Refurbishment of D1 and D2 Distillation Columns

PPG HI-TEMP 1027™ chosen to provide high-temperature protection

Case study

Project
Refurbishment of distillation columns

Location
North Taranaki, New Zealand

The Contractors
NZ Corrosion Services Ltd.
TBS Coatings Ltd.

The Challenge
To protect the distillation columns, which had an existing inorganic zinc silicate that was 26 years old, which showed significant corrosion. As the column had to be insulated, the preferred option was the complete removal of the existing inorganic zinc silicate. At the time, there was no global case history with an inorganic zinc silicate that had nearly three decades of service.

The Solution
The PPG HI-TEMP 1027 single-component, high-temperature-resistant coating.

The Benefits
The coating prevents corrosion under insulation (CUI) and can be directly applied to hot substrates up to 316°C (600°F) thereby saving expensive downtime.

The Result
NZ Corrosion Services Ltd. completed extensive research and used a case study from one of its own petrochemical projects on which to base its recommendation for the methanol plant. NZ Corrosion Services Ltd. has operated in this industry for over 12 years and its expertise and experience provided the gateway to achieving the end goal. A key initiative by the company was to engage plant engineers from the US to talk with the site engineers from the methanol plant. It was this engagement process that gave the assurance that the PPG HI-TEMP 1027 coating had performed as well as any CUI single-component alternative.

The Customer
This plant facility is the only manufacturer of methanol in New Zealand. The company has three production facilities in Taranaki capable of producing up to 2.4 million tonnes of methanol per year.

The Challenge
The columns are 26 years old with the original inorganic zinc silicate still adhering on the majority of the steel substrate. In additon, there was a variation in the operating temperature of the steel substrate as the contractors progressed down the column.

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The Solution

The methodology was to remove the existing inorganic zinc silicate by abrasive blasting (non-metallic) and apply the PPG HI-TEMP 1027 coating while the distillation vessel was still in operation.

- PPG HI-TEMP 1027 at 125 µm
- PPG HI-TEMP 1027 at 125 µm

The coatings were applied insitu by TBS Coatings Ltd. under various weather conditions in the middle of winter between June and September 2016. Most of the application was hot applied with the applicators using the “multiple mist coat application method” to achieve the required DFT. This method used by TBS Coatings Ltd. reduces the possibility of blisters appearing when the PPG HI-TEMP 1027 coating is applied too heavily.

The Benefits

The PPG HI-TEMP 1027 product has been specifically developed to prevent CUI with superior protection for these extreme temperature conditions and provides proven, long-lasting protection.

The ease of application by spray with the PPG HI-TEMP 1027 single-component coating reduced costs with no downtime and no shut downs. The PPG personnel on site were there to assist both the plant operation staff and the applicators with a full spectrum of application and technical data for these distillation columns.

The Conclusion

The plant operation team was very pleased with the result of the application. Any future projects requiring CUI will be specified with the PPG HI-TEMP 1027 product. A total of 1,841 liters was applied to both columns.

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