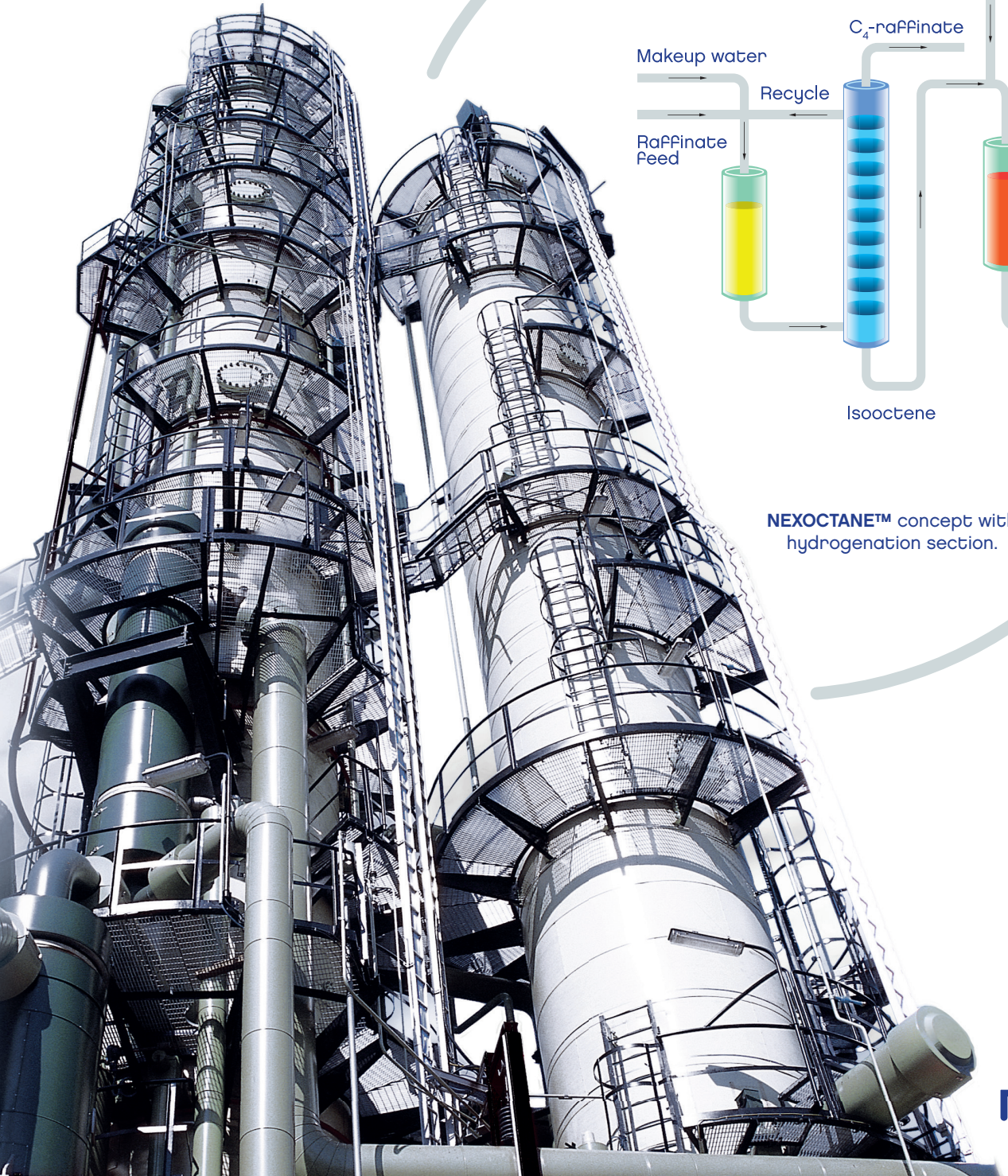
NEXOCTANE™

Isobutylene to Premium Fuel and Chemical Component



NEXOCTANE™ concept with hydrogenation section.

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NEXOCTANE™

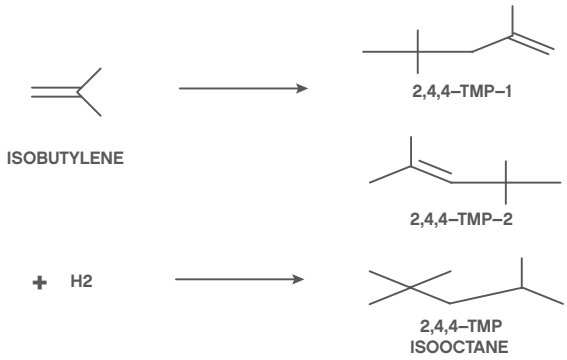
Process Technology of Choice for Chemical and Clean Fuel Component

All gasoline fuel and chemicals producers face today the challenge of achieving current and future specifications with high availability at low cost. Environmental concerns and market requirements steer the customers towards safer, high quality, non-aromatic and clean-burning hydrocarbons with premium octane values. Produced by proven process, isooctene and isooctane will be the optimum hydrocarbon components for refiners and chemical providers.

Process Solution

The **NEXOCTANE™** process consists of two independent sections. Isooctene is produced by dimerization of isobutylene in the dimerization section, and subsequently, the isooctene can be hydrogenated to produce isooctane in the hydrogenation section. Dimerization and hydrogenation are independently operating sections.

The isobutylene dimerization takes place in the liquid phase in adiabatic reactors over fixed beds of acidic ion-exchange resin catalyst. The product quality, specifically the distribution of dimers and oligomers, is controlled by recirculating alcohol from product recovery section to the reactors. Alcohol is formed in the dimerization reactors through the reaction of a small amount of water with olefin present in the feed. The alcohol content in the reactor feed is typically kept at a sufficient level so that the isooctene product contains less than 10 percent oligomers. The dimerization product recovery step separates the isooctene product from the unreacted fraction of the feed and also produces a concentrated alcohol stream for recycle to the dimerization section. The C4-raffinate is free of oxygenates and suitable for further processing in an alkylation unit or a dehydrogenation plant.



Isooctene produced in the dimerization section is further processed in a hydrogenation unit to produce the saturated isooctane product. The hydrogenation section consists of trickle-bed reactor(s) and a product stabilizer.

Benefits

Economical Benefits

- For refinery applications **NEXOCTANE™** dimerization section alone is an attractive minimum cost alternative delivering excellent blending properties of isooctene.
- In revamp applications for MTBE facilities product recovery can be handled with existing MTBE distillation equipment.
- Excellent availability and long catalyst age.

Product Benefits

- Low RVP – leads to maximization of lighter, lower value streams.
- Greater blending flexibility – owners maximize profits by increasing production of higher grade gasoline.
- Non-aromatic product – to meet tightening environmental specifications.
- Essentially no sulfur in saturated isooctane product.

Flexibility of Design

- The **NEXOCTANE™** process is suitable for a wide variety of C4 feedstocks derived from refinery FCC, olefin plant raffinate and isobutane dehydrogenation.
- MTBE or ETBE as an alternative option for swing-mode production is easily built in.
- C4 trimerization to JET fuel component production in campaign mode can be arranged.
- Independent sections for dimerization and hydrogenation enable a choice of technology ensemble that yields either an olefinic or completely saturated product.

Easy Operability

- Environmentally friendly and non-corrosive dimerization catalyst system using proprietary ion exchange resin.
- Ease of loading and unloading of catalyst.

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