

Novolen Technology Holdings

Novolen Technology Holdings C.V. (NTH), an 80/20 joint venture of ABB Lummus Global and Equistar affiliated companies, licenses the Novolen® gas phase polypropylene (PP) technology for the production of the full range of polypropylene resins. This reliable, versatile and environmentally clean process makes products meeting the requirements of even the most demanding applications. ABB is the only company to offer technology integration between propylene and polypropylene with four processes aimed at producing or maximizing propylene from upstream refinery and petrochemical units.

- **Novolen® Technology**

The Novolen polypropylene process utilizes one or two vertical, stirred bed, gas-phase 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. Impact copolymers require two reactors connected in series: in the first reactor, propylene homopolymer or random copolymer is polymerized; in the second reactor, rubber is added by polymerizing an ethylene/propylene mixture. Propylene, ethylene and any other required comonomers are fed into the reactor(s). Hydrogen is added to control the molecular weight. Polymerization conditions (temperature, pressure and reactant concentrations) are set by the polymer grade being made. The reaction itself is exothermic and reactor cooling is achieved by flash heat exchange, where liquefied reactor gas is mixed with fresh feed and injected into the reactor; flash evaporation of the liquid in the polymer bed ensures maximum heat exchange. The polymer powder is discharged from the reactor and separated in a discharge vessel at atmospheric pressure. Any unreacted monomer separated from the powder is compressed and either recycled or returned to the upstream olefins unit for recovery. The polymer is flushed with nitrogen in a purge vessel to strip it of residual propylene. The purge vessel off gas is passed to a recovery system; the powder is transported to powder silos and is then converted into pellets that incorporate a full range of well-dispersed additives. For highly demanding applications requiring extremely low volatiles and odor levels, the Novolen process offers an optional degassing unit to treat the pellets after extrusion.