

# Fluid Catalytic Cracking – Revamp Solutions

TechnipFMC is a world leader in the application of Fluid Catalytic Cracking (FCC) technology to refinery operations, including revamping older units to improve their performance.

Existing FCC assets can increase profitability and reliability by upgrading to newer technology. Through our longstanding alliance with Axens, IFPEN and Total, our FCC technology and revamping services have significantly improved performance in mature units. Our alliance has licensed over 60 grassroots units and executed more than 250 revamps.

## FCC Revamp Project Services

- ▶ Planning studies with yield and cost estimates
- ▶ Process CFD and kinetic modelling
- ▶ Finite element analysis (FEA)
- ▶ Troubleshooting
- ▶ Catalyst circulation and fluidization improvement
- ▶ Erosion mitigation
- ▶ Reliability analysis
- ▶ Basic engineering and license
- ▶ Detailed mechanical design
- ▶ Proprietary equipment supply
- ▶ Inspection services
- ▶ Operator training
- ▶ Commissioning and start-up assistance



Installation of this riser termination device in the reactor reduced coke and dry gas and improved product yield selectivity.



TechnipFMC provides FCC revamp project services ranging from conceptual studies to commissioning and start-up.

## Reactor Technology

Increased capacity, conversion and/or selectivity as well as enhanced reliability can be achieved through application of the following equipment:

- ▶ Feed injection nozzles
- ▶ RS<sup>2</sup> riser termination device
- ▶ Post-riser quench
- ▶ Koch-Glitsch KFBE™ catalyst stripper packing
- ▶ Mix-zone temperature control

## Regenerator Technology

TechnipFMC offers the following solutions for improving catalyst maintenance and performance, increasing the effectiveness of emission control additives and prolonging on-stream reliability of regenerator equipment:

- ▶ Air ring distributors
- ▶ Spent catalyst distributors
- ▶ Catalyst coolers
- ▶ Pall porous media flue gas filter systems
- ▶ Two stage regeneration for resid feed
- ▶ Koch-Glitsch KFBE™ structured packing in regenerator withdrawal well

## Proven Results

- ▶ The FCC technology features, originally developed for grassroots units, can be installed to modernize or revamp mature units.
- ▶ The profitability of modern grassroots units can be achieved in existing units for a fraction of the installed cost.
- ▶ Safety, operability and mechanical reliability can be greatly improved in existing units.
- ▶ These FCC technology solutions have successfully been demonstrated globally and are backed by broad experience of TechnipFMC and its FCC alliance partners.



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