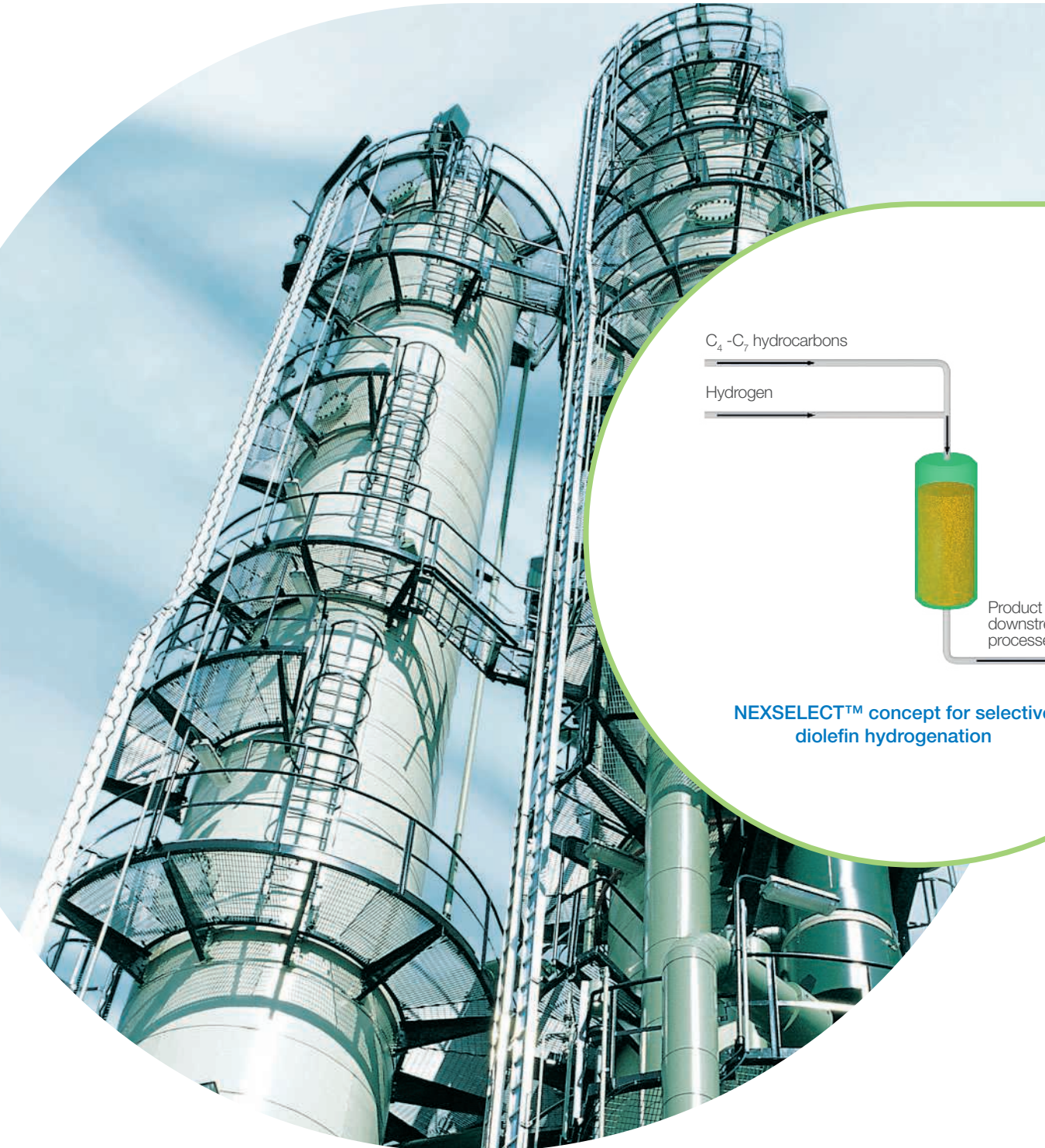


NEXSELECT™

Cost-Effective Selective Diolefin Hydrogenation



C₄-C₇ hydrocarbons

Hydrogen



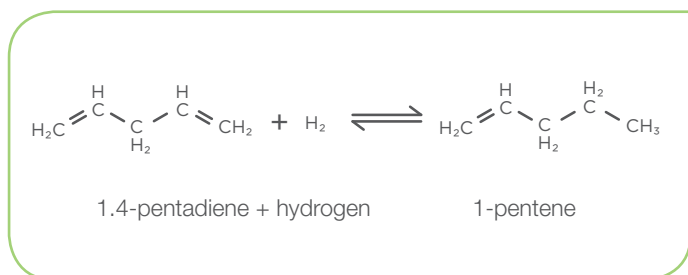
Product to
downstream
processes

NEXSELECT™ concept for selective
diolefin hydrogenation

NEXSELECT™

For Enhanced Downstream Process Catalyst Life and Product Quality

Light cracked naphtha originating from fluid catalytic cracking or steam cracking contains gum forming C5–C7 diolefins. Diolefins will polymerize in contact with ion exchange resin and dilute gasoline quality and cause equipment fouling in downstream processes. NEXSELECT™ process is the selective diolefin hydrogenation technology of choice for reducing these problems.



Process Solution

In the NEXSELECT™ process C5–C7 diolefins (dienes) are selectively hydrogenated to olefins in the presence of a precious metal catalyst. Reactor design is conventional fixed bed type. The reactions take place in liquid phase.

During hydrogenation the reactive and harmful diolefins are converted to olefinic hydrocarbons. However, in the reaction conditions employed in NEXSELECT™, practically no paraffin

formation from olefins hydrogenation takes place due to mild temperature, small amount of excess hydrogen and highly selective catalyst employed.

Simultaneous isomerization reactions further enhance the overall yield and value of the hydrogenated product e.g. in a downstream etherification unit. Basically there are two types of reactions. The isomerization of a non-reactive iso-olefin to reactive tertiary olefin is most beneficial for the ethers production. Reactions take place analogously for iso-olefins with higher hydrocarbon numbers. The yield of reactive tertiary iso-olefin is limited by equilibrium which is favored by mild reaction conditions.

Typical NEXSELECT™ is designed for 0.5–2 w-% diolefin concentration. Product diolefin concentration is below 500 ppm.

The process is easily integrated with the NEXTAME™ and NEXETHERS™ units without any need for additional degasification equipment.

Benefits

High Conversion of Diolefins

- Excellent conversion of NEXSELECT™ guarantees trouble-free operation without any gum formation in e.g. etherification reactors downstream and good ether product quality.
- Improves naphtha value as blending component.

Integration to NEXTAME™ and NEXETHERS™ Processes

- The process is easily integrated with the NEXTAME™ and NEXETHERS™ units without any need for additional degasification equipment.

Low Investment Cost

- NEXSELECT™ operates at liquids phase and does not need any hydrogen recycle compressors or gas separation if integrated to down stream distillation units.

Proven Design and Availability

- Optimum performance and high availability and track record with proven design and easy operation.

Conversions

Typical values for selective hydrogenation:

C5-diolefins selective hydrogenation 75...99%

C6-diolefins selective hydrogenation 75...99%

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