

# Electrocoating success for PE-based family business

Electrocoat, co-founded by Joe and Gloria Bloem in 2007 and joined in 2008 by their daughter Angelique, is today one of the continent's most reputable coaters. *MechChem Africa* talks to company MD, Angelique Adcock, about the process and the company's success.

**O**n retirement, Joe and Gloria Bloem decided to invest their savings into a new business venture and, with support from Business Partners, bought a brand new state-of-the-art, fully automated, twelve-step electrocoating production line. The production line was designed, built and assembled in Gauteng, before being sent down for installation in their pre-prepared Port Elizabeth facility.

A few months into production, the financial crises struck the South African economy, but the fledgling industrial coating plant registered good sales and was awarded an SABS ISO rating despite the tough economic climate.

Following the death of Gloria Bloem in 2011 and that of Danny Schoombie in 2012, the company's production manager, Joe and Angelique became co-owners of Electrocoat and established an efficient management team with a total of 21 employees to take the business forward. Sadly, Joe Bloem – who had recently retired – passed away in March, leaving the family legacy and his share of the company in the safe hands of his daughter and the company's managing director, who is now a 100% shareholder.

The company is currently in discussions

with black equity partners to transform it into a black-owned entity, which Adcock believes will unlock even greater returns. "From a production perspective, Electrocoat is experiencing good and strong growth, which is built on over 11 years of experience, a track record of excellence, a long-serving management and production team and a fresh vision," Adcock says.

## Electrocoating and its advantages

Electrocoating – also known as e-coating, electropainting, electrophoretic lacquering or anodic/cathodic electro deposition (AED/CED) – is very different from powder coating or the paint spraying processes. In principle, when electrocoating a component, a conductive metal object is submerged into a water-based solution containing electrically charged paint particles.

When a dc voltage is applied between the component and a series of oppositely charged electrodes in the solution bath, charged paint particles are attracted to the oppositely charged component, where they are neutralised by electron transfer (current flow) causing them to precipitate and adhere to the component surface.

The protective paint layer that builds up



Angelique Adcock at NAACAM.

on the surface acts as an electrical insulator, which ensures an even coating and a self-limiting, voltage-dependant thickness. As the surface becomes covered, the neutralisation reaction moves towards the least covered areas until the entire surface is coated and insulated. At this point, current flow from the component will stop, indicating that the electrocoating process is complete. Paint applied using this process will, therefore, protect the entire part equally, even corners, edges and recessed areas.

"We operate a 12-step automated coating process, but the process can be divided into four distinct sections," explains Adcock.

"The first is pre-treatment, during which the parts to be coated are cleaned and phosphated to prepare the metal for the paint application. This is an essential process to achieve the corrosion performance requirements to ensure a high quality finish and to keep the paint bath clean," she says.

The part then enters the electrocoat bath, where the coating is applied. "The bath consists of de-ionised water with dissolved (ionised) paint resins and pigments. The resin is the backbone of the final paint film and provides corrosion protection, durability and toughness. The electrocoating process is driven by a dc rectifier, which is used to regulate and control the build-up of the paint film on the components," Adcock says.

Post rinse processes follow. As the painted part exits the bath, paint particles cling to the surface and have to be rinsed off to maintain efficiency and aesthetics. The excess paint is filtered and returned to the tank. "This ensures very high efficiency paint usage, greater than 95%, which is far higher than any competing process," she suggests.

The component is then baked in an oven to

promote cross linking or curing of the polymer material. "At Electrocoat, we use the cathodic electrodeposition (CED) method, which is the most popular technology because of its superior adhesion and corrosion protection properties," says Electrocoat's MD, adding that paint films of these materials generally cure at temperatures of around 180°C.

Summarising the key advantages over spray or powder coating alternatives, she says that the automated electrocoating process offers productivity and operational cost savings due to high throughput; high material transfer efficiencies (>95%); low applied costs; precise film thickness control; reduced labour requirements; and dense line racking.

From a quality perspective, the process offers 100% coverage of complex parts with a uniform film thickness, giving benchmark corrosion protection to metal components. Edge coverage is superior to competing processing and the consistency from part to part is excellent. Electrocoating is also compatible with other coating technologies, enabling top coats to be applied to enhance aesthetics, for example.

Heavy metal-free coatings and ultralow volatile organic compounds (VOCs) are available, which gives the process environmental advantages, and the closed loop paint recovery system ensures minimal waste discharge.



From a quality perspective, the process offers 100% coverage of complex parts with a uniform film thickness, giving benchmark corrosion protection to metal components.

The process is also OSHA compliant.

Electrocoating will not protect inside tube surfaces however, as the potential difference will not exist inside the enclosed space between the paint solution and the inside surface. As a rule, the coating will penetrate from the outside into an opening by approximately double the tube diameter.

"Finishers choose electrocoating to

provide their products with a durable, lasting coating. And because an electrocoat can be used as a primer, top coat or both, in combination with other types of coatings, the versatility is endless. The demand for higher quality and durability is what is expected by our customers and, at Electrocoat, we offer a service that gives exactly that," concludes Adcock. □



In the first stages of the fully automated electrocoating process, the parts are cleaned and phosphated to prepare the metal for the paint application.

## RELIABLE ENERGY SOLUTIONS

for the entire mining sector.

Zest WEG Group is able to offer a range of standard off-the-shelf products as well as end-to-end energy solutions by leveraging best practice engineering and manufacturing capabilities.

All products are engineered to facilitate a safe and reliable mine and plant with operational stability and the highest possible production levels as an objective. Reduced maintenance and ease of serviceability assist in lowering the total cost of ownership for the mine.

10001:2015

10001:2015

9001:2015

Africa Distribution

**ZEST**  
WEG Group

Tel: 0861 009378      www.zestweg.com