

Commercially proven process for flexible resid upgrading

Energy lives here™

FLEXICOKING™ technology is a commercially proven, cost-effective, continuous fluidized bed process that thermally converts heavy feeds to lighter products and flexigas. FLEXICOKING technology, as an integrated process, offers great flexibility when upgrading residuum, as it provides high-value liquid products as well as clean flexigas that can be used as refinery fuel or for power generation.

Key benefits

Cost-effective investment

- Simple integrated steam/air gasification and carbon steel construction
- Reduced plot space requirement

Environmental benefits

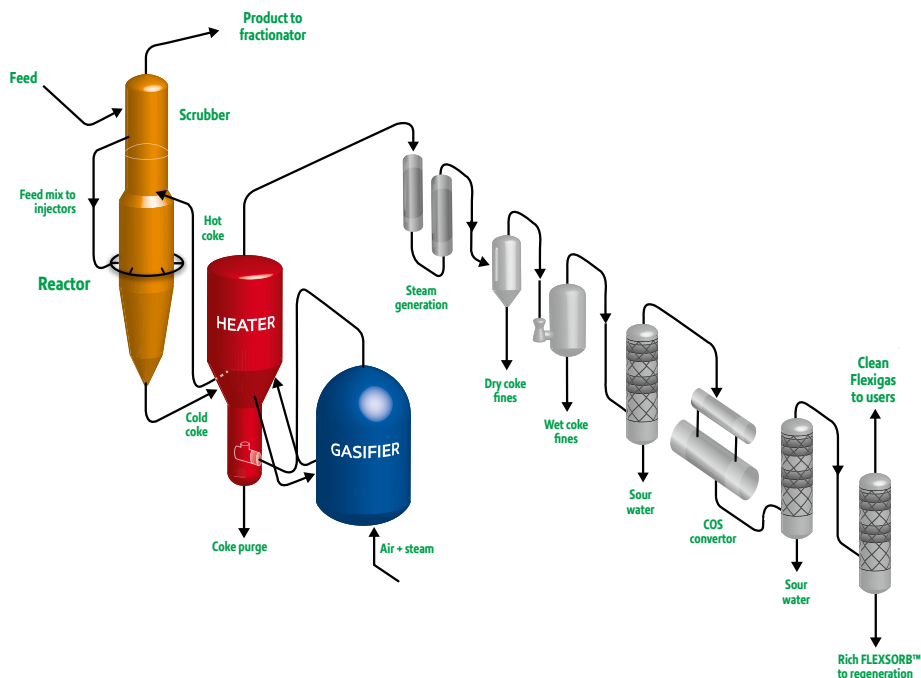
- Continuous non-batch operation and closed coke handling system, resulting in low particulate and fugitive hydrocarbon emissions
- Converts coke to clean, economical Flexigas which lowers SOx and NOx emissions

Flexible & multi-purpose

- Handles wide variety of feeds:
 - Deep cut vacuum resid
 - Atmospheric resid
 - Oil sands bitumen
 - Heavy whole crudes
 - Deasphalting unit bottoms
 - Fluid catalytic cracking bottoms
 - Ebullated-bed bottoms

How FLEXICOKING technology works

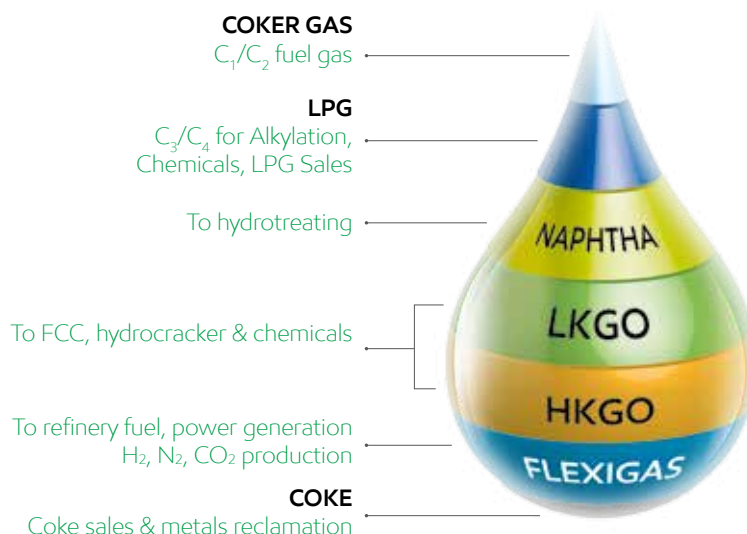
The vacuum resid feed enters the scrubber for “direct-contact heat exchange” with the reactor overhead product vapors. The higher-boiling point hydrocarbons (~975°F+/525°C+) present in the reactor product vapors condense in the scrubber and return to the reactor, in mixture with the fresh feed. Lighter overhead product vapors in the scrubber go to conventional fractionation and light-ends recovery. The feed is thermally cracked in the reactor fluidized bed to a full range of gas and liquid products, and coke. Coke inventory is maintained by circulating the bed coke from the reactor to the heater via the cold coke transfer line.



In the heater, the coke is heated by the gasifier products and circulated back to the reactor via the hot coke transfer line to supply the heat that sustains the thermal cracking reaction. The excess coke in the heater is transferred to the gasifier, where it reacts with air and steam to produce flexigas. The gasifier products, consisting of flexigas and coke mixture, return to the heater to heat up the coke. The flexigas exits the heater overhead and goes to steam generation, to dry/wet particulate removal, and to desulfurization in the integrated FLEXSORB™ process. The clean flexigas is then ready for use as fuel in refinery boilers and furnaces and/or for steam and power generation. Approximately 95 percent of the coke generated in the reactor is converted in the process. Only a small amount of product (1% weight on Fresh Feed) is collected as fines from the flexigas and purged from the heater to extract feed metals.

Full range products slate

FLEXICOKING™ technology produces a full range of products, from a C₁+ reactor gas to C₅/975°F (525°C) liquid products, the multi-purpose flexigas and a small stream of low-sulfur coke that is purged to extract feed metals.



FLEXICOKING™ services include:

- Initial non-confidential consultations
- Development of licensing proposal
- Basic engineering package, including basic design specification and operating guide
- Engineering support during FEED and EPC stages
- Technology transfer, training and start-up support

About Technology Licensing & Catalysts

ExxonMobil licenses both downstream and chemical technologies and offers proprietary catalysts for fuels, lubricants, plastics and other chemicals. The company's extensive experience can help to provide technology solutions that contribute to cost reduction, environmental compliance, reliability, plant automation, and other areas.

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