Significant advances in tooling materials, design and operation, combined with an array of constantly improving computer-driven tools, are helping the manufacturing industry keep pace with demands for improved productivity and efficiency. In addition to cloud-based computer-aided design and manufacturing software (CAD/CAM), new digital tools, and linkages to those tools, are being developed all the time. The web sites of many machine makers are now bulging with useful information, such as interactive catalogs, machining data, tooling and e-learning opportunities, and tooling options, helping manufacturers find all the information they need to make machining process choices right at their digital fingertips.

Kennametal’s NOVO is a new set of digital tools that deliver via the Machining Cloud process knowledge drawn from its data-rich legacy of experience and machining strategies to improve manufacturing efficiencies.

Using Digital Tools to Optimize Your Cutting Tools

Machine makers are helping shops exploit the vast amount of digital data now available on machining and tooling

Jim Lorincz
Senior Editor

Cutting Tools
In just one industry, the North American automotive industry, the required capacity of the vendor tooling industry is projected to reach $15.2 billion in the next five years compared with available current supply of only $9.25 billion, according to the 2013 Vendor Tooling Study of Harbour Results Inc. (Royal Oak, MI). Vendor tooling—tooling purchased by the OEM to be run in Tier One or Tier Two facilities—accounts for an average of $550 per vehicle based on 2012 North American vehicle volume, for example.

Factor in the tooling requirements of all other manufacturing industries, including but not limited to aerospace, medical, energy, and general engineering, and it isn’t hard to imagine just how competitive tooling suppliers will have to become to retain their customer’s brand and product loyalty. The Harbour study recommends that OEMs, Tier One and tooling suppliers revisit current strategies throughout the entire value stream and develop key strategies for reducing the anticipated capacity gap, involving early collaboration, focusing on cost (as opposed to price), and managing the value stream. Here then are how some cutting tool suppliers are forging digital ties to bind their customers to their portfolios of products and process solutions.

Digital Assistant with Data-Rich Machining Strategies

NOVO, which was unveiled at EMO by Kennametal Inc. (Latrobe, PA), is a new set of digital tools aimed at improving manufacturing efficiencies with process knowledge delivered via the cloud. Kennametal is collaborating with industry leaders, including Okuma, DMG Mori, WinTool, Siemens PLM Software, and Zoller and others to streamline access to digital knowledge.

“With NOVO’s embedded intelligence in application engineering and process planning, Kennametal and our partners are opening the path to a completely connected digital art-to-part-to-profit process,” said John Jacko, vice president and chief marketing officer.
Online catalogs and tool selectors have become common options for manufacturers looking for the latest tool solutions for their production processes. NOVO is designed to go beyond the concept of the online catalog by integrating the application engineering and production experience of Kennametal’s 75-year legacy history. “Simply put, NOVO is a process enabler, a true digital assistant with data-rich machining strategies that starts working from the moment a parts drawing is received. With a refined and intuitive tool advisor, tool selector, and tool configurator, everything down the line gets more efficient from parts quoting through presetting, and production,” said Francois Gau, vice president-strategic marketing.

NOVO is process knowledge delivered via the Machining Cloud. Its goal is to solve many challenges for process planners, manufacturing engineers and those who want the most efficient machining strategies based on the features of their parts. NOVO comprises four major functional tools: Tool Advisor, Tool Selector, Tool Configurator, and Job Functionality.

Users can begin to use NOVO by defining machining features to determine the best machining sequence to do the job, or searching for a preferred tool and grade. NOVO smart filters take the task of selecting all cutting tool components from hours to minutes, while users get the assurance that the list is comprehensive and correct.

“NOVO works like a process planner,” said Thomas Long, head of the newly formed Virtual Machining RDE department at Kennametal. “It works from the feature back to the machining strategy and then finds the best tools for each strategy. In addition, each project is tied to application data gleaned from Kennametal’s experts and decades of experience. Search for a specific Kennametal part and you also get models and all associated inserts, adaptors, and spare part for an optimized solution. Users are able to access NOVO via a PC application and tablet solutions. It stands alongside such web-available solutions as MTConnect for data gathering and ISO 13399 for standardizing tool data through established data exchange systems, accessible via a PC application and tablet solutions.

