

UOP

PREMIUM GASOLINE COMPLEX

UOP's integrated solution to produce maximum premium gasoline using only naphtha feedstock

With increasing demand of premium gasoline and tightening gasoline specifications, the industry is looking for economical solutions to produce environmentally clean premium gasoline with the most efficient use of naphtha feedstock. This has increased the demand for high performance C₅/C₆, and C₇ naphtha isomerization technologies capable of producing blending components free of aromatics, benzene, sulfur, and olefins, while maintaining or increasing the gasoline pool octane. UOP Premium Gasoline Complex can produce 100% 95 RONC Euro 5 gasoline without the addition of traditional octane boosters such as alkylate, MTBE, ETBE, or ethanol.

A naphtha complex, including a Naphtha Hydrotreating Unit (NHT), Penex™ Unit, and CCR Platforming™ Unit has served as the core technology for upgrading full range naphtha feeds in the past few decades. Enabled by recent innovation in molecular management, process design, and catalyst, the UOP Premium Gasoline Complex produces 100% 95 RONC Euro 5 gasoline without export of naphtha or addition of oxygenates such as MTBE / ETBE.

PROCESS DESCRIPTION

The UOP Premium Gasoline Complex consists of four main process units to produce premium gasoline. Full range naphtha is hydrotreated in the NHT unit. A naphtha splitter separates the hydrotreated naphtha into three main streams: an overhead stream consisting of C₅/C₆ components is sent to the Penex Unit; a sidecut stream of mainly C₇s is sent to the IsomEx™ Unit; and a bottom stream rich in C₈+ components is processed in the CCR Platforming Unit.

- **NHT Unit** removes contaminants in the full range naphtha and separates the components to be processed in the downstream units
- **Penex Unit** isomerizes the C₅ and C₆ components to increase the octane, while maintaining high yield
- **IsomEx Unit** isomerizes the C₇ components, maximizing the C₇ contribution to the gasoline pool, while maintaining high yield and limiting aromatics
- **CCR Platforming Unit** increases the octane of C₈+ components and produces valuable hydrogen for the refinery



Figure 1 - Maximize premium Euro 5 gasoline production without octane boosters .

FEATURES AND BENEFITS

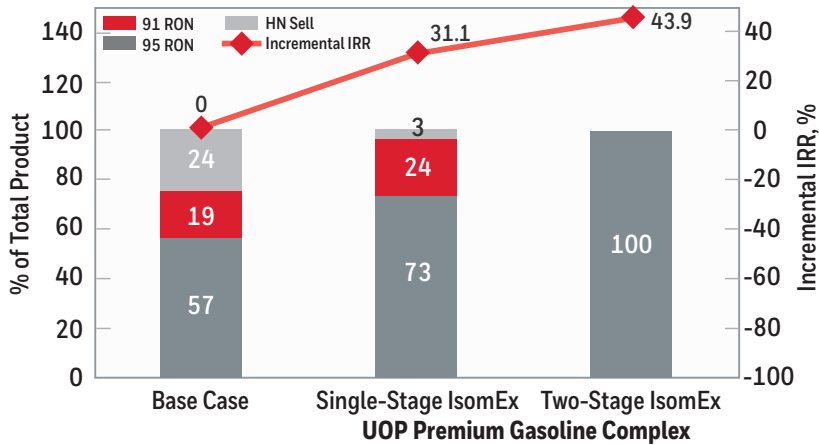
The UOP Premium Gasoline Complex is specifically designed for efficient management of molecules in a naphtha stream to increase gasoline product yield and produce maximum premium gasoline. The key benefits of the complex include the ability to:

- Produce 100% 95 RONC Euro 5 gasoline
- Eliminate use of octane boosters
- Maximize feedstock utilization by eliminating naphtha export and maximizing gasoline production
- Maintain flexible feed stock processing capabilities
- Delivers high return on investment enabled by molecular management
- Variety of configurations for optimal economical solutions are available

PROCESS FLOWSCHEMES

Several factors are considered when selecting the process units and flowscheme within a naphtha complex. Two of the most important factors are the desired product specifications (such as octane) and the economics of the complex. Figure 2 shows the results of a study in which full range naphtha was processed to produce 75% 95 RONC and 25% 91 RONC Euro 5 gasoline with the goal of maximizing 95 RONC Euro 5 gasoline production without the use of MTBE / ETBE, ethanol, alkylate, or any other octane booster. The UOP Premium Gasoline Complex not only produces more gasoline, it produces more 95 RONC Euro 5 gasoline, significantly improving the economics of the complex.

FIGURE 2 – UOP Premium Gasoline Complex Increases NPV Case Study



FEED STOCKS

Conventional feed is full range straight run naphtha from a crude unit. Depending on the refinery configuration, upstream conversion unit, and the gasoline pool requirements, other naphtha such as hydrocracked naphtha can be processed within the UOP Premium Gasoline Complex to ensure maximum production of premium gasoline.

UOP EXPERIENCE

UOP is the leading global provider of each technology within the UOP Premium Gasoline Complex. To date, more than 355 light naphtha isomerization units are in operation or design/construction with fresh feed capacity ranging from 500 BPSD to more than 65,000 BPSD. There are more than 375 CCR Platforming units in operation or design / construction with fresh feed capacity ranging from 7,000 BPSD to more than 114,000 BPSD.

For more information

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