



# Encore Engineering: outstanding dependability

*African Fusion* profiles SAIW Member, Encore Engineering Services, a petrochemical-focused mechanical and specialist welding service provider that has successfully executed plant and piping projects in Secunda and Sasolburg for over 25 years.

Encore Engineering Services commenced business in early 1996 and, over the past 25 years, has been focused on its key client, Sasol, successfully executing many mechanical and piping projects in Secunda and Sasolburg. From the beginning, Encore began to evolve into a specialist piping and structural welding manufacturer with expertise in exotic materials.

“Our core business is the manufacture and maintenance of pressure piping, pressure systems and related equipment and structures, with manufacturing covering both fabrication and installation activities,” says technical director, Henk van Heerden. “We combine applicable welding technology with competent welding skills on carbon steel, stainless steel, aluminium, chrome and nickel alloys, using processes such as gas tungsten arc welding (GTAW), shielded metal arc welding (SMAW), flux-cored arc welding (FCAW) and gas metal arc welding (GMAW),” he adds.

A notable project in its history, according to Van Heerden, was Sasol’s C3 polypropylene plant expansion project at Secunda, which began in April 2015 and was concluded in June/July 2016. “We had about 85 teams working continuously on that project – 60 welding teams and 15 mechanical teams – from April/May 2015

until we finally signed-off in June 2016,” he tells *African Fusion*.

The plant polymerises propylene fuel into polypropylene thermoplastic – and the C3 expansion took Sasol’s production from 103 000 tpa to just over 625 000 tpa. “This project won Sasol’s Project of the Year award for 2015,” Van Heerden says, adding that Encore reported to the lead EPC contractor, Technip, who in turn reported to Sasol.

“On the mechanical side, the fitters were responsible for installing and aligning equipment such as compressors and pumps, while our welding teams installed all the structural steel and piping,” he adds.

Describing the typical welding tasks undertaken, he says that the structural side was mostly carbon steel, but the piping involved a lot of stainless steel – 304 and 316 grades – along with some high temperature 1¼-chrome-moly materials.

“Pipe welding was done manually, with welders on the large bore piping having to produce sound GTAW root welds before filling and capping using SMAW electrodes, while all tubes smaller than 40 mm in diameter had to be welded using GTAW only,” continues Encore’s quality manager, Dewald du Plooy. “The majority of our welders are qualified on both processes, but we also have an elite group of GTAW welders to take

care of the small bore TIG welding, which can be very tricky,” Du Plooy adds.

“Almost all of the welders we use are local,” Van Heerden assures. “It is important to us to support locally skilled people around Secunda wherever possible. And when we cannot meet our needs, we look for people from other provinces. Only once in our history did we have to employ overseas welders (OCNs) but that was an absolute last resort because of a massive shutdown across the whole of Sasol,” he notes.

## ISO 3834 and SAIW Membership

Talking about Encore’s ISO 3834-2 Certification from the SAIW, Du Plooy notes that in the welding field, this is increasingly becoming the required standard. “Using this standard can effectively ensure that welding quality meets the in-service standards required and more and more contracting companies are now insisting on it,” he says, adding that Encore Welding services has been an SAIW-certified ISO 3834-2 since 2017.

Van Heerden adds: “Another major contributing factor for us was that Sasol does not allow any contract to work on pressure equipment to be undertaken without ISO-3834-2 Certification. So certification has significantly increased our work scope.”

ISO 3834-2 requires welders to perform in strict accordance with the approved Welding Procedure Specifications, which must be properly displayed in welding areas. “We also have to control our consumables and do surveillances and verification audits on our stores and on our welding equipment on a regular basis,” says Du Plooy.

“Traceability through the quality management system is also vital,” continues Van Heerden. “We strive to achieve complete traceability and to close all loopholes to ensure nothing can come back to bite us after a project has ended.

“From a management point of view, we can definitely see that the quality of our welding is getting better and better, as we learn lessons and implement solutions. This is evident from the steady improvement in our weld repair rates.

