28
MV Switchgear provides PTK's for wind farms	Pg 17	Canoeists prove they're world class	Pg 29

Cover: Top and bottom images – laser levelling and alignment equipment and a 3D co-ordinate measuring machine used by ACTOM Turbo Machines. Middle image – welding a large ID fan from Kendal power station.

ACTOM's approach to new technology and business development

It is of strategic importance for ACTOM to regularly review their traditional product range and service offering to ascertain whether they are still relevant and to ensure that they evolve and remain at the forefront of developing technology.

"Product development is vital in our sector. We need to embrace the fourth industrial revolution and evolve our product and service offering. The pace at which technology changes, calls for partnerships, not only with other companies who specialise in these technologies, but also with research and development partners, including our local universities. Many of our businesses are doing this very successfully and we encourage these strategic alliances in order to ensure we remain competitive," said Mervyn Naidoo, ACTOM's Group CEO.

ACTOM works closely with a number of South Africa's reputable universities and supports them with projects on postgraduate level with the ultimate goal of commercialising viable technologies.

Dr Philip Du Toit, a Stellenbosch graduate, joined John Thompson as a Design Engineer and after obtaining his doctorate was promoted to Senior Development Engineer, Industrial Watertube Boilers. He explained how the analysis of data can be used to help customers improve their processes, "We deployed a model predictive controller on one of our sale-of-steam sites and presented a paper on the results at

an industry conference. This sparked interest from a multi-national supplier who was experiencing capacity constraints and occasional tripping at one of their plants, leading to substantial losses in terms of downtime and start-up procedures. We were asked to investigate algorithms that could predict when a trip is likely to happen and prevent it. Preliminary studies have proven that we are able to do so. We are currently working on the algorithm that will be deployed in the control room for the operators to monitor the condition of the process. We had about 900 tags that processed data upstream from the boilers so it was quite a big data exercise. We spent a substantial

amount of time working closely with our client to customise the approach, leveraging domain expertise with data science. This enabled us to move on to the next phase of production and deployment."

This type of artificial intelligence capability gives OEMs like John Thompson a massive competitive advantage. The ability to improve the efficiency of factory operation by a percentage or two results in major gains and directly impacts the bottom line.

ACTOM Turbo Machines has gained efficiencies through the use of the latest laser levelling and alignment tools. **Chris Bezuidenhout**, Managing

To page 4



Raymond Saayman, a Turbine Fitter; Zondwane Moleboheng, an Apprentice and Anthony Mancera, an Assistant Turbine Fitter using the latest laser levelling and alignment tool.

From page 3

Director of ACTOM Turbo Machines, which, in five years has grown to be the largest non-OEM turbo machinery facility in Southern Africa, explains, "We have seen a number of developments in technology within our industry and have readily adopted this technology to gain efficiencies in our business. Our highly skilled rotating equipment artisans have worked with mechanical measuring equipment and now have the advantage of the latest laser equipment at their disposal."

For a number of years, ACTOM Electrical Products has been supplying the renewable energy sector and is an example of one of the ACTOM businesses with an established network enabling them to roll out and integrate new technologies.

"Because of the remote location of the solar farms we work with in the Free State, Electrical Products performs a co-ordinating function, sourcing and supplying product from within the ACTOM group as well as a number of other items required by the client," said **Rod Penaluna**, Divisional CEO of ACTOM Electrical Products.

All renewable energy projects rely heavily on storage, an area that **Paul Cuthbert**, Divisional CEO of ACTOM Power Conversion, sees as potential for the Static Power business. "Batteries will be an integral part of any future renewable project and there will be continued development and strides made in this technology. Static Power is looking to partner with companies in the flow technology area and we are investigating various opportunities



A MicroGen installation in Ladysmith, KwaZulu-Natal.

in this field."

John Thompson has a number of new technologies that they are currently implementing or researching.

"The MicroGen is a watertube boiler producing steam between 20 and 45t/h at pressures between 31 and 61 bar, aimed at the growing demand for small to medium pressure power boiler co-generation applications. Our objective is to match the MicroGen boiler with the required size and type turbo-alternator as a complete power island. We are targeting two models, the MicroGen 5 and the MicroGen 10, which will have the electrical output of 5MW or 10MW respectively. They are designed to burn biomass, renew-

able fuels or coal because we are still catering for a number of customers that want to burn coal and biomass for power security reasons. We aim to supply this as a turnkey solution, and have already successfully supplied a 30t/h boiler into the market," explained **Etienne De Villiers**, Divisional Technical Manager.

Another development for John Thompson is their partnership with Blue Crane Green Energy who has a proven pyrolysis concept that uses any carbon containing material as fuel. The heat that is produced as a waste product of this process could then be used to generate steam.

"We see this as a strategic initiative, enhancing the ability to generate energy from alternate fuels going forward. Materials that were previously considered waste streams can now be used as a fuel supply which generates an additional revenue source by the fact that there is a market for biochar, thereby reducing overall cost. This is a carbon negative process which is what the world needs at the moment," said **Martin Reck**, General Manager – Package Boilers.

With the air pollution emissions regulations coming into effect from 1 April 2020 ACT, another area in which John Thompson is looking at substantial growth is their air pollution control business.

John-Paul Andre, Divisional CEO of John Thompson explained, "Pressure is mounting on environmental compliance, specifically air quality and John Thompson has a representation agreement with international company, HAMON, who are leading manufacturers and suppliers of environmental systems. We have an exclusive agreement to supply the HAMON electrostatic precipitator that removes fine particles like dust and smoke from a flowing gas by applying a high-voltage electrostatic charge and collecting the particles on charged plates. We also have access, on a non-exclusive basis, to flue-gas desulphurisation and heat recovery steam generators."

Solar augmentation is another area that John Thompson is eager to develop and they are working with a Scandinavian company to look at using concentrated solar plants to generate steam. This would augment existing coal-fired steam plants, displacing the dependency on coal during the day.



The installation of a Torripac boiler in Grenada - shown here is the vibrating grid.



The initial prototype assembly of LED floodlights at Genlux by Rodgers Marumo and Lucky Tshianzi.

Should viable storage options be developed, this augmentation could be extended into the night.

John Thompson has also developed a new range of package boilers. The Torripac TO400 is a 3200kPa boiler catering to a comparatively small market, allowing the option of generating electrical power in conjunction with process steam. Power can be generated by passing the high-pressure steam through a back-pressure power generating unit such as a steam turbine or alternatively screw expander unit. The 2900kPa steam passes through the turbine or screw expander which generates electricity, whilst simultaneously reducing the pressure of the steam to the customer's required process pressure. The electrical power is thus produced almost as a by-product, which equates to highly subsidised electricity.

John Thompson is busy with its first installation of this type of Torripac boiler for a customer in Grenada who is constructing a new distillery to produce bespoke, cask-matured, fine quality rum.

Genlux, is forging ahead with developments in the LED market and launched their new LED floodlights at the Association of Municipal Electricity Utilities (AMEU) show in Cape Town in mid-October.

Sello Tsoai, General Manager of Genlux Lighting explained, "We very successfully launched our new LED streetlights in 2018. Since the launch, the demand for our high quality and durable product has increased to such

an extent that our current production line needs to be doubled to meet demand. Our new LED floodlights have sparked a great deal of interest and we hope to experience the same success as the LED streetlights."

There is no doubt that product development is a strategic focus for ACTOM, but so too is product diversification and business development.

As a result of the unbundling of the products and services traditionally supplied by TLT ACTOM, LH Marthinusen saw an opportunity to offer customers fan servicing.

David Sullivan explained why this made business sense, "In many instances we visit the same customers. Everything is driven by a motor,

our service mind-set kicked in and we realised that we were perfectly placed to service fans as well. So, our strategy is very much around being able to offer customers energy efficiency upgrades through a turnkey solution including both motors and fans."

LH Marthinusen initially identified a fairly small footprint within their workshop, but have, within a few months, extended considerably and established three specialised fan servicing workshops.

In another business development initiative, **Mike Shaw**, Divisional CEO of Reid and Mitchell has been tasked with developing a Sub-Saharan rail strategy for ACTOM as he explains, "This entails pulling together the best of our organisation to address the various idiosyncrasies of the countries and customers within the region. There is enormous opportunity, with a renewed focus on rail in this region." He continued to explain that the strategy would be to set up agreements with strategic partners in-country as well as with key industry players. Then, leveraging on Reid and Mitchell's experience and competencies, establish a network of service centres to efficiently deal with customer requirements.

In conclusion on ACTOM's approach to new technology and business development, Mervyn Naidoo said, "We continually review and adapt our strategy as the market evolves and I am confident that our appetite to adopt new technologies and to diversify our product and service offering will ensure ACTOM's success in the future."



Philimon Moramaga, Thobela Nkohla and Junior Ntoka working in one of the fan servicing workshops at LH Marthinusen.

ACTOM Transport exhibit at Africa Rail

ACTOM Transport participated as an exhibitor in Africa Rail at the Sandton Convention Centre on June 19 & 20 this year in their search for new business opportunities in Africa.

The annual show, which comprises an exhibition and conference, is Africa's premier rail event and attracts participants and visitors from all over Africa.

ACTOM Transport's three business units Transport Equipment & Projects (TEP), Signalling and Arnot Vibration Solutions, along with TEP's longstanding international partner BBM of Italy, which manufactures and supplies rail depot equipment that includes wheel presses, bogie presses and mechanical test equipment, were represented.

"The exhibition provides us with an excellent opportunity to meet existing and potential customers and suppliers to pick up useful information about the latest developments and plans underway across Africa, which could result in worthwhile business prospects for us," commented **Frans Weygertze**, TEP's Business Development Manager.



Philip Meyer (left), Signalling's Business Development Manager, and Nicolas Mediavilla (centre), Sub-Saharan Area Manager for BBM of Italy, TEP's international partner, discuss some of ACTOM Transport's offerings with visitors to the show, while Paul Steggink (behind counter), Product Manager of Arnot Vibration Solutions, looks on.

Bold steps taken by Balmoral College to improve its advancement in athletics and soccer

Balmoral College has initiated the establishment of a new school athletics association to ensure that its high school learners get the opportunities they need to develop their athletic abilities and compete in school championships.

It has similarly taken the initiative of ensuring that its high school learners are given the opportunity to take part in inter-school soccer competitions.

Balmoral College, a longstanding beneficiary of ACTOM's social responsibility programme, had tried to join one of the existing school athletics associations serving its area, but was turned down. So it contacted five other schools in the vicinity that also didn't belong to any existing school athletics association and formed their own body, Germiston Athletics Schools Association (GASA), which was launched in September last year.

