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Published three times a year and mailed out together with MechChem Africa by:

Crown Publications (Pty) Ltd

Crown House Cnr Theunis and Sovereign Streets Bedford Gardens 2007 PO Box 140 Bedfordview 2008

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Publisher: Karen Grant

Deputy publisher: Wilhelm du Plessis

Production & layout: Darryl James

Circulation: Brenda Grossmann

Printed by: Tandym Print, Cape



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www.africanfusionmagazine.co.za

Nov-Dec 2024

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our national industry. These scarce skills have transformed the students into world respected managers and leaders. We have all experienced the hardship of the training at the Institute compared to other institutions that offer similar training.

At SAIW's annual general meeting, earlier this year, I made a commitment to look into our training courses and exams, in terms of affordability, failure rates, time frames for returning exam results, and the way in which we manage the SAIW's training offering. This was in response to a number of complaints, which led to an independent investigation. Pass rates, we discovered, have been on a downward trend since 2017, and it was taking far too long to issue exam results.

This prompted us to look at other aspects of the business, and along with the executive director, John Tarboton, we mapped out a recovery plan. By the end of October, I was happy to report the backlog in terms of the examination results had been cleared.

But other issues were raised. With the Institute having shrunk significantly since 2020, the SAIW has become thin in several service areas. This is what led to the shortage of examiners, for example. So a decision was taken to look again at all the aspects of the way the SAIW operates with a view to ensuring future success and sustainability.

The high-cost of training courses is a number one priority, and we looked very hard at ways of reducing that cost. The Executive Director has informed me that there will be a reduction of cost of all SAIW training courses for 2025. Instead of increasing costs in line with inflation at 6%, fees will be reduced substantially. This will transfer a net reduction of course fees of approximately 16% to all students taking SAIW courses next year.

In addition, we are now looking at developing and delivering tailor made training short courses to directly meet company needs: courses that ensure that all the content is directly relevant and useful in the company's specific workplace.

The investigation highlighted that the executive director was having to focus on both strategy and the day-to-day operations of the business. So the board has decided to look for a general manager to take over operational management. This position has been advertised and we hope to have someone in place by January 2025.

We have also advertised for a properly qualified human resources manager to join the Institute, a role that has always been an added responsibility in the past. We have never really developed the formal mechanisms for properly dealing with staffing issues and development needs.

Across the organisation, we are going to be looking into the experience, competency and qualifications of individual staff members, with a view to restructuring their roles to better meet the needs of our students and SAIW members. Where possible, we will look to redeploy lecturers to their areas of best competence, and we will bring in new competent people to fill any gaps. By doing this, we hope that all staff will be more comfortable and successful in their day-day roles at the SAIW.

We expect that a nuclear new-build programme may be coming. So we are now partnering with NECSA to develop the high-level NDT skills required in the nuclear environment. This really does require a different mindset in terms of the safety, quality and competence levels.

One of the main tasks of the SAIW board is to ensure future sustainability of the organisation. Through this restructuring process, we hope to significantly improve operational efficiencies to enable the SAIW to continue to deliver relevant and high quality services while operating according to the best levels of corporate governance.

Joseph Zinyana, SAIW president



Seamless-cored wires that reduce manganese exposure

Nazmi Adams, Senior Vice President at voestalpine Böhler Welding, introduces the new diamondspark GUARD range of seamless flux-cored welding wires, which have been designed to reduce exposure to manganese welding fumes – a potential cause of a Parkinson's-type disease called manganese toxicity.

lux-cored wires are commonly used in electric arc welding of low-carbon steels, particularly in structural applications. However, concerns have been raised about the potential neurological effects linked to manganese exposure in welding fumes, which may pose significant health risks to welders and other employees in the workplace.

As a result, health authorities have defined the exposure limits for welding fumes in the general workspace. While the proper PPE may protect the welder, other workers in the workplace are being exposed to harmful gases as well.

Although South Africa has not yet defined welding fume exposure limits, South African companies typically seek to operate at very high safety levels.

Health effects of welding fume elements

The human respiratory system is divided into the upper airway system, which includes the nose, throat and oral cavity, and the lower airway system, which includes the trachea, bronchi and other airways, which continue to branch into increasingly smaller airways called the bronchioles.

All particles smaller than 10 μ m are difficult for the nose and throat to filter out, and these therefore pass directly into the lungs. Welding produces fumes and gases with particles ranging in size from 0.01 μ m to 10 μ m, depending on many different aspects. "The fact is, however, that welding fumes can penetrate deep into our lungs without us immediately noticing. We often only feel the effects of welding fumes years later," says Nazmi Adams, Senior Vice President at voestalpine Böhler Welding.

In recent years, the development of neurological dysfunctions due to welding fume exposure have mainly been associated with manganese (Mn). It has been documented that Mn poisoning causes a Parkinson'slike syndrome called 'manganese toxicity' after humans experienced chronic exposure in other occupational settings. These neurobehavioral changes have also been observed in welders who were exposed.

Based on these considerations, lowering the Mn presence in the welding fume is a very important step towards improving the health of welders.

diamondspark GUARD rutile cored and metal-cored wires are used in the general construction industry and in shipyards.

the amount of fume generated in a workplace and all elements should be considered. Safety regulation applies the STOP principle in which:

- 1 'S' stands for Substitution, reducing the risk at the source, ie, selecting a welding consumable, welding process and shielding gas that will produce the least fume and manganese emissions. It is the first and most effective fume mitigation measure.
- 2 'T' stands for Technical measures, such as isolating the worker from the hazard



In trials comparing the new diamondspark GUARD 420 MC metal-cored welding wire with the standard diamondspark MC wire, operator exposure to airborne Mn was significantly reduced, helping fabricators to meet recently revised exposure limits.

There are many factors that influence



The seamless diamondspark GUARD 420 MC wire on trial at a shipyard. Inset: diamondspark GUARD wires provide the same level of welding productivity and welding performance as conventional diamondspark cored wires, with a substantial reduction in the manganese content in the welding fumes.



Product name	EN ISO 17632-A	AWS A5.20/SFA-5.20	Welding positions	Polarity	Shielding gas
Diamondspark GUARD 420 RC (rutile cored)	T42 3 P M21 1 H5 T42 3 P M20 1 H5	E71T-1M/T-9M/T-12M H4	All positions	DC+	M21, M20 (Ar+8; 25% CO ₂)
Diamondspark GUARD 420 MC (metal cored)	T42 4 M M21 1 H5 T42 4 M M20 1 H5	E70C-6M H4	All positions	DC+	M21, M20 (Ar+5; 25% CO ₂)

Table 1: Classifications for the new voestalpine Böhler Welding diamondspark GUARD 420 RC seamless rutile cored wire and the diamondspark GUARD 420 MC seamless metal-cored wire.

by using fume extraction, ventilation or enclosures.

- 3 'O' stands for Organisational measures: changing the way of working by organising the work and restricting access. Unfortunately, most welding stations cannot be completely isolated.
- 4 'P' stands for Personal Protective Equipment, providing welders with the PPE required. The Powered Air Purifying Respirator (PAPR) system is reputed to be the best, but unfortunately, this only protects the welder and not the other workers or staff in the vicinity.

The employer has a duty to ensure that 'Substitution' is used whenever practically possible and to establish the healthiest process for the workplace.

Low manganese diamondspark GUARD welding consumables

To meet the challenge of Substitution and reduce the risk of welding fumes at the source, voestalpine Böhler Welding has developed diamondspark GUARD consumables, which produce significantly lower emissions of manganese fumes during the welding process. "Our diamondspark GUARD 420 RC rutile cored and diamondspark GUARD 420 MC metal-cored wires are used in the general construction industry and in shipyards. As shown in the comparison tables and charts below, diamond spark GUARD cored wires are the perfect protection for welders," says Adams.

diamondspark GUARD wires are the latest in seamless-cored wire technology developed by Böhler Welding, and due to their innovative chemistry, they produce up to 60% lower manganese content in the welding fumes (mg/s) compared to conventional folded metal-cored wires. Yet diamondspark GUARD wires provide the same level of welding productivity and welding performance as conventional diamondspark cored wires, with a substantial reduction in the manganese content in the welding fumes.

Comparative welding fume trials

In trials comparing the new diamondspark GUARD 420 MC metal-cored welding wire with the standard diamondspark MC wire, operator exposure to airborne Mn was

Wire speed [m/min]	Welding speed [cm/min]	Current [A]	Voltage [V]	Total FER [mg/s]	Mn FER [mg/s]
6.6	72	220	25.2	13.1	0.49
8.3	72	250	26.4	13.0	0.59
9.9	72	280	27.5	10.2	0.54
11.6	72	310	28	4.9	0.35

Table 2: Fume emission rate (FER) and Mn FER for the standard diamondspark MC wire.

Wire speed [m/min]	Welding speed [cm/min]	Current [A]	Voltage [V]	Total FER [mg/s]	Mn FER [mg/s]
6.8	72	220	24.8	12.6	0.33
8.9	72	250	26.5	13.7	0.28
9.8	72	280	27.5	11.1	0.25
12.2	72	310	28.8	6.1	0.27

Table 3: Fume emission rate (FER) and Mn fume emission rate for the new diamondspark GUARD 420 MC wire.



Mn fume emission rate for a classic diamondspark MC and diamondspark GUARD 420 MC at different welding parameters.

significantly reduced, helping fabricators to meet recently revised exposure limits.

The seamless design of the diamondspark wires delivers a large performance parameter window and is suitable for any wire-based welding process. It also delivers low diffusible hydrogen and outstanding mechanical properties.

The reduction of Mn in welding fumes is of crucial importance for the safety of welders and will become even more important in the future. The exchange of information, knowledge and research results make it clear that certain fumes are dangerous and that countermeasures need to be taken.

The increased safety standards are a great benefit for the health of welders. Manufacturers of welding consumables, equipment and personal protective equipment can focus on reducing Mn fume emissions, which leads to better welder health, better working conditions and greater satisfaction.

"It should be noted, however, that changing only this one parameter would not result in maximum protection. For effective Substitution to reduce the risk at source, the correct GUARD filler metal, shielding gas and an optimal set of welding parameters should be used.

"But if using a welding machines from voestalpine Bohler Welding, such as a URA-NOS or TERRA MIG/MAG welding systems, the ideal welding parameters for these diamondspark GUARD wires are already integrated and readily available," Adams concludes.

www.voestalpine.com/welding

SAIW recommits to accessible, quality training for a sustainable future

Under the theme 'SAIW: The Backbone of the Welding Industry' the SAIW's 2024 awards highlighted the industry's essential contributions and SAIW's commitment to sustainability through accessible, quality training.

he Southern African Institute of Welding (SAIW) hosted its 2024 Awards Gala in Fourways, Johannesburg, celebrating excellence in welding, fabrication and non-destructive testing (NDT) under the theme, 'SAIW: The Backbone of the Welding Industry'. The event underscored SAIW's role in upholding industry standards, advancing technical training, and promoting innovation across South Africa.

In his opening remarks, SAIW President Joseph Zinyana said that the night was a celebration of the remarkable skill and dedication within our industry. "These awards honour those who not only meet but exceed the standards that make our industry resilient and forward-looking," he said.

After acknowledging past presidents and Gold sponsors, ESAB and Afrox, and extending a welcome to SAIW members, dedicated staff and to all visitors and their partners, the SAIW President said that the SAIW has provided technical training for the past 76 years, and has produced welding technicians, inspectors and NDT inspectors of exceptional quality, many of whom are in leadership positions within the welding industry. "The skills developed here are highly sought after, transforming our students into world-class managers and leaders. We all understand the challenges of the rigorous training provided by SAIW, which stands out compared to other institutions offering similar programmes," he said.

"At our 2024 AGM in May, I committed to reviewing SAIW's systems and processes, focusing on the cost and efficiency of our training," he continued, before reporting that the SAIW recognises that its course fees may be unaffordable for many in South Africa. "So I am pleased to announce that, after a thorough cost review led by our Executive Director, we have planned a fee reduction for 2025 to make our courses more accessible to the broader South African community," he announced.

Regarding operational efficiency, he said that members had raised concerns at the AGM about delays in exam result processing. "We also received feedback about high failure rates in exams conducted at our Institute. In response, we initiated a comprehensive review with our Executive Director, John Tarboton, and developed a recovery plan. I'm pleased to report that we have cleared the examination backlog," he said

In response to the additional shortcomings, a restructuring and realignment programme was also authorised by the SAIW board, a process that is expected to be completed by year-end. "This process is



SAIW 2024 awards winners; from left: Len Jordaan, Calvin Carrol, Mandla Makhubela, Armand Pierre Rosenthal, Joseph Zinyana (SAIW President), John Tarboton (SAIW Executive Director), Sunithi Barends, Ian Mc Leod (Eriger MD), Emily Van Der Schyff and Dawie Olivier.



Dawie Olivier received his Gold Medal Award, the SAIW's highest honour, from SAIW President, Joseph Zinyana (left) and Executive Director, John Tarboton (right).

crucial for the Institute's sustainability and future viability," he added.

On construction and welding industry challenges in South Africa, he said that there are few capital projects underway, so South Africa is experiencing an outflow of expertise to international markets. "Petrochemical and nuclear professionals are also increasingly seeking opportunities abroad, which is affecting our industry's technical knowledge base," he pointed out.

