



Linde

Deployment Snapshot:

IN2ERT™ vs Alternative Cleaning Methods for Heat Exchangers Used in Extraction and Upgrading of Heavy Crude Oil

Challenge

- High H₂S and LEIs content
- Heavy fouling of tube bundles due to asphaltene and coke buildup, reducing heat transfer efficiency
- High pressure drop, restricting flow paths
- Frequent bundle pulls (every 12 – 18 months), increasing maintenance cost and reducing throughput

Project

Clean one pair of heat exchangers using the IN2ERT service and compare to alternative methods from prior turnarounds

Execution

IN2ERT cycled through chemical injections, soak time and N₂ purge

Results

Improved performance with IN2ERT:

- 90% faster cleaning time
- 30% cost savings compared with alternative methods
- Improved safety for on-site operations; lower potential for personnel exposure through LEI spikes after decontamination
- Less waste with over 95% reduction in chemical use compared with exchanger flooding and recirculation methods, leading to over 30% disposal cost savings and enhanced operator safety (reduced potential for chemical exposure)

In the Customer's words

"The IN2ERT™ technology worked great on E-100. We pulled the other bundles right after this for comparison and they were completely covered in thick, sticky emulsion. This created a bad working environment for the crew and a lot of time was spent cleaning those bundles."

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