It has got off to a flying start. "We had our first inter-high competition at the end of January this year, from which a team of 75 children from Balmoral College was selected to participate in the greater Germiston championships in mid-February. From

that championship competition 32 of our students went through to the District championships held in the last week of February," said **Roan Halgryn**, the school's HOD for Sport & Culture.



Balmoral College learner Gudani Thovhakale is shown above finishing in first place in an under-17 race in the Inter-Germiston athletics meeting early this year.

"What this means is that we were well represented in the District championships in our first year of participation. It is a good platform to start building on," he pointed out.

Balmoral College has similarly positioned itself well for development of its learners' skills and advancement in soccer in future. It entered three high school soccer leagues in its area this year:

- The Easterns High Schools Football Association, which caters for Term Two (up to end-March).
- The Ekurhuleni Invitational League, which caters for Term Two overlapping into part of Term Three (up to end-July).
- The Northern High Schools Football Association, which caters for Term Three (up to end-August).

Impressively, the school's under-17's proved to be winners in the Easterns league championship competition in that age group this year. "We have also done well as starters in the other two leagues. With the greater competitiveness all three leagues provide, we look forward to making great strides in the future," Roan commented.

SASOL awards top supplier recognition award to ACTOM Turbo Machines

ACTOM Turbo Machines is the youngest service provider in its field of operations to receive Sasol's supplier recognition award in the large enterprises category since the annual awards were instituted five years ago.

The business unit is also the only large non-OEM business in its service category to win the award to date.

ACTOM Turbo, which has been in business for six years, was one of five large service providers in various categories to be selected for the 2019 awards for "Top Performing Service Supplier: Large Enterprises." Suppliers having an annual turnover with Sasol in excess of R50-million a year qualify for "large enterprise" status.

Grace Ndwammbi, Sasol's Senior Vice-President, Supply Chain, presented the award to ACTOM Turbo's Managing Director **Chris Bezuidenhout** at the awards presentation ceremony at Sasol's head office in Sandton on June 14.

Since its inception ACTOM Turbo has grown to become the largest non-OEM turbo-machinery and high-speed rotating equipment service provider in Sub-Saharan Africa.

Anton Hamman, Sasol's Principal Specialist, Mechanical Equipment Sourcing, said that while Sasol is very OEM-reliant both in terms of service backup and parts supply, it has found that in the case of service provision for turbo machines, for which critical and complex skills are required, ACTOM Turbo has proven itself to be exceptional as a service provider, both for repair and refurbishment and for ongoing maintenance.

"We view turbo machines as the heart of our operations, so it is absolutely essential that the service provider has all the critical skills needed to ensure that the equipment is maintained to OEM specification. If you use a non-OEM company for this work you must be certain they have the required skills and competencies to perform this work to the correct standard every time and understand the associated risks involved," Hamman said.

"In addition to the technical skills involved, safety awareness is a critical aspect. The machines in the oxygen plant, for instance, are extremely large and heavy (60MW units), which makes them difficult and potentially dangerous to work on. ACTOM Turbo have demonstrated their awareness

of the hazards involved and rigorously apply all the procedures necessary to ensure that no one gets injured and that the work gets done as per agreed schedules.

"On turbo machines we look for the best skills in the country and globally and this is what ACTOM Turbo offers," Hamman concluded.

Chris Bezuidenhout said ACTOM Turbo is greatly honoured at having received the award. "It signifies recognition of the highest order, which we greatly value and cherish. It marks an important milestone for us in our ongoing drive to provide the best possible service to industry and I would like to

heartily commend our maintenance and refurbishment teams on this achievement. Keep it up!"

ACTOM Turbo has a long-term service agreement with the Sasol group as a whole, encompassing Sasol Secunda, Sasol Sasolburg, Sasol Mining and Natref. "This agreement is for us to provide maintenance on a periodic basis at all the sites concerned. However in the case of the oxygen plant at Sasol Secunda, the agreement is based on us having a permanent presence there, with a team of 40 to look after all 16 oxygen trains in the plant," Chris pointed out.



Anton Hamman (second from left), Sasol's Principal Sourcing Specialist, Mechanical Equipment, congratulates Chris Bezuidenhout, Managing Director of ACTOM Turbo, on receiving the prestigious Sasol award, while (from left) Leon Greeff, Sasol's Senior Manager, Oxygen Electrical & Instrumentation; Mervyn Naidoo, ACTOM's Group CEO, and Nicholas Mokgosi, Sasol's Senior Manager E,C & I Sourcing, Category Management, look on.

ACTOM participates in 'Open Day' at Katlehong Technical Secondary School

ACTOM participated in an Open Day held in August this year by Katlehong Technical Secondary School in Katlehong township, Alberton on the East Rand to mark its launch of a school of engineering.

Panyaza Lesufi, Gauteng MEC for Education, accompanied by senior officials of the Gauteng Education Department, was Guest of Honour at the event.

ACTOM was one of several sponsors of the school that took part in the Open Day by staging an informal open-air exhibition of their products and other offerings for the benefit of Katlehong Tech's learners, as well as learners from several other schools in the vicinity who attended.

The ACTOM business units that took part as exhibitors were Electrical Products, MV Switchgear, Genlux Lighting and Xpelair Fans.

ACTOM recently commenced sponsoring Katlehong Tech when it brought it on board as the third East Rand school to participate in the group's Ekurhuleni Schools Tutoring Project,

which is aimed at boosting the learning of Maths and Science at these high schools to encourage more learners

to take up careers in engineering and related professions.



From left to right are; Linky Mdaka, Technical Sales Consultant for MV Switchgear; Gerald Ndlovu, Sales Representative at Electrical Products; Jaco Opperman, Principal of Katlehong Engineering School; Joe Mpsi, Chairman of the Gauteng Legislature's Finance Committee; Alison Bengtson, Deputy Director General of the Gauteng Department of Education; Marks Maponyane, Businessman and former soccer star, and Busi Luthuli, District Director for Ekurhuleni South.

ACTOM selects two projects as winners in latest HJ van der Bijl Innovation Awards competition

In this year's HJ van der Bijl Innovation Awards competition, longstanding sponsor ACTOM selected two projects as joint winners of the Renewable Energy section, instead of just one winner.

Angelo Calvino, High Voltage Equipment's Technical Commercial Sales Engineer, who is ACTOM's judge of competition entries by secondary school learners from all over the

country every year, said both winning entries were fully deserving of the prize, as he considered them to be exceptionally original.

Presentations of awards by ACTOM and other sponsors were made in Boksburg, Gauteng, at the end of September. The competition, which is aimed at encouraging innovation in science and technology among youngsters, forms part of the annual Eskom

Expo for Young Scientists.

The two winners of the ACTOM-sponsored award were **Rachel Mahlasela**, a Grade 12 learner at Mahhushe Agricultural School near Mzinti in Mpumalanga, and **Noxolo Tshayinca**, a Grade 9 learner at Tiger Kloof Combined school near Vryburg, North-West Province.

The device assembled and successfully tested by Rachel harnesses energy from electromagnetic waves in space. It consists of a solar panel and a transmitter, with the transmitter transmitting the electricity generated by the solar panel via conductors to a transformer, while rectifiers also form part of the device to convert the DC power to AC power.

Noxolo's project involved developing a combination wind- and solar-powered device to drive a pump to pump water from underground, as well as generating electricity for use on a farm. In addition, it incorporates a system for storing electricity in a power bank to provide reserve power whenever weather conditions are such as to prevent direct generation of wind and/or solar power.



Angelo Calvino congratulates winners Rachel Mahlasela (left) and Noxolo Tshayinca at the Innovation Awards ceremony.

ACTOM empowers local businesses

Tran-Source

Tran-Source (Pty) Ltd has been working with a number of the ACTOM divisions since 2012.

Tran-Source is a 100% black-owned transformation advisory and consulting organisation with a specialist focus on Broad-Based Black Economic Empowerment (B-BBEE). They have experience working with large enterprises as well as multinationals, in the implementation of transformation strategies to ensure compliance with the B-BBEE legislation.

Heading up this dynamic organisation is Oliver Pete who has worked in the B-BBEE industry since 2009. His career started at Deloitte in April of 2008, and he then gained further experience working for a smaller consulting company for two years from 2010 to 2012 when he eventually founded Tran-Source (Pty) Ltd.

Oliver is a Tshwane University of Technology alumni, and is currently enrolled with the University of Witwatersrand studying towards BA Law and Psychology. He also founded the NPO, Thabisha Centre for Learning and Development, which rolls out developmental projects in rural Limpopo for high school learners, to prepare them for their post matric careers. His passion lies in job creation, SMME development, mentoring for rural youth, and skills development. Oliver is also studying classical piano on a part time basis.

“We have established a good relationship with many of the divisions of ACTOM and I believe this is because they know they can rely on our advice that is always sound in law and reasoning and upholds the spirit of



Oliver Pete, CEO of Tran-Source.

transformation”, commented Oliver on their partnership with ACTOM.

According to their mission they aim to create an awareness of transformation as an inclusive policy, that when properly implemented, does not cause an atmosphere of discrimination but creates value for the people and the environment within which they operate.

Oliver explained their approach, “It is important that we select Enterprise Development and Supplier Development candidates who display entrepreneurial spirit – they must want to succeed. If this desire to succeed is evident, we can then assist with the development of other skills needed in their business.”

He also highlighted the need for his customers to understand that these initiatives are not simply to meet B-BBEE goals, and he used the analogy of raising a child, “You do not

plan to have a baby who will remain a baby for the rest of his or her life. It is your desire as a parent to see this baby develop, to ultimately become a meaningful and independent member of society. The same is true for Enterprise Development initiatives, in this process you want to develop successful and profitable businesses that contribute meaningfully to our economy. And in my experience working with most divisions of ACTOM, they get this.”

Tran-Source has recently relocated to offices in Midrand, and established an ESD hub. SMMEs will be able to use this facility to host meetings; perform training; run workshops and seminars and work on tenders, with access to office equipment such as computers, telephones and printers.

“Tran-Source has grown organically since 2012, with most of our work coming from word-of-mouth, and we are proud to say that to date we have not lost a single client and I believe this speaks volumes for our business. We however have terminated relationships with clients who didn’t share in our ethos of ethical implementation of B-BBEE initiatives. And with the support of companies like ACTOM, we have also been able to further develop the business and create more opportunities for SMMEs and start-ups. There is so much potential out there and many entrepreneurs just need support in order to get going and ultimately to fly. It takes a minimum of three years of support for an SMME to succeed, and support from companies like ACTOM is always appreciated,” concluded Oliver.