Looking ahead, Joseph Zinyana is anticipating a potential nuclear new-build programme. In preparation, SAIW is collaborating with NECSA to develop advanced NDT, Inspection and welding engineering skills tailored to the nuclear sector, which demands the highest levels of safety, quality, and competence. "Our partnership with NECSA aligns with South Africa's focus on clean energy, as nuclear energy can provide efficient and stable electrical power without GHG emissions. We believe this is exactly what our country needs in the current energy landscape," he added.

"SAIW remains committed to supporting any government initiatives that create employment opportunities for our youth and provides them with practical skills up to and including engineering expertise. As we move forward, let us focus on what we can contribute to our country and our communities. We all share a responsibility to help shape a better future, and we are dedicated to making SAIW the institution of choice for technical training," he concluded.

Executive Director, John Tarboton followed the SAIW President onto the podium. Highlighting the theme for the evening: 'SAIW – The Backbone of the Welding Indus-



"I am proud to share our Purpose Statement," he continued: "The SAIW is dedicated to implementing standards and training in welding fabrication and related technologies to ensure the reliability and integrity of welded equipment for the safety of personnel and plant," he quoted, adding: "This purpose captures the heart of our mission and the responsibility we hold to industry and society."

As a non-profit organisation, SAIW also recognises its wider purpose, Tarboton continued, a mission that goes beyond profit to make a positive impact on individuals, industry and society. "With this purpose in mind, we are committed to making our training more accessible by reducing costs for students and industry partners, while upholding our high standards. This approach is essential to ensure the long-term sustainability of SAIW and to keep our value proposition relevant to both individuals and the industry," he said.

Announcing the changes being made as a result of the independent investigation, he said the SAIW has decided to seek a General Manager to oversee operational management, freeing up the Executive Director to focus more fully on strategic priorities. The position has been advertised, and the aim is to have someone in place by January 2025. Additionally, SAIW is seeking a qualified Human Resources Manager – a role that will now be a focused, dedicated position with formal mechanisms for supporting employees and addressing their needs.

"Across the organisation, we are undertaking a review of the experience, competency, and qualifications of our individual employees to restructure roles that better align with the needs of our students and SAIW members. Where possible, we will redeploy lecturers to areas where their expertise can have the greatest impact, and we will bring in qualified individuals to fill any gaps.

"We hope that this restructuring will help ensure that all staff are more comfortable and successful in their day-to-day roles at SAIW," said Tarboton, before turning attention to the core focus of the night; recognis-



The SAIW hosted its 2024 Awards Gala in Fourways, Johannesburg, celebrating excellence in welding, fabrication and non-destructive testing (NDT).

ing exceptional achievements and contributions within the welding and NDT fields.

The 2024 awards and winners

A new award has been introduced from 2024 to celebrate the skill, dedication and expertise of welders from across South Africa. This award will be based on the annual SAIW ATB Welder Challenge, a competition that welcomes entrants from across the SAIW's Approved Training Bodies (ATBs), Tarboton announced.

The Best Welder in the 2024 SAIW Welder Challenge, which recognises excellence in the demanding craft of welding, was Mandla Makhubela, a welder from Bazil Technologies. "The competition was intense, but my training and focus helped me succeed," said Makhubela, adding that winning the competition has provided a stepping stone into far more opportunities in the welding industry.

This was followed by the awards for inspection and NDT, celebrating the best Level 1 and Level 2 students on SAIW Inspection courses and the best student on an SAIW NDT course. The winners were:

- The best student in a Fabrication and Welding Inspector Level 1 course for 2024 was Len Jordaan, acknowledged for his precision and passion.
- The Best Level 2 Student for 2024 on an SAIW Fabrication and Welding Inspector course was Calvin Carrol. With over 20 years of experience in the industry, Carrol exemplifies the value of lifelong learning for career progression.
- And the SAIW President's Award for the Best NDT Student in 2024 went to Sunithi Barends, who was cited for her commitment to safety and expertise in NDT, while significantly advanced industry standards.

Next to be presented was the award for outstanding performance on one of the SAIW's International IWS, IWP or IWT Welding Coordinator courses. This award went to Armand Pierre Rosenthal, renowned for his innovation in the mining sector. Rosenthal was also the recipient of the Phil Santilhano Memorial Award for the best student on any SAIW Inspector or Coordinator courses.

The two ISO 3834-related awards followed for the Best Welding Coordinator from one of the SAIW's ISO 3834-certified companies, and the award for the Best ISO 3834-Certified Company. To date, the SAIW ISO 3834 Company Certification Programme has certified 322 South African fabrication companies to this International welding quality standard, so these two awards showcase the highest standards of quality and compliance in South Africa's fabrication industry.

The Best ISO 3834 Welding Coordinator for 2024 award went to Emily Van Der Schyff, the ISO 3834 welding coordinator for Eriger, a custom-manufacturer of high quality boiler components for the power generation, petrochemical, mining, sugar, paper and chemical industries of South Africa.

Eriger was also chosen to be this year's recipient of The Best IIW Manufacturing Certification Scheme ISO 3834 Company Award for 2024: reaffirming the company's commitment to surpassing industry standards, according to MD, Ian McCleod, who received the award on behalf of his company.

The final award for the night was the SAIW Gold Medal Award, the Institutes highest honour, which recognises an individual for their outstanding contribution to the SAIW and the welding industry. This year, that honour went to SAIW stalwart, Dawie Olivier, who is known for his mentorship and commitment to skills development.

"Through the collective efforts of our members, employees, stakeholders and partners, our Institute has become a beacon of quality and integrity in the welding community. Together, we have built an organisation that serves as the backbone of the industry, and with your continued support, I am confident we will achieve even greater success in the future," concluded John Tarboton.

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Kelvion: SA's integrated Heat Exchanger Specialist

The SAIW member profile for this issue comes from Kelvion Services, an OEM that fabricates and services a comprehensive range of heat exchangers and coolers. *AF* talks to ISO 3834 welding coordinator and IWE, Pule Maleme; Kelvion's South African MD, Alex Dreyer; and Engineering Manager, Mike Coats.

he South African facility of Kelvion has recently been recertified to ISO-3834-2 for the 3rd time under the Kelvion name. But under the GEA banner, the company's South African operation was first certified by the SAIW soon after the launch of the scheme in 2008, so its South African fabrication operation is one of the longest continuously certified ISO 3834 facilities in South Africa.

Kelvion participated extensively with the new-build work for Medupi Power Station, most notably for the air-cooled condenser system. "Today, Eskom is still a major client, but mostly on the maintenance and upgrading side, but we also do substantial amounts of work for the petrochemical sector, both here in South Africa and across the continent," begins Alex Dreyer, the company's MD.

"We look after processing equipment such as shell and tube heat exchangers, air cooled heat exchangers, plate heat exchangers, cooling towers, steam and air heaters and condensers. And we remain very strong in condenser refurbishing work," he adds.

A power station typically consists of four essential parts, he explains, "A boiler

that turns the condensate into steam; the steam then expands to drive a turbine; a water cooled or air-cooled condenser; the fourth component is the pump that takes the condensate from the condenser back to the boiler. Often a small turbine of between 5.0 and 10 MW is used to drive the pump with two or more electric motors driving smaller pumps as backup. But it's much cheaper to use a steam turbine," he says.

"Over long periods of time, due high steam velocities at the inlet cutting through tubes or corrosion from dirty water, some tubes begin to leak, which then have to be plugged. Once 5% or so of the tubes have been plugged, the performance of the whole condenser drops off enough to justify fully retubing it. We have developed a cost-effective way of replacing these tubes," he continues.

"Many of the main condensers and boiler feed pump turbine condensers are getting to the end of their lives, and we've been retubing the condensers on these systems to bring them back online," he explains. "The condensers are basically a shell with tubes inside. Cold water is typically pumped through the tubes, while the outlet steam from the turbine is passed into



Kelvion Services' patented tube-to-tube orbital welding process has been used extensively to weld U-bend tubes efficiently during the manufacturing or refurbishing of air finned coolers.

the outer shell, condensing on the outside surface of the colder tubes".

He cites, in particular, Kelvion's boiler feed turbine condenser retubing work: "Boiler feed pumps are very high-pressure pumps used to pump condensed feedwater back into the boiler – at main steam boiler pressures. These pumps tend to be powered by small steam turbines. The steam used to power these turbines, however, also needs to be condensed before being recirculated, and we have developed the expertise to retube these condensers.

Due to the large size of these condensers, the retubing has to be done in-situ at the power station, so access is always an issue, he says. "We move into the power station, take the water box covers off the condenser, and then we systematically remove and replace every tube," he says.

Mike Coats goes on to present a similar repair application for a main steam condenser solution for a utility boiler, below the floor in the turbine hall, with the boiler somewhere above. "The hot steam from the turbine exhausts downwards into the



AFRICAN FUSION

Pule Maleme: IWE and ISO 3834-2 Welding co-ordinator

After graduating from the University of Pretoria with a degree in metallurgical engineering, Pule Maleme did an Honours degree in Welding Engineering at the University of Pretoria under Prof Pieter Pistorius.

After completing modules on welding processes, fabrication, design of welded

structures and welding metallurgy, he sat for the SAIW/IIW exams for his International Welding Engineer (IWE) certificate, which he passed in 2022.

Pule Maleme joined Kelvion Services in 2019 as an engineering intern and is now the company's welding engineer and the welding coordinator of the ISO 3834-2 Certification scheme.



Most of the heat exchanger and waste heat boiler work done at Kelvion's facility in Roodekop requires high integrity fusion welds between the tubes and the tubesheet.



condensers tube bundle, which is very large, and the tubes are very close together. The tubes used to be brass, but increasingly we are now using titanium, where a machine is used to expand each tube end into a groove on the end plates to make the seal" he notes.

Heat exchangers, waste heat boilers and orbital welding

Most of the heat exchanger and waste heat boiler work done at Kelvion's facility in Roodekop requires high integrity fusion welds between the tubes and the tubesheet, continues Pule Maleme.

He cites some recently fabricated waste heat boilers for a petrochemical application that were constructed using Kelvion's orbital welding expertise, which has the benefit of decades of experience. "When using an orbital welding system, a custom designed GTAW welding head is used for in-bore welding of the tube to tubesheet. The torch is rotated inside the tube, fusing it to the edge of the tubesheet," he explains.

"This process is one of our specialties and very few companies in South Africa use it as much as we do," he says, adding that achieving full penetration welds is critical. "The edges of the tubes are machined accurately so that they fit precisely into the pre-machined tubesheet recess. During welding the two parts are fused together, ensuring perfect, full penetration welds." he explains.

"To guarantee an ideal choice of welding parameters and repeatability, we weld qualification mock ups, followed by laboratory testing and analysis. Production welding is then performed by following precisely the qualified welding parameters and procedures. This ensures complex heat exchangers such as waste heat boilers are manufactured to the highest international standards" Pule Maleme tells *AF*.

Describing the operation of the wasteheat boiler, Mike Coats says that hot waste gas enters the heat exchanger at about 1 000 °C, and a sound weld is required to withstand the extreme temperature and pressure. Around the opening of each tube there is a trumpet-shaped ceramic ferule to prevent the gas stream from coming into direct contact with the tube end. The gas then flows though the bundle of tubes, heating the water on the shell side, which creates reusable heat for preheating and other process applications," he explains.

Kelvion Services has developed a patented tube-to-tube orbital welding process, as well. This has been used extensively to weld U-bend tubes efficiently during the



vessels and process columns.

manufacturing or refurbishing of air finned coolers. Tubes in carbon steel, stainless steel and Incoloy have been successfully welded using this proprietary process.

A 316L Stainless Steel Channel for a heat exchanger.

Welding and ISO 3834

Maleme says that, apart from the ongoing orbital welding work he coordinates, Kelvion focuses on four key welding processes. "We use TIG welding extensively for high integrity work, along with MMA welding. To achieve better productivity, we also use MIG/MAG welding and submerged-arc welding. When required by the contract, we perform corrosion resistance weld overlays, using FCAW or sub-arc welding processes. We also perform Stellite hardfacing weld overlays when it is specified in the contract" he informs *AF*.

"Kelvion successfully welds carbon steel, low alloyed steel, stainless steel materials including duplex and super duplex grades, and exotic materials such as Monel, Inconel, Hastelloy and Incoloy" he adds.

He cites the manufacture of filter vessels for Temane, Mozambique: "These vessels were thick-walled carbon steel requiring mandatory PWHT. They also required welded-in stainless steel internals. A buttering layer of Inconel was applied to the carbon steel followed by PWHT. And after the PWHT, the stainless-steel internals were welded to the Inconel buttering layer without the need for further PWHT, thus eliminating risk to the stainless-steel corrosion resistant properties and the shape of the components. We used the sub-arc welding process to deposit the Inconel buttering layer." Pule notes.

Kelvion's competitive advantage?

"As well as our welding expertise and experience, we pride ourselves on our in-house design expertise," responds Mike Coats. "We have thermal and mechanical design engineers in-house to enable us to accommodate the most complex products, which we can then locally manufacture and commission. And although heat exchangers, condensers and coolers differentiate us in the fabrication market, we don't shy away from fabricating equipment such as pressure vessels and process columns," he says.

