

Tooling Update

Tool Builder Reaps Benefits of Automated Die Design

By implementing a highly automated die-design process, a Canadian tool and die shop has slashed design time by 50 percent and brought a new level of machine efficiency.

For more than 30 years, 150-employee-strong Verbom Inc., Valcourt, Quebec, Canada, has specialized in design and manufacture of tools and dies. Verbom's president, Yvon Laplante, has focused a great deal of effort at using technology to make his company more competitive with overseas shops, with much of the effort directed at the design process.

"It all starts with design," he says. "Good design and fast design—that's what will keep our customers from

looking elsewhere."

After years of 2D CAD (AutoCAD), followed by a hybrid approach (2D work done in AutoCAD and 3D work done in Cadkey), Verbom wanted to move exclusively to solid modeling. In 2001, the company installed NX design automation system software from UGS, Maryland Heights, MO, which could handle complex part shapes and also, according to Verbom officials, was employed by many of the company's automotive customers.

Recently, to better utilize the software, Laplante acquired UGS' NX Progressive Die Design software. Combined with some customization work to capture Verbom's die-making expertise within

NX, the result of that acquisition is a highly automated die-design process that has slashed design time by 50 percent, according to company officials.

Before implementing the NX-based automation, Verbom's average cycle time for die development was 28 weeks with customers pushing for 22 weeks. "Since we automated our engineering, we're down to 20 weeks," says Laplante, "and that eight-week improvement is the difference between profit and loss. The ultimate goal is 14 weeks."

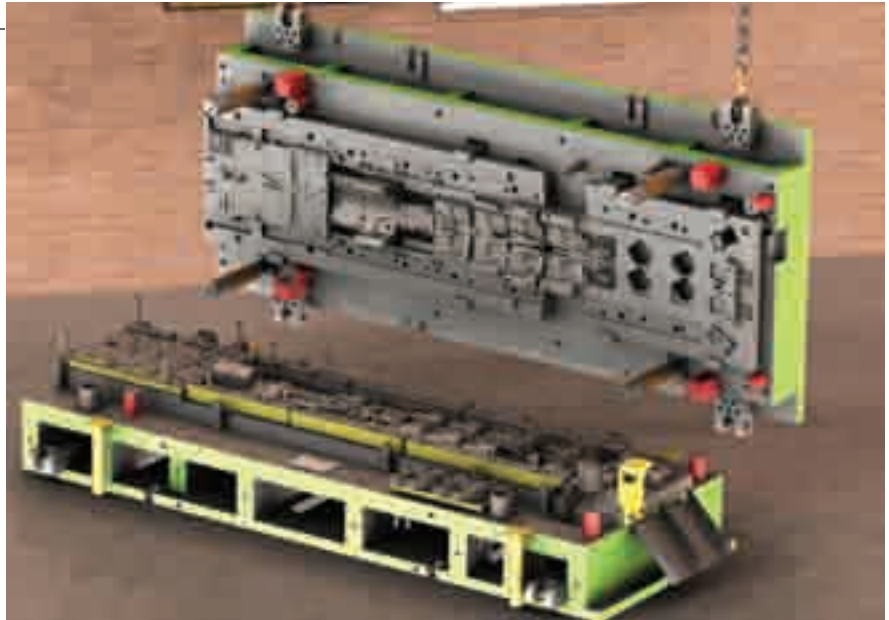
NX Progressive Die Design creates die bases in mere minutes, once the designer enters some basic die information. Also, automatic bill-of-material generation is quicker and more accurate than

the manual alternative. Verbom also has automated the ordering process for purchased components, as NX component information goes automatically to an Oracle database and then to suppliers. Other automated operations include pricing and creation of detailed manufacturing-process information for the shop floor.

The embedded knowledge also supports best design practices. "In the past, people without much experience were creating some strange designs that were nightmares on the shop floor," he says. "That doesn't happen any longer."

Verbom also uses NX CAM capability to automatically generate tool paths from design information, saving time especially given the frequent part-design changes.

"If a car maker changes a part design, we have to change the die," shares Laplante. "We start with the strip layout and that dictates the die design. So if we change an angle or move a bend line or



a hole on the strip layout, everything else on the die automatically updates, even the tool paths. Everything is linked in NX."

With CNC programming now much less time consuming, programmers have set about optimizing machine operations, bringing improved efficiency.

"Our machines ran at about 45 percent of capacity before, and now we're at 60 percent," says Laplante. "That's a 15-percent increase on 15 machines, so it's like we have two new CNC machines."

For more information on NX software for die design from UGS, write no. 200 on your reader response card.

GR Spring & Stamping Upgrades CAD/CAM for Die Design and Build

A switch from separate CAD and CAM software packages to an integrated CAD/CAM package from VX Corp., Melbourne, FL, has GR Spring & Stamping, Inc., Grand Rapids, MI, poised to meet the continuing challenges of quality, volume and lead time presented by its customers in the automotive industry. GR

Spring & Stamping operates six facilities in the United States and Mexico, producing custom stampings, value-added assemblies, springs and slideformed products, as well as the dies used to make those products. Its new VX CAD/CAM package combines 3D solid/surface hybrid modeling and parametric design

and drafting capabilities with an integrated CAM package that includes two-through five-axis milling. The company purchased eight seats of VX—six in design and two in manufacturing.