**Go Online for Convenient Tooling Solutions**

Iscar Metals Inc. (Arlington, TX) has streamlined the delivery of its online information sources, according to Matthew Schmitz, national products manager who has responsibility for GRIP products used for grooving and parting and Iscar’s miniature product line. The Ibaqus app is actually a compila-
tion of five useful apps for metalcutting and a connection to Iscar’s Tech Talks on YouTube. With the Ibaqus app, users can access the Iscar Tooling Advisor (ITA), CMS electronic catalogue, the Insert Convertor, the Product ID, and Machining Calculator from Apple or Android devices.

“The Iscar Tool Advisor recommends the best Iscar cutting tools and data to do a defined job,” said Schmitz. “It’s a database that draws upon years of learned experience, applications, cutting conditions etc. ITA allows the customer to type in details about his application and in a matter of minutes get a number of options about the best way to manufacture the part. We segment it by metal removal rates and provide a number of examples of how best to optimize the machining process.”

The CMS Electronic Catalog can be searched in a number of ways, by function, by product, by family etc. that not only finds cutters but allows access to an image of a tool via screen shot as opposed to scanning a catalog page. The Insert Convertor displays Iscar’s alternative grades and geometries for what is available from competitors in the market. The Product ID provides the basic descriptive and technical data for a specific insert by entering product ID or scanning the item pack’s QR code or 2/5 Code. The Machining Calculator offers a wide range of calculator options such as power consumption, metal removal rate and cutting time that are commonly used by metalcutting engineers, experts or CNC programmers.

Special custom cutting tools, which are valued for their ability to combine processes in multistep machining operations, pose challenges to cutting tool suppliers to deliver optimized tools in a reasonable amount of time. Walter USA LLC (Waukesha, WI) announced at EMO that it has expanded its Walter Xpress fast delivery service for special tools with the addition of drilling and reaming tools with inserts.

Walter USA LLC (Waukesha, WI) has expanded its Walter Xpress fast delivery service for special tools with the addition of drilling and reaming tools with inserts. Specials Done Online through Express Service

Special custom cutting tools, which are valued for their ability to combine processes in multistep machining operations, pose challenges to cutting tool suppliers to deliver optimized tools in a reasonable amount of time. Walter USA LLC (Waukesha, WI) announced at EMO that it has expanded its Walter Xpress fast delivery service for special tools with the addition of drilling and reaming tools with inserts to Walter Xpress’s capability to produce solid carbide drills and milling cutters.
benefit to the user is that there are great savings in time and cost because the tasks of design, cost calculation and creating the production data are accomplished through the use of a sophisticated, fully automatic system.

“Vendor tooling—tooling purchased by the OEM to be run in Tier One or Tier Two facilities—accounts for an average of $550 per vehicle at 2012 North American vehicle volume.”

Walter is taking advantage of digital communications through the internet for global reach for its Xpress service. First the user tells the field staff or the local engineering team from Walter’s local sales office about their machining requirement. The local engineering team comprises the responsible experts who enter the customer-specific parameters into a configuration system. In addition to the geometry data for the workpiece, this also includes specifications for the material and the relevant cutting tool material options. Examples include Tiger-tec Silver, the appropriate insert shapes, machine features such as the retaining system, and cooling available etc. The system thus feeds, designs and calculates the required tool within the shortest period of time and outputs comprehensive documentation, including a 3D drawing.

The expansion of the Walter Xpress portfolio covers drilling and counter-boring or precision boring tools with up to three machining stages. Solutions for drilling are based on Walter’s established Xtra-tec point drill and Xtra-tec insert drill ranges. Bodies with fixed insert seats, cartridges or precision boring cartridges are available for counter-boring and precision boring. Delivery time for these complex tooling solutions is pegged at four weeks. The short deadline is made possible due to automated internal processing similar to the internal procedures developed to produce special solid carbide tools with delivery in three weeks.

By 2021, manufacturing analysts estimate that more than 1 million jobs will be vacant due to retirement and the inability to find skilled, knowledgeable talent.

Tooling U–SME has robust training that address key workforce development challenges:

> Boost Operations Effectiveness
> Enhance Production
> Improve Quality
> Reduce Scrap
> Rollout New Technologies
> Expedite On-Boarding
> Heighten Quality Capabilities
> Cross Train
> Shift from “Tribal Knowledge” to Formal Learning

See how Tooling U–SME can help you overcome workforce development challenges at your company.
866.706.8665 – Toolingu.com

Is your manufacturing workforce at risk?