Pule Maleme adds: "On our latest ISO 3834-2 certificate we have broadened our scope statement to be more inclusive of our wide product range. It now reads that Kelvion specialises in the: manufacture and refurbishment of shell and tube heat exchangers, air cooled condensers, pressure piping, waste-heat boilers, air-finned coolers, process columns, storage tanks and structural steel," he concludes.

www.kelvion.com/services



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Welding Challenge 2024 and the push for real economy skills

The SAIW 2024 Welding Challenge has successfully concluded after four days of intense competition, showcasing the exceptional skills of South Africa's next generation of welders. Held from October 21 to 24 at the SAIW's City West campus in Johannesburg, the event brought together some of the country's most promising young welders, all under the age of 30.

ollowing the successful conclusion of the SAIW 2024 Welding Challenge, R5 000 in cash prizes were awarded in each of the three categories. Mandla Makhubela from Bazil Technologies won the best carbon steel welder award and the best stainless steel welder award; while Gaylon Peterson from Alstom Ubunye won the best aluminium welder.

In the overall competition Lonele Mabuza from Alston Ubunye scooped third place, while Gaylon Petersen was the runner up and Mandla Makhubela was the overall winner. He was rewarded with an additional R5 000 prize, a selection of high-tech welding tools and equipment and a VIP ticket to the SAIW's prestigious annual Gala Awards dinner held at the Fourways Indaba Hotel on 8 November 2024.

Commenting on his win Makhubela said, "The competition was tough, but my focus and experience helped me pull through. I'm grateful for the opportunities I've had, and I look forward to continuing to grow in this field. My goal is to keep pushing the boundaries and one day lead large-scale projects, not just in South Africa but internationally."

South Africa's rising welding stars shine

As a result, the 2024 competition saw fierce participation from students and recent graduates from various Accredited Training Bodies (ATBs), each of whom had either completed or was nearing the completion of their qualifications under the International Institute of Welding (IIW) or the Quality Council for Trades and Occupations (QCTO).

These talented contestants demonstrated their prowess across a variety of welding processes, including Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), Gas Tungsten Arc Welding (GTAW), and Shielded Metal Arc Welding (SMAW), with tasks requiring them to weld in all positions and joint types on carbon steel, stainless steel, and aluminium.

Commenting on the significance of the awards, SAIW Practical Training Manager Confidence Lekoane says, "The SAIW Weld-



Final competitors in the SAIW 2024 Welding Challenge.

ing Challenge 2024 aims to demonstrate and assess competencies associated with various welding skills. Competitors used different welding processes and materials, such as low carbon steel, austenitic stainless steel, and aluminium, to meet specified quality requirements. Key technical skills include selecting appropriate electrode types, adjusting welding parameters, and ensuring quality welds through visual and radiographic tests."

Their efforts were a clear demonstration of the high level of skill and dedication required to succeed in the competitive welding industry, where demand for qualified artisans continues to grow.

Winners announced and judges impressed

The competition was judged by a panel of esteemed professionals, including Nonhlanhla Angel Mathebula, an Application Support Specialist at Afrox and a former SAIW Young Welder of the Year competitor. Mathebula, now an inspiring figure in the welding industry, praised the contestants for their performance. "Watching these young welders brings me so much pride. They handled the competition's challenges with incredible focus and skill. It's rewarding to see how the next generation is rising to meet the demands of our industry," he says.

Other judges included Johnnie Holtzhausen, a Technical Sales Representative at Abicor Binzel South Africa, and Frans Vorster, a Master Artisan with over 45 years of experience in the welding sector. Houston Devlin Isaacs, a Welding Specialist at Lincoln Electric Africa and a former international competitor, completed the panel, adding a global perspective to the evaluations.

Reflecting on the event, Isaacs remarks on the value of such competitions. "This competition is about more than just winning. It's about gaining confidence, refining your skills, and preparing for a career in an industry that is crucial to South Africa's development. The level of talent we saw this week is a strong indicator of the bright future that lies ahead for these young artisans."

Lekoane noted the importance of the competition in helping South Africa meet its workforce needs. "The skills showcased by these welders go far beyond the competition. These young artisans are on a path to becoming the backbone of South Africa's industrial and manufacturing sectors. The welding talent we saw here is evidence of the vital role they play in shaping the future of our country's workforce.

"For many of the competitors, this event marks a significant milestone in their careers. Beyond the prizes, they leave with new knowledge, experience, and recognition within a rapidly growing industry," concludes Confidence Lekoane.

The role of aid agencies in raising welding education, training and skills levels





Chris Smallbone.

John Tarboton.

he IAEA, UNIDO, and other national and international aid/donor organisations play prominent roles in assisting developing countries to implement strategies to improve education, training, skills and careers opportunities at various levels of personnel to meet the present and future needs of the welding industry. This while also progressing the UN Sustainable Development Goals (SDGs).

During the past 45 years, the Southern African Institute of Welding (SAIW) has a fine record of supporting both the continental African community and the global community in welding related activities. It is a founder member of the International Institute of Welding (IIW) and has played prominent roles in working with many African and IIW member countries.

The SAIW embraces collective international action, cooperating and collaborating, where possible, to apply global solutions to global challenges. For example, Chris Smallbone, IIW Fellow, SAIW Fellow and Honorary Life Member, and John Tarboton, SAIW Executive Director, highlight the role of not-for-profit organisations such as the SAIW in working directly alongside global aid/donor agencies to improve the quality of life in developing countries. Most notably, SAIW's work with the International Atomic Energy Agency (IAEA) and the United Nations Industrial Development Agency (UNIDO) across Africa is highlighted.

SAIW is working in line with the South African Government's national initiatives to help South Africa to achieve the United Nations Sustainable Development Goals (SDGs) by 2030. The SAIW also supports the recently released International Institute of Welding (IIW) NWC-SDGs report.

This paper shows examples of how SAIW has worked with aid/donor agencies to improve the national welding capabilities of African countries as well as progressing UN SDG 4: *To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.*

Such examples could also be used in other regions of the world, particularly by regional groups working with the IAEA and UNIDO amongst other aid and donor agencies.

Regional opportunities

The IIW NWC-SDGs report (Volume 1 Section 5 pages 67 to 84) shows the countries

of the world split into nine regions: Africa, South Asia, South-East Europe, Asia, Europe, Latin American and The Caribbean, Oceania, North American, and The Middle East.

The Report gives some ideas on how the countries in a particular region could cooperate and collaborate on projects. Examples of such collaboration in different regions could include the Asian Welding Federation (AWF), European Welding Federation (EWF), Southeast European Network (SEENET), SAIW-CETIME-IAEA, IAEA-ARCAL, IAEA-ARASIA and IAEA-ARC.

The International Institute of Welding (IIW) has linked its National Welding Capability (NWC) Project and the SDGs so that strategies can be introduced by a country including implementing a Flagship Programme with a single global focus 'To assist the country to establish, sustain and improve its national welding capability and progress its UN Sustainable Development



SAIW hosting a delegation of approximately 60 delegates for the launch of the 2022 Nuclear Energy Management Schools programme (NEMS2022).

Goals'. Such a programme may have many associated initiatives and projects, but all relate to this single global focus.

The IIW NWC-SDGs Report also gives many examples of projects that could be initiated by the welding industry in a country covering each of the 17 SDGs. (SDGs Long Report Volume 2 Pages 6 to 49).

Lead Organisations in a country could seek to work with donor and aid organisations such as AFD, CIDA, CIDCA, EURADA, IAEA, FCDO UK, GIZ, UNCTAD, JICA, UNDP, UNESCO, UNICEF, UNIDO, USAID, and World Bank Group (SDGs Long Report Volume 2 pgs 71 to 74).

Examples of past international cooperation and collaboration

There are many examples of how IIW Members have previously cooperated and collaborated with developing countries to assist in improving their national welding capabilities^[8].

Such examples include amongst others: Germany has assisted China, Vietnam, Ethiopia, South Korea and Indonesia; France has assisted Thailand, Morocco and Kazakhstan; UK has assisted Malaysia; USA has assisted Trinidad and Tobago; Japan has assisted Vietnam and Egypt; Austria has assisted Indonesia; South Africa has assisted Africa (through the IAEA) and Nigeria; while Holland and Canada have assisted South Africa; Portugal has assisted Brazil, Angola and Mexico; and Spain has assisted Peru and Mexico.

The main emphasis in all of the examples mentioned was on education, training and transfer of appropriate technologies. Even though these examples happened over the past three decades, the experiences and results achieved are still being used to introduce new projects today.

For example, the UN has had a range of programmes which countries benefitted from. Reference^[9] gives examples from a number of countries of UNIDO's programme of direct support to industry under trust fund arrangements, Reference^[10] shows how UNIDO visited Vietnam to study the status of welding in Vietnam and the requirements for improvements and welding training development, and Reference^[11] shows many of the programmes which have been available within UNIDO to help developing Countries.

As an outcome of a meeting with UNIDO in 1994 in Vienna, the International Institute of Welding (IIW) through its IIW Board of Directors Working Group Regional Activities and Liaison with Developing Countries (WG-RA), introduced the unique IIW Weld-



SAIW hosted an NDT training course for a group of students from across Africa, supported by the International Atomic Energy Agency (IAEA).

Care Programme to assist developing countries improve their national welding capabilities, particularly through the establishment and/or growth of a not-for-profit national welding organisation. Some of the successes of this programme, including how it could be used for future challenges identified by the United Nations (UN) and many IIW members, were shown in 2007^[2].

SAIW Involvement with UNIDO

Since the introduction of the IIW education, training, qualification and certification programmes in South Africa in 2003, 151 International Welding Engineers (IWEs) have been trained and qualified at the Universities of Pretoria and Witwatersrand; while 181 International Welding Technologists (IWTs), 280 International Welding Specialists (IWSs), 138 International Welding Practitioners (IWPs) and 1507 International Welders have been trained and qualified at SAIW.^[19].

SAIW's and IIW's welding inspector training, qualification and certification programmes have been very successful, with 6 034 individuals being trained. Furthermore, 9 596 certificates have been issued in the main non-destructive testing (NDT) methods during the past eight years. In addition, nearly 30 000 days of welder training having successfully taken place on a variety of courses to meet the standards required for employment in industry

The United Nations Industrial Development Organization (UNIDO) is the specialised agency of the United Nations with a unique mandate to promote and accelerate sustainable industrial and economic development. It supports countries to industrialise in ways that foster digital and green transitions and accelerate progress with the Sustainable Development Goals. UNIDO implements numerous actions to contribute to the SDGs and due to the interlinked nature of the SDGs, many of its activities contribute to more than one SDG.^[170]

Since 1994, SAIW has been involved with a number of initiatives with UNIDO and this has continued, even recently, with UNIDO creating a video showcasing SAIW's capabilities and facilities in Johannesburg. Due to its success as an IIW Authorised Nominated Body (ANB), SAIW has been able to assist a number of African countries to become IIW Approved Training Bodies (ATBs). These have included Liberia, Nigeria, Ethiopia and Tanzania.

African countries including SAIW (1997, 2006 and 2012), Nigerian Institute of Welding (NIW) (2009), the Central Metallurgical Research & Development Institute (CMRDI) in Egypt (2004) and the Centre Technique des Industries Mecaniques et Electriques (CETIME) in Tunisia (2010) have held very successful IIW International Congresses, and SAIW (2004 and 2018), NIW (2009), Egypt (2010) held technology innovation workshops as part of their technology transfer strategies in their national welding capability plans and regional support.

This is besides their own national conferences, seminars, workshops, training courses, R&D and technical support to their industries is conducted on an on-going basis in their countries.



SAIW is currently collaborating with the International Atomic Energy Agency (IAEA) and the Nuclear Energy Council of South Africa (Necsa) to establish a Nuclear School of Excellence that will offer a range of specialised courses focusing on welding and NDT within Africa's nuclear sector.

SAIW has become a continental leader in education, training, qualification and certification as an IIW Authorised Nominated Body (ANB) and IIW Authorised Nominated Body for Company Certification (ANBCC). This includes assisting other African countries. For example, with sponsorship from the German Agency for International Cooperation (GIZ), SAIW is working with Ethiopia, has established an IIW Approved Training Body (ATB) and is now training welding coordination personnel in Ethiopia.

International Atomic Energy Agency (IAEA)

The International Atomic Energy Agency (IAEA) serves as the world's foremost intergovernmental forum for scientific and technical cooperation in the peaceful use of nuclear energy. The IAEA strengthens the global nuclear safety and security framework. It identifies and promotes best practices and safety standards and implements programmes to assist states in applying these standards. The IAEA is also a key player in the effort to prevent nuclear terrorism^[129].

To accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world, one of the main functions of the IAEA – in accordance with its Statute, Article II – is to assist member states with capacity building, sharing knowledge and expertise and assisting with the procurement of equipment.

The IAEA works with its member states to foster the role of nuclear science and technology applications in support of sustainable human development. Nuclear energy is favoured in many countries and with the advanced stage of development

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of small modular reactors (SMRs) changing the nuclear landscape, many more countries may embrace nuclear energy. Interest in nuclear power capacity has increased significantly in recent times with over 60 reactors currently under construction in 15 countries.