“Our clients have a minimum requirement for all Welding Service Providers to



On Sasol’s C3 polypropylene plant, Encore’s mechanical fitters were responsible for installing and aligning equipment such as compressors and pumps, while the welding teams installed all the structural steel and piping.

achieve a repair rate of 5% or less, and we were achieving that before we first implemented ISO 3834-2 in 2017. Immediately after implementation, however, we achieved 4.56%, and ever since it has been declining steadily. We are currently sitting at 3.2% for this year, but that is immediately after a shut-down so we expect it to decline even further. This is a strong indication of the effectiveness of ISO 3834-2 in raising weld quality and, because weld repair is such a costly exercise, it points towards the cost-saving value of implementing this ISO standard,” suggests Henk van Heerden.

In support of the company’s technical welding requirements, Encore also has its own welding data capturing program, Encore Welding System (EWS), which was implemented in 2018 and is maintained by Du Plooy’s Quality Control Department. “EWS captures all welding data per project and keeps track of WPSs, Welder Qualifications, Welding Consumables, Non-Destructive Testing, Post Weld Heat Treatment and Project Progress.

“Using this information provides data to cross-check all variables to ensure compliance to approved welding procedures, drawings and client requirements – and the system enables quick data recall for any quality or project related query, serving as an additional electronic archiving system,” notes Dewald du Plooy.

On the added-value of SAIW membership, Van Heerden says that Encore first built a relationship with the Institute as the certification body for ISO 3834. “As an SAIW member, we have a direct line to access support: for procedures and procedure qualifications, for example, along with

technical assistance on any welding issues that may arise.

“Also, we have started sending our supervisors for specific training from the SAIW and as members, we get discounts. We believe that building better relationships is always going to be beneficial in the long run” he tells *African Fusion*, adding that another major benefit is that corporate members have free access to use the SAIW’s comprehensive library of Welding Codes and Standards.

Encore Engineering Services’ 6 000 m<sup>2</sup> under-roof workshop in Secunda consists of an engineering and fabrication area of 4 500 m<sup>2</sup>; a 720 m<sup>2</sup> cutting bay; and a material store of 720 m<sup>2</sup>, which includes the company’s ISO 3834-2 accredited Welding Store under 24/7 surveillance. In addition, the facility has a laydown area of 3 600 m<sup>2</sup>, which is set up to accommodate large pipe sections, materials, and equipment.

The cutting bay is equipped with heavy duty benches and rollers to feed the bench grinders and/or the plasma cutter. It then feeds into the workshop, where work can be allocated to any one of the 32 workstations.

The workshop has four separate welding bays of approximately 1 000 m<sup>2</sup> each, and a 500 m<sup>2</sup> boiler making bay. Four large sliding doors on all sides of the workshop ensure proper material handling to and from the workshop.

“Our history of service and ISO 3834-2 certification gives Encore’s clients and stakeholders the assurance that we continuously render services that not only comply to international standards, but also adhere to client specifications, needs and expectations. This has resulted in our trust-



Encore Engineering Services has an elite group of GTAW welders to take care of small bore TIG welding.



For the control of welding consumables according to ISO3834-2, Encore’s accredited Welding Store is under 24/7 surveillance.

worthy reputation with current clients and acts as evidence to prospective clients that we can deliver high-quality and sustainable results,” notes Du Plooy.

The company’s managing director, Mano Laia says: “We at Encore apply experience gained with the assistance of our ISO 9001:2015 and ISO 3834-2 accredited system to deliver exceptional services to our clients: through a talented, dedicated team of highly skilled, qualified and well-trained employees. We strive to maintain the highest quality standards while diligently adhering to client requirements.

“The company’s history in the petrochemical industry has resulted in safety and quality being placed at the centre of Encore’s core values and daily activities, with dependability, integrity and employee expertise as additional values.

“We offer South African industry efficient, productive and sustainable services by providing high quality work that saves time and money for our valued clients,” Laia concludes.

[www.encore@secunda.co.za](mailto:www.encore@secunda.co.za)



A notable project in Encore Engineering’s history was the Sasol’s C3 polypropylene plant expansion project at Secunda.

