CCR (Continuous Catalyst Regeneration) Reactor

Product Coding
P31XXXXXXX

Introduction

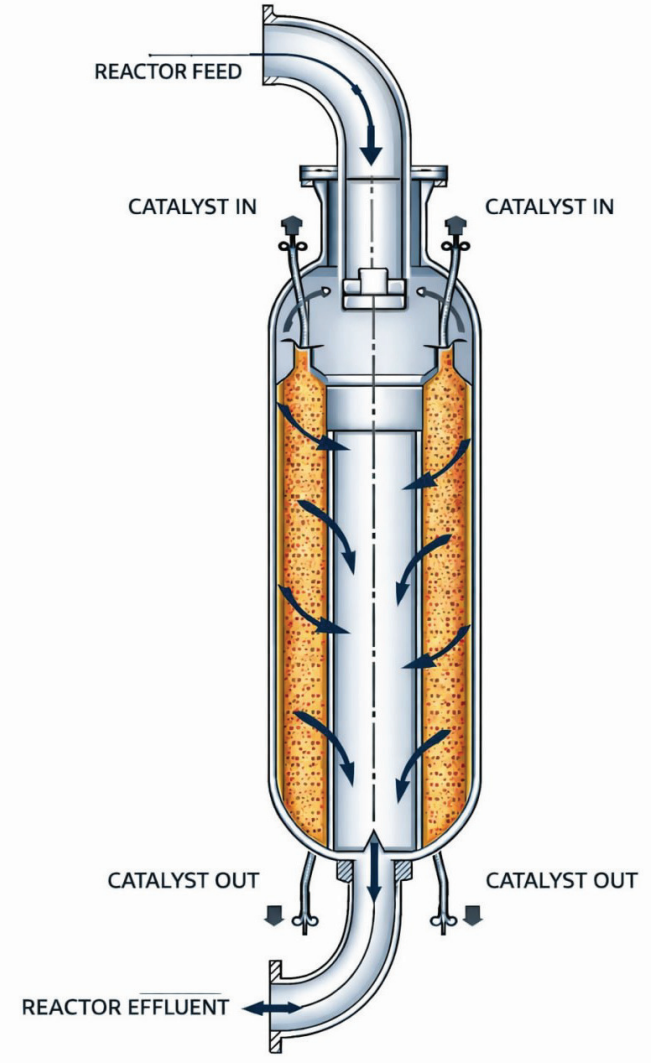
CCR is an advanced reactor and regeneration technology used primarily in catalytic reforming and aromatics production units, where stable catalyst activity and long on-stream operation are critical. Unlike conventional fixed bed systems that require periodic shutdowns for catalyst replacement or regeneration, CCR technology enables continuous withdrawal, regeneration, and reintroduction of catalyst during normal plant operation.

By maintaining near constant catalyst activity, CCR systems provide consistent product quality, higher unit severity, improved yields, and extended campaign lengths. The technology is especially suited for modern, large capacity refineries and petrochemical complexes seeking operational flexibility, high reliability, and minimized downtime.

CCR units operate under high temperature and pressure, handling hydrogen rich hydrocarbon streams while ensuring precise catalyst circulation and controlled regeneration. The success of CCR technology relies heavily on robust mechanical design, reliable internals, and precise catalyst handling equipment, all engineered to function continuously under severe operating conditions.

CCR Process in Action

In a CCR unit, the reforming reaction occurs in a series of radial flow, moving bed reactors arranged vertically. Process feed flow downward through the catalyst beds, while the catalyst itself moves slowly by gravity from the top reactor to the bottom.



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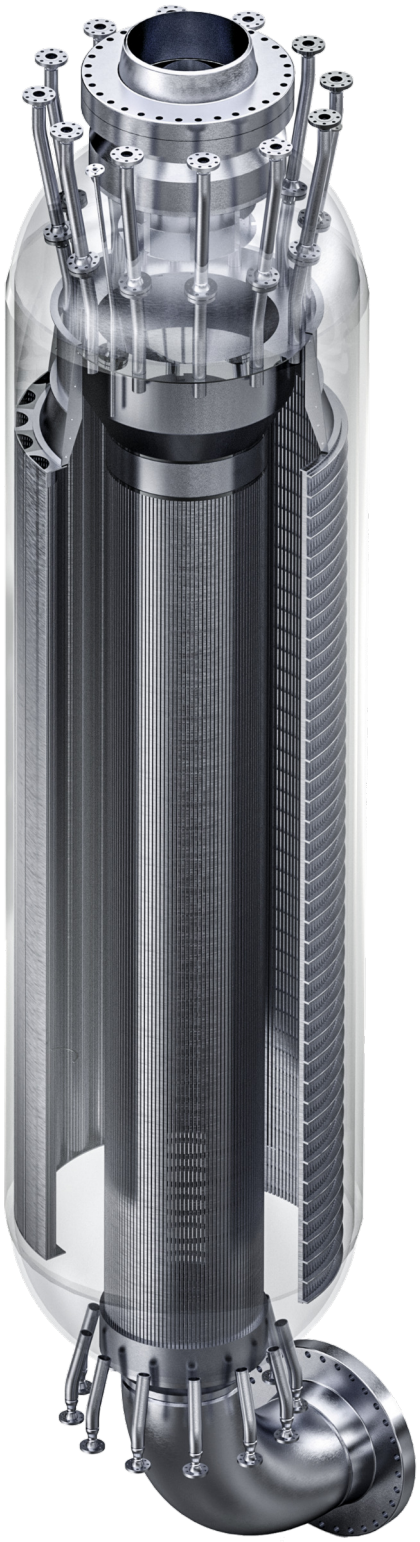
As the catalyst becomes gradually deactivated by coke formation, a small, continuous stream of spent catalyst is withdrawn from the reactor system and transferred to a dedicated regeneration section. In the regenerator, coke is removed through controlled oxidation, and the catalyst is reconditioned to restore its activity and selectivity.

Following regeneration, the catalyst is cooled, treated as required, and then reintroduced to the top of the reactor train, completing the continuous circulation loop. This steady catalyst movement allows the reactor system to operate at higher severity and efficiency than conventional semi regenerative units, while maintaining stable pressure drop and predictable performance.

The CCR process offers superior control over:

- Catalyst activity
- Hydrogen yield
- Aromatics selectivity
- Product quality consistency

As a result, CCR technology has become the preferred solution for high performance reforming and aromatics units worldwide.



CCR Typical Equipments

- Reactor body
- Feed diffuser
- Top grid
- Center pipe
- Outer basket (SCS basket or scallop)
- Conical cover plates
- Catalyst transfer pipes
- Sealing rings

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