The role and importance of welding across the total life cycle in such projects is significant and raises the question of how a country can continually meet and upgrade the technologies and education, training and skills levels required at all levels of personnel.

SAIW's involvement with the IAEA over the past 30 years in Non-Destructive Testing (NDT) could be replicated in welding technology education, training and skills development areas in Africa and other different regions of the world.

SAIW and Africa: A very good example of African collaboration is shown by the support of the International Atomic Energy Agency (IAEA) in the development of non-destructive techniques for industrial quality control in Africa. In 1994, IAEA started funding a pan-African NDT training, qualification and certification programme conducted at the SAIW.

For over 25 years, this has been very successfully implemented through the excellent cooperation and collaboration of the IAEA and many individuals and countries in Africa. South Africa (SAIW) and Tunisia (CE-TIME) became the two Regional Designated Centres (RDCs) for Non-Destructive Testing with the emphasis on training and certification of NDT personnel throughout Africa.

The African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) was established by African States to further strengthen and enlarge the contribution of nuclear science and technology to peaceful socio-economic development on the African continent. In 2004 this culminated in the formation of the African Federation for Non-Destructive Testing (AFNDT) in Khartoum.

Projects still continue today with SAIW hosting a delegation of approximately 60 delegates for the launch of the 2022 Nuclear Energy Management Schools programme (NEMS2022). NEMS2022 saw participants from 12 countries on the continent, along with IAEA Staff Members from Vienna in Austria. Countries represented included Algeria, Egypt, Ethiopia, Ghana, Kenya, Morocco, Niger, Rwanda, Senegal, Sudan, Uganda and Zambia. These initiatives show the potential for similar cooperative and collaborative projects in the welding related industries.

The IAEA has a very good record of encouraging cooperation and collaboration in training in nuclear science and technology on the continent as evidenced by its work with 27 universities in Africa. A meeting was held in Johannesburg, South Africa on 14-16 August 2023 to progress this subject.^[231]

SAIW is also powering ahead with its collaboration with the International Atomic Energy Agency (IAEA) and the Nuclear Energy Council of South Africa (Necsa). Facilitated by the South African Department of Energy, a Nuclear School of Excellence is being established within the Necsa Learning Academy to introduce advanced training techniques to bolster the continent's nuclear sector. The School of Excellence is scheduled to commence in the first half of 2025 and will offer a range of specialised courses focusing on welding and NDT within the nuclear sector involving nuclear safety, precision measurement, and consultancy services.

Countries such as Ghana, Nigeria and South Africa have already published reports on how improving their national welding capabilities will positively affect the UN SDGs in their countries. South Africa and Nigeria, in particular, are already sharing their expertise and experiences across Africa at international level in areas such as education, training, qualification and certification of welding related personnel at all levels as well as certification of companies to international standards.

For example, today SAIW has more than 322 companies certified to the IIW Manufacturers Certification Scheme According to ISO 3834 thus helping cities and



human settlements to be safe, resilient and sustainable^[19].

Latin America and the Caribbean: There are previous examples of a number of major training projects involving countries in Latin America and the Caribbean which were initiated and supported by the International Atomic Energy Agency (IAEA) through the promotion of advanced inspection techniques and applications in non-destructive testing.^{[138], [139]}

A good example of countries cooperating with the assistance of the IAEA is the Cooperation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL). The countries involved included Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Dominican Republic, Uruguay and Venezuela.

Asia and Oceania: An example of present cooperation between countries in the Asia and Oceania regions is shown by the Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA). Countries cooperating with the assistance of the IAEA are Australia, Bangladesh, Cambodia, China, Fiji, India, Indonesia, Japan, South Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Palau, Philippines, Singapore, Sri Lanka, Thailand and Vietnam.

Middle East: An example of a cooperative arrangement with the assistance of IAEA is the Cooperative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA). The countries involved are Iraq, Jordan, Kuwait, Lebanon, Saudi Arabia, Oman, Qatar, Syria, United Arab Emirates and Yemen. They host five Regional Resource Centres that serve as hubs for capacity building in nuclear science and technology in the region.

Some recommended strategies to put in place

Section 1 of the IIW NWC-SDGs long report, Volume 2: *Potential NWC and SDGs Welding Industry Projects and Resources* shows some strategies, complete with potential resources, which could be implemented in different regions and countries.

Working with organisations such as IAEA, UNIDO,UNESCO, WHO and other similar national and international organisations, one can investigate, recommend and implement measures that will ensure that the optimum education and training is performed to produce outcomes to meet the needs of the different welding-related industry sectors in a country or region.

These would include skills levels and career paths and routes for people including helping ensure lifelong learning opportunities and employment, alleviating poverty and improving the quality of life of so many.

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- 3. All the references shown in square brackets [] can be found with the same numbers in the IIW NWC-SDGs Long Report Volume 2 pages 50 to 57, which is freely downloadable from https://iiwelding.org/iiw-jointothefuture/iiwand-sustainable-development



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New Age celebrates 21 years in SA

On the occasion of the company's 21 anniversary, *AF* talks to New Age Engineering Solutions' Founder and CEO, Joseph Zinyana, about some of the highlights of the company's journey.

e established New Age in November 2003, so last year marked our 20th anniversary, and now we're 21 – two decades plus one – and we continue to build and grow," begins Joseph Zinyana, the founder and CEO of New Age Engineering Solutions.

New Age now operates in five key regions across South Africa: Gauteng, Sasolburg in the Free State, Secunda in Mpumalanga, Cape Town in the Western Cape, and Rustenburg in the North West.

"In Cape Town, we've been servicing the Astron Energy petrochemical plant, formerly Chevron, since 2015, and we have maintained a permanent presence at the Koeberg Nuclear Power Station since 2007," notes Zinyana. Their services include project management, mechanical and piping work, and pressure vessel tanks and pressure parts. "We are certified under ISO 3834 Part 2 for fabrication and on-site pressure vessel installation, although we don't hold the ASME VIII Division 1 certification required to manufacture pressure vessels," he clarifies.

New Age has provided general maintenance and shutdown service support at Koeberg – South Africa's only nuclear power station – for 17 years. "Additionally, We have a contract for quality control and welding engineering to help ensure the plant's health and reliability," he adds.

Moving on to the Mpumalanga area, where the company's head office is situated, he points out that the bulk of New Age's work is with Sasol Synfuels, which provides about 40% of turnover. "Sasol is currently our largest client. We provide them with mechanical services and solutions and do maintenance and shutdown work across their plants. Our relationship with Synfuels began in 2012, so it's now a 12-year partnership," he says.



New Age's engineering solutions include project management, mechanical and piping, pressure vessel tanks and pressure parts.



New Age Engineering Solutions has been awarded an on-site contract by fertiliserproducer 20-metre high storage tanks.

As with any long-term partnership, maintaining high safety standards is crucial.

"Safety is paramount, especially in the petrochemical and nuclear sectors, where standards are very steep," Zinyana emphasises. "I'm proud to say that in our 21-year history, we have never experienced a fatality. We recently completed a shutdown in Secunda with a recordable case rate (RCR) – the total number of work-related injuries or illnesses per 100 full-time employees per year – of just under 0.2, finishing three days ahead of schedule."

Additionally, the New Age maintenance team at Astron Energy Main reached a milestone of 1 000 000 man-hours without a lost time injury. A commendable performance!

In Sasolburg, New Age is actively servicing the Sasol 1 refinery and recently secured a three-year contract at the NA-TREF refinery, covering both mechanical projects and welding services. "In addition, we have been awarded an on-site contract by Omnia, a fertiliser producer, to construct 20-metre tanks, and that team is already on-site and performing well," he notes.

Most recently, in the Sasolburg area, New Age has been awarded a maintenance services contract with SAFRIPOL, a leading South African producer of high-density polyethylene (HDPE) and polypropylene (PP). The company manufactures 160 kt of

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HDPE and 120 kt of PP annually.

"We have also just been awarded the contract from the Sasolburg-based engineering Solutions company, MegChem, for the construction of a boiler gas feed line between NATREF and Sasol 1, as well as the OBL pipeline (outside battery limits) for a plant extension for Air Products. Also just completed is the platformer feed basin for Natref. And all of these are structural, mechanical and piping (SMP) projects," he says

"MegChem has now become an intimate partner to New Age and we are currently busy with another OBL project in ASTRON Cape Town for them," Zinyana adds.

When zooming in on the North West Province, he highlights another SMP project at a platinum plant. "This is a breakthrough for us in the mining and minerals sector. It is a substantial project for our business in the Rustenburg area and we have already completed our first shutdown," he informs *AF*.

Reflecting on the early days, Zinyana recalls that New Age started as a consultancy organisation focused on inspection and welding engineering. "That changed in 2005 when we manufactured some modular plant units for the export market, which incorporated pressure vessels, piping and instrumentation fabricated here in South Africa according to NQA Level 1 requirements and certification.

"Then, in 2006, we were invited to install a refrigeration system for York International





In the North West Province, Zinyana highlights another breakthrough SMP project for New Age Engineering Solutions at a platinum plant.

 now Johnson Controls – in a platinum mine in Rustenburg and a gold mine in Johannesburg. These two milestone projects were stepping stones into the diverse business we run today," he adds.

What does the future hold?

"Now, we are looking to branch into the African market on the plant servicing side. Africa is growing, and we expect to see more and more plants coming on stream that will likely need experienced servicing contractors," Zinyana says.

Zinyana assures that New Age is also dedicated to building a strong foundation for the future by training the youth and providing on-the-job experience to bridge the gap between school and workplace readiness. Through training programmes, New Age is preparing the skilled workforce to meet the evolving demands of industry.



"In the upcoming years, we aim to broaden our expertise in the nuclear sector," he says. "We plan to partner with SAIW and Necsa to train student interns in the high-level skills necessary for nuclear plant and component fabrication and testing."

Zinyana believes nuclear energy will be essential for the future, as it provides reliable base-load power without emitting CO₂. "It's clean and, contrary to common belief, very safe," he adds.

"However, there's a global shortage of nuclear skills. We want to help rebuild local skills in South Africa to ensure we have the capacity needed when the nuclear newbuild projects start," Zinyana concludes.

https://newage-eng.com

Driving innovation: Renttech Welding unveils customer-centric Application Technology Centre

Solidifying the company's credentials as a multi-brand welding provider of premium welding solutions for South African Industry at all levels, Renttech Welding has opened a new Application Technology Centre (ATC) at its Wadeville premises. *AF* talks to welding product manager, Johan Bester.

C n the past year alone, we have taken on the voestAlpine Böhler Welding brand of welding consumables, adopted the premium Kemppi brand of welding power sources and again expanded our range of Uniarc welding and cutting solutions. In addition, we have launched a state-of-the-art Applications Technology Centre (ATC) here at our Head Office in Wadeville, which aims to bring comprehensive welding and cutting solutions together under one roof for our customers to experience and test for their various applications," begins Renttech Welding's product manager for the welding industry, Johan Bester.

"These world-renowned brands and products are now launched and integrated into our range, and they were all on view and available to test at Electra Mining Africa as well as through customer days throughout the year. And they are not just products: when properly combined and used, they improve or change the way customers fabricate, resulting in an optimised welding regime that not only improves productivity but also has a substantial impact on the bottom line of our customers.

"That is why we have launched the new Renttech ATC, not as a showroom, but as a hands-on solutions development, demonstration and customer focused facility to highlight the benefits that our brands offer when combined, and what problems they can solve for our customer," he adds.

"We have set out to make this one of the best welding centres in Africa, while also holding its own against those in European countries. We have gone all out to include the most current technology available to the South African market and to bring a hands-on experience to our customers," Bester tells *AF*.

The idea is a customer-centric approach. "We aim to go the extra mile with customers by developing end-to-end solutions that directly meet their needs. We want them to step into a state-of-the-art space, not only to watch demonstrations, but to test the welding machines and the consumables for themselves, then, along with our experienced ATC members, to solve problems and develop cost-effective solutions for their own project-related fabrication tasks.

Renttech Welding's ATC members all have unique practical experiences in various systems and proven solutions across a wide array of sectors and welding processes. "We are hands-on welding people that come with a lot of industry experience across the various welding and cutting disciplines," he continues.

"This enables us to take every aspect of an application into consideration, so that chosen solutions are ideally suited to the projects, and can be successfully implemented in the customers fabrication shop. Renttech also helps to develop welding procedures; empowers shop-floor welders with usable knowledge on the new technology; and supports onsite implementation and ongoing service needs.

"This is not limited to welding, either, we also offer solutions on the material preparation side: laser cutting, plasma cutting and pipe bevelling. Here we are well positioned with brands such as Hypertherm, Harris, Promotech, as well as various laser



Renttech Welding's new ATC is a hands-on solutions development, demonstration and customer focused facility to highlight the benefits of its premium brands.

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If automation is the answer, the best technical result is achieved when combining the best welding equipment and the best consumables with a suitable manipulation system.



Hands-on welding inside the welding booths of the ATC is a core aspect of Renttech's customer centric approach.



In August 2024, Renttech, as the newly appointed national distributor of Böhler, hosted the Böhler Perfect Weld Seam tour and the official ATC launch.