Tran-Source offers SMMEs access to a well-equipped business hub in Midrand.

Thembaukukhanya Security

Dorcas Nkomo and Nokuzola Majebe are the dynamic duo that head up Thembaukukhanya Security, a black, female-owned and managed PSIRA accredited security company.

"Our business was established in 2015 through an empowerment initiative by LH Marthinusen (LHM). We both worked as contract security officers on site when we were approached by management with an opportunity to start our own business," explained Dorcas.

Dorcas and Nokuzola, with support from LHM and business training and direction from Tran-Source, now employ 15 security officers and provide guarding services; 24-hour CCTV surveillance and monitoring; and are able to supply and install, through a reliable sub-contractor, alarm, CCTV, panic systems, intercoms and gate automation.

Specialised services include site surveys and assisting clients with internal investigations related to security.

"Starting our own business was not easy and we have faced some challenges, but we have received a great deal of support and have the appetite



From left to right – Dorcas Nkomo and Nokuzola Majebe, the owners of Thembaukukhanya Security in their CCTV monitoring control room.

to grow the business and to prove to ourselves and those who believe in us that we are able to meaningfully contribute to the safety and security of businesses in South Africa," said Nokuzola.

Isikebhe Sizinze Trading

Since 2016, Genlux Lighting has been doing business with Isikebhe Sizinze Trading (IS Trading). The company was started in 2014 by **Revana Chetty** (Director) and **Wentzyl Chetty** when they realised the opportunity to supply wire harnesses to light industrial companies. IS Trading cuts, strips, crimps and adds terminals in order to produce wire harnesses as per customer specification. They have a vision centred on conformance to standards and a focus on delivering superior value to their customers while most importantly creating employment.

"We place a great deal of importance on job creation and are proud to source all of our employees from the local community. Our staff are dedicated and reliable," said Revana Chetty.

This dedication by owners and staff has enabled IS Trading to work hand in hand with companies like Genlux to ensure that their operational deadlines are met. Not only do they supply Genlux with wire harnesses, but they also assist with the assembly of complete product and product components as and when volumes dictate.

Wentzyl Chetty said, "We are actively pursuing new business ventures both within the ACTOM group as well as with other customers. Ultimately, we want to be able to offer our staff employment on a more regular basis. We believe this is the best way to empower people and communities."



Wentzyl and Revana Chetty with the wire harnesses produced by Isikebhe Sizinze Trading.

John Thompson's Utility Boilers & Environmental unit sets up equipment hire business

John Thompson's Utility Boilers & Environmental unit (UBE) based in Isando, Kempton Park, has set up a business by offering for hire to other businesses the equipment it deploys for its own use.

The equipment, previously situated at the various Eskom power stations where UBE is engaged on long-term

boiler-serve and other maintenance contracts, has been brought together at the premises of the new business, which is located at ACTOM division Marthinusen & Coutts' power generation equipment repair facility in Benoni.

The new business unit commenced operation in September 2019. "Previously we had the equipment situ-

ated at the various power stations for use in carrying out our long-term boiler-serve and other maintenance contracts at these sites," said **Deserene Naidoo**, UBE's Regional Manager for Air Cleaning & Mill Maintenance Projects.

"We then recognised that the equipment could be used to serve the dual function of catering to our own needs for our ongoing contracts while also being made available on hire to a wide variety of other businesses with similar requirements, including businesses within ACTOM."

The equipment comprises, among others, mobile cranes, trucks, trailers, containers, lifting equipment, welding machines, scaffolding, forklifts, cherry-pickers, tele-handlers, inverters, grinders, prepping machines, calibrating machines, cutting torches and hot-boxes.

The cranes on offer for hire include a tower crane with a lifting capacity of 24t and a mobile crane with a lifting capacity of 50t, while the largest truck available is a Man truck with two trailers of 24t and 30t carrying capacities respectively. Among welding machines on offer there are DC Arc machines, a semi-automatic gas shielded welder and a CO₂ welding machine.

UBE operators are available to operate the various items of equipment for customers.



The UBE unit's large mobile crane is shown in action at a construction site.

A new approach to air distribution in biomass boilers for renewable energy generation

The combustion efficiency of boilers at factories is becoming increasingly important due to more stringent pollution legislation.

At a sugar mill the waste from the process, namely bagasse, is used as fuel which therefore limits the financial impact of combustion inefficiencies. However, the impact on mills with off-crop refining or any downstream activity and other types of factories which utilise more costly fuels than bagasse is substantial.

A basic definition of combustion efficiency is maximising the fuel burnout with the minimum amount of air added. Besides the environmental and direct financial benefits with regards to fuel cost, decreasing the excess air by improving the combustion has the added benefit of reducing the erosion rates on the downstream equipment in the gas flow path. The lifetime of these compo-

nents can therefore be extended and maintenance reduced, which translates into additional savings.

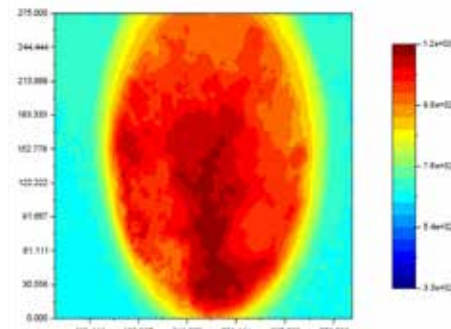
Air is introduced at different locations in the combustion chamber of the boiler. The floor of this chamber is referred to as the grate and the volume above is called the free-board. The air flow is split into two main components, namely primary air which

passes through the grate and secondary air through the water walls into the free-board.

Breakthrough

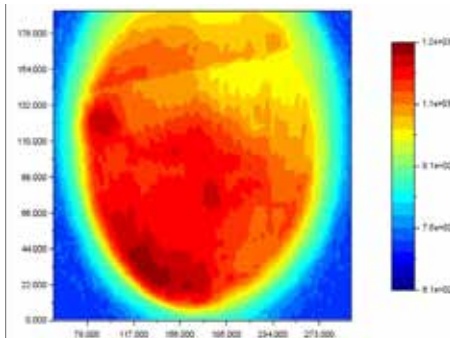
The development of advanced secondary air (SA) systems in grate-fired boilers is seen as one of the real breakthroughs in this technology in

To page 12



Video image of the flame (left) & processed temperature (right) contours with the **old** SA system

From page 11



Video image of the flame (left) & processed temperature (right) contours with the **new SA system**.

the last few years. This is primarily due to the use of computational fluid dynamics (CFD) in order to determine the ideal locations and properties of the air streams.

A firing strategy was developed for wet biomass fuels based on reducing the under-grate airflow where the primary function of this air fraction is drying. Sub stoichiometric conditions at grate level prevents the rapid combustion of the dried fuel pile and overcome the batch type combustion phenomenon known as cycling or puffing. This approach of gasification in the bed and combustion in the free-board is also utilised in modern biomass bubbling fluidised beds.

The two aforementioned methodologies were combined by utilising CFD to design an advanced SA system for biomass combustion with minimal under-grate air. The system was customised for a bagasse boiler at a sugar mill in South Africa.

The higher mass flow available to the SA system was leveraged by introducing the air into the lower bagasse chutes to create enough turbulence without the use of high velocity and a separate high-pressure fan, which is the conventional approach. It is therefore a more cost effective and compact

solution. The main focus of the system was to improve combustion efficiency and stability.

Comparing CFD results of the old SA system to the new system indicated that the time, turbulence and temperature of combustion were increased, leading to lower unburnt gas (CO) and unburnt carbon losses.

Improved combustion stability

A testing campaign on site revealed an improvement of combustion stability with the new SA system. Puffing reduced considerably with a more constant furnace pressure. A reduction of CO measured at the outlet of the boiler from 2000 ppm to 900 ppm at a low O2 content of 3% volume dry was also seen. The difference in shape, position and temperature of the flame comparing the old and new SA system corresponded to the CFD results qualitatively.

A shorter, more diffused flame with less and lower temperature peaks was observed when utilising the new SA system.

A data analysis comparing two crushing seasons with and without the new SA system indicates a 5% efficiency improvement on average with the new system. This value is higher

than theoretically expected and it is deduced that is due to a higher reduction in unburnt carbon loss.

At the moment the air split between the grate and free-board is static, requiring careful setup during commission. A dynamic modulating system is seen as the next step. A machine learning experiment using the historical data set was conducted to assess the feasibility of an efficiency gain and if an algorithm could learn to modulate the air-split. The results indicated an additional efficiency increase of 1.5% from 5% to 6.5% with an algorithm successfully learning to exploit periods when different SA settings are beneficial.

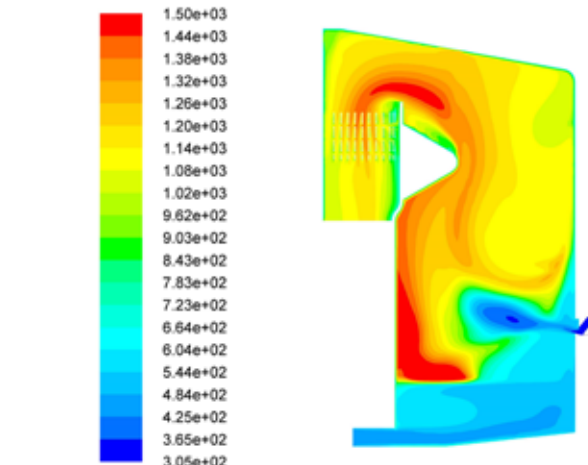
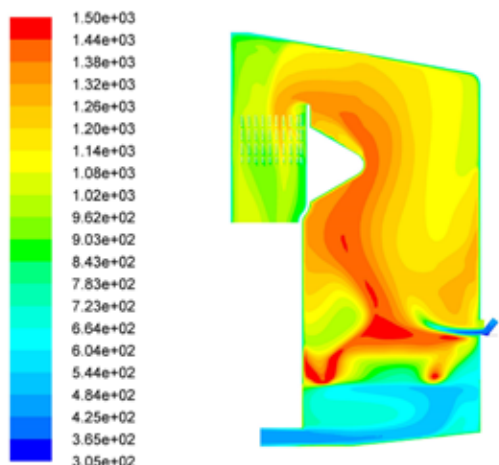
Conclusion

These results motivated developing a system that combines a thermal camera with the SA system using an algorithm to learn how to adjust the air from the pixels of the video. This approach is being tested currently on a packaged boiler.

Equipment is specified, guaranteed and tested in a range of stable operating conditions according to codes, e.g. BS845. However, in reality, conditions vary substantially over the operational period.

