



TREATMENT OF NAPHTHA HYDROTREATER & HYDROGENATION REACTOR WITH CATZYME™ LTC

PROJECT

A large European refiner partnered with ZymeFlow® for a scheduled turnaround that included multiple hydroprocessing and hydrogenation units. The project was unique because it combined two different process areas: straight run naphtha hydrotreating with chloride absorber and a Hydrogenation Reactor in the olefins area of the plant. There was also a tight shutdown schedule and sensitive downstream catalyst systems that had to be considered when developing a decontamination solution. ZymeFlow's CatZyme™ LTC for pre-unloading reactor treatment on the two systems.

CHALLENGES

During the previous turnarounds, the Chloride Absorber from the Naphtha Hydrotreater Unit required long purging times to reach zero LELs and water flooding, extending maintenance by several shifts.

The Hydrogenation Reactor was highly compacted in the catalyst and adsorbent beds requiring manual breaking and confined-space entry. In addition, both units were on the critical path of the turnaround, requiring strict downtime minimization.



The positive point was that the entire catalyst was discharged by gravity, making the tasks easier for the catalyst discharge company and saving working time."

~ Quote from Area Manager

ENGINEERED SOLUTION

Based on the units and process conditions, the ZymeFlow Engineering and Reactor teams worked closely with operations personnel to optimize procedures and address the issues and understand their needs and expectations. The ZymeFlow team applied CatZyme® LTC, a formulation designed for reactor treatment, and injected during the hot hydrogen sweep. The engineered approach accelerated hydrocarbon removal under hot hydrogen conditions and eliminated the need for water flooding and minimized exposure risks during opening and unloading.

AT A GLANCE

- CatZyme® proved effective across multiple reactor types, providing consistent safety and operational benefits
- Early integration of CatZyme™ into turnaround planning maximizes time and safety gains
- The process significantly enhances unloading efficiency and worker safety

RESULTS

The Chloride Absorber from Naphtha Hydrotreater Unit achieved 0% LEL upon opening — the first time the client avoided water flooding. This saved several shifts, eliminated wastewater handling, and allowed immediate safe entry. The Hydrogenation Reactor achieved 100% gravity catalyst discharge, with no manual cleaning or CO₂ micro-explosives needed. This significantly improved safety and reduced unloading time by at least two full shifts.

Both treatments delivered safer, faster, and cleaner reactor access with no negative effect on catalyst or adsorbent performance post-startup. The customer highlighted improved safety, predictability, and efficiency during the turnaround.