As received, GR Spring & Stamping customers' part models are oriented as they will function in a vehicle. Then, designers go to work on a tool by using reverse engineering. A typical die comprises 150 to 200 separate 3D solid CAD elements, drawn as a solid in VX and then assembled virtually. While 3D solid designs take longer to complete than 2D renderings, the firm finds that for every hour spent designing it gains two hours at the end of the process.

For more information about VX software, write no. 201 on your reader response card.

Save with One-Piece Round Ball-Lock Retainer

Moeller Mfg., Plymouth, MI, introduces the True Set economy round ball-lock retainer. It offers one-piece construction, combining one screw and one dowel in a single unit, with benefits of 30 percent proven savings, according to Moeller officials.

For more information from Moeller Mfg., write no. 202 on your reader response card.

K & S Streamlines Die Development with Simulation

K & S Tool, Die and Manufacturing, Inc., Ixonia, WI, recently invested in new computer systems optimized to specifically handle high-end CAD programs and new die-simulation software.

Tighter tolerances, complex designs and tooling up to stamp high-strength steels present challenges in the engineering of dies to produce parts for automotive, residential lawn care and other end-use markets. Since 2002, K & S has

met these challenges by using Dynaform simulation software, from ETA, Troy, MI. The software predicts the formability of sheetmetal products and assists in everything from the quoting of a project through the critical die-development phase and tryout. Continuous upgrades to the latest versions of the software give K & S a competitive edge for building dies. Not only does the software streamline the

different phases of die development, it also gets the results desired with better-functioning tools, which results in the quicker production of parts.

For a quote, many K & S customers supply 3D part geometry instead of blueprints and PDF files. In just minutes the Dynaform Blank Size Engineering (BSE) module can determine blank size, generate blank nesting and automatically ana-

lyze potential forming issues with the part geometry. An estimator can input production volume, material cost, scrap value and consumables' cost to ensure an accurate quote.

"In the past, we had to err on the side of caution when providing quotes for customers," says K & S' Dale Grosenick. "With the improved BSE module, we can generate reports on blank nesting and generate a more accurate per-part cost for our quotes."

Engineers at K & S can prevent problems down the road by visualizing forming problems such as cracking, wrinkling and thinning by running the incremental simulation within Dynaform, for a true digital tryout.

"We used to have to prototype or rely on prior experience before determining if there was a problem with the die design," says Grosenick. "If we had done something similar before and were successful or if we had a problem with something before, often that determined how we would proceed. By using simulation, this is a much more part-specific approach and saves us a significant amount of time."

For more information from ETA, write no. 203 on your reader response card.

Analog Proximity-Sensor Line

Eaton Corp., Pittsburgh, PA, introduces the AccuProx family of analog inductive proximity sensors. With long-range, tight repeat accuracy and linear outputs, AccuProx sensors are ideal for applications that require precise position sensing and measurement or detection of small variances, such as error-proofing, saw-blade deflection, material-blemish detection, absolute angle detection and part positioning.

Unlike a standard inductive sensor, which outputs an open or closed signal based on target presence or absence, an analog sensor outputs an electrical signal that varies proportionately to the position of a metal-alloy target within its sensing range. AccuProx sensors can

sense ferrous and nonferrous alloys and can be used to ensure proper distance, size and thickness for various types of measurements.

AccuProx sensors are available with current and voltage outputs on the same sensor. Shielded and unshielded models are available in 12-, 18- and 30-mm tubular barrels with a variety of connection options.

For more information from Eaton Corp., write no. 204 on your reader response card.

New Sensors Website Offers Secure, Customized Features

MTS Systems Corp., Sensors Division, Cary, NC, has unveiled the first phase of its website redesign, with secure value-added information access for customers. The website, www.mtssensors.com, offers customized content by region,

maintaining a local business culture.

A new product generator, powered by 3D PartStream.net, provides access to an interactive online 3D part catalog. Customers can use it to build a product, view it and download 2D or 3D CAD drawings of the product. The product generator also provides a part number and allows the customer to request a quote.

For more information from MTS Systems, write no. 205 on your reader response card.

Updated Gas-Spring Catalog

Dadco, Inc., Plymouth, MI, has updated its product catalog for the LJ series of nitrogen-gas springs. Available in three force models (3, 5 and 7.5 kN) with stroke lengths from 13 to 125 mm, the LJ series may be operated self-contained or linked using the company's MiniLink system. The MiniLink system



provides users with a compact piping system that includes Dadco's Mini-fittings, MiniFlex hose and Mini control panel.

Changes include the addition of new solid-model cylinder and mount drawings that provide the catalog with a different look while maintaining its user-friendly format. The catalog includes gas-spring specifications, force charts, accessories, tools and ordering information.

For more information from Dadco, write no. 206 on your reader response card.