Introduction

The growth rate in LPG demand is expected to rise further with the introduction of LPG as automobile fuel. At the same time, naphtha is going to be in surplus in near future, due to increasing use of natural gas and also the significant increase in refining capacity. In view of this, IndianOil R&D Centre has developed a new process called ‘INDALIN Plus’ for conversion of naphtha/ light gas oil streams of any origin including straight run naphtha and natural gas condensate to high yield of saturated LPG and high octane gasoline containing higher quantity of aromatics such as toluene, xylene with simultaneous reduction in olefins and sulfur in liquid product.

Process description

INDALIN Plus employs circulating fluidized bed reactor and regenerator hardware and proprietary catalyst formulation without requiring any external source of hydrogen and feed pre-treatment. It produces saturated LPG with potential to qualify as Auto-grade LPG. The operating conditions, hardware and catalysts are selected to make the process highly selective towards production of saturated LPG and high-octane gasoline.

Olefins are not generated; rather the olefins in feed are converted resulting in very low olefins content in gasoline product. Also, the LPG is much less olefinic qualifying the specifications of Auto-grade LPG. Another important feature of INDALIN PLUS is the very high degree of desulfurization in the range of 80-95% depending on the feed. This reduces the sulfur content in gasoline product significantly.

Gasoline octane is also very high due to presence of higher amount of BTX. All these features of INDALIN Plus enable direct blending of gasoline product into the refinery MS pool.

Simultaneous reduction in olefins, sulfur and increase in octane for the gasoline fraction are the remarkable feature of the process. The process can also be integrated with BTX plant for production of aromatics and further increase in LPG yield.
## Salient Features

- High LPG yield (up to 60 wt% of fresh feed) meeting the specifications of Auto-grade LPG.
- Up to 42 wt% of feed premium quality Gasoline with RON high as 95 and olefins content less than 2 wt%.
- Gasoline is rich in BTX (more than 50 wt%) – higher margin through recovery of BTX and recycle of non-aromatic part of gasoline.
- High degree of desulfurization in the range of 80-95% depending on the feed – this reduces the sulfur content in gasoline product significantly.
- Hardware configuration similar to conventional FCC unit - no major scale-up issue.
- Capability to handle feed stocks up to 95% TBP point of 400°C from different sources.
- Operability at wide range of severities to maximize either LPG or Gasoline depending on refiner’s objective.

## Advantages

- Feed flexibility – can process feed of any origin in naphtha/ kerosene/ light gas oil/ natural gas condensate.
- Flexibility to change the ratio of LPG/gasoline as per the demand.
- No requirement of feed pre-treatment and external hydrogen supply.
- Excellent integration with aromatics complex for production of petrochemical feedstock.

## Backup Strengths

- Proven experience in design, revamp, troubleshooting, optimization, etc. of process units employing circulating fluidized bed systems.
- Pilot plant data bank and evaluation facilities.
- Facilities for characterization of feed, product and catalyst.
- Excellent technical support and troubleshooting expertise.
- Wide operating experience of FCC/RFCC/INDMAX units.

## Contact details

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