

Polypropylene (93-8)

The global polyolefin industry is experiencing revolutionary changes regarding the development of catalysts and process technologies. The objectives are to enhance product properties and reduce costs, as shown in the figure below. Over the last decade many product developments based on revolutionary catalyst advances (e.g., metallocenes) have been focused on the polyethylene industry. Whereas cost improvements and evolutionary catalyst changes have occurred in the polypropylene industry, the revolutionary advances in resin properties associated with metallocene catalysts have lagged behind those of the polyethylene industry with commercialization of the latter only in its infancy.

In Polypropylene, Chem Systems reviews five leading processes available for license. Their current state of the art, relative to the situation covered in our previous polypropylene PERP Report, has advanced primarily along the lines of efficiency. The basic process designs have not changed substantially, but through evolutionary catalyst improvements and the more standard use of third and fourth generation catalysts manufacturers have been able to achieve higher throughput in single lines and thus improved economics. With regard to product enhancement, the effort has been largely in the area of improving the high value product/properties of high melt flow homopolymers, low heat seal random copolymers, and high impact copolymers.

In terms of commercial growth, the licensing field has become highly competitive, since producers worldwide have chosen to enter or expand their businesses via outside technology where technology differentiation is often related to commercial, not strictly technical, issues. The conclusion is that before licensees select technology, licensors and technology also must be evaluated and differentiated according to other criteria such as:

- Product capability and market needs
- Product property and performance
- Licensing cost and support
- Synergy with existing technology for expansion
- Technology advances and licensor experience

Another important aspect of the polypropylene industry has been the market entry of many new producers, especially in developing countries due to the availability of numerous alternative state-of-the-art technologies. This led to the downturn and poor profitability in the early 1990s. More recently, however, strong demand and capacity outages due to unforeseen events (e.g., mechanical problems, fires, and severe weather conditions) have resulted in a surge in profitability (operating rates).