John Thompson is moving towards smart products that can learn and adapt. The new dynamic SA system addresses these unstable transient conditions and varying fuel quality facilitating the future of cleaner, more reliable and cost-effective products.

*Dr Philip du Toit Pr Eng
Senior Development Engineer
Industrial Watertube Boilers
John Thompson*



CFD temperature contours on a plane in the middle of the simulation with the **new (left) and old (right) SA systems**.

ACTOM HVAC Systems performs extensive and complex upgrade at Colibri Towelling's Cape plant

When Colibri Towelling, one of South Africa's leading manufacturers of toweling fabric, decided to upgrade its 30-year-old plant in Strand, near Cape Town, its main focus was to ensure that its new weaving mill would be to First World standards and that the machines would operate at optimum efficiencies.

A critical part of the weaving process is the condition of the air the weaving machines need to operate in. Internal humidity and air temperature levels must be maintained at 80% relative humidity. For this to materialise a specialised air-conditioning system was designed to provide direct humid air at the warp as well as in the shed all year round.

Colibri Towelling is a longstanding customer of ACTOM HVAC Systems and has had several upgrades to its plant. According to their management they see ACTOM HVAC as business partners not simply as a supplier. However, the refurbishment involved in the latest project is much more extensive than in any of the previous upgrades. In the light of this relationship, Colibri looked to no other contractor than ACTOM HVAC as the main supplier for the revamp.

"The project encompasses not only the installation of a dual air-conditioning system, but also all the overseeing of civils, electrical, steam, compressed air, fire detection etc. aligned to this scope of work," said **Thys Bosman**, General Manager of ACTOM HVAC's Cape Town branch.

This is the first time the business unit has been appointed as the main contractor on a plant refurbishment



The rebuilding of the weaving shed at Colibri Towelling's Strand plant nears completion.

project incorporating an air-conditioning upgrade. A firm of professional engineers was appointed to assist on the civils side and an electrical contractor to assist with the electrical installations.

The revamp, which began in May this year and scheduled to be completed by the end of the year, involved demolition and reconstruction of portions of the plant, including relocation of the air-conditioning plant from its previous position in the weaving shed roof to a building alongside the shed previously used as a yarn store and in turn a new yarn store has been established.

All this necessitated carrying out substantial building alterations, including replacing the asbestos roof with modern structures that conform to cur-

rent building regulations. Furthermore, a walkable insulated Chromadek ceiling was installed in the weaving shed as an essential part of providing a cleaner working environment both in the interests of the production staff's health and to produce a better-quality end-product. "This solution has allowed for most of the services to be installed in the ceiling space, making it easier for fault-finding and maintenance. Extensive modifications also had to be made to meet current fire prevention regulations," Thys said.

The weaving process generates large volumes of dust. Underground return air-ducts have been built directly under the weaving machines with suction openings positioned under the areas where the dust is generated. All the conditioned air in the shed is returned to the air conditioning plant where it is filtered through automatic self-cleaning drum filters. The dust and waste removed from the filters is deposited in collectors which are connected to a central vacuum system. The filtered air is re-circulated automatically and passed through scrubbers from which it is forced into the weaving shed at a preset temperature and humidity level.

With the new system the volume of air supplied, at 40 air changes per hour, is nearly double what it was previously, thereby providing a much cleaner environment.

"In addition, the new process combined with the new weaving equipment and renovated plant should result in a more than 200% increase in production," Thys concluded.



The LED lighting will be installed from the top in the rectangular openings as shown in the walkable ceiling, while the central vacuum system and compressed air will also be installed above the ceiling for connection to the weaving machines below – all to allow easy maintenance.

Power Systems appointed to refurbish and extend Pretoria's Soshanguve substation

ACTOM Power Systems has been successful in winning a large contract from the City of Tshwane Metropolitan Municipality to refurbish and extend the Shoshanguve substation in northern Pretoria.

The contract, awarded in June this year, is scheduled for completion in mid-2022.

The double-configuration substation, which is more than 30 years old, requires refurbishment of its two existing 132kV/33kV switching station bays and two 132kV/11kV bays. In addition, two new 132kV/11kV bays are to be added to meet increased demand for power in the area it serves. This applies especially to a planned new large development node due for construction

in Onderstepoort, comprising a mix of residential, retail and educational facilities and including a hospital, among other services.

The refurbishment of the substation involves some re-equipping of the existing bays. It also includes decommissioning of the substation's original indoor 33kV switching room and its replacement with a new outdoor 33kV switching yard.

ACTOM's High Voltage Equipment division will supply new 132kV and 33kV current transformers and surge arrestors for the refurbishments and circuit breakers, isolators, voltage transformers and current transformers for the extensions.

The new 132kV/11kV bays to be

established will comprise one active and one reserve bay. ACTOM MV Switchgear is contracted to manufacture, assemble and supply a 51-panel 11kV switchboard containing its new generation AMV12 air-insulated switchgear to control the two refurbished 132kV/11kV bays and the active new bay.

ACTOM Distribution Transformers will supply NER transformers for the new bays.

The new outdoor 33kV switching yard and the new 11kV switchboard to serve the new 132kV/11kV bays will be equipped with state-of-the-art protection systems to be supplied by ACTOM Protection & Control.

ACTOM Industry achieves market breakthrough with three other group business units



Shown in MV Switchgear's plant at Knights are (from left) Greg Whyte, MV Switchgear's Design & Development Manager; Janna Kapp, ACTOM Industry's General Manager; Caroline Dawson, MV Switchgear's Sales & Tendering Engineer; Dewald Loretz, WPI's Business Development Manager; Dakshesh Naik, ACTOM Industry Sales Engineer, and Martin Kelly, Divisional CEO of ACTOM's Medium Voltage & Protection division.

ACTOM Industry has achieved a major breakthrough towards diversifying its business beyond its traditional core business.

Since late-2018 the business unit has succeeded in securing a series of valuable contracts for standalone switchgear in its traditional markets after teaming up with three business units – namely MV Switchgear, WPI Power Solutions and Protection & Control.

This follows a decision made by ACTOM Industry about three years ago to diversify its business, due to experiencing a sharp reduction in business opportunities in its traditional field of operations as a result of the economic recession.

"While the standalone medium voltage switchgear contracts we have won during the past year represents a departure for us from our traditional business, at the same time we have

technical skills to contribute to these projects due to our extensive experience in designing varied and complex switchgear as part of our expertise in mine winders, drives and control systems for the mining and other major industries," commented General Manager **Janna Kapp**.

ACTOM Industry has the largest installed base of mine winder systems in Southern Africa and is also a major designer and supplier of drives and

control systems for the metallurgical and mineral processing industries, among others.

“We have longstanding excellent relationships and enjoy a good reputation with most of the leading players in our traditional markets. Consequently when we approached them with different offerings from the norm we were positively received by and large,” Janna said.

The other major factor that has facilitated ACTOM Industry’s entry into the new market is that it and its ACTOM group partners complement each other as a working team in their ability to meet the requirements of the projects concerned. Their respective roles are:

- ACTOM Industry: principal contractor and project managers.
- MV Switchgear: designers, manufacturers and suppliers of switchgear.
- WPI: installers, commissioners, cable installers and technical backup

service providers.

- Protection & Control: designers and suppliers of protection and control systems.

The contracts won to date by this grouping, headed by ACTOM Industry, are:

- A 10-panel board for a blast furnace at ArcelorMittal South Africa’s Vanderbijlpark Works, awarded in October 2018 and completed in May this year.
- A three-panel board for a 15MW compressor at the Tumela shaft of Anglo American Platinum’s Amandelbult mine in North-West Province, awarded in October 2018 and delivered in February this year.
- A 45-panel board for a substation upgrade at Amandelbult mine’s Tumela shaft, awarded in July this year and scheduled for completion in July 2021.

Taken together, the three contracts are valued around R30-million.

The 11kV switchgear for the supply

of power to the ArcelorMittal South Africa blast furnace comprises the new generation AMV12 air-insulated switchgear – this being the first AMV12 installation in a mining or metals application since MV Switchgear launched it into the market in early-2015.

The 3-panel SBV5E 11kV board installed at Tumela shaft is for the shaft’s main compressor, which supplies compressed air for drilling and for emergency air supply to underground rescue bays.

The large 45-panel 11kV SBV43DE board for Tumela shaft will replace and upgrade an existing old MV switchgear substation for all underground reticulation in the shaft, including powering their main de-watering pumps, totalling 5,4MW. Installation of the new equipment is only due to be completed by mid-2021 as a phased installation strategy is being applied to ensure that no mining operations are interrupted by the changeover.

Signalling upgrades level-crossing systems at two Metro stations in Cape Town

ACTOM Signalling recently completed the installation of a new improved level-crossing control system and booms on Kenilworth Road near Kenilworth Station, and nearing completion is the Buttskop level crossing in Cape Town.

The previous automated control system at the Metro station had been out of action for several months prior to the contract being awarded at the beginning of this year by the Passenger Rail Agency of SA (PRASA) to replace it with the improved system. The level-crossing had to be controlled manually using flags during the period that the automated system was not functioning.

Signalling completed the improvement contract in August. The former relay-based control system has been replaced with an electronic programmable logic controller (PLC), with axle-counters installed in the place of track circuits and LED flashlights replacing the formerly used incandescent lights. In addition, fibre-optic cabling has replaced copper cables for communication purposes. Four modern half-arm level-crossing barriers have been installed in place of the two full-arm barriers used previously.

Signalling is nearing completion of another level-crossing improvement



A view of Kenilworth Road showing the new half-arm booms that have been installed to control traffic at the level crossing.

contract on Cape Town’s suburban passenger line. This is for the Buttskop level crossing close to Blackheath Station in Blackheath. It involves the same improvements as applied to the Kenilworth Station level-crossing, except that two modern half-arm barriers will replace the two old half-arm barriers.

The improvements by Signalling of the level-crossing systems at Kenilworth Station and Buttskop – and at Muizenberg Station in a contract the business unit completed two years ago – form part of an ongoing programme

PRASA has been engaged in for some time to upgrade the old legacy signalling systems with electronic systems at Metro stations in the Western Cape.

“The completion of our level-crossing improvement contract at Buttskop has to await the completion of the signalling system upgrade that is currently under way at Blackheath Station, from where the level-crossing is controlled. This is expected to happen before the end of this year,” explained **Peter Colborne**, Signalling’s General Manager.

Positive impact on High Voltage division following Nampower order

ACTOM High Voltage Equipment (HVE) was obliged due to a shortage of orders to place its factory staff on short time towards the end of 2017 and in the early months of 2018.

