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Lummus Novolen Technology GmbH (Novolen), a part of CB&I, licenses the Novolen® gas-phase polypropylene process worldwide on the basis of Ziegler–Natta and metallocene catalysts for the production of a full range of polypropylene resins. This reliable and versatile process produces products meeting the requirements of the most demanding applications, while maintaining a strong focus on health, safety and environmental issues. The Novolen process features low total installed costs (TIC) and is very competitive in cash production costs.

CB&I's [on-purpose technologies](#) for the production of polymer grade propylene, such as [CATOFIN®](#) dehydrogenation and [Olefins Conversions Technology \(OCT\)](#) allows licensors all over the world to benefit from the synergies provided when combining those in-house technologies with Novolen's polypropylene technology.

Performance Characteristics

The Novolen process utilizes one or two identical vertical gas-phase stirred bed reactors. Homopolymers and random copolymers can be manufactured either in a single reactor or in a reactor cascade with two reactors, depending on the required capacity and product range. Alternatively, two reactors can be operated in parallel to achieve higher capacities for a single train plant and to produce bimodal resins. A cascade reactor configuration is required for the production of impact copolymers, whereas in the first reactor a propylene homopolymer (or random copolymer) matrix is polymerized and in the second reactor the ethylene–propylene rubber (EPR) is produced. Independent from the configuration chosen, all reactors are identical in design, size and material.

Our advanced VRC™ technology allows for choosing between a parallel and cascade reactor configuration without any downtime. This concept provides you with ultimate flexibility.

The polypropylene product portfolio covers a wide range of properties:

Melt flow rate (MFR)	0.1 – 3,000 g/10 min.
Isotacticity	90 – 99.5 %
Tensile modulus	300 – 2,400 MPa
Tensile yield stress	10 – 40 MPa
Impact strength (reactor blends)	No break at –30 °C
Transparency (1mm disc)	Up to 93 % for Ziegler–Natta polypropylene. Up to 96 % for metallocene polypropylene
Melting temperature	125 – 165 °C

Simplified Novolen Process Schemes

[Parallel configuration](#) (homo, random)

[Cascade configuration](#) (homo, random, impact)

Use the links below to explore the Novolen process.

- [Novolen Gas-Phase Polypropylene Process Description](#)
- [Metallocene](#)
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