



## **Hot Dip Galvanized Case Study No. 7 Kumba resources' – Leeupan Colliery**

### **The Application**

This case study reviews the hot dip galvanizing of the structural steel components for the extensions at Kumba's Leeupan Colliery. The extensions comprise a new coal crushing and washing plant leading to a stack down area, reclaim tunnel and conveyors to a railway loading station.

The new plant will enable Kumba to double the output from their Leeupan colliery.



**General view of the extensions at the Leeupan colliery**



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### Environmental Conditions

The environmental conditions are typical of those found in any coal crushing and washing plant. Conditions are generally described from mild atmospheric along conveyors to severe corrosive conditions in the wet areas. Corrosive conditions in a colliery are generally dependent on the sulphur content of the coal and the degree of wetness.

Where extremely corrosive conditions (Type C5 in terms of ISO 9223) are encountered, a duplex coating (hot dip galvanizing plus a top paint system) becomes an option. Such a system can and does significantly extend the ultimate service life of the structures. Plain hot dip galvanized steel was used to construct these extensions.

### The Site



The existing plant,  
operational for the  
past 12 years

The new  
extensions where  
hot dip galvanizing  
was used for  
corrosion control  
of the carbon steel  
components.

**Aerial View of the Leeupan colliery Site**

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**Part of the new plant under construction**

**First quarter of 2005**



**Coal recovery silo**

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**Associated coal  
conveyor system  
under construction**

### Findings

Discussions with the mine engineer revealed that the choice of hot dip galvanizing was due to the cost advantages (economics and value analysis), long-term service life, (design life of 20 years plus), low maintenance requirements and the fact that the product would retain its appearance without fading. Corrosion control assessment will only follow in the next 5 to 19 years.

### Conclusion

This case study again highlights a favourable value analysis of hot dip galvanizing for corrosion control of structural steel on capital projects. The project team appreciated the advantages and benefits that are available using hot dip galvanizing and duplex coatings for typical C5 environment as defined by ISO 9223:2012.

Previous case studies relating to collieries are contained studies 5 and 6, both of coal washing plants using a duplex coating system.