



AWT: Towards exemplary 21st-century manufacturing

AF talks to Thulani Mngomezulu, General Manager-CEO Designate of 2Roads Group company, Applied Welding Technology (AWT), about the company's new strategic direction towards becoming a renowned 21st-century manufacturer of critical engineering components.

Established in 1987, Applied Welding Technology (AWT) operates out of a fully integrated facility in Kempton Park near Johannesburg, offering comprehensive welding, machining, fabrication and testing services.

With a primary focus on welding and machining critical parts, AWT has always excelled in working with a wide range of materials, rebuilding critical worn components with base materials and cladding surfaces using Stellite, Inconel, bronze, stainless steel and Monel, among others. Whether rebuilding 10 t vessels or small-bore 32 mm nozzles, the company has the welding, machining and heat treatment capabilities to deliver comprehensive remanufacturing solutions for industries using the full spectrum of advanced materials, such as power generation, petrochemical and mining.

In addition to its well-equipped factory, AWT has dedicated onsite teams for specialised welding tasks. These teams have successfully executed repairs on valves, pumps, fans, valve chests, diffusers, and other equipment. Most notable is the company's expertise in performing seat replacements on welded valve bodies, including gate and non-return (NRV) valve types.

Quality control and assurance are

fundamental to the company's processes. "We continuously improve our processes, diligently monitor every step and conduct industry-standard tests at all the necessary hold points, accompanied by meticulous documentation to ensure the highest standards of excellence," says Thulani Mngomezulu, the recently appointed General Manager-CEO Designate of AWT.

Notable projects

Turbine Valve Components: "Our largest project so far this year has been the refurbishment of turbine valve components for the Majuba and Duvha Power Stations. In general, this work involves machining, weld build-up, cladding – primarily with Stellite – and final machining to tight tolerances in line with OEM's specifications and instructions. "This is highly specialised work that the AWT team has been able to successfully execute based on previous experience and in partnership with the OEM," he says.

Cladding of cast iron butterfly valve disks: Another area of expertise AWT has developed in recent years is the welding of large cast iron components. This is one of the most challenging materials to weld and requires particular welding procedure specifications and tight control of the welding operation. "In recent months, we have

successfully applied austenitic cladding to cast iron discs ranging from 600 mm to 3 000 mm in diameter and up to 11 tonnes in weight," Mngomezulu reveals.

Re-Stelliting at Kusile: AWT has been providing in-situ machining and re-Stelliting of valves and other plant components at Kusile Power Station since June 2021. "We are delighted to have completed this contract in May this year, and to have received a positive end-of-contract review from our client. Throughout this contract, AWT demonstrated that we can consistently deliver high-quality work, even under extremely demanding conditions, therefore ensuring that our clients receive maximum value from our services," he adds.

Re-imagining the future

AWT is expanding its site project footprint beyond its traditional South African market. Examples of this are recent assignments carried out in Mauritius and Ghana, which involved repairs on turbine components for a client operating within the power generation environment. "We are currently working towards developing organisational capabilities that will enable us to achieve our long-term strategic goals. We are strengthening our collaboration with our 2Roads sister companies to enhance our customer experience while improving synergies between these companies. We also remain committed to quality-enhancing systems such as the ISO 3834 standard certification compliance to international construction codes and local power generation and petrochemical industry requirements," he tells AF.

Appointed in October 2024, Thulani Mngomezulu has been charged with formulating and executing AWT's new strategy. His credentials in the South African petrochemical and welding industries make him ideally suited to the task. "For the past few years of my career, I have been largely focused on welding technology, but I started my career in mechanical engineering, so I bring manufacturing and machining expertise into AWT, as well," he says.



Machining a cast-iron component. AWT excels in repairing critical worn components with complex base materials and cladding surfaces using Stellite, Inconel, bronze, stainless steel and Monel.

