



Hot Dip Galvanized Case Study No. 5 Goedehoop Colliery

The Application

Goedehoop Colliery has been in existence since the early eighties. In about 1995 the mine embarked on several extensions, one being that of a coal washing facility and related conveyors. It was suggested to mine management personnel that because of previous paint coating failures that a duplex coating system be used to provide corrosion control of the carbon steel structures. The proposed coating system comprised hot dip galvanizing, sweep blast preparation of the zinc surface to accept the mechanically bonded top paint coating. The top paint coating that followed was a single coat high build epoxy applied in accordance with the Association's Code of Practice for surface preparation and application of organic coatings.



**General view of the
structure at
Goedehoop Colliery in
2005**



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Environmental Conditions

Coal washing facilities are extremely aggressive industrial environments, due to the combination coal dust containing high levels of sulphur (SO₂)

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Findings

Examination of the duplex coating system, the steelwork in the newer plant was found to be in exceptional condition, so much so that the organic coating had to be purposely removed in order to assess the adhesion of the organic coating and overall condition of the hot dip galvanizing substrate.

Coating thicknesses were recorded and are depicted in the following photographs.



Hot dip galvanized coating being measured (123µm) after the top paint coating had been removed



Measurement of the full duplex system (hot dip galvanized plus the top paint system being checked (337µm)

Conclusion

After 10 years of service the duplex system was found to be in exceptional condition and was a prime example of the effective use of the synergy of hot dip galvanizing in combination with a specified top paint coating.

This case study will only be concluded once a return visit is arranged to further review the coating performance after say an additional 10 to 15 years.