As HVE contemplated the gloomy prospect of possibly having to continue in this unenviable position for an extended period, **Struan Steele**, Electrical Products Namibia's General Manager, alerted the division to the fact that Nampower, the national power utility, was about to post the first of a series of tenders for substantial quantities of high voltage equipment to replenish its stocks to replace aging equipment and for planned new projects.

"Of course we wasted no time in

responding and thanks to a combination of preparing and submitting keenly competitive bids, we've won several large orders during most of 2018 and in the first half of this year for a variety of HV equipment," said **Casbah Zwane**, HVE's General Manager.

Importantly these include substantial orders for a range of disconnectors and instrument transformers, which are both 100% locally manufactured by HVE at its Knights plant, thereby enabling the division to return to normal production time.

The orders received from Nampower to date total about R35-million in value, with imported circuit breakers and surge arrestors being

among the items ordered, in addition to the abovementioned locally manufactured equipment.

"There is no doubt that we have won the lion's share of the HV equipment that Nampower awarded in 2018," Casbah commented.

"We are extremely grateful to Struan and his staff for the valuable assistance they have given us, without which we wouldn't have been as successful as this. An added factor that worked in our favour was the excellent understanding Struan has of Nampower's needs and preferences," he added.

HVE manufactures customised compact Star Delta live-to-earth disconnector for local smelter



High Voltage Equipment factory staff (from left) Walter Nkadimeng, Foreman; Jimmie Joy, Foreman; Willem Lebenya, Assembler; and Freddie Williamson, Inspector, with the newly-assembled Star Delta portion of the disconnector for the Rustenburg smelter.

High Voltage Equipment has custom designed and manufactured a combination switching Star Delta and live-to-earth disconnector for a local smelter that is more compact than any of the units of this configuration

it has produced previously.

The new unit is about 20% smaller than the most compact among the many customised Star Delta live-to-earth combination switching disconnectors the division has previously

produced for customers locally and abroad.

"Its greater compactness makes for easy installation in an existing indoor plant, as is the case in this instance where it has been developed

to replace conventional disconnectors that have reached the end of their lifespan," commented **Craig Aaron**, HVE's Senior Product Manager, Isolators.

The new disconnector will control three single-phase transformers for the Rustenburg-based smelter.

"Its big advantage over its predecessors is that the live-to-earth portion provides a visible open gap and automatic earthing on the supply side, thus enhancing the safety of the installation compared with a conventional discon-

necter used in this application," Craig explained.

The use of composite silicon rubber compound insulators in the new Star Delta live-to-earth disconnector contributed significantly towards its greater compactness. Composite insulators also have the advantage of being better suited to polluted conditions than conventional porcelain insulators are.

In addition to compactness, the new unit, for the first time incorporates the following important enhancements:

- Lower friction self-aligning and self-cleaning contacts.
- Common spare parts, with consequent reduction in spares holding by the client.
- Motor-operated control for ease of operation, in place of manual-operated control.

"Due to the modular design, further customisation is possible. Cast resin current transformers and surge arrestors can also be accommodated, if required," Craig concluded.

MV Switchgear provides PTK's and collector substation switchgear for two new wind farms

ACTOM MV Switchgear was awarded two contracts late last year for the design, manufacture and supply of pad-mounted transformer kiosks (PTK's) to serve the wind turbine generators at two new wind farms.

The business unit is recognised by independent power producers and EPCM contractors for the reliability and efficiency of its PTK's, which it developed and supplied for wind farms in earlier rounds of the national Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

The two farms, which form part of Round Four of the REIPPPP, are Golden Valley near Cookhouse in the Eastern Cape, comprising 48 wind turbines, and Excelsior between Swellendam and Bredasdorp in the Western Cape, comprising 13 wind turbines.

The contracts, awarded by EPCM contractor OptiPower Projects, also include the design, manufacture and supply of the medium voltage switchgear required for the 33kV/132kV collector substations that will feed the wind-generated electricity into the national grid.

Further enhancements are incorporated in the latest PTK's.

Aluminium-zinc coated mild steel is utilised in the manufacture of the LV assembly of the new PTK's in place of galvanised mild steel used previously. In addition, many of the internal parts of the LV assembly are now made of aluminium-zinc coated mild steel, instead of painted 3CR12 steel. "The main advantages of using aluminium-zinc coated mild steel for these purposes are greater ease of fabrication and reduced fabrication costs," remarked



One of MV Switchgear's new PTK's for wind turbines is given a final check over by a technician in the business unit's Knights plant before being dispatched for delivery to one of the new wind farms currently under construction.

Greg Whyte, MV Switchgear's Design & Development Manager.

The other components of the enclosure for the new PTK's, besides the LV assembly, are a 36kV Schneider Flusarc ring main unit and a wind turbine transformer. The transformers, manufactured by ACTOM Distribution Transformers, have different power ratings for the two wind farms – those for Golden Valley being 2,8MVA units, while those for Excelsior are 2,75MVA units.

Greg said a temperature rise test conducted on one of the first PTK's produced, established that the transformer installed within the PTK enclosure is able to supply its full rated power. "What this means in short is that the transformer is suitably designed to ensure that, despite the de-rating effect of the enclosure, it can be used at its full nameplate rating without exceeding the specified temperature rise limits," he commented.

MV Switchgear/WPI's Rustenburg branch moves into larger premises

The setting up by MV Switchgear and WPI Power Solutions of a branch in Rustenburg two years ago to better serve the platinum mines in the area has paid off handsomely.

Thanks to substantial growth of the branch's business, at the beginning of May this year it moved into larger and better-equipped new premises and increased its staff threefold to cater to the growing demand.

The branch, which previously occupied only an office and had a staff of three, now has premises with a total floor area of 500m² to accommodate a sizeable workshop, a spares store and offices, with a total staff of nine comprising Branch Manager **Cas Coetzer**, two admin people, five field service technicians and a safety officer. The workshop is equipped with a drill

press and test equipment to provide for minor repairs and tests on the spot.

The new branch is situated in Unit

Nine, 10a Mangan Street, Rustenburg, and the phone numbers are Tel (014) 538-1474 and Cell 082-785-5459 (Cas).



Technicians of MV Switchgear and WPI Power Solutions' Rustenburg Branch conduct routine maintenance work on an electrical installation at one of the mines served by the branch.

Last of Medupi's generator units synchronised to the national grid

It was a moment of particular significance for ACTOM Protection & Control (P&C) when the last of Medupi power station's six generator units was synchronised to the national grid in late-August this year.

Not only did it mark the full coming on stream of the world's fourth largest coal-fired power station, but it also brought to an end P&C's longest running protection and automation schemes supply, installation and commissioning contract to date.

The business unit in conjunction with its technology principal at the time, Areva T&D of France – now GE Grid Solutions of the US – won the highly prized turnkey contract in August 2009, and in February 2010 it was awarded an identical contract for Kusile power station.

The protection equipment supplied under these contracts comprised customised protection, control and fault recording systems for the generator, generator transformer, unit transformers and associated equipment for each of the 800MW generator units. Each unit is equipped with four panels consisting of Main 1 and Main 2 protection panels for full redundancy, a combined synchronisation and control panel and a disturbance recorder panel.

"The technology was so widely proven and well accepted worldwide that Eskom rolled it out for upgrades at Letabo and Majuba power sta-

tions, having already done so earlier for Komati and Grootvlei prior to the contracts for the two new power stations being awarded to P&C by GE Grid Solutions, the main contractor for the turbines for both Medupi and Kusile," commented **Faisal Hoosen**, P&C's General Manager.

P&C, as part of its supply, installation and commissioning contracts with the two new power stations, is directly

involved at first synchronisation, with at least one of its senior engineers participating as part of the generator unit commissioning team.

The team typically consists of Eskom and supplier engineers covering turbine control, excitation control, unit control and the electrical operating desk (EOD). All systems are checked with the generator off line before first synchronisation and unit optimisation.



A view of Medupi power station near Lephalale, Limpopo Province (Photo sourced from Mining Weekly).

Synchronisation involves ensuring that a generator unit is running at the correct frequency and voltage before being connected to the grid.

Synchronisation of the first unit at Medupi was completed in March 2015.

Currently synchronisation of Kusile's generator units is at the halfway stage, with Unit 3 having been completed in April this year.

"It's been a long road on this project, but the dedication, discipline and

ingenuity of our engineers must be acknowledged and celebrated. Despite our country's challenges, the quality of South Africa's engineers and their efforts behind the scenes should never go unnoticed," Faisal said.

LH Marthinusen proves cost-effective method to repair – instead of replace – power station ID fans



Welder William Gwili is seen in LHM's Fan Service division workshop welding a newly-manufactured fan blade section onto the impeller of the large ID fan from Kendal power station.

LH Marthinusen's (LHM) Fan Service division has successfully developed a cost-effective method for repairing dust-eroded impellers on induced draft (ID) fans deployed in coal-fired power stations.

The centrifugal ID fans in South Africa's older power stations are subjected to increasing flyash dust loads as the efficiency of the dust control systems declines over time. Electrostatic precipitators are used in most of Eskom's power stations for dust control.

A 4m diameter ID fan from Kendal Power Station in Mpumalanga that has had its impeller blades eroded in this way was selected as a test unit for repair, with LHM being commissioned in April this year to re-blade the fan by part-manufacturing new

impeller blades by reverse engineering methods and welding them to the old impeller blades' base sections on the fan. The ID fan impeller contains a total of 24 blades.

"The crucial aspect of this project was to ensure that the welded replacement blades would be as strong and safe as those in the original fan to withstand the high speeds and pressures involved when in operation," explained **Craig Johnston**, General Manager of LHM's Fan Service division.

The 4122kW motor-driven ID fan operates at a speed of around 600rpm and a pressure of 5,2kPa to achieve an air-moving capacity of 683,6m³/sec.

LHM's Fan Service division engaged a local specialist mechanical consultancy to assist in designing the new blades of the impellers to

help ensure that the repaired impeller meets the requirements as stipulated. It also engaged the services of leading welding metallurgy expert professor **Pieter Pistorius** of the University of Pretoria to evaluate the results of a series of tests on samples of welded quench-and-tempered steel prepared as a preliminary step towards welding the impeller blades themselves to ensure that the stringent conditions of the contract would be met.

"The tests were done on pieces of original ID fan blades on which samples of the new steel to be used to manufacture the final repaired product were welded. The tests, which included microscopic examinations and tensile tests, were aimed at confirming the integrity and strength

To page 20

From page 19

of the welds and also to establish the compatibility between the new and original quench-and-tempered steels," explained **Nicolaas Botha**, LHM's Industrial Fans & Ventilation Systems Project Manager.

