MARKET

Innovation in smelting technology

South African smelting and technology equipment specialist Metix is actively seeking solutions that will enhance productivity and reduce downtime – usually long before clients have commissioned the upgrades.

The company offers the full scope of EPCM services on smelter projects, detailed engineering of furnace-related infrastructure, in-house procurement, cost-control systems, site construction, as well as quality assurance and safety. According to the company's technology equipment director Jacques Venter, much interest is currently being expressed by international clients and potential clients, even though the industry is in a slowdown. "Based on previous project success, we have had some international contact and are in constant communication with clients across Europe, China and India."

A key area of interest is in work that the company has completed for mining company Lonmin – a primary producer of platinum group metals (PGMs). "The company was commissioned in 2007 as project manager on an operation that included the rebuilding of an entire furnace for Lonmin in Rustenburg," says Venter. "While stripping the old furnace, we noticed that the slipping devices, as well as the contact shoes and bus shoes were almost destroyed by corrosion. We suggested to the client that we replace the slipping devices with new ones made from stainless steel, which would provide more resistance to the highly-corrosive environment of the furnace."

The company re-engineered the slipping devices that had been originally supplied decades ago. "The design was excellent. We made some minor improvements and alterations and installed the devices with no problems," says Venter. "The set-up procedure was simple and performance excellent, with no complaints from our client." That, in this business, is key to success: The client is content and comfortable that the slipping devices will last around 20 years and greatly reduce safety issues. It was decided to use stainless steel for the harsh environment as, says Venter, "where SO_2 gas comes into contact with water it becomes H_2SO_3, a very corrosive compound", creating a hazardous atmosphere that corrodes copper and steel.

While re-engineering the original pressure ring design, the contact pressure between the contact shoe and the casing was also increased to prevent arc damage between the two parts, reducing the amount of paste that builds up between the contact shoes and casing.

During the Lonmin project, Metix also applied a ceramic coating to all copper components in what is believed to be a first in South Africa. "The ceramic coating is able to withstand temperatures greater than the melting point of copper. The ceramic is applied in a similar manner to powder coating and is baked onto the etched-cleaned bare metal. This coating is resistant to sulphur corrosion and thus protects the copper."

Venter says that all indications are that an improvement in production was achieved. "The 9 MVA six-in-line furnace was

OPPOSITE Metix slipping devices installed on six in line electrodes for a furnace in the platinum industry
BELOW Technical director Jaques Venter says that the company has international patents on its pressure rings

turning out record production rates on a regular basis after the rebuild.

Another area is that of slipping devices. "Slip-throughs in furnaces can kill people," says Venter, "which is why many plants are replacing their devices."

The company offers a solution where cost is of concern, in a device that is more economical than most but is also failsafe against slip-throughs. "The only drawback with this slipping device is that it does not allow for back-slipping. However, in the platinum industry, back-slipping is not required," he says. "What makes this design completely failsafe against slip-throughs is that both slipping bands are permanently clamped, and either of the bands can hold the full weight of the electrodes. This means that the bands are able to support more than double the electrode mass."

With over 30 draughtsmen and several design engineers in its employ, the company has developed patented technology that has caught the eye of international companies. "We have three international patents on our pressure rings, which is now a flagship piece of equipment." The company has also applied for patents on furnace roofing and sealings.

"Every minute of downtime that can be saved contributes to the lowering of production costs," Venter says. "A client that has equipment that doesn't give any trouble will be more productive than a competitor." Even while many local companies have switched their furnaces off for the time being, the company is exploring new avenues. The company is looking at the international arena, in particular the Chinese market, which is still looking at furnace expansion. We have had some interest from Norway and other European, companies and we will continue to seek solutions to global mining issues." 35