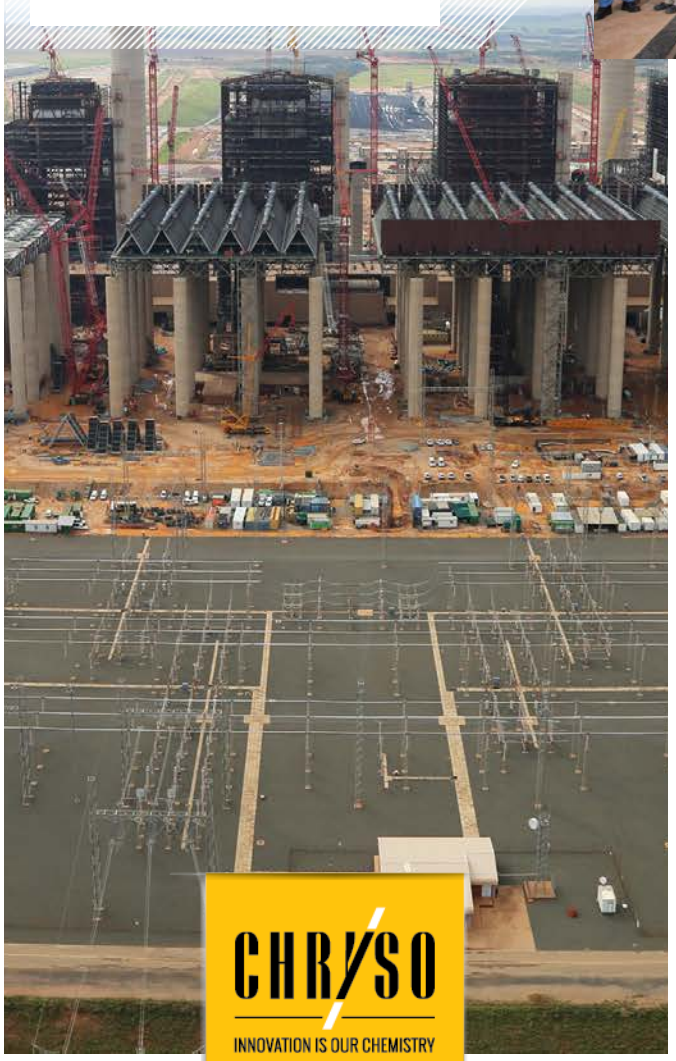
Kusile Power Station

COUNTRY: **MPUMALANGA, SA**
DATE: **DECEMBER 2016**



Main: Kusile Power Station aerial view from the North. **Above left:** Management team. **Above centre:** Kusile Power Station ICC columns. **Above right:** Kusile Power Station mill foundations.

PRODUCTS USED: Pulverised Fuel Ash
CHRYSO®Omega 136

DESCRIPTION

The Kusile Power Station forms part of Eskom's programme to address insufficient power supply due to aging infrastructure and plant breakdowns, as well as support the growth of the South African economy. It is one of two coal-fired power stations currently under construction and once fully operational, will increase the country's installed base load by almost 11%. A unique environmental aspect on the project is the inclusion of a flue gas desulphurisation (FGD) plant, which is in keeping with South Africa's commitment to lower carbon emissions. The Air-Cooled Condenser (ACC) technology will also reduce the plant's water consumption.

PROJECT SPECIFICATION

The power station is one of two coal-fired power stations and other Eskom energy generation initiatives that will address the need to increase the available power supply in South Africa. CHRYSO supplied CHRYSO®Omega 136 via the concrete suppliers and batch plant on site

PROJECT CHALLENGE

A power station has the considerable requirement for the structural support of large and heavy plant and equipment, as well as the need for fire and corrosion resistance. Concrete is an obvious choice to meet these requirements as it offers versatility, adaptability, cost benefits, as well as being a durable and low maintenance material. Many items of plant, such as the turbines, mills, and fans will be subject to enormous dynamic loads and uplift forces, and concrete is one of the few construction materials that can satisfy these design requirements.

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Main: Kusile Power Station stockyard light masts. **Above left:** Kusile Power Station boiler lift shafts openings. **Above centre:** Kusile Power Station geotechnicals. **Above right:** Kusile Power Station Turbine workforce.

CONCRETE SOLUTIONS

Eskom's specification for the structural concrete was for a 35 MPa mix with a minimum cementitious content of 420 kg/m^3. Pulverised Fuel Ash with CHRYSO®Omega 136 was included at a rate of 30% in order to counter the effects of heat of hydration and to improve workability. Depending on the ambient weather conditions, the shutters on the large concrete pours would not be removed until the temperature gradient was within acceptable limits. In general, all large concrete pours in excess of 350 m^3 were monitored using thermo-couplers.

PROJECT TEAM

- Client: **Eskom Holdings SOC Limited**
- Principal agent: **Black & Veatch International**
- Main contractor: **Kusile Civil Works joint venture**
- Suppliers: **3Q Concrete, Crocodile Ready mix**

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