Craig commented: "These tests confirmed that the newly-manufactured and repaired impeller blades would fully match the original blades in quality—most importantly in their ability to withstand the high stresses involved.

"In fact, the tests have demonstrated that the rigorously controlled and monitored re-manufacturing and

repair procedure we are now following in executing the contract will result in a product that markedly exceeds the strength and durability of the original!" he emphasised.

"This has been achieved mainly through identifying various high stress areas in the original blade designs and ensuring that they are eliminated in the remanufactured blades that will replace them."

LHM's Fan Service division is implementing a detailed quality control plan in executing the manufacture and repair of the impeller blades in

the current contract, in which a team of technical personnel of Kendal Power Station led by System Engineer **Thengi Molotsi**, participate by monitoring progress on a regular basis.

Tendani Rasivhetshela, Senior Engineer at Kendal and the initiator of the concept, commented: "Traditionally an impeller in an eroded condition has been replaced. Now the power stations have an alternative available to them of repairing instead of replacing the impellers of their ID fans at substantially lower cost than previously."

Metalplus applies continuous welding process to repair steam turbine components

Certain types of steel alloys may not be welded without compromising the strength of the weld unless the process is performed uninterruptedly at an even temperature.

This applied in the case of a repair project carried out by Metalplus recently at its Robertsham, Johannesburg, factory on key components of a 20MW steam turbine that became worn and in need of substantial refurbishment after close on 40 years of operation in a large chemical plant in Mpumalanga.

Metalplus established when examining the turbine that the balance drum, labyrinth seals and blade seats were in need of extensive repair, requiring

rebuilding through continuous welding.

"All these components are made of a special steel alloy that require a continuous welding process. This means all the welding involved has to be performed uninterruptedly for as long as it takes – in this instance six days – within a set temperature range according to the type of steel applicable," explained **Jose Gomes**, Metalplus' General Manager.

Metalplus is geared for such a challenging task, having developed over the past 15 years a highly effective continuous welding technique. The contract, awarded in June this year and completed at the end of August

as scheduled, involved:

- Identifying all the repairs required, including having to gather all necessary data for a reverse engineering rebuild process to restore the worn components to their original condition. Reverse engineering had to be applied as the original drawings for the components are unavailable.
- Manufacturing a special cage to enclose the portions to be welded. The cage is fitted with thermostatically-controlled heating elements to keep the components' worn surfaces within the required temperature range throughout the welding process.
- Assigning three welders to perform



Welding Operator Patrick Luthuli monitors the continuous welding of a large rotor in Metalplus' plant.

the continuous welding in shifts around the clock throughout the welding period, using a special wire and flux imported from Europe.

The welding system applied is submerged arc micro welding, which Metalplus pioneered in South Africa in the early-1970's. "Among the advantages of submerged arc welding

over other welding systems is that it achieves a very high quality weld with a uniform finish, it is well suited for automated welding with an extremely high deposition rate and speed, and it is environmentally friendly, producing little or no smoke," Jose pointed out.

After completion of the continuous welding, performed over six days in

mid-August, the repaired components were put through a heat-treatment process and thereafter subjected to non-destructive testing by an ultrasonic process, which confirmed that they had been restored to their original condition.

Marthinusen & Coutts' major investment to boost Power Generation's repair capabilities

During the past year Marthinusen & Coutts (M&C) has purchased a wide range of additional equipment for its dedicated Power Generation facility in Benoni to further boost its generator repair and refurbishment capabilities.

"The equipment, the bulk of which is brand new, is just the latest in a series of investments running into tens of millions of rands that we have put into Power Gen over the past three years to bring its capabilities up to the highest possible standards to meet the needs of the market," said **Richard Botton**, M&C's Divisional CEO.

"It is part of an ongoing strategy we have pursued since acquiring ACTOM Turbo Machines five years ago and the subsequent acquisition of Generator Technologies (Gentech) three years ago to provide a full electro-mechanical service to users of turbines and generators," he explained.

ACTOM Turbo, based in Sasolburg, is a specialist mechanical repairer of power generation equipment. Gentech, a longstanding provider of repair services for generators, was merged into Power Generation, thereby strengthening the expanded operation both in skills and equipment.

"Following the latest equipment purchases, M&C's Power Gen facility is now the largest privately-owned service provider of its kind in Sub-Saharan Africa, having the capability to service power plants of up to 150MW," Richard stated.

The newly-acquired equipment comprises:

- Two of the largest hydraulically-operated dedicated salient pole coil presses capable of exerting pressures of up to 1000t.
- Variable power electronic devices to supply continuous current with a capacity of over 2000A for the fast-curing of



Test Technician Sergio Bernades conducts tests on a 36MW stator rewind at M&C Power Generation.

main pole rotor coil insulation.

- A dedicated controllable power supply for full flux core testing of stators up to 60MW.
- A 7m x 3m electronically controlled and recorded curing oven.
- Various cranes up to 90t lifting capacity.
- A comprehensive range of modern test equipment.

In addition M&C has recently installed three large clean condition rooms in the Benoni plant, two to be used for rotor rewinds and the third for stator rewinds, plus a large dedicated sand blast room for cleaning of rotors and stators. The division has

also developed and equipped three 20 foot site services containers and one 40 foot container for deployment in the field, mainly for use on projects in remote areas.

"Most of the M&C division's investment of the last several years has gone into developing our Power Gen facility, which together with ACTOM Turbo on the mechanical side and working closely with their respective international technology partners, have grown to become the top service providers in the market, offering a full centre-line electro-mechanical solution to industry," Richard concluded.

Marthinusen & Coutts upgrades Zambia facility's machine shop workshop

A new 435m² machine shop workshop and transformer department at Marthinusen & Coutts' facility in Kitwe, Zambia, will further improve the quality and turnaround time of its offerings in the region.

According to Marthinusen & Coutts Zambia General Manager **Eugene Lottering**, the commissioning of the machine shop workshop in January

this year created significant space in the 1700m² main workshop, allowing for the investment in a transformer department.

"We now have a dedicated factory for machining work-pieces for the main shop," said Eugene. "The M&C head office in Johannesburg makes a vital contribution by sending their machine shop foreman to provide training. This

upgrades the local Zambian machining skills on a continual basis."

The division's machine shop facility boasts five machining lathes, two milling machines, and a submerged arc welding machine. It also has a 50t horizontal press and rotor binding machine. All equipment operates under two 6,3t jib cranes.

"Our transformer department has allowed us to service the market in transformer repairs. The facility is equipped with a 20t overhead crane to lift larger transformers," he said.

The new department is equipped with a new coil machine, ratio tester, an oil purification machine, and a dedicated oven.

M&C has already successfully overhauled transformers for a number of opencast mines. Working in collaboration with M&C Johannesburg has ensured quality is optimised, while local transformer repair skills are also being developed.

"We have also established a Level 3 maintenance site services team to provide on-site electro-mechanical assistance to customers," said Eugene.

"Our continuous investment in the region allows us to provide customers with a one-stop electro-mechanical repair facility for alternators, generators, motors and transformers, as well as mechanical equipment," he said. "This means shorter lead times and less transportation risk, while also benefiting the Zambian economy."



Artisans at work in the newly-established machine shop workshop at M&C's Kitwe facility.

M&C's large motors test facility rated among top of its kind in Africa after comprehensive upgrade

Marthinusen & Coutts recently completed a comprehensive upgrade and modernisation of its high voltage rotating machines load test facility at its Cleveland, Johannesburg, works.

Following the upgrade, which was completed in September this year, the facility is now one of the most modern dedicated large motor test facilities in Africa.

"One of two major advances that have been achieved through the upgrade is that temperatures and vibrations are now measured automatically and continuously while a machine is being tested, representing a huge leap forward from the previous system, in which these measurements had

to be acquired manually," said **Rob Melaia**, M&C's Engineering & Technical Executive.

The other major advancement is that acquiring and communicating the test data is now automatic and virtually instantaneous, as well as being made available remotely to M&C's test technicians and the customer alike. "A further advantage is that the new system is not exposed to the risk of possible misreading of the data that the previous communication system – being partly manual – was subject to," commented **Johannes de Lange**, M&C's Test Department Manager.

Besides being faster, more efficient and more user-friendly, the upgraded and modernised systems are also safer

than the former systems used, as they don't require the test technicians to work in close proximity to the high voltage and fast rotating machines while under test, as previously.

Prior to purchasing and installing the new automatic systems this year, M&C had a dedicated "customer room" built on top of the existing test facility control room to enable customers to watch tests in progress.

"Previously, in order to do so, a customer would have to join the test technicians in the control room, which sometimes got too crowded for comfort for both parties," Johannes remarked.

Customers can now enjoy a bird's eye view of the test proceedings

through the large windows of the customer room and have immediate access to the automatically generated test results data and reports via the display screens installed in the room.

Included among the improvements to the communication and data display system is a display on a single computer screen window of all the main test results presented in schematic form for easy reading at a glance. The results provided here are: current, voltage, power, apparent power, reactive power, winding and bearing temperatures, vibration velocity and acceleration and motor speed.

Rob said: "A key aspect of the new system that is worth emphasising because of its great convenience is the fact that results of tests are accessible remotely, which means a customer can view them in his own office on a computer screen or smartphone as they become available."

A view from the customer room overlooking M&C's large motors load test facility, showing (from left) Test Facility Foreman Sibusiso Ndlovu, Test Technician Alwyn de Bruin and Test Department Manager Johannes de Lange performing tests on a large wound rotor induction motor rotor.



ACTOM Turbo Machines signed on as local channel partner of world leading gas & oil equipment OEM

ACTOM Turbo Machines has been appointed "channel partner" in South Africa for Baker Hughes Turbomachinery & Process Solutions (BH TPS) company.

As its channel partner in South Africa ACTOM Turbo represents BH TPS exclusively in the following three categories:

- Turbomachinery and process solutions (TPS), whereby the business unit provides all required ongoing support to BH TPS' installed base of oil & gas equipment in South Africa, including repairs, refurbishment and supply of spare parts.
- Representation of BH TPS for the sale of all new oil & gas equipment it has on offer, including, among others, steam and gas turbines, process compressors and pumps.
- Representation of BH TPS' Power Transmission division, the OEM for a reputable range of hi-tech heavy industry gearboxes used with equipment produced by BH TPS and many other world renowned OEM's. The agreement covers support of gearboxes already supplied that form part of the company's installed base of oil & gas equipment, as well as sales of new gearboxes.