Renttech wants customers to step into a state-of-the-art space to develop solutions for their own project-related fabrication tasks.

solutions. We can do welding and cutting trials based on several different technologies before homing in on a best-fit solution for the customer's specific application and budget," Bester assures.

Another key advantage of the ATC is that it enables development, demonstration and customer solutions to be completed in a dedicated environment away from the noise and demands of a busy workshop. "Here, we have a focused environment that allows for dedicated discussions and brainstorming to come up with the best solutions. We can then put it to the test in our welding or cutting booths.

"When conducting customer specific training we not only train the welders on how to effectively use the equipment and consumables but we also make sure we address first line maintenance, as well as the importance of yearly equipment validations, consumable storage and moisture control. We go through both the positives and negatives of any solution and how to manage them to achieve the required outcome.

"We always try to marry the equipment solution with the customer's needs and capabilities, while making sure we equip the users with the knowledge and skills to use the equipment effectively." he explains.

When asked about automation, Bester says that every solution needs to be looked at in terms of quality, cost, flexibility, productivity and workload. Sometimes automation will be involved and sometimes not. If automation is indeed the answer, the best technical result is achieved when combining the best welding equipment with the best consumables on suitable manipulation equipment. "Our strong product offering combined with our technical experience allows us to offer a fully supported technical package throughout the various stages of project implementation," he says.

He goes on to describe the launch of the ATC together with The Böhler Perfect Weld Seam tour: "Back in August, Renttech, as the newly appointed national distributor for voestAlpine Böhler Welding, hosted the Böhler Perfect Weld Seam tour, which also doubled up as our official ATC launch. We ran this over two days to ensure there was enough time and space for our customers to experience all the latest solutions on offer as well as to create an informal networking environment, to share ideas and successes, to enjoy a dedicated welding solutions day and to celebrate the launch of the ATC.

"We had the voestAlpine Böhler Welding team of experts as our esteemed guests, with speakers covering various technical topics, processes and consumable solutions relevant to the south African welding industry. Then it was all about the handson experience inside the welding booths," Bester relates.

Renttech Welding is continuously investing and strengthening its position as a national welding and cutting solutions provider, all with a view to raising customer manufacturing capabilities. South African fabricators are competing in a global market. If they want to participate and compete, they need to invest and stay abreast of the latest technologies to be able to produce consistent quality as competitively as possible.

"As a technical supplier of welding and cutting solutions, we have a valuable part to play in this critical process and will continue to invest in both people and infrastructure to be able to fulfil this obligation to our customers," Johan Bester concludes. https://renttechsa.co.za

AWC launches total-solutions welding offering

African Welding Company (AWC), the Afrox-owned welding company originally set up to distribute voestalpine Böhler Welding (vaBW) products in South Africa, has been relaunched as the channel to market for all Afrox's welding and hard goods products and services. *African Fusion* talks to Gerhard van Wyk, the Head of the new entity.

WC was originally formed following a visit to Essen in Germany, where Afrox and voestalpine entered negotiations regarding Afrox's consumables factory in Britz. The end result was the formation of a joint venture partnership to share the ownership of the factory, giving voestAlpine a 51% share and leaving Afrox with 49%. "Afrox subsequently became the exclusive distributor for all voestAlpine Böhler Welding consumables in South Africa and a selection of other countries in sub-Saharan Africa," Gerhard van Wyk tells *AF*.

AWC was then formed as a totally separate but wholly owned subsidiary of Afrox to take vaBW brands to market, with Gerhard van Wyk as its Head since its inception in 2020/2021.

In parallel, however, Afrox continued to service the region's welding market with

One of the solutions from the

Manufacturing Industries Department,

which now sits inside AWC, uses Miller ArcReach technology

for distributing gas to multiple welders working at height.

coupled the Afrox-developed Multi-User Pressure Panel (MUPP)

consumables, gas equipment, PPE and a range of welding and cutting machines and accessories through its Hard Goods division, while its welding shielding gases continued to be made available through the Industrial Gases division. Afrox also has an extensive network of Gas & Gear outlets throughout the region for the supply and distribution of a wide range of welding and cutting products to cater for the needs of local industries, small and large.

"It therefore began to make more and more sense to bring all of our offerings together so that we could benefit from the expertise of all of our product specialist and Afrox's extensive footprint. So we negotiated a release from the exclusivity agreement with Böhler and we have now relaunched AWC as a non-exclusive distributor of our full basket of welding products and services. We have retained the distribution rights for vaBW products on a non-exclusive basis, but have also taken on full responsibility for the Afrox Hard Goods range and the 360° welding solutions service offering from our Manufacturing Industries division," says van Wyk.

And while still wholly owned by Afrox, AWC remains and will continue to be independently run as a separate business entity, enabling Afrox to focus on its core at-

mospheric gases business and AWC to take care of all welding-related products and services. "We are now completely separate companies," adds Gerhard van Wyk.

From a resource perspective, he says AWC combines all

of Afrox's welding expertise, products and facilities into one entity. "We still have access to the same basket of products but it is now far easi-



AWC is the exclusive distributor of the Miller brand of welding power sources, including the Miller Big Blue 800 Duo, a powerful dieseldriven welder that offers robust welding and auxiliary power output.

er for us to offer a total welding solutions to clients, rather than having to compete with each other to sell a particular consumable or brand," he explains.

Subsequently, a few other Böhler Welding distributors have been appointed in South Africa, but AWC remains fully supportive of the full range, both out of the Brits factory and imported products from overseas. "We can now also handle all of our Afrox branded products, as well as the imported brands we have always carried," he adds.

In terms of consumables, Afrox's Vitamax 6013 SMAW electrodes remains a leading brand in South Africa, and these are still locally manufactured. Also manufactured in Britz are low hydrogen Afrox LH 7018-1 electrodes as well as our low-alloy and Stainless Steel ranges. And AWC can also now offer a comprehensive range of GMAW and FCAW welding wires, imported from leading oversees suppliers.

"On the gas equipment side, our Sapphire and Legend cutting and welding torches and associated gas equipment ranges and gas regulators are widely used. They are now manufactured overseas under the Afrox licence, which is still based on the original design from the 1960s that meets the two different connection standards, 3/8 and 9/16, that still apply in South Africa today.

"We are also proud of our PortaPak gas cutting and welding solution, which is a light and robust gas equipment kit that is ideal for difficult-to-get-to jobs," he says. This whole range is supported by our internally developed 'Afrox Safety Solutions Programme', which assists our customers to conform to legal requirements as well as



The Saffire® Legend 916 acetylene cutting torch with Saffire® 6000 regulators can cut steel up to 450 mm thick with an 8F cutting tip.

local and international standards.

AWC is also the exclusive distributor of the Miller brand of welding power sources, along with the rugged Afrox Industrial range of power sources for MMAW, GTAW, GMAW and FCAW, along with a full range of accessories and PPE.

In addition, the Manufacturing industries department now sits inside AWC to provide development services for welding solutions, including welding procedure development, welder qualification and training, and on-site application solutions. "This department gets involved in project work, to assist companies to be more efficient in their use of our suite of welding products with tailored application solutions.

"On the shielding and purging gas side, we will still pass on enquiries to Afrox's Gas Division, unless the order is part of a 360° application solution, which AWC will now offer through Manufacturing Industries," he says.

"What we have created is a welding focused company with products to suit a wide range of applications and customer needs, from the DIY welders looking to build palisades to the process equipment manufacturers making pressure vessels and heat exchangers," he continues.

Van Wyk is looking forward to the time when South Africa starts to see some serious infrastructure growth in the country, where we can grow jobs and build a stronger welding industry. "The new AWC is geared up for that growth in the economy. Whenever it happens, we will be ready to provide customers with advanced welding technology and solutions.

"Our bigger, better and more flexible AWC will be able to deliver exceptional service to customers from and extended 'one-stop-shop' offering, with a highly experienced sales and welding applicaThe PortaPak gas cutting and welding solution is a light and robust gas equipment kit that is ideal for difficult-to-getto jobs.

tions teams supporting the day-to-day welding, fabrication and development needs," he adds.

"With this differentiated offer, we believe AWC is in a better place than ever to support South Africa's welding industry," concludes Gerhard van Wyk.

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YASKAWA MOTOMAN AR2010: Combining Precision, Performance and Functionality

Ideal for welding agricultural equipment, automotive frames or construction machinery, the new AR2010 robot offers fast and powerful performance for arc welding applications. While the streamlined arm design gives easy access to parts in confined places, the slim robot profile permits close robot placement for highdensity weld cells. Improved axis composite speed and expanded wrist range optimize robot functionality, and a symmetric wrist provides equal access to both sides of a part. A 50 mm thru-hole reduces cable interference and wear, and an enhanced feeder mounting area on the arm reduces equipment obstruction.

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ESAB's mechanised cutting, gas-equipment and PPE offering



AF talks to Willie Burger, ESAB's new product manager for mechanised cutting, PPE and gas equipment, about ESAB's Swift Cut plasma cutting system; the integration of Thermal Dynamics plasma cutters with existing CNC tables; the globally renowned gas equipment brands, Victor, GCE, and ESAB; and the importance for fabricators to invest in employee health through best-possible PPE solutions.

ith over 28 years of experience in application development in South Africa's welding and cutting industry, Willie Burger has now joined ESAB South Africa to take care of the mechanised cutting, PPE and gas equipment portfolio. "I am still learning about the specific products I represent, but ESAB has an amazing culture and I have been given some excellent brands to take care of," says ESAB SA's new product manager.

Burger first highlights the flagship new Swift-Cut Pro range of mechanised cutting tables that he will now be handling. "I am actually going to Dubai next week to be fully trained on this system,

but I am already impressed.

These are cutting edge CNC plasma machines with precision guide system and a robust design. They offer a low investment cost and are easy to use, simple to learn and we offer exceptional aftercare and support," he assures, adding that Swift-Cut Pro machines are the answer to affordable in-house metal cutting. The system can be coupled with both Thermal Dynamics and ESAB plasma cutting power systems which can be tailored to plate thicknesses in general use, with the ESAB Cutmaster A120 offering.

"ESAB prides itself on the aftercare we can provide for these systems. We strive

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to help users to get the absolute best from Swift-Cut Pro solutions, and ESAB offers both remote assistance and advice, or we can organise a visit. With years of combined experience in plasma cutting, we can support many different material grades and types and we can provide remote advice and services from a smartphone or tablet. In addition, we offer collaborative software tools to train, assist and diagnose problems," Burger adds.

He goes on to highlight the hand held ESAB Cutmaster 120 plasma cutter, which offers significant advan-

ESAB's Crossbow HD compact, an economical, portable, track-mounted 2D tractor and manipulator that is ideal for small fabrication, maintenance and repair shops and training schools.



Thermal Dynamics sets the

standard for flexibility, value and

performance in manual plasma cutting products and solutions.

tages over flame cutting options for thin to medium thickness plate and beam sections. "Both the quality of the cut and the cutting speed are often significantly better if using a plasma cutter instead of a gas torch," he tells *AF*.

Cutmaster plasma cutters are also ideal for use with ESAB's Crossbow HD compact, an economical, portable, track-mounted 2D tractor and manipulator that is ideal for small fabrication, maintenance and repair shops and training schools. "It can even be disassembled and transported to remote job sites. It has a user friendly CNC system that enables accurate shapes or contours to be cut, and it can be used for plasma and flame cutting," Burger says, adding that plasma is suitable for steel or aluminium of up 20 mm thick, or stainless steel up to 15 mm, while oxy-fuel can be used to cut mild steel of up to 100 mm thick.

CNC control features include a comprehensive library of 24 common shapes to minimise programming and set-up time, with dimensions easily edited to create custom shapes without additional programming. Custom programs are supported through basic M-and G-Code programming, and off-line programmed NC files can be transferred to the machine via a standard USB port.

"Also, our Thermal Dynamics plasma cutting brand can be retrofitted to any standard cutting table to modernises and transform older cutting system and add flexibility, value and performance," he continues. ESAB's Thermal Dynamics brand of plasma cutting systems is known for offering high precision and for its longlasting consumables. This makes them ideal for upgrading an older cutting table into something far more efficient and productive. "Where the CNC cutting bed is in good condition, this makes for a very cost effective way of upgrading a workshop's cutting capability," he adds.

Gas equipment: Victor, GCE and ESAB

When it comes to gas equipment, ESAB offers torches, pressure and flow control solutions and cutting and welding accessories from industry leading OEMs, including Victor, GCE and ESAB. "Safety is key, and we are associated with recognised industry leaders in that regard," notes Willie Burger.

"The starting point of achieving high safety standards is quality manufacture, where ESAB's production lines operate according to Total Quality Control principles, which includes the commitment of every member of our team," he points out. As well as being safe, this results in gas equipment products that deliver performance, reliability and innovation. Also, ESAB handles the GCE Druva® speciality gas equipment range and the GCE Valves product lines. These brands are mostly for medical facilities and laboratories: more specialised high accuracy regulators for calibration purposes, for example.

Welder safety and PPE

On the PPE side, Burger says that welding helmets with auto darkening filters (ADF) are becoming more the norm as fabricators strive to better protect their welders. "We also now offer helmets with built-in ventilation, which filter welding fume while also keeping the welder cool.

