SIEMENS

NX

Moules Mirplex (Mirplex Molds)

Adding speed to mold design and manufacturing expertise

Industry
Consumer products

Business challenges
Pressure from global competitors to develop molds faster

Keys to success
Integrated CAD and CAM

Mold design application

Design and manufacturing knowledge re-use

Large assembly handling

Drag-and-drop CAM operations

Local language support

SINUMERIK controller for high-speed cutting cycles

Results
Overall mold development cycle reduced by 35 percent

Design changes incorporated 40 percent faster

Mold design time down by 25 percent

CAM programs updated 50 percent faster after design changes

High-speed and precise machining of molds

NX CAD, NX CAM and the SINUMERIK 840D controller shrink mold development time by 35 percent

Selling mold design expertise
Moules Mirplex Inc. (Mirplex Molds Inc.) has offered services in mold manufacturing and precision machining for more than 25 years. Mirplex's customers span a range of industries including sports and recreation, pharmaceutical and consumer goods. The size of its molds varies greatly, from small molds used to produce pill bottle caps to very large molds weighing up to 15 tons per side, such as those used to produce parts for recreational equipment. Mirplex produces the following types of molds: multi-cavity molds, molds with hot runner systems, molds with multiple slides and cams, gas-assisted molds, compression molds and molds for aluminum die-casting.

From its first CNC machining center purchased in 1987 to the 15-ton overhead crane and Huron high-speed machining (HSM) center added since 2002, Mirplex has continually expanded its capabilities and equipment to better serve its customers. Over the years, the company has become known for its expertise, to the point that many of its customers now

Moules Mirplex thanks the BRP engineering team and Plastic Age Products Inc. for helping to deliver the ambitious project results as seen in many of the images throughout this story.
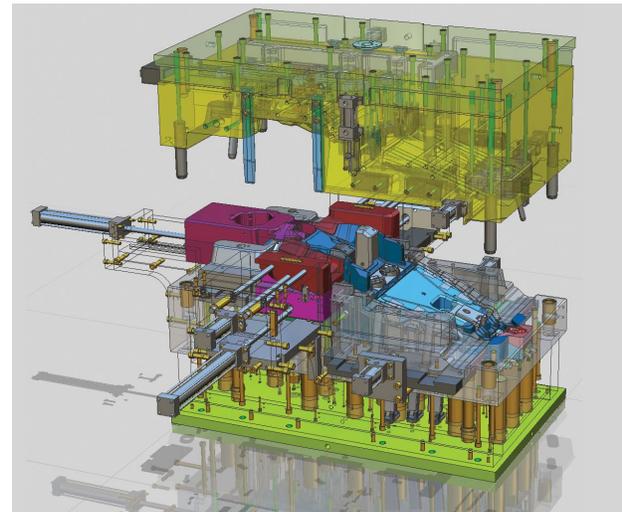
Completed mold assembly for BRP Piranha project – virtual and physical. Mold size: 62 x 37.5 x 42.5 inches; number of components: 900; press size: 1,600 tons.

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involve Mirplex in their design processes. But this does not protect the company from time pressures posed by global competition. "We must always find ways to deliver molds faster to stay ahead of foreign competition," explains Pascal Lachance, a mechanical engineer and mold designer at Mirplex.

Good reasons for Siemens part manufacturing technology

Mirplex relies on the NX™ digital product development system and SINUMERIK computer numerical control (CNC) technology from Siemens for a fast mold development process that ensures the level of quality and precision its customers have come to expect. The company evaluated a number of other solutions before upgrading from its previous I-deas™ software. It chose NX because of the seamless integration of the NX CAD and CAM systems, the availability of NX Mold Design and the ability to get technical support in the local language. Other selling points for NX were the fact that it could create the large digital assemblies that some of its molds required, and NX CAM's support for the Siemens SINUMERIK 840D controller, which Mirplex uses to run its Huron HSM center. "The 840D helps us to achieve our complex mold and die machining requirements with its high-speed cutting capabilities," adds Lachance.