The TPS agreement – the first category listed above – came into effect in



Mark Gulbis posing next to a BH gas turbine rotor on display at an exhibition accompanying the Annual Meeting of BH executives, partners and clients in Florence, Italy, in January this year.

April 2018. On the strength of ACTOM Turbo's excellent performance under this agreement over the past year, BH TPS negotiated the addition of the other two agreements to ACTOM Turbo's local representation portfolio, resulting in the new equipment sales agreement being brought into effect in March this year and the Power Transmission representation agreement coming into effect in April this year.

Mark Gulbis, ACTOM Turbo's Project Engineer responsible for business development, is the primary person responsible for managing and implementing the BHTPS representation agreements. He is well-placed to perform this role due to his experience as a project engineer and accounts manager with the company that previously represented BH TPS in South Africa.

"It is worth noting that BH TPS's parent company Baker Hughes – formerly GE Oil & Gas – is the world's first and only full-stream oil & gas company, which denotes that its business encompasses the full gamut of activities and processes involved, ranging from exploration and production of crude oil and natural gas to transportation by pipe, rail, etc. and also including the refining of crude oil and natural gas into petroleum products," Mark pointed out.

"The representation agreements that BHTPS has entrusted us with are of great value to us at ACTOM Turbo Machines. We will continue to do our utmost to fulfil all our duties and commitments under these agreements and hope our partnership with BHTPS will prove to be a long and fruitful one," he commented.

Genlux wins contract to manufacture and supply LED streetlights for Gauteng highways



This picture shows the R21/N14 interchange in Pretoria with the N14 extending northwards where the GEN 2 LED streetlights, manufactured and supplied by Genlux Lighting, have been installed. The white LED lights contrast against the yellow High Pressure Sodium (HPS) HID lights in the foreground.

Genlux Lighting was awarded a two-year contract in early-2019 to manufacture and supply LED streetlights for national highways in Gauteng.

Genlux is one of three local LED streetlight manufacturers to be awarded contracts for a programme launched by the SA National Roads Agency (SANRAL) to replace old High-Intensity Discharge (HID) streetlights and floodlights with energy-saving LED lights on Gauteng's national highways.

Between February and August this year Genlux manufactured and supplied GEN 2 LED streetlights for six sections of national highways in

Gauteng, as follows:

- On the N14 north of the R21 interchange towards the Rigel off-ramp, as well as additional sections from Garsfontein through to Lynwood in Pretoria.
- On the N4 highway from Hatfield through to the Watermeyer off-ramp in Pretoria.
- On the N12 highway from the Edenvale interchange to just past the Kraft Road interchange in Ekurhuleni.
- On the N3 highway between the Gilloolys interchange and the Van Buren off-ramp in Johannesburg;
- Between the Gilloolys inter-

change and the Linksfield off-ramp in Johannesburg; and

- Between the Van Buren off-ramp and the Geldenhuys interchange in Johannesburg.

In addition, during the same period Genlux and another manufacturer supplied LED floodlights for three of the four high mast installations at a floodlight pilot test site situated at the R23 (Benoni) off-ramp on the R21 highway.

The installations of the LED lights are performed by two specialist highway lighting installation and maintenance contractors.

ACTOM participates in Electra Mining Botswana show for the first time

As part of its ongoing drive to grow its business in neighboring countries and beyond, ACTOM participated for the first time in the Electra Mining Botswana trade exhibition in Gaborone this year.

The group divisions and business units that participated in the three-day exhibition in early-September were High Voltage Equipment, MV Switchgear, Protection & Control, Electrical Machines, LH Marthinussen, Reid & Mitchell, John Thompson Air Pollution Control, Electrical Products and Genlux Lighting.

The show, staged at the Gaborone Fairgrounds, was attended by, among

others, the Botswana Chamber of Mines, the Jwaneng and Orapa diamond mines, the Botswana Defence Force, the University of Botswana and government representatives from Lesotho, Tanzania, Zimbabwe and Zambia.

ACTOM personnel in attendance said their participation in the show proved worthwhile, as they established some promising leads to possible future business.

Elizabeth Senatle, Protection & Control's Product Manager, Protection Products & Systems, explains some of the latest products on offer to Benjamin Marape, a Botswana Defence Force Electrical Engineer.



Quadpara Association now represented on Motiv Electrical's board

The Quadpara Association of South Africa (QASA) has taken up a 12% shareholding in majority black-woman owned company Motiv Electrical.

QASA's CEO **Raven Benny** has been appointed a Director on Motiv's board.

Motiv, in which ACTOM has a shareholding, is a longstanding provider of procurement services to a number of group divisions and business units, as well as owning and operating a service-orientated business in the cleaning and DC industries called Motiv Service. It also has a subsidiary, Motiv Office, which deals in office equipment and décor to corporate clients.

"QASA, which is one of Motiv's social responsibility programme beneficiaries, has taken a 12% stake in the business, with ACTOM reducing its shareholding from 47% to 35%," said **Mbali Rampa**, Motiv's General Manager and a shareholder.

The change, which took effect in February this year, enhances Motiv's standing as a black-empowered business in terms of the Broad-Based Back Economic Empowerment Act. "It means that in addition to the favourable status we already enjoy as a black-owned business, we are now also a designated supplier in terms of the

Act, due to QASA being an organisation representing people with disabilities," Mbali explained, adding that Motiv also

hopes to benefit from collaboration with QASA in developing new markets and clients for the business.



QASA's CEO **Raven Benny** (seated), newly-appointed as a Director on Motiv Electrical's board, with (from left) Motiv's board Chairman **Chris Holly**, ACTOM's Procurement Executive; **Mbali Rampa**, Motiv's General Manager; and Motiv Directors **Pauline Mokoena**; and **Nathaniel Gabashane**, Electrical Machines' HR Manager and Large Motors Manufacturing General Manager respectively.

John Thompson refurbishes ablution facility at township school near Tutuka power station

John Thompson recently refurbished a derelict ablution facility at Lesedi School in Sakhile Township on the outskirts of Standerton in Mpumalanga as its latest corporate social investment (CSI) project for previously disadvantaged communities in the vicinity of Tutuka power station.

The division periodically undertakes CSI projects as part of the

Utility Boilers & Environmental (UBE) business unit's responsibilities under its boiler-serve and other long-term maintenance contracts at various Eskom power stations.

"The ablution facility had been out of use for a long time, so the Grade 1 to 4 learners for which it was intended were using toilets provided for older children at the school," explained **Gladstone Mbili**, the UBE unit's Business Development & Stakeholder

Relationship Manager.

A local building contractor was appointed to do the work, which was carried out from April to June this year. "It involved installing, among others, a new cistern system, toilets, urinals and wash basins purchased at our expense, as well as repairing the windows, ceilings, lights and gutters and installing burglar-proofing," Gladstone said.

MV Switchgear donates circuit breaker and ring main unit for new training centre

When approached by longstanding customer George Municipality early this year to assist them with the establishment of a new training facility by contributing suitable switchgear for it, MV Switchgear responded by donating two items for the purpose.

In July MV Switchgear duly handed over to the George Municipality personnel who travelled to the unit's Knights plant to collect them a 12kV SBV4E air-insulated circuit breaker and a 12kV FBX gas-insulated ring main unit.

The equipment has subsequently

been installed at the new training facility, which has been established by the municipality's Electrotechnical Services Department to provide training for authorised switching operators within the Southern Cape Karoo District.

Key appointments

Chris Smith has been appointed General Manager of ACTOM Energy with effect from April 1, 2019.

Rudi Els has been appointed General Manager of Marthinus & Coutts' Power Generation facility with effect from July 1, 2019.

Brightman Zungu has been appointed Branch Manager of Electrical Products' Durban Branch with effect from October 1, 2019.

Jacques Church has been appointed Branch Manager of Electrical Products' Welkom Branch with effect from September 1, 2019.

Michael Hoaeane has been appointed Sales & Commercial Executive of Reid & Mitchell with effect from November 1, 2019.

Portia Mlangeni has been ap-

pointed Marketing Communications Coordinator of John Thompson's Utility Boilers & Environmental business unit with effect from September 2, 2019.

Wayne van Zyl has been appointed Financial Manager of Distribution Transformers with effect from November 1, 2019.

Tumi Mesefo has been appointed Divisional Accountant of Electrical Products with effect from October 21, 2019.

Baldwin Hlongwani has been appointed Business Development Manager of Power Transformers with effect from October 1, 2019.

Ferdi Swart has been appointed HR Manager of the Engineering Projects & Contracts division with effect from July 1, 2019.

Basetsana Pretorius has been appointed Senior Contracts Engineer at High Voltage Equipment with effect from August 1, 2019.

Confidence Mabulwana has been appointed Proposals Manager at High Voltage Equipment with effect from July 22, 2019.

Daniel Lamola has been appointed Senior Manager, Services, at High Voltage Equipment with effect from October 5, 2019.

Sibusiso Ndlovu has been appointed SHEQ Manager of Marthinus & Coutts' Power Generation facility with effect from November 1, 2019.

Walter Woest has been appointed Foreman of Marthinus & Coutts' Power Generation facility with effect from November 1, 2019.



Chris Smith



Rudi Els



Brightman Zungu



Jacques Church



Michael Hoaeane



Portia Mlangeni



Wayne van Zyl



Tumi Mesefo



Baldwin Hlongwani



Ferdi Swart



Basetsana Pretorius



Confidence Mabulwana



Daniel Lamola



Sibusiso Ndlovu



Walter Woest

Getting into the spirit of Mandela Day

In the true spirit of goodwill and generosity that Nelson Mandela's birthday has come to represent, the staff of some group divisions and business units opened their hearts and pockets again on July 18 this year to help people less fortunate than themselves.

Staff of LH Marthinusen (LHM), Denver, selected two organisations to assist and hand over gifts to in celebration of the occasion: Stepping Stones Hospice in Alberton and The Character Company based in Randburg – the latter specifically devoted to providing mentorship and male role-models to young boys who don't have father figures in their lives.

John Thompson's Utility Boilers & Environmental (UBE) business unit staff based at Eskom's Matimba power station near Lephalale in Limpopo Province likewise participated in two projects – one in conjunction with Eskom involving upgrading two schools in the area and the other with Lephalale Municipality's Mayor, **Jack Maeko**, for a project aimed at benefitting local formerly disadvantaged communities.

On Mandela Day a group of LHM staff-members visited the Stepping



Jaco van Schalkwyk (left), the Character Company's Founder and Chairman, is seen with (from left) David Sullivan, LHM's Divisional CEO; Charmaine Hall, HR Manager; and Cheryl Havenga, Financial Manager.

