

Project : Modifications to the catalytic cracking reactor
Montreal-East, (Quebec), Canada

Client : Shell Canada

Project description :

Shell must replace the internal components of its catalytic cracking reactor at their MER refinery (H=45m; Ø=6 m). However, the conventional method of cutting an opening through the side of the vessel for access and dismantling also requires the removal of some of the refractory, a lengthy task.

As a creative alternative, Ultragen proposed to access the components from the bottom of the reactor via adequately sized openings cut through its support skirt. The technical challenge resides in maintaining the vessel's mechanical integrity while under load and with a 5m X 3m structural cut out.

Ultragen's team used a finite element approach in its modelling and analysis of the vessel modifications. This technique was also used in the design of a reinforcement structure satisfying the ASME code while providing a safe work environment.

The technical team produced dismantling and reassembly procedures detailing the sequence, timing and resource allocation. This documentation will enable a smooth transition while meeting the constraints of a tight shut-down schedule.

Refining

Year of realization : 2008 - 2009
Project value : 5 M\$

Services offered by Ultragen :

- Identification of novel alternative approaches
- 3D modelling of the catalytic cracking reactor and regenerator
- Finite element analysis
- Design of structural reinforcements
- Project management
- On-site technical assistance

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