Burger highlights the company's Sentinel A60 welding helmet as ESAB's state-ofthe-art ADF. "This helmet takes welding to the next level with a wider, crisper view of the welding arc, helping welders to improve on the quality, speed and efficiency of their welds – and they are exceptionally comfortable and stylish.

We have several other ADF options, though, the ESAB SWARM A20; and the SAV-AGE A40, for example and non-ADF welding helmets are also available."

Fresh air systems are available for use with Sentinel and all other AIR-ready versions of these helmets. The ESAB powered air purifying respirator (PAPR) systems, such as the EPR X1.1, connect seamlessly with any ESAB prepared-for-air welding helmets to provide advanced respiratory protection from harmful welding fume and particulates.

"This PAPR unit is designed for applications ranging from occasional use to fulltime industrial applications. It has a robust, compact housing with a powerful blower to ensure maximum life and performance. And it is easy to check the battery status, fan settings and filter conditions at a glance



ESAB's Thermal Dynamics plasma cutting brand can be retrofitted to any standard cutting table to modernise and transform older cutting system and add flexibility.

with quick-access LED status lights.

"Also, the EPR X1.1 provides audible and vibratory alerts to notify the welder of low air flow, which indicates the need for a filter change, and low battery conditions.

"I think it is becoming increasingly important for fabricators to provide better PPE solutions for their welders, as they are having to do in Europe. Fortunately, this has already started to happen in some more forward thinking companies in South Africa.

"Welders are an expensive investment, and protecting those investments means taking good care of the health and safety issues that affect welders on a daily basis," says Willie Burger.

"It is very nice to be now working with ESAB, though, a company that's focused on all aspects of welding and welders," he concludes.

https://esabsa.co.za

November-December 2024

Robotics: opening doors for SMEs



s industries increasingly integrate robotics and automation into their business operations, South Africa's small and medium enterprises (SMEs) are beginning to recognise the benefits of robotics. They want their very own piece of the pie. For smaller businesses, robotic integration has always appeared more complex than for those producing on a larger scale, mainly due to the initial cost and the complexity of adoption.

Yaskawa South Africa acknowledges this and is addressing these concerns by creating solutions that simplify the installation and operation process, making robotics both accessible and suitable for businesses of all sizes and in myriad industries. This involves offering flexible financial models and investing in skills development to help Andrew Crackett, managing director of Yaskawa Southern Africa, highlights the value for small and medium enterprises (SMEs) of adopting robotic automation solutions and how Yaskawa is addressing barriers to adoption.

smaller businesses optimise productivity and growth in their highly competitive markets.

SA's SME Landscape

The adoption of robotics and automation in South Africa, particularly among SMEs, has been slower than in other parts of the world. Although this is for a number of reasons, such as financial constraints, integration complexities, lack of technical expertise and accessible training, and the perception that automation is better suited for large-scale industries, Andrew Crackett, Managing Director of Yaskawa Southern Africa, believes that these challenges can be overcome with the right approach.

"When working with SMEs, we take the time to understand their unique needs and objectives. This allows us to provide tailored robotic systems and end-of-arm tooling that are both adaptable and scalable, helping businesses grow sustainably," Crackett explains.

Yaskawa's robotics solutions can adapt to various applications and industries, and this versatility is critical for SMEs that often operate with limited budgets and need systems that can grow along with their businesses.



Yaskawa Southern Africa is at the forefront of helping SMEs overcome the barriers to adopting robotics by offering tailored solutions, flexible financial models and robust training programmes.

Tailoring robotics for SA's SMEs

For many SMEs, integrating robotics into existing operations can be daunting. However, Yaskawa is able to simplify the process by offering interfaces that enable easy communication between robots and other equipment and, more importantly, with operators. In addition, flexible system configurations allow businesses to expand their robotic capabilities as their needs evolve. "Our solutions are designed to make it easier for SMEs to integrate robotics into their operations. We also offer extensive support and training, ensuring a smooth transition as businesses adopt these new technologies," says Crackett.

Overcoming financial constraints

Of all the perceived barriers to robotics adoption, the initial investment costs of robotics are often a significant concern for SMEs. To help overcome this barrier, Cracket says Yaskawa has partnered with system integrators that offer leasing plans, helping SMEs to afford robotics and automation by spreading out the costs over time. These financial solutions open the doors for smaller businesses that may not have had the capital for a large upfront investment for these advanced systems. "This approach ultimately optimises the return on investment, making automation a feasible option for more businesses," he adds.

Cultivating a robotics ecosystem

Aside from providing robotics solutions, Yaskawa is committed to creating a strong robotics and automation market in the country. "We are helping to cultivate a strong robotics ecosystem in South Africa by working closely with local integrators across specialised industries. In addition, we provide a comprehensive set of training programmes, from basic programming and maintenance to more advanced troubleshooting and operator-specific skills," Crackett says.

The focus on training is crucial, as one of the biggest challenges facing SMEs in the country is the lack of workers with any background in operating and maintaining robotic and automation systems. As such, Yaskawa is helping to build a workforce that is not only capable of managing the technologies but also contributing to the broader industrialisation goals of South Africa.

Driving economic growth and job creation

While there are concerns that the adoption and integration of automation will lead to job losses, Yaskawa has a different view. The company sees robotics as a key driver of economic growth and job creation in South Africa.

By automating repetitive, labour-intensive tasks, businesses can increase productivity and reduce labour costs in this area, making production more competitive while offering their current workforce opportunities to upskill, which, in turn, could see them furthering their own careers. Robotics optimises productivity, efficiency, and, subsequently, competitiveness. It also allows for the upskilling of employees, as well as reducing operator fatigue and improving the safety of manufacturing operations.

Moreover, Yaskawa's business model is in line with South Africa's National Development Plan 2030, which aims to improve industrialisation, optimise the country's ever-present need for job creation, and stimulate economic growth. By investing in local manufacturing and helping businesses adopt advanced technologies, Yaskawa is playing a key role in supporting the country's industrialisation goals.

Innovating the future

Yaskawa is committed to the continued innovation in robotics solutions for the South African market. "Automation can boost both productivity and efficiency, while also helping businesses to stay competitive. It is not only about cutting costs, robotics opens up opportunities for employees to upskill and reduce physical strain from repetitive tasks," Crackett explains.

Yaskawa's focus on innovation ensures that South African businesses have access to the latest advancements in robotics and automation, enabling them to remain competitive in a rapidly evolving global economy. As South African SMEs face increasing pressure to modernise and compete on a global scale, robotics and automation offer a path to increased productivity, efficiency and profitability.

"Yaskawa Southern Africa is at the forefront of helping SMEs overcome the barriers to adopting robotics by offering tailored



Easy-to-use Yaskawa collaborative welding robots give fabricators the flexibility to create and switch welding jobs quickly and easily.

solutions, flexible financial models and robust training programmes. By building a strong robotics ecosystem and contributing to the country's industrialisation goals, Yaskawa is not only simplifying robotics for SMEs but also driving economic growth and job creation in South Africa," concludes Andrew Cracket.

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MD Steel grows cutting capability through Cosmo

Michael Jacobs, CEO at MD Steel Services, and Petrus Pretorius of Cosmo Group talk about their relationship, that now includes the supply of state-of-the-art CNC laser cutting systems from Shanghai-based ACME-Laser.

stablished in 2018 with a single plate roller in a 1 000 m² workshop with another 1 000 m² of laydown area, MD Steel has now moved into R28-million premises in Boksburg with 9 000 m² under roof and 11 000 m² of laydown area. "We specialise in metal processing: rolling, bending, cutting, drilling and fabrication. And despite having had to endure the COVID years, the demand for our services has and continues to grow," Michael Jacobs, the CEO and founder of MD Steel Services tells *AF*.

"Broadly speaking we are a metal processing service provider that also has a fabrication workshop. We manufacture concentric and eccentric reducers for the piping industry, for example, and we do free issue fabrication, where customers supply the drawings and drop off the materials and we then do custom fabrication for them, delivering the final products to meet specifications and project schedules," Jacobs says.

He cites a customer from China who is currently looking to erect an assembly facility in South Africa. "I did a quote for them for several hundred million Rands, based on free-issue fabrication of all the medium to heavy steel sections needed to construct their assembly plant. We are seeing a lot of growth in Chinese motor vehicle manufacturing in South Africa, because these vehicles have all the modern features of the top vehicle brands, but they are a lot less expensive," he adds,

"This is a big market for us and we have quoted for over R500-million worth of metal processing and fabrication work. We try not to buy the materials ourselves, but we do all the cutting, rolling, bending, drilling and welding work required to enable rapid onsite assembly," he says, adding that the client then only pays for the labour involved.

On the quality side, he says that MD Steel is ISO 3834-certified by the SAIW and has two Level 2 weld quality inspectors to coordinate the fabrication work. "We have several welders, all coded for the processes we use, and we have a boom welding submerged arc system for long seams.

On the resourcing side, Jacobs says MD Steel bought a lot of its equipment second hand and then fully refurbished it to suit its modern needs. "This started with our plate rollers and we are now busy rebuilding



The bed is a heavy-duty, double-exchange, automatic feeding table that is precision milled. While cutting one sheet, the next sheet can be loaded ready to be moved into place.

another one that can handle 50 mm plate thickness, adding to the rollers we already have: for 6.0, 25, 40 and 50 mm plate thickness. We also have a 500 t bending brake that we can use to make plate girders or channel sections, or we can fabricate beams from plate using our submerged-arc system, if required," he says.

Extending the cutting capability

MD Steel's relationship with Cosmo began a few years ago with the refurbishment of two second hand CNC plasma cutting systems, one with a 9×5 m and another with a 12×3 m CNC table: "We asked Cosmo to take care of the full refurbishment, which involved coupling new Hypertherm plasma cutting technology with these CNC tables.



MD Steel is now using the machine to cut material using a 20 mm nozzle that can handle a 20 to 26 mm cut.



We were very pleased with the service and the results we received, and our boiler makers have since used these machines extensively for in-house fabrication work.

"Nowadays, though, many customers tend to prefer the cut quality of a laser cutter, so we approached Cosmo for a solution," he adds.

This resulted in the supply of a stateof-the-art 6.0 kW ACME LP420H fibre laser cutting machine with interchangeable 2×3 beds, which was installed September. "We are now cutting material using a 20 mm nozzle that can handle a 20 to 26 mm cut, and the interchangeable beds mean that while cutting one sheet, the next sheet can be loaded ready to be moved into place," he adds.

Petrus Pretorius goes on to describe the journey that led Cosmo Group to adopt ACME Laser's for its South African clients. "We visited the ACME factory in Shanghai, China, about two years ago and we liked what we saw. They have a massive factory that builds quality machine using components from global brands such as SMC and Schneider Electric. ACME now has over 15 years of manufacturing laser welding and cutting systems and they export them all over the world," he says.

"Chinese technology is really an eye opener. In Shanghai, almost 80% of the motor vehicles are fully electric. Technologically really is an advanced place," Pretorius tells AF.

Describing the specific features of the ACME LP420H he says that the laser source is a Max 6.0 kW fibre laser, while the bed is a heavy-duty, double-exchange, automatic feeding table that is precision milled. "For thinner steel, the system uses compressed air at 15 bar to blow away the kerf, while oxygen is used for thicker section cuts – and for cutting stainless steel, nitrogen



A FScut 4000E control system that incorporates the CNC, cutting and nesting software ensures easy operation with fast, accurate and clean cut quality.

can be used instead, , but MD Steel isn't doing much stainless yet," he says, adding that the system has all of the typical CNC control and programming software and nesting features you would expect of a high-end automated cutting table – and it comes with approvals from TUV, CE, FDA, SGS, and ISO 9000.

"We developed a good relationship with MD Steel through our willingness to completely refurbish their plasma cutting systems, which we continue to service and supply with the consumables to keep the machines running 24/7. So they felt that they could trust us on the laser cutting machine, as well," he says.

"On the training side, we were joined by an engineer from China via WeChat, which



The laser source is a Max 6.0 kW fibre laser, a premium Chinese brand, while the laser head is a 6.0 kW Raytools BM06 K.

worked out fine. And yes, despite some unexpected delays, everything went well and the laser cutting machine continues to perform well.

"We are also hoping to start supporting the fabrication side of MD Steels' business, perhaps with one of ACME's laser manual welding machines, which we think would make an ideal tacking solution for the boilermakers," says Pretorius.

"From our side," concludes Michael Jacobs, "the laser cutter gives us another string to our bow, and we are excited about the opportunities we are already seeking in taking the technology one step further."

https://cosmogroupsa.co.za



MD Steel now has a state-of-the-art 6.0 kW ACME LP420H fibre laser cutting machine supplied and supported by Cosmo Group.

B.E.D. tailors welding range for local and pan-African applications

AF meets Mike Giltrow and Craig Bister of Bolt and Engineering Distributors (B.E.D.) to find out about the company's expanding welding offering for the South African and African markets. As well as the top-tier Fronius brand, the range offered by B.E.D. now also includes the GYS brand of mid-tier welding machines and the locally-manufactured and exceptionally rugged Reeflex brand of MMA/ TIG and MIG/MAG inverters.



ith core expertise in fasteners that began at its inception in 1983, B.E.D. has grown into a engineering and industrial product distributor with a national footprint close to key customer industries, which include mining, power generation, renewable energy, infrastructure, engineering, agriculture and, increasingly, fabrication.