Stones Hospice to hand over bed linen and orthopaedic cushions that had been purchased for the patients. In addition they provided a finger lunch

for the staff and presented patients with gift bags, each containing biscuits, soap, a face cloth and other toiletry items.

The following day the Founder and Chairman of the Character Company, **Jaco van Schalkwyk**, visited LHM to give a talk to the division's staff about how the organisation goes about encouraging boys without fathers to become better men and good citizens. LHM presented him with a gas fridge and sleeping bags for use by the boys on the weekend and holiday camps they are regularly taken on as part of the Character Company's mentorship programme.

In the dual project undertaken by UBE in cooperation with Eskom, the business unit provided fencing and fluorescent fittings to Skuinskloof Primary School to upgrade the school and donated vegetable seeds, gardening tools, watering cans, hosepipes and pesticides to Moroka Preschool to enable it start growing and providing food for the children.

In the Mayor's project in Lephalale for Mandela Day, UBE staff presented 100 blankets in a local village for distribution among elderly residents in the area. They also participated in planting a tree to signify the importance of caring about and doing something to help members of other communities besides your own.



UBE staff based at Matimba power station help plant a tree as part of the Mayor's Project in Lephalale on Mandela Day.

LH Marthinusen celebrates Heritage Day with donation to Free State farm school

LH Marthinusen (LHM) celebrated Heritage Day last year – and again this year – in an unusual way.

A short while prior to September 24 last year, when this day is celebrated nationally as a public holiday, top management was approached by **Pieter van der Walt**, LHM's General Manager, Large Motors, with a request to support a charity initiative in which his Pretoria-based church group is involved. His request, to which management agreed, was to sponsor the donation to a farm school in the eastern Free State of six new steel tables for the use of its learners to eat on during their lunch breaks.

Pieter's church group handed over the tables to the school, the Missio Deo Primary School near Ficksburg, just prior to Heritage Day last year.

The church group first got involved in the Missio Deo School Outreach Project, as it is called, because one of its part-time pastors belongs to the group of farmers in the district that set up the school seven years ago. It first catered only to Grades 1 & 2, but has since grown to a full primary school attended by a total of 143 learners.

This year in September LHM again made a financial contribution to the benefit of the school in celebration of Heritage Day by donating six carports to provide shade for the six tables supplied a year earlier. "The learners now make much greater use of the outdoor tables than they did before, thanks to

the shade the carports provide," Pieter commented.

Pieter was among a group of church members who officially handed over the carports to Missio Deo's Headmaster, **Tichaona Chavhunduka**, during the week prior to Heritage Day this year.



Some of the Missio Deo schoolchildren are seen here relaxing at tables in the shade of carports LH Marthinusen provided this year.

ACTOM High Voltage Equipment staff celebrate Heritage Day with an informal lunch outdoors

Many members of staff at High Voltage Equipment celebrated Heritage Day (Tuesday September 24) by getting together the previous Friday (September 20) to enjoy a celebratory lunch together.

"Everyone taking part brought along traditional food from their various cultures and looked very colourful, as all of us got dressed up in various traditional attire for the occasion. Some borrowed from colleagues of other cultures for the day," said **Thembi Baloyi**, PA to **Casbah Zwane**, HVE's General Manager.

The lunch was held in the garden of the HVE Training Centre at Knights.

"Everyone was in high spirits and thoroughly enjoyed the occasion. It provided us with a great opportunity to socialise and get to know each other better in an informal atmosphere," Thembi enthused.



The group of HVE staffers in their colourful attire during the Heritage Day celebration.

ACTOM's canoeing star Loveday shows what he's made of in 2019 World Marathon Championships

Dedicated canoeist Loveday Zondi and his Sub-Veteran partner Alex Roberts returned home triumphant after winning Bronze in their doubles (K2) race in the 2019 World Canoe Marathon Championships in Shaixiong, China, in mid-October this year.

Their opportunity to participate in the Championships came when they were selected in June this year to join the South African team to compete there as K1 and K2 contestants.

Loveday, 35, Product Coordinator at Electrical Products, and Alex, 37, Manager of a computer software company, began training together regularly from April onwards in the hope of being selected, but trained more intensively after June.

"The prospect of competing against the world's best was daunting, but our hard training paid off in the end," Loveday commented.

The 19,5 km marathon course, which included four portages, was staged in a canal, with separate races run for groups of similar age categories. Loveday and Alex competed in a group comprising Sub-Veterans, Veterans and Masters.

In the K1 race Loveday, although starting off well, was unlucky to get



The third placed South Africans in the Sub-Veteran category share their success with the winning Spanish pair and the Argentinians, who finished second.

his rudder damaged, forcing him to replace it with a borrowed one. "One of the South African team staff-members quickly arranged to get hold of the replacement rudder and helped me install it," he explained.

Not only did their quick action keep him in the race, but he did well to finish in seventh place in his age category, while Alex won Silver.

In the K2 event on the following day they started in the leading bunch, which was thinned down in one of the portages from eight boats to five, which included Loveday and Alex. This bunch stayed ahead up to the final sprint, with a Spanish pair taking first place, Argentinians finishing second and the South Africans third.

How ACTOM paddlers fared in Fish River Marathon

In their final race in South Africa before leaving for China to compete in the 2019 World Canoe Marathon Championships in October, Loveday and Alex finished in 15th place overall in the two-day Fish River Canoe Marathon K2 race in the Eastern Cape at the end of September.

The pair were in third place in their age group (Sub-Veteran). A total of 397 boats completed the 84 km course.

The other ACTOM participants were experienced canoeist **Rod Penaluna**, Divisional CEO of Electrical Products, paired with young up-and-coming paddler **Zonele Nzuza**, SHE Assistant at Genlux Lighting, who finished in 75th position overall, and **Craig Johnston** and **Mike Merry**, partnering each other for the fifth time in this race, who finished in 225th place overall and ninth in their age group (Sub-Grandmaster).

Craig is General Manager of LH Marthinusen's Fan Service division and Mike is Divisional Financial Executive for Power Conversion.



A shot of Rod Penaluna and Zonele Nzuza in action during the race.

ACTOM divisions and business units

POWER

John Thompson, Bellville: (021) 959-8400

John Thompson, Isando: (011) 392-0900

www.johnthompson.co.za

John Thompson designs, manufactures, installs and maintains industrial boilers and environmental equipment for local and international process steam and power generation applications. It also retrofits, services and maintains utility boilers and environmental equipment in the power generation market, as well as designing, supplying and installing dust control, product recovery and gas-cleaning equipment for the mining, mineral processing, cement, chemical, petrochemical and food industries.

POWER CONVERSION

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: (011) 899-1111

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: (011) 899-1111

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

HVAC Systems, Durban: (031) 700-3286

HVAC Systems, Cape Town: (021) 981-0111

www.actom-hvac.co.za

HVAC Systems designs, supplies and installs industrial ventilation, heating and air-conditioning systems for the petrochemical, paper, pharmaceutical, mining, food, textile and various other industries.

Static Power: (011) 397-5316

Static Power Specialize in the design and manufacture of AC and DC standby equipment, including thyristor type battery chargers (Micro Process Controlled option), industrial batteries, power supplies, rectifiers, DC/DC converters, DC/AC inverters, furnace control panels, capacitor trip units, battery trip units, power distribution boards. All systems are designed and engineered to suit their purpose.

Alkaline Batteries: (011) 397-5326

Alkaline Batteries, is the South African Distributor for ALCAD and SAFT industrial nickel cadmium and Lithium Ion batteries for the industrial, telecoms, rail and renewable energy markets. Services offered; Installation, Commissioning, Battery Sizing, Testing, Training, Maintenance and Repairs.

COM 10: (011) 552-8368

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

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.

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. It manufactures, Isolators, instrument transformers, outdoor circuit breakers, isolated phase busbars. It also supplies generator circuit breakers, high voltage gas insulated switchgear, compact hybrid switchgear, surge arresters, substation and overhead line insulators. It also specializes on the repairs and maintenance of high voltage equipment.

MEDIUM VOLTAGE & PROTECTION

MV Switchgear: (011) 820-5111

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.

Protection & Control: (011) 820-5111

Protection & Control is a market leader in the supply of protection and metering solutions to the electrical industry. The offering includes a comprehensive range of automation systems, protection relays, credit, smart and prepayment metering systems and hosted services as well as LV panels, components and accessories.

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 to power utilities, 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 to power utilities, the mining sector, local authorities and industry locally and internationally.

LH MARTHINUSEN

LH Marthinusen: (011) 615-6722

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.

Metalplus: (011) 433-1880

www.metalplus.co.za

Metalplus is an expert mechanical facility. It has pioneered Submerged Arc Micro welding in South Africa. Its core competencies are machining of new shafts and repair, grinding and micro welding of all types of rotating equipment and other mechanical components, as well as the mechanical repairs of a wide range of electrical components (traction motor casings, electric motor casings, end/bearing caps, etc.).

MARTHINUSEN & COUTTS

Marthinusen & Coutts: (011) 607-1700

www.mandc.co.za

M&C 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: (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.

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 and employs a team of expert designers, with further technological support available from a leading international designer and manufacturer of luminaires.

ACTOM ENERGY

ACTOM Energy: (021) 511-9146

www.actomenergy.co.za

ACTOM Energy in collaboration with divisions within the ACTOM group, provides System Integrations and Turnkey Subsystems across all sectors.

hydron hydraulics: (021) 511-9146

www.hydron.co.za

hydron hydraulics designs and supplies hydraulic engineering systems and services to the offshore oil & gas sector internationally. Equipment it designs, supplies, assembles, refurbishes, repairs and installs includes high pressure power packs, ring main units, winches, cranes, ballast systems and drilling and under-sea equipment.

Electrowave Cape: (021) 510-2550

www.electrowavecape.co.za

Electrowave Cape designs, supplies and services electrical and electronic engineering systems for the marine and offshore industries locally and internationally. These include design and installation of power automation and drive systems, automation and instrumentation systems and generator control systems and refurbishment, repair, installation and maintenance services.

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 and Development editorial contact, Wendy Hardy
Tel: 083 230 0643, wendy@trendingideas.co.za

Produced by: Jeroen Luyk, In Africa
(011) 768-7050 or 082 951 5049, inafrica@saol.com

ACTOM contact:

Andries Mthethwa, Tel: (011) 820-5111
andries.mthethwa@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, embracing new technology and business development



ACTOM is the largest manufacturer, solution provider, repairer, maintainer and distributor of electro-mechanical equipment in Africa.



ACTOM