# MINING AND INDUSTRIAL *Category*

The Mining and Industrial Category Winner of Steel Awards 2015: **Medupi Power Station – Air Cooled Condenser**

**WINNER: MINING AND INDUSTRIAL CATEGORY**

## Medupi Power Station – Air Cooled Condenser

By Spencer Erling, Education Director, SAISC

**Judges' Comment:**

The whole team involved in the successful completion of this project is to be complimented.

The logistics of designing, detailing, procuring, fabricating, galvanizing, assembling, quality control and delivery of 26 000 tons must have been a great challenge. The completion on time is a great achievement.

In a year when Steel Awards attracted over 80 entries, a sure sign of the times comes from the lowest number of entries in this category for years. It should come as no surprise with commodity prices being as low as they are, that spending in the industry has virtually dried up.

Remember those heady days of World Cup Soccer stadiums, Gauteng Freeway upgrades and two new power stations to be built? All the bigger fabricators were very busy, and along comes GEA Air Cooling Systems needing to purchase the steelwork for the Medupi air cooling structures, some 26 000 tons of steel. What to do?

In 2007, GEA approached A. Leita and Kentz to submit a bid. A. Leita teamed up with Cadcon and Boksan Projects and formed the ABC Joint Venture with A. Leita leading the fabrication team and Kentz to do the on-site work.

And what a great business decision that was for all the players! They are one of few power station contractors who can proudly boast to being on time and

having produced a virtually quality problem free product.

When one visits the site, because of the enormous boiler houses which stand close to the air cooling units, you tend to be surprised to know that each unit has over 4 000 tons of steelwork. It becomes necessary to drill down into what makes them tick to be able to grasp just how big a project the air cooling of the power station actually is.

There is an air cooling unit for each of the six boilers. The radiators are supported by a structural steel support structure. Floor beams covered with 4mm floor plates; an A-frame structure fabricated out of heavy H beams; and fan bridges span between the main girders.

Just try to picture the girders, 27 metre span, 7.2 metres deep with a mass of 30 tons each! The units each have a footprint covering 112 x 108 metres (to give you a feel for just how big that is, it is the best part of two adjacent soccer fields).

There are in addition secondary structures such as stair cases, cat-ladders, ESD supports, wind walls at ground level and control rooms. Detailing was done by the JV using Tekla software.

## PROJECT TEAM

**Client:**
Eskom

**Turbine contractor:**
Alstom

**Air Cooling Main Contractor, Structural Engineers, Quantity Surveyor and Project Managers:**
GEA Air Cooled Systems

**Main Contractor, Steel Erector and Cladding Erector:**
Kentz Engineers and Contractors

**Steelwork Fabricators:**
A. Leita Steel Construction, Boksan Projects, Cadcon

**Detailing Company:**
Mondo Cané

**Galvanizer:**
Robor Galvanizers
(now Monoweld Galvanizers)

The elements, the environment, future water cleaning requirements, inaccessibility and long life span requirements of the client (Eskom) led to the decision to hot dip galvanize the steelwork. The JV was assisted to achieve their delivery commitments by a record throughput by the then Robor Galvanizers (now known by their original name, Monoweld Galvanizers).

It is common knowledge that the Medupi site has been beset with labour difficulties. Despite all the troubled times on site, the GEA / Kentz / ABC JV team maintained a good relationship. Well done guys!

So even though this is a mega project, it is not something new for the South African structural steel industry, what is it that makes this project special and deserving of a category award?

The real message for our readers is:

- That medium sized steelwork contractors can, with good management and co-operation, successfully handle mega projects.
- That the proud South African tradition of fabricating structural steel for industrial projects, to a high quality, in vast quantities on time is quite achievable and is here to stay.
- Give us a chance and we will ramp up to deal with any size of project.
- That South Africa has the facilities, equipment, skills, labour and technology to fabricate and manage such projects.
- That the welding requirements to those massive girders and A-frames, all to AWS D 1.1 can be achieved by following the recommendations of AWS and by training the welders to meet such requirements.