Having matriculated from Tisand Technical High School in Esikhaleni, KwaZulu-Natal, Mngomezulu studied mechanical engineering at Durban University of Technology, graduating in 2004. "While still at university, I did practical experience training at the local Engen refinery. This was my first introduction to South African industry.

"My first permanent job was with Sasol Synfuels, where I was a mechanical technician doing maintenance and installations on new and replacement plant equipment: pumps, piping, general structures, vessels, tanks, and heat exchangers, for example. After about two and a half years, though, I moved back to Engen as an equipment inspector," he says.

During that time, Mngomezulu studied for his Level 1 and Level 2 Welding Inspector and other inspection/testing related qualifications through the SAIW. Then in 2011, he joined the SAIW as a consultant in the Technical Services department, at the time when ISO 3834 Company Certification first began to be rolled out. He was with the SAIW for five years, during which time he also qualified as an IIW International Welding Technologist.

In 2016, he was invited to join Lincoln Electric Middle East and Africa as the Technical Applications Manager, responsible for supporting and developing applications and demonstrating equipment for the full suite of Lincoln Electric welding and cutting equipment and consumables, from plasma cutting systems through to all of the manual, semi-automated and automated welding process solutions.

During his time at Lincoln Electric, Mngomezulu continued to study, with an increasing focus on developing his business management knowledge and skills. He completed a Post Graduate Diploma in Business Administration (PDBA) from Wits University in 2020; went on to get a Financial Modelling & Valuation Analyst (FMVA) qualification from the Corporate Finance Institute® in 2021; and in September 2023, he was awarded a Master's degree from the



Above: AWT's Simphiwe Shongwe is setting up a CNC machine for a new job: "Our vision is clear: we are working towards becoming an organisation that exemplifies the 21st-century manufacturing enterprise," says Thulani Mngomezulu.

Right: The company has the welding, machining and heat treatment capabilities to deliver comprehensive remanufacturing solutions.

University of the Witwatersrand in Innovation Studies.

A modern manufacturing vision

During 2024, with the current CEO, Ross Tudhope, looking to retire, 2Roads and AWT began to search for a suitable candidate to take the reins at AWT. "I was initially approached by someone from 2Roads. Then AWT got involved, and after a few months of discussions, we agreed that I would join as General Manager and CEO Designate. Since then, I have been working closely with Ross while also being charged with developing a strategy for sustainable and innovative growth.

"I am currently involved with all the different departments, trying to set up how we want to do things in the future. It's about managing change, in everything from what we want from our personnel, the training and development that is required to get there, and the technologies we need to adopt, develop and assimilate to ensure that we can compete and succeed. The AWT team has an interesting mix of talent, and everyone is looking forward to building our future together," Mngomezulu tells AF.

"Our vision is clear: we are working towards becoming an organisation that exemplifies the 21st-century manufacturing enterprise, and this will be largely about our capabilities and how we continuously reorganise ourselves," he says.

"There are two ways to think about our



future, from the perspective of where we are now, and from a vision of where we could be in three, five and ten years. Our history is largely about refurbishments, remanufacturing and lifetime extensions of critical, high-value, precision plant components, and we are very good at this.

"Going forward, however, we are gearing ourselves up to also support the new greener industries, not only the renewable energy sector, but other emerging industries as well, in support of global sustainability," he explains.

"We understand that it's not going to happen overnight, but together with our new vision, we have been reflecting on what drives us: our mission to help our customers build and maintain reliable systems and our contribution towards a sustainable future – along with our values: Respect, Integrity, Trust, Customer focus, and Quality.

"Based on these pillars, we are determined to transform Applied Welding Technology into a renowned and exemplary manufacturer of the critical components needed for a sustainable 21st century – and effectively support the needs of our customers in South Africa and beyond," concludes Mngomezulu.

<https://appliedwelding.co.za>



AWT has a workshop in Kempton Park and onsite teams for specialised welding tasks. These teams execute specialised weld repairs on valves, pumps, fans, valve chests, diffusers and other equipment.