"Our approach was to start with the basics of industry, namely nuts, bolts and washers. Then, over time, the Group steadily grew its range of complementary products and service offerings," begins Mike Giltrow, the company's CEO.

Welding, being a joining process, was seen as a natural fit for the company, so when the opportunity arose to take on the distribution rights for the top-tier

Irranius

Fronius brand back in 2010, there was no hesitation. "Fronius is a top-of-the-range international brand and we have been very successful in convincing clients across the country of its value," Giltrow tells AF.

While Fronius machines are well suited to robotic welding for high-volume or high-value fabrication, there are now also several more affordable options such as the TransSteel range, which also make these machines accessible where highquality manual welding is required, notes Craig Bister, B.E.D. Group Welding Division manager.

He adds that additional expertise and support for the Fronius range is also now available through the local presence of Fronius South Africa. "As partners in South Africa, we work very closely with Fronius SA to develop and supply the best

possible solutions for our customers," he adds.

Mike Giltrow continues: "Over the years we have noticed that not everybody has the technical expertise or the budget to adopt state-of-theart welding technologies, though. So we have added midtier welding options to better meet these customers' needs," he says, before inviting Bister to talk about the GYS range of equipment from France.

"We don't ever try to compare the different brands to each other and they are easy to keep separate and distinct from one another, because the markets are completely different – a manufacturer of agricultural equipment compared to a manufacturer of OEM motor vehicle components, for example," he explains.

For the GYS brand, the multi-process welding machines are key, the Multiweld FV 220M, for example, a single-phase welding machine that combines MIG/MAG, coredwire and MMA welding processes. "This machine can operate on a supply voltage anywhere between 85 and 265 V thanks to its flexible voltage input power management system, while an intuitive interface integrates two digital displays to deliver simple but accurate weld settings.

"The machines also come with a powerful four drive-roll wire feeding system, which offers excellent performance, even for aluminium and flux-cored wires," says Bister.

For general fabricators needing to weld heavier section, the GYS Multiweld 320T (320 A) and 400T (400 A) inverters are also available. "These are both 3-phase machines that are designed for use with wire sizes of up to 1.2 mm and 1.6 mm, respectively. They offer simple and cost-effective welding solutions for a host of day-to-day manufacturing and repair applica-

tions," he says.

"What we also do really well is on-site demonstrations," Bister continues. "We now have four vans in

the field equipped with all the welding, cutting and gas equipment we can offer, so we can go into a customer's workshop and show them how our solutions can help them to do their day-to-day fabrication tasks. And we have an excellent team of specialist welders that can give advice on how best to use the equipment."

The other brand that B.E.D. has added to its welding offering is the locally designed and manufactured Reeflex brand of MMA and MIG/MAG welders, which have been specifically designed to meet the rigours of the African mining market. "Reeflex technology is designed by Dr Philip Theron, and it is 100% locally produced in Randburg. We have been involved as a distributor of Reeflex for a number of years now, because these are the most robust and reliable locally manufactured machines we know," continues Giltrow.

This factor, along with their simplicity, has made the Reeflex brand very successful across Africa. "Reeflex is one of the few companies that can offer a 100% duty cycles at the maximum rated current. They are mostly used for MMA/stick welding using electrodes, but Reeflex also make their own wire feeder for those wishing to do MIG/MAG welding," adds Bister.

B.E.D. is distributing these machines in South Africa and to some sub-Saharan African countries, including Zambia and DRC. Key features for African market include: an open-circuit voltage-reducing device (VRD) that is built in as standard to improve operational safety and to meet mine safety requirements; dual-voltage versions to suit the mains supplies of most African mines; and thermal and input voltage protection.

"As a Group, we have become an important distributor for Reeflex, and Philip Theron, because of his extraordinary technical ability, is an ideal partner to have in this business. The range is extremely well thought through, based on the specific needs of the mines in Africa," adds Giltrow.

Turning attention to the cutting side, Giltrow points out the close relationship B.E.D. shares with First Cut and Messer, for both hand-held oxyfuel cutting equipment and, through First Cut, fully mechanised plasma cutting tables. "Also as part of this relationship, we are able to offer GSI's S.A.T (Safety Advanced Technology) system with our hand-held gas equipment. This system was developed in South Africa by Peter Rohlssen and has become part of Messer's local oxyfuel cutting offering. We are very proud to have been associated with this development, which can eliminate the



To go into customers' workshops, B.E.D. now has four demonstration vans equipped with welding, cutting and gas equipment.

possibility of a fire or explosion should a gas hose be damaged while the flame is lit." he explains.

Hypertherm plasma cutting products are also part of B.E.D.'s fabrication offering, and are also a feature of the product range in the demonstration vans being driven to customer sites.

"Also very exciting for us is our new dedicated distribution centre, which now handles all the logistics for getting stock to our various branches. Inside is a brand new welding workshop, where we do all our welding equipment testing and repairs.

"In addition, we have bought two stateof-the-art welding machine calibration systems from Fronius, one for the new workshop in Wadeville, Johannesburg and one for our branch in Cape Town. These were originally bought for Fronius aftermarket work, but they are also being used to calibrate other machine brands, so they have been quite busy," says Bister.

"We believe we are now better resourced than ever to meet the growing needs of South Africa and Africa's welding fabrication and repair requirements, particularly as the market continues to adopt new technologies and automation solutions. We are also well placed to continue to deliver on our 100/0 commitment to customers: 100% commitment with zero excuses," concludes Mike Giltrow.

https://bolteng.co.za



Locally produced in Randburg, Reeflex welding machines offer a 100% duty cycles at the maximum rated current. They have proved themselves to be robust and reliable, making them very popular on African mines.

Fronius SA: from AR training to better structural integrity

AF visits Fronius South Africa's stand at Electra Mining Africa and talks to Edric van der Walt about the extended welding offering available to welder training centres and fabricators facing limited cash flows but still needing to raise their structural integrity and weld efficiency levels.

key attraction at the Fronius stand at Electra Mining Africa 2024 was a new welder trainer solution, now called the Welducation Simulator. "Instead of just using virtual reality, we are now using augmented reality (AR) in our new training systems, which makes the transition from simulator to real equipment far easier for a novice welder," begins Edric van der Walt, Fronius South Africa's welding specialist.

The simulator, the virtual welding helmet, the plate and the torch look and feel real, and when viewed through the helmet, the training environment and all the people in the vicinity can still be seen so that the trainee welder always remains aware of the surroundings. "Unfortunately, most training centres have very limited cash flow, so they tend to go for basic real welding systems. That often means that students seldom get the opportunity to try modern machines with process control that can make their lives easier.

"So as well as taking our new Welducation Simulator to demonstrate at welding schools, we also, from time to time, take some of our advanced equipment to the larger training centres' just to expose future welders to the new technology: the advantages of pulsed GMA welding and CMT (cold metal transfer), for example. We want our youngsters to be aware that this



A key attraction at the Fronius stand at Electra Mining Africa 2024 was a new welder trainer solution now called the Welducation Simulator.



technology is out there, to broaden their horizons a little and then, hopefully, once they qualify and start to experience difficulties in the field, they will remember seeing a system that is able to offer better control, better quality and more efficiency," van der Walt tells *AF*.

Demonstrating the Welducation Simulator, he asks me to put the helmet on and aim the torch at the red dot shown at the start of the weld, then press the torch trigger to start to weld. As well as showing and sounding like weld metal is being deposited, visual guides for the torch angle, the arc length and the welding speed are shown around the position of the simulated welding arc. The sound of the weld also changes depending on the arc length and the heat affected zone is shown developing around the weld bead.

After welding, I get a score: 58 out of 100 for the first run and 92 for the second. An analysis is also available on clicking the score: on the second weld, the arc length was good, as was the angle, but there was still an issue with the torch speed. "The system comes with a 'stinger' for electrode welding, and a TIG torch. There is even a piece of virtual TIG filler that gets shorter and shorter as you weld, so the welder needs to bring his hand steadily closer as the wire is 'consumed," Van der Walt explains.

It is quite authentic, yet clearly more accessible than real world welding can ever be. "And while these systems can never fully replace the need for trainees to weld for real, it can replace the physical torch manipulation aspect of a programme, getting the hand steady and the speed right, which is the starting point to being able to produce a quality weld joint," he explains. He adds that it is during these stages of welder training when students tend to waste the most material and time. For every 'bad' real weld, the plate must be discarded or the weld metal ground back out, which is expensive and time consuming. It is also during this training phase when most students hurt themselves: they can get arc-eyes, burns, or they can inhale fume. Using an effective AR welder training system is much more efficient in terms of time and costs," he argues, adding that it is also proving a faster way of developing the necessary welding skills.

Fronius' CMT Advanced solution

Currently, according to Van der Walt, hand held laser welding is the new 'best thing', "We don't think lasers are always a good solution, though. We've done a bit of internal research and consulted a lot of people, including one young gentleman who presented his Welding Engineering Master's thesis on laser welding. He agreed with many of our findings that for welding white-goods such as kitchen and washroom goods and thin stainless steel sheeting where only the aesthetics really matter, laser welding works perfectly. But when it comes to anything structural, such as pipe root welding or motor vehicle chassis, then the problems start, especially with respect to wire feeding, which is not always as easy as people make it look on videos.

The underpinning problem, he adds, is that laser welding is too cold. "A lapped joint might look OK, but when it is tested, it is not structurally sound. We still believe firmly that our CMT process is able to match the speed of a hand-held laser welding solution, while delivering better welding results that can pass all structural tests," he says.

Fronius' CMT process, Van der Walt continues, is now better regulated than ever. It is much smoother, can deliver even lower heat inputs and it now includes multiple pre-programmed options for specific welding materials, thicknesses and joint types. "We have open root CMT welding procedures for pipeline welding, and lowdilution overlay cladding procedures, for example. We also have procedures for welding galvanised steel sheeting using 100% CO_2 shielding gas, developed to prevent porosity," he notes.

The new CMT Advanced process from Fronius is also available, which reverses the welding polarity during the shortcircuit phase of metal transfer. This not only improves weld stability and reduces spatter, but it offers better heat input con-



Fronius' cost effective TransSteel range offers spatter free welding of steels in medium to heavy steel fabrication applications. "It is the rugged partner for structural-steel fabricators," says Edric Van der Walt.

trol, higher deposition rates, and minimal distortion. "It also reduces the amount of fume produced, improving working conditions for the welders.

"CMT Advanced is now available with the new Fronius iWave AC/DC machines, which offer multi-process options including AC and DC TIG welding, MMAW and GMAW options, including LSC (low spatter control), PMC (pulse multi control), as well as CMT and CMT Advanced transfer modes.

"This single multi-process system can replace everything in a fabrication workshop with a modern machine that incorporates a host of process-specific advanced welding process control techniques," he says.

Also worth noting is that most of the Fronius iWave welding machines we sell around the world are destined for use by welders rather on welding robots," he says, adding however that the Fronius Robotic iWave is also about to be launched into South Africa.

"The most important market for us in South Africa, is still the steel fabrication market, which tends to rely on manual welding processes. For this we have our cost effective TransSteel range, which offers spatter free welding of steels in medium to heavy steel fabrication applications. It is the rugged partner for structural-steel fabricators," continues Van der Walt.

Available in compact versions – the 2200C to 3500C – and as split systems with external wire feeders in the 3500 and 5000 series welders, these robust machines are



Fronius still believes that the CMT process is able to match the speed of a hand-held laser welding solution where the weld has to pass structural tests.

reliable steel construction tools with an intelligent design and exceptional easeof-use. And as with most Fronius systems, they are digitally controlled and come with expert built-in knowledge for steel welding that guarantees system performance.

Another advanced solution now available on the South African market is Fronius' battery-powered AccuPocket welder, which offers unlimited welding mobility for repair work at exposed locations that are difficult to supply with mains power. With a highperforming lithium-ion rechargeable battery and a low overall weight of only 11 kg, AccuPocket gives users unprecedented freedom for MMA and TIG welding.

"And in Hybrid mode, the unit can be used for welding at the same time as being charged – even when mains voltages are fluctuating or the power trips," Van der Walt adds.

Fronius products are available in South Africa though the B.E.D. Group, except in the Eastern Cape, where the brand is handled by Proac Engineering.

"As Fronius South Africa, we offer sales and technical support for B.E.D. Group, Proac and their customers and we have direct access to our overseas specialists should we need them," concludes Edric van der Walt.

www.fronius.com/en-za/south-africa





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Advanced sub-arc welding from Steinmüller

Senior Welding Engineer, Friedrich Schwim, outlines his company's submerged-arc welding (SAW) capabilities, which set the benchmark for excellence in this process, reinforcing Steinmüller Africa's position as a fabrication leader for the power and petrochemical industries.

Solution of the set of

With advanced machinery, including one of the only two PEMA machines in the country and the only Oerlikon SAW stub welding machine in South Africa, among others, the company is well equipped. Using this machinery, Steinmüller Africa can provide its clients with fast and costeffective turnkey fabrication solutions. SAW ensures minimal weld repairs and offers a faster weld solution, increasing plant uptime. These capabilities position Steinmüller Africa to deliver welding services to effectively meet the growing demands of the energy and industrial sectors.

