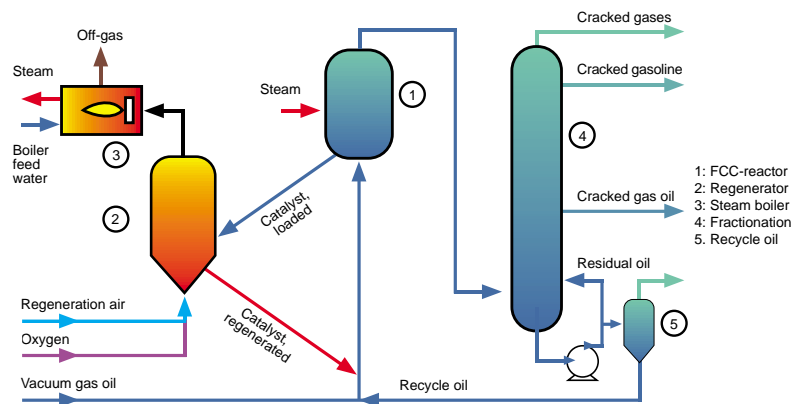


Improving the Performance of FCC Plants by Oxygen Enrichment

Basic schematic of an FCC plant
(FCC = fluid catalytic cracker)

FCC plants are used to convert vacuum gas oil, often mixed with residues from atmospheric distillation, vacuum distillation and visbreaking, into lighter hydrocarbon fractions. The products are a gas fraction (primarily C_3/C_4), a liquid fraction (primarily gasoline) and coke as a solid. The coke on the catalyst is burnt off during regeneration.

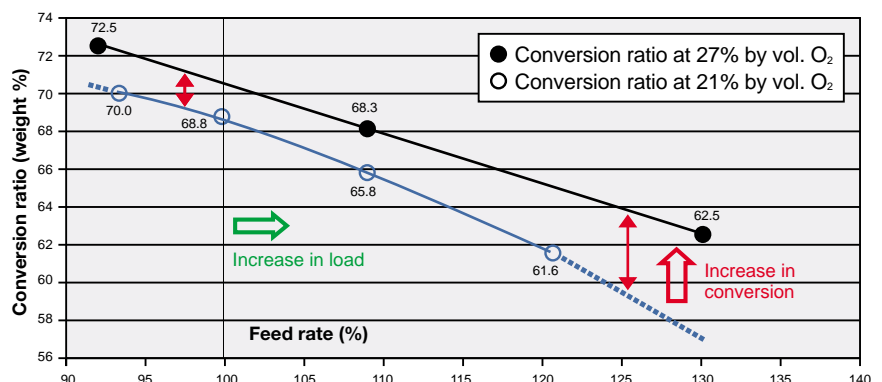


Advantages

Oxygen enrichment during regeneration results in higher plant efficiency because it is then possible

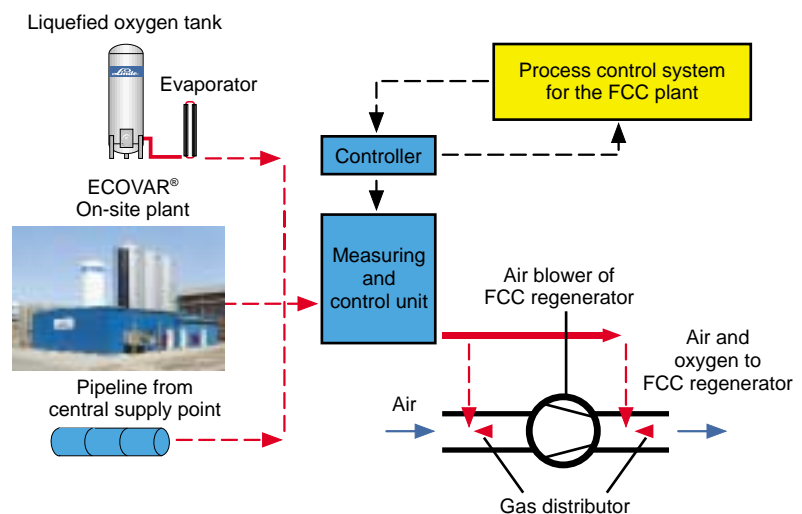
- to increase the capacity of the plant
- to be more flexible in the selection of feedstock, especially to enable use of heavier feedstock with a greater tendency to form coke
- to raise the conversion ratio and the gasoline yield
- to reduce the by-products
- to reduce CO in the regenerator off-gases
- to achieve less abrasion of the catalyst and less erosion of the cyclones for catalyst separation through smaller gas streams

Test results from an experimental plant



Application

The oxygen content in the regeneration air is usually raised to a maximum of 28% by volume.



Schematic of oxygen enrichment in an FCC plant

Oxygen supply possibilities

Depending on the oxygen requirement and infrastructure of the refinery, the oxygen can be supplied

- by a liquid supply system
- by an on-site plant
- through a pipeline

Liquefied tank supply is used when the oxygen requirement varies strongly. An on-site plant is economical when oxygen is required continuously at throughputs of 300 Nm³/h and more. It delivers oxygen in a purity of 90% to 94% by vol.

Service offer



Linde Technische Gase GmbH
Seitnerstraße 70
82049 Höllriegelskreuth
Tel.: +49 (0) 89 74 46-0
Fax: +49 (0) 89 74 46-1230
<http://www.linde.de/linde-gas>

- Integration of the specially designed oxygen distributor in the pipeline
- Integration of the oxygen supply system in the process control and safety system of the FCC plant by way of a measuring and control unit
- Execution of tests with the customer's oils and residues in a test FCC plant
- Analysis of the composition of the products
- Performance of profitability calculations
- Investigation and supply of the optimum means of oxygen supply
- Installation of the equipment for oxygen supply and start-up
- Supply of oxygen

Further publications on our complete range of products are available in all our sales offices. Please consult our specialists for advice.