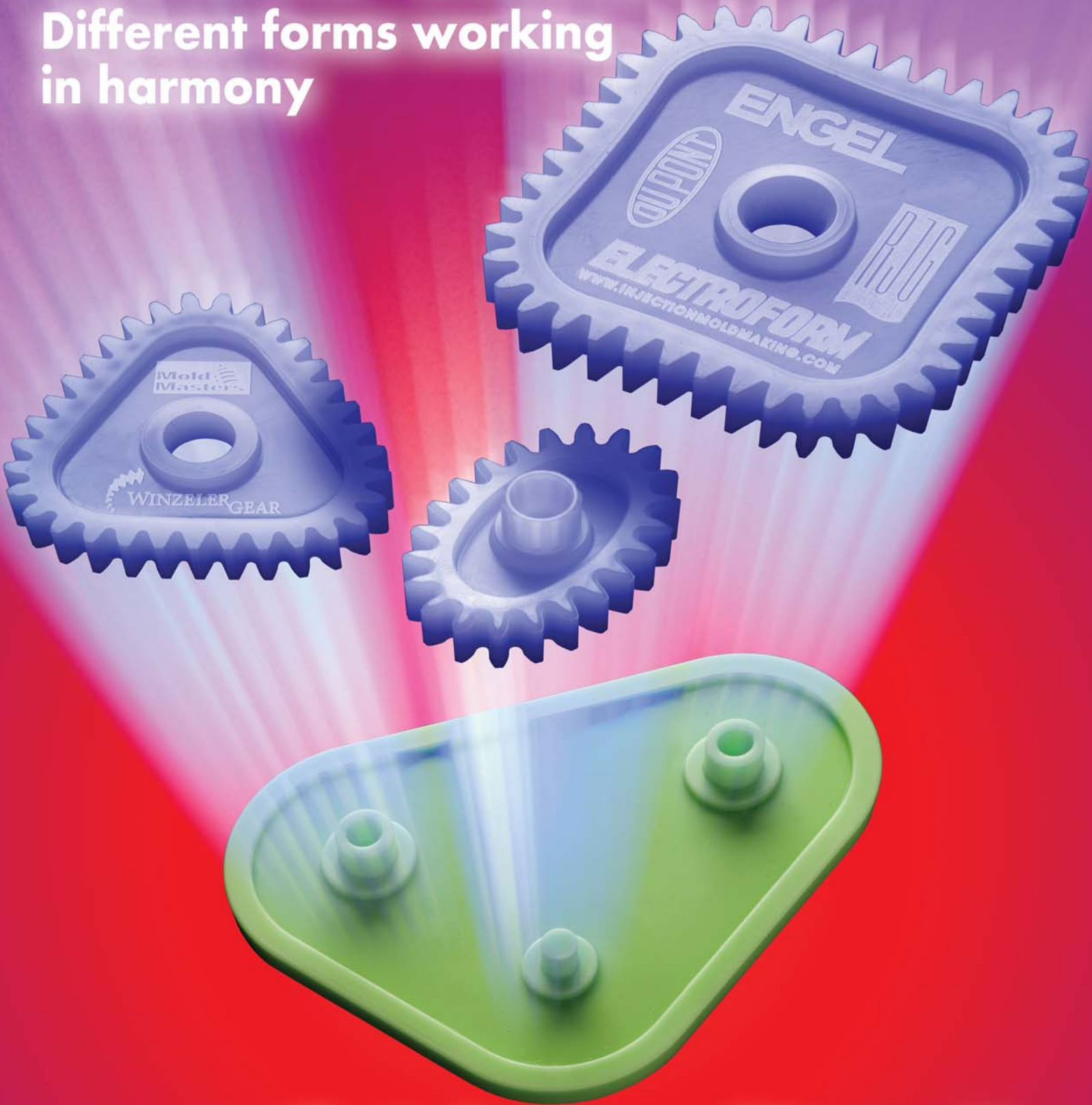


# The Gear Gizmo

Different forms working  
in harmony



That's the Power of Partnership

When one company's unique vision is touched by the imagination of key partners contributing their own experience and passion, it can evolve into a collaboration – a surprising harmony – that brings the vision to life. That is the power of partnership.

Demonstrating the partnership between Winzeler Gear, RJG, Inc. and Engel North America is the gear gizmo – three uniquely shaped gears produced with one mold and formed in a single molding cycle – on display at Engel's booth during the 2006 National Plastics Engineering Show.

The genesis of their partnership took shape in 2004, when Winzeler Director of Manufacturing Harry Soling met with Engel North America President Walter Jungwirth and RJG President Rod Groleau. For years, Winzeler had used Engel molding presses and RJG's scientific molding technology in its operation. To advance gear production, President John Winzeler, believed the logical next step was integrating RJG's intuitive "plug and play" scientific molding telemetry with Engel's molding press technology.

Engel and RJG shared Winzeler's vision; what was needed was a better understanding of how RJG telemetry could interface with Engel's molding press technology. With that in mind, all three met again at RJG's headquarters in June 2005, along with Engel Manager of Process Engineering Joachim Kragle and RJG Chief Engineer Art Schuster. Their discussion quickly evolved into a brainstorming session on how they could demonstrate their mutual development of molding technology during NPE 2006.

The demonstration would involve precision gears made from DuPont DELRIN (a high shrinkage engineering material) using a family mold where each gear was unique in dimensions. The RJG cavity pressure curves will determine the sequential closing of the valve gates for each gear. As a result, they could demonstrate multiple molding profiles using one mold and completed in a single molding cycle.

To accomplish this challenge, Joachim would attend RJG's Master Molder School so he could become more knowledgeable in scientific molding, while Engel investigated the feasibility of "plug & play" connectivity with RJG technology. Charged with designing a unique gear that would immediately draw the attention of NPE attendees, Winzeler initially developed an elliptical gear that would mate with a triangular gear. To make the design more challenging, they added a square gear that also meshed with the elliptical gear.

Mold construction began in January 2006, just after Engel completed work on the RJG interface. While Engel North America designed the automation process, Engel Austria built a 60-ton electric molding press featuring their new CC200 controller and shipped it to Engel Canada for automation integration. With the gear design in

place, Winzeler completed initial process development, and shipped the mold and RJG interface to Engel for final assembly and integration.

Assembling the gears presented a challenge, especially because of their non-circular shape. With that in mind, Engel partnered with KUKA Robot Group to engineer an automated system that integrated robotic inspection, assuring greater



quality control during gear assembly. Adding expertise and support to the project were other strategic partners, including DuPont who supplied the DELRIN molding material, Electroform who constructed the mold, Mold-Masters who provided the valve gate hot half and controller and Real Time Technologies Vision System.

The demonstration at NPE 2006 was a joint success, proving that eight companies contributing their own imagination, experience and passion can bring a shared vision to life. Now, that is the power of partnership.

 WINZELER GEAR  
www.winzelergear.com