With NX, mold design and tool path creation take place concurrently. While Lachance is designing the mold, his colleague, CNC programmer Eric Boucher, starts the programming work in NX CAM. This is possible, in spite of the fact that many design changes are still coming in from the customer, because of how easily the NX geometry can be changed. "The challenge we have is that the parts we get from customers are never completely designed," explains Lachance. "We are doing some development on the part before doing the mold. NX gives us the flexibility to change a model through powerful tools such as the surface modeling function."
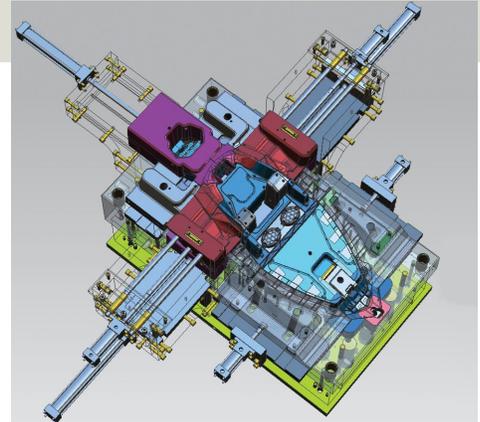
"B" side of mold – virtual and physical.

Time savings on all fronts

Lachance estimates that mold design takes 25 percent less time with NX. That's partly due to the faster incorporation of customers' design changes, which now takes about 40 percent less time than it did previously. NX Mold Design also accounts for some of the time savings. "NX Mold Design has standardized our processes," says Lachance. "Also we now have a library of parts such as mold bases that we can re-use. A mold is already half-designed when we start." Typically the customer provides CAD geometry in STEP or Parasolid® format. "Here, too, NX is better," Lachance says. "The translators are

SINUMERIK 840D controller and Huron KX30 machine tool.

embedded in NX and they are faster and accurate so we don't spend time stitching surfaces."

The associativity between NX CAD and NX CAM makes it easier to update the CAM model after a design change. Boucher estimates that he can incorporate design changes 50 percent faster with NX than he could previously, in part because he doesn't have to reassign all the surfaces. He finds NX CAM easier to work with in general, thanks to features such as the ability to drag and drop operations to create a machining sequence. Also, the use of templates means that he is now re-using existing information to a greater extent. This ability to leverage existing data, combined with the fact that the programming work starts sooner and changes are incorporated faster, has made tool path generation 20 percent faster than it was previously. Boucher points out, "NX CAM is easy to work with because we are able to capture and re-use our machining knowledge in the form of templates."

The overall result of NX is a 35 percent reduction in the time it takes Mirplex to deliver molds to its customers. This faster cycle time, combined with the company's expertise, positions it well in the globally competitive market for molds. "We are selling expertise," says Lachance. "But we are always looking for ways to work faster.
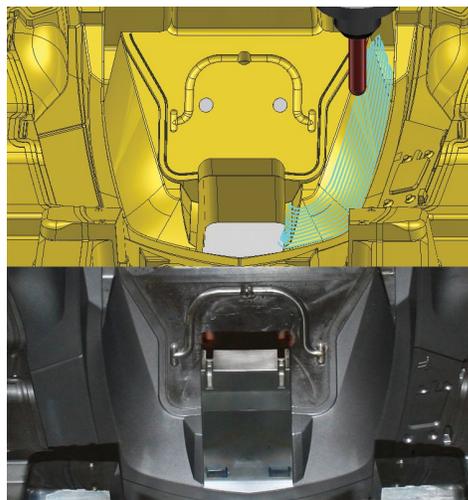
NX CAM tool path and machined part.

Solutions/Services

NX Mold Design
NX CAM
www.siemens.com/nx

SINUMERIK 840D controller
www.siemens.com/sinumerik

Customer's primary business

Moules Mirplex Inc.
(Mirplex Molds Inc.) special-
izes in molds and precision
machining.
www.mirplex.com

Customer location

St-Jean-sur-Richelieu, Québec
Canada

**"The 840D helps us to
achieve our complex mold
and die machining require-
ments with its high-speed
cutting capabilities."**

Pascal Lachance
Mechanical Engineer
Moules Mirplex Inc.

SINUMERIK 840D controller applied to mold and die machining.

The upgrade to NX has definitely streamlined our CAD and CAM work. By continuing to work closely with Siemens, we look to enhance our part manufac-turing and machining capabilities even further." In this regard, Siemens partners with customers to develop best-in-class solutions that enhance the integration of CAM and CNC, simulate and optimize machining, synchronize planning and production, and improve overall manufacturing efficiency.

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