

Fabricator completes maintenance project at PetroSA refinery

Engineering company Steinmüller Africa, a subsidiary of Germany-based international engineering and services group Bilfinger, completed a planned maintenance project in March for State-owned national oil company PetroSA's Mossel Bay-based Gas-To-Liquids refinery, in the Western Cape.

Steinmüller Africa Welding Operations Manager **Morne Kidson** tells *Engineering News* that the scope of work involved replacing the Synthol Reactor internal coil U section, and structurally replacing and welding the pipe components. The outside diameters of the pipes varied from 40 mm to 90 mm with the wall thickness varying between 3 mm to 25 mm.

Additionally, he notes that Steinmüller Africa is an original-equipment manufacturer for various State-owned power utility Eskom boilers, and has ongoing boiler and high pressure piping maintenance service contracts at 11 coal-fired power stations.

Further, to assist the power generation sector with skills development, Steinmüller is involved in a training programme for the power utility SD&L (Skills Development & Localisation), says Steinmüller Group Training Administration Manager **Sonet Jordaan**. The company is training ten riggers, ten pipe fitters, ten boilermakers and ten welders through this programme.

Explosive Welding

Kidson highlights the increasing demand for explosive welding technology applications during the maintenance of high-pressure heat exchangers at power stations.

Explosive welding is used to fuse tubes to tube plates or headers in high-pressure heat exchangers. It is performed when a tube is impelled against the tube plate material using the energy from an explosive discharge. In the process, expansion and fusion occur in a high-energy rate impact, Kidson explains.

The ageing coal-fired power stations, such as Kriel and Arnot, in Mpumalanga, have several heat exchangers that need to be refurbished/replaced. They weigh several tons and have up to several thousand tubes that need to be either plugged during maintenance or totally replaced during refurbishment.

“Since the traditional welding methods are time consuming, explosive welding, with a weld metal travel speed of more than 8 000 m/s, reduces welding time, plant downtime and relative repair costs. It also achieves a weld that is expanded, fused and sound,” he says.

Explosive welding is also suitable for the welding of components of different metals, as well as for welding dissimilar metals, such as carbon steel to stainless steel and stainless steel to titanium. “Steinmüller can apply the process to manufacturing in workshops, or insitu at the power stations,” Kidson emphasises.

The explosive welding technology existed for a while and was mostly applied on insitu heat exchanger tube plugging. Steinmüller is the first to manufacture a brand new heat exchanger from scratch making use of the explosive technology in the whole world. It is important to note that the process actually fuses the two materials into one homogenous material. The fusion line is not detectable through a microscope or etching. Although Steinmüller Africa originally introduced explosive welding to Eskom in 2010 under licence from TEI, it remains the only company in South Africa qualified and approved to perform explosive welding for the power generation sector, he adds.

Innovation is one of Steinmüller’s values and we are constantly evaluating the market for opportunities. The company is 52 years old and, therefore, has to continually evolve. . .it is vital to keep abreast of new innovations and technologies, as this allows for the company to anticipate end-user needs,” he says.

Industry Outlook

Kidson believes that the welding sector is growing. He highlights that, with South Africa’s ventures into renewable energy, there are substantial opportunities in the renewable energy market.

“There are huge industrialisation opportunities in Africa, in not only the power generation and renewables industries but also the petrochemicals industry,” he concludes.

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A proud Steinmüller Africa employee attends to the 5th tube bundle of a project-related HP Heater.

Contact:

Source name: Bonnie Robinson

Job title: Communication and Branding Specialist, Bilfinger Power Africa

Telephone number: +27 11 806 3927

Email address: bonnie.robinson@bilfinger.com

Fax: +27 86 613 1965

Company name: Steinmüller Africa (Pty) Ltd.

Address: The Grid, 45 De La Rey Road, Rivonia, 2191, South Africa

Postal Address: PO Box 1537, Rivonia, 2128, South Africa

Website address: www.steinmuller.bilfinger.com