HEMPEL
Trust is earned

Transforming refinery insulation:

Hempatherm IC system triumphs over CUI in a large Gulf Coast facility

In May 2021, a large refinery on the Gulf Coast needed to replace the traditional insulation for their Pentane spheres as part of an annual turnaround exercise. Due to a tight maintenance schedule and high Corrosion Under Insulation (CUI) problems, the client was in search of an alternative solution that would return assets back to service quickly, with less CUI risk, and improved insulation performance.

To meet these requirements, Hempel proposed the application of Hempatherm IC 175 and Hempatherm IC 170. These high-quality insulation coatings replace traditional insulation and promote sustained thermal performance over the service life of the asset.

At the end of the project, the refinery achieved optimal thermal performance on the Pentane spheres while significantly reducing application time, and the risks of CUI. The Pentane spheres now boast enhanced longevity and reduced maintenance needs, which further results in lower operational costs for the customer.

hempel.com

HEMPEL
Trust is earned

Enhancing thermal performance and preventing long-term CUI risks

Project details	
Customer name	Gulf Coast refinery
Project	Insulation coatings on Pentane spheres
Year	2021
Asset reference	Pentane spheres
Project size	1,160 m^2 (12,500 ft^2)
CUI system	Hempatherm IC 175 Hempatherm IC 170

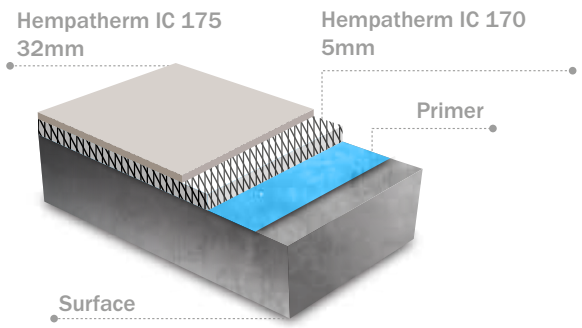
The challenge

Harsh environments like refineries pose constant threats to equipment integrity. Corrosion Under Insulation (CUI), triggered by water ingress, wreaks havoc on insulation, leading to safety hazards, energy loss, and costly maintenance. In the case of our client[1], their Pentane spheres faced persistent water ingress, causing traditional insulation to fail, which could jeopardise safety, efficiency, and profitability. The refinery urgently needed a long-term solution to mitigate CUI and ensure reliable and efficient operations.

The solution

Hempatherm IC 175 and Hempatherm IC 170 were recommended as the ideal solution to the refinery's CUI challenges. When used as a system, these high-performance coatings boast exceptional hydrophobicity and film build, creating an impenetrable barrier against water, safeguarding insulation and preventing CUI over the service life of an asset – estimated at 20 to 25 years. Tailored to the refinery's specific needs through thermal modelling, the system combined 32mm of Hempatherm IC 175 (made with aerogel technology), with 5mm of Hempatherm IC 170, to deliver optimal thermal insulation. The system performed better compared to conventional methods, slashing application time by over 40% (7 weeks vs. 12 weeks), while minimising downtime and costs.

CUI recommendation



Application: Spray applied using low-pressure high-volume spray equipment.

The result

The application transformed the refinery. Water ingress was eliminated from the Pentane spheres, addressing the root cause of CUI. Sustained thermal performance ensured optimal energy efficiency, cutting operational costs. The faster application saved time and resources, enabling swift resumption of operations. Additionally, the reduced CUI risk improved worker safety. Two years after its application, Hempel's Hempatherm insulation technology maintains colder operating conditions and shows no performance degradation, delivering exceptional value to the refinery.

Hempel A/S
Lundtoftegaardsvej 91, 2800 Kgs. Lyngby, Denmark
Tel: +45 4593 3800 Email: hempel@hempel.com
hempel.com

Note 1: Customer wishes to remain anonymous