Machinists | Assemblers | Inspectors | Welders | Maintenance | Engineers
The customer receives their quote within 24 hours. In the background, all of the data that are required internally for manufacturing the tool, the bill of materials, work schedule and NC manufacturing programs are created. This means that production can start immediately after the order is placed. Sufficient provision of new materials and the machine capacities ensure that no bottlenecks will occur.

Walter Xpress delivers important benefits for the users. Thanks to the automated processes at Walter, the user saves a great deal of time. Without this type of processing, customers usually have to deal with two deadlines: one for the quote and another for manufacturing/delivery. Since special tools reduce the number of tool changes, they also shorten the customer’s production times. The comprehensive documentation that is already available with the quote provides the customer with a high degree of planning security. The short delivery times also allow the customer to reduce their rotating stock of tools and to also reduce their inventory. When replenishment is required, the customer knows that they won’t have to wait for longer than four weeks.

With the integration of the indexable insert special drilling tools, Walter has taken an important step in developing Walter Xpress and can build on this to introduce further indexable insert tools, including the shoulder mill from the new Blaxx range of products. In further expanding its other competence brands, one of the next steps Walter will take is to include Walter Prototyp threading tools.

Metal Cutting eLearning, Any Time, Any Place

Sandvik Coromant (Fair Lawn, NJ) has a long history of providing technical education to end users, machinists, operators, programmers, and students. Since 1979 when Sandvik Coromant issued its first “Metal Cutting” textbook to the 13-chapter, paper-based “Home Study Course” in the 1980’s and 1990’s hardcover.
volume of Modern Metal Cutting, Sandvik Coromant has helped educate tens of thousands of users across the US and globally. The latest development from the Sandvik Coromant Academy is an eLearning program that is based on a full online version of the MCT handbook.

“In a highly competitive manufacturing environment, it is critical to get the right help at the right time to be the most efficient in producing a part.”

With nine chapters, 18 introduction and summary videos and 57 unique training courses, the eLearning program allows users, whether novice or expert, to learn on their own schedules. The program is available to everyone 24/7 on any device that can access the internet; making it an ideal solution for shop owners who wonder how to get their employees the knowledge they need while maintaining high productivity in their shops.

In addition to its accessibility, an eLearning program caters to different learning styles as opposed to traditional classroom learning. People learn in different ways. Some learn better by reading, some by watching and some by listening. Some learners want stand-alone text while others prefer context help on the screen. Given the lean requirements of modern manufacturing, it is also important to consider if the online training is sufficiently comprehensive for a learner to achieve meaningful progress on their own.

From calculating cutting data and depth of cut to workpiece materials and tool choices, this online training from the experts at Sandvik Coromant Academy covers it all. Teaching through multiple formats including video, animation and question and answer, it covers general metal cutting knowledge but also specifically teaches about internal and external turning, parting and grooving, milling, drilling, threading, boring and tool holding. For additional resources, it includes an online copy of the comprehensive Training Handbook, downloadable as a pdf file.

According to JoAnn Mitchell, Sandvik Coromant Sr. Project Leader, “In a highly competitive manufacturing environment, it is critical to get the right help at the right time to be the most efficient in producing a part. Learning everything you can from qualified sources, especially when it can be done at your own pace, can yield tremendous benefits both the learner and the company. Better understanding equals better results and eLearning is a good way to get a better understanding.”

Available online at www.metalcuttingknowledge.com, the course includes a 50-question exam, which tests the user’s metal cutting knowledge gleaned from the course and a passing score earns a Certificate of Completion. For ease of learning and time management, each class is has a time limited required to complete.

Once logged in to MCT eLearning, the virtual classroom tracks and saves all completed classes, regardless of time of day, place, etc. A learning management center, color coded by red, green and yellow indicator lights tells the user if they should stop, go onto the next course or if additional course work is needed. This structure allows students to individualize their experience and tailor the way they attack the course material.

This eLearning class may be taken separately and can be followed by additional technical training in any of Sandvik Coromant’s Productivity Centers (three in the US and 27 globally) where scheduled classes and live technical demonstrations are combined for the additional levels of Metal Cutting Technology education for learners wanting a deeper understanding of specific areas.