SAW is a specialised welding technique that reduces impurities from entering the weld pool by burying the entire arc in a pool of flux, resulting in cleaner welds. Its significantly higher welding speed and semi-automatic nature reduce the need for human intervention, making it stand out from other welding solutions in South Africa.

It is commonly used to weld plates and pipes, as well as large and small stub-toheader assemblies. Steinmüller Africa's expertise is supported by its fleet of three boom welders, the Oerlikon welding machine for header-to-stub welds and the PEMA machine which features six welding heads for welding membrane walls, offering more welding capacity.

SAW has few limitations barring those involving in-position welding. However, components can be manipulated into the flat position, which results in no significant limitations beyond the thickness of the material. Additionally, SAW offers a more controlled and efficient process compared to manual gas tungsten arc welding (GTAW) and shielded metal arc welding (SMAW), which rely on gas and flux-coating respectively for arc protection.

With the change in available consumables such as flux and gas, and Steinmüller Africa's exclusive cutting-edge technology, SAW can effectively be used across a range of applications. These factors make the company the ideal solution provider for clients' welding requirements.

Although SAW offers numerous advantages, it comes with challenges including moisture absorption in the flux and the welding position. Steinmüller Africa overcomes these challenges by adhering to rigorous standards: the flux is baked according to the manufacturer's guidelines and kept hot during welding to prevent moisture absorption. Welding parameters are carefully determined during planning and are strictly monitored throughout the process. In some cases, production test pieces are welded to ensure the quality is up to specification standards.

Furthermore, Steinmüller Africa selects welder operators based on their skills and interest in the process, ensuring they are both engaged and knowledgeable about the techniques used. Operating SAW ma-



Steinmüller Africa has the only Oerlikon SAW machine for stub-to-header welding in South Africa.

chinery requires specialised expertise. To ensure compliance with all governing standards and to ensure optimal machinery use, Steinmüller Africa provides in-house training for its SAW welders.

With successful welding services and installations at various Eskom power stations and Sasol plants, Steinmüller Africa continues to set the benchmark for excellence in SAW applications, reinforcing its position as a leader in the industry.

Senior Welding Engineer Friedrich Schwim concludes: "Steinmüller Africa is always investigating opportunities to optimise component fabrication to ensure the highest quality and cost-effectiveness. We also ensure faster manufacturing times while remaining competitive in terms of fabrication costs in the industry."

www.bilfinger.com/en/za



Steinmüller Africa's cutting-edge PEMA SAW machine features six welding heads for welding membrane wall panels for steam boilers.

The new Vulcan 1200A Dual engine-driven welder

At an event at its Boksburg facility in Gauteng in early November, Unique welding launched its locally-manufactured Thermamax Vulcan 1200A Dual multi-function engine-driven onsite welding solution. Thomas Taljaard, Head of Sales and Marketing, outlines some key features and advantages.

ffering up 1 200 amps of welding current at any one time, the new Thermamax engine-driven welder and generator is the ideal solution for use on African construction sites and mines, where access to three-phase mains power is often unavailable or difficult to access.

The core of the package includes two highly efficient 600 amp multi-process welding inverters driven by a Perkins genset. Also included is a high pressure compressor for arc-air gouging, which can also be accessed for other purposes, and two 380 V, 3-phase and two 220 V, single phase auxiliary outputs, which can be used to power any other equipment, including additional welding power sources. Up to three welding arcs can be simultaneously run off system, and arc air gouging and welding can be performed at the same time.

Fully mobile, the multi-process 600 amp inverters included the Vulcan Dual can be used for MIG; Stick/MMA; arc air gouging or scratch-TIG welding applications. A simple selection on the control panel enables easy switching between processes and welding current/voltage is selected by a single 'power' dial on the front panel.

Key features of the Vulcan Dual include:

- A fully mobile welding solution with two 600 amp multi-process inverterbased power sources built in that can run simultaneously without interfering with each other.
- An arc air gouging compressor is built into the system, which can be used from one power source while welding from the other system. The compressor can be used for gouging and compressed air. A robust piston compressor is used and this sits at the front allowing for excellent air flow for gouging from a 5.5 kVA motor.
- MIG/GMAW welding can be run from any conventional wire feeder due to constant voltage (CV) arc characteristic



The core of the package includes two highly efficient 600 A multi-process welding inverters driven by a Perkins genset. Inset: The system has been made very easy to operate with only one process selection switch and one welding power setting per welding inverter on the front panel.



Representing the local OEM, Robert Case demonstrates the key features of the Unique Welding's new Thermamax Vulcan 1200A Dual.

programmed into the digitally controlled power sources.

- The system has been made very easy to operate with only one process selection switch and one welding power setting per welding inverter on the front panel.
- The Vulcan 1200 amp is locally manufactured, it can be customised according to the buyer's requirements and a customised unit can be delivered within six weeks of agreeing the specifications and ordering.
- The design meets all the safety requirements of the mining industry, including lock-out electrical isolation for maintenance team safety and VRD (voltage reducing device), which reduces the open circuit voltage to safe levels until welding starts and as soon as the arc is extinguished.
- A top-of-the-range, turbo-charged, Perkins diesel-engine and alternator is used to generate the power. This system comes with a two-year warranty.
- Highly fuel efficient, the Vulcan 1200A Dual can be used for, on average, 12 hours on a single 100 l tank of fuel, depending on the running load.

"Unique Welding is one of the largest independent gas and welding distributor in South Africa, with 14 branches and an extensive network of independent distributors "As a fully integrated gas and welding solutions provider, we strive to transform the South African gas and welding industry with our expertise, innovation and specialised services.

"Our new Thermamax Vulcan 1200 Dual is our latest innovative customised solutions, which, along with the support services we can offer, will save local customers time and money, providing sustainable value for years to come," concludes Thomas Taljaard.

HDGASA shines light on renewable energy

The Hot Dip Galvanizers Association of Southern Africa (HDGASA) plays an important role in supporting the energy value chain – which spans clean, renewable and green energy – as it powers towards key sustainability targets, according to Executive Director, Robin Clarke.

After a nine year 'teething period', during which key energy sector stakeholders and local galvanizers found common ground, he says hot dip galvanizing is now the preferred corrosion control mechanism for this sector, enabling substantial return on investment for energy infrastructure projects and the industry as a whole.

"As an Association, we support the move to renewable energy. We are pleased that the sector has embraced hot dip galvanizing. What we do prolongs the life of the most essential element – steel," Clarke points out.

Clarke says that the HDGASA has always fostered a close, constructive relationship with Eskom: "As an association, we have advised the parastatal regarding corrosion control of transmission lines and distribution equipment over the past several decades. We expect this to continue with the 14 000 kilometres of transmission lines due to be provided under Eskom's strategic development programme."

Solar installations grew on the back of load shedding: "They were scattered across

the length and the breadth of the country. We ran into headwinds related to corrosive environments that had not been factored into the original generic designs intended for the Northern Cape," Clarke explains.

It has taken time for stakeholders to replace generic specifications with siteand location-specific alternatives. This means pre-approving a quality plan before accepting a design, to ensure that the corrosion control needed for each installation is correctly specified to meet the service life requirements. For example, a solar installation on the West Coast requires a different thought process and specification to an identical facility in Kakamas in the Northern Cape.

"We began working very hard as an Association to interface with key players to ensure that this was done – and that a thorough environmental assessment was completed to ensure that the specifications for corrosion control and the selection of the materials were correct," Clarke advises.

Although this initially applied to large solar farms, it soon extended to far smaller installations on the roofs of commercial buildings such as shopping malls.

"We have been advising commercial property groups not only to correctly determine the corrosion control specifications for individual solar installations, but also to assess the baseline corrosion condition



Hot dip galvanizing is now the preferred corrosion control mechanism for the renewable energy sector.

of the roof and the roof sheeting on which the PV panels are installed. These roofs are predominantly galvanized or duplexcoated galvanized substrates. As such, the roofs need to have a service life equal to or exceeding that of the renewable energy installation, to ensure acceptable projected return-on-investment and sustainability targets," he explains.

Lessons learnt from the solar sector will also assist the wind power sector. Clarke says the HDGASA will continue to work closely both in-country and offshore with South African role players, championing the capacity and expertise of South African galvanizers to supply the solar, wind and developing renewable markets.

"The renewable energy sector provides a powerful growth opportunity for South Africa's galvanizing fraternity, and the HDGASA will do all we can to support and facilitate this," he concludes.

www.hdgasa.org.za

New computer lab opens doors for primary school learners

As part of its work on power plant Mill maintenance, Babcock not only delivers technical services but also prioritises community upliftment. This includes providing on-site training to upskill local residents and contributing to social development initiatives.

Recently, Babcock supported a local primary school by equipping its computer lab with essential tools such as new laptops, tables and chairs, empowering students in underprivileged communities with access to better educational resources.

De Wet Reyneke, Project Manager at Babcock, says that local businesses worked together to build the computer laboratory for the primary school. The brand-new computer laboratory, with workstations for 30 learners, was handed over to the principal of the school, Nthabiseng Khanyi, on 16th October 2024.

"We chose to support this project because it directly aligns with Babcock's commitment to social development and advancing education in underprivileged communities. Providing a school computer laboratory empowers students with essential digital skills, which are increasingly critical in today's world," says Reyneke, reflecting Babcock's broader ESG goals of fostering community upliftment and longterm, sustainable impact.

"We are so grateful for Babcock's involvement. This computer laboratory is go-

ing to add value to our school and empower our students to be computer literate. They will be able to learn about digital technologies and do online research for their projects and assignments," says school principal, Miss Khanyi.

"Our learners come from a disadvantaged community with only one library that has outdated information, so now they will be able to find useful information quickly. "While most of our educators are computer literate, we plan to apply to the Department of Education to appoint a qualified computer science educator so that we can offer computer science as a formal subject," she adds.

Babcock's De Wet Reyneke concludes: "Babcock is honoured to play a role in opening the door to a world of information for these learners."

www.babcock.co.za



Babcock is supporting a local primary school by equipping its computer lab, empowering students with access to better educational resources.

Brilliantly simple, brutally effective Kemppi X3 arrives in SA

At Electra Mining Africa earlier this year, Renttech unveiled its latest high-end welding power source, the Kemppi X3 FastMig, a robust highend welding solution built for difficult jobs in challenging conditions.

The Kemppi X3 HD300 wire feeder features the company's Duratorque 4x4 wire feeding mechanism and a strong plastic case with a dual-wall construction.

emppi X3 FastMig Synergic and Pulse MIG/MAG welding machines are the quickest way to complete high-quality welds in a wide-range of welding and fabrication environments. With a robust design and durable wire feeder, the X3 FastMig is designed to cope with heavy industrial MIG/MAG welding.

Although the machine looks tough, it is also simple to use and delivers precise results. A new icon-based user interface saves time with fast setup and easy parameter selection and the X3 FastMig gives the welder immediate control over key

functions, enabling them to create high-quality welds in a simple and reliable way.

With 420 A (X3S) or 450 A (X3P) options at a 60% duty cycle, the X3 is brutally effective without compromising quality. As soon as the settings are locked in, the welding task can start and the welder can keep going until it's done. These machines are an excellent match for industrial welding where capable, accurate and reliable welding equipment is essential and where the MIG/MAG welder needs to be



The Kemppi X3 FastMig was launched by Renttech Welding at Electra Mining Africa during September.

The Kemppi X3 FastMig range on display at Renttech Welding's Application Technology Centre (ATC).

supported for fast change overs and varying work tasks.

The X3 FastMig Synergic and Pulse models come with the Kemppi X3 HD300 wire feeder, which features the company's Duratorque 4x4 wire feeding mechanism and a strong plastic case with a dual-wall construction. The X3 HD300 wire feeder is designed to be attached to the X3 FastMig's MIG/MAG power source via a rotating plate, and a safe-lift design also allows the wire feeder to be lifted and suspended by the handle.

The whole welding system can be mounted onto a 4-wheel trolley and accessories such as a hanger boom for the wire feeder are also available. To make parameter adjustment easier while welding the Kemppi HR53 hand remote or the GRe50 torch remote control are available as optional accessories.

The Kemppi FastMig X3S 420 G Power Source includes manual and synergic MIG/MAG, MMA, and gouging processes and provides up to 420 A at a 60% duty cycle. The X3S comes pre-programmed with 42 factory-installed welding programs, including GMAW programs for carbon steel, stainless steel, AlSi5, AlMg5, and many more, as well as flux-cored and metal-cored programs and optimised stick/ MMAW programs for rutile and cellulose electrode types.

The 450 A FastMig X3P, on the other hand, offers manual, synergic and pulse MIG/GMAW, MMA, and gouging processes and provides up to 450 A at a 60% duty cycle – and 67 factory-installed welding programs are included.

For welders to deliver the productivity and quality needed to make South Africa's fabrication industry globally competitive, they need to have access to the best possible welding tools. The technology built into the Kemppi X3 delivers just that. Book your demo today and see for yourself what the new Kemppi X3 platform is all about!

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