

Twistdraai Colliery

The application

A perception exists that suggests that one cannot apply hot dip galvanizing within a colliery. Hot dip galvanizing has over the years been extensively used for conveyors, both overland and even underground. In the most severe corrosive conditions such as a coal washing plant, hot dip galvanizing plus a suitable top paint system has been applied with excellent results.

Environmental conditions

Corrosive conditions within the Twistdraai coal washing plant would be classified as a C5 environment in terms of ISO 9223. In other words, one of the more extreme corrosive conditions listed in the ISO specification.

The photographs below can best illustrate the corrosive conditions encountered at the washing plant.

The site

This case study reviews the performance of a duplex system at Sasol's Secunda Twistdraai coal washing plant. Coal is delivered from the mine to the coal washing plant, where after processing it is dispatched to end users.

Our findings

During the site inspection, some 53 different overall coating thickness readings were taken with the following results:

Maximum 888µm, Mean coating thickness 388µm, Minimum 277µm.



This 378µm coating reading was typical of that found on the structural steel.

In general terms the structural steel together with the duplex system was found to be in excellent condition. It was reported that the coating system has been in operation for approximately 4 years. In addition an annual inspection is conducted aimed at monitoring the coating performance. A series of photographs were also taken and these have been used to illustrate our findings as well as any specific comments.

Conclusion

A Duplex system uses the strengths of both hot dip galvanizing and selected paint coatings to compile and enhance "synergistic new performance" coating, which is cost effective where "value analysis" and long-term maintenance costs are taken into consideration. The system is designed to provide extended service life in severe corrosive environments.

Surface preparation is a critical factor to the success of the coating's performance and as such, must not be overlooked in terms of the specification, as well as at the time of the application.

Hot dip galvanizing is simply the best form of primer for a good paint system!



Two examples of the extent and severity of the corrosion conditions on painted steel.



Further examples of the integrity of the duplex system.

