

# ESPRIT de Corps

Passion | Vision | Commitment | Power | Performance | Value

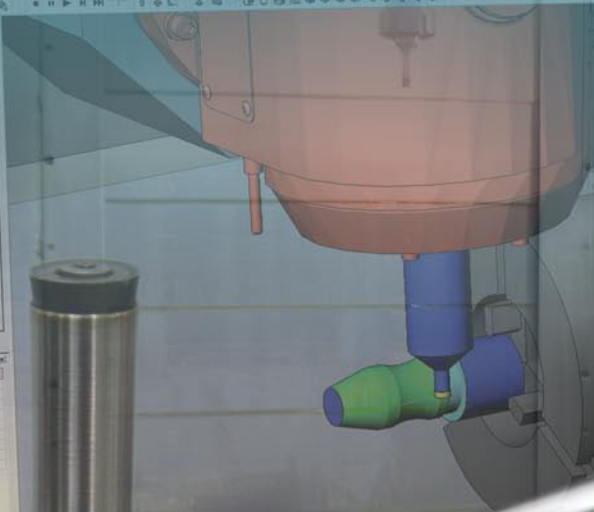
**FALL 2008**

- New turning spinning tool add-in increases tool life by up to 2000%
- Successful Agie 123 tests cuts yield product upgrade
- Citizen selects ESPRIT as a preferred CAM system

## FOCUS ON

**ESPRIT 2009**

**New Technology—New Solutions**





## CAM Support for Advanced Multitasking Machining and its Applications

By Daniel Frayssinet

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**M**ultitasking machine tools with milling, turning and drilling capabilities are increasingly popular in metalworking today. Once used primarily for production machining because they were difficult and time consuming to program, multitasking machines have seen a reemergence in the marketplace due to new, powerful and easy-to-use CAM systems. Improved CAM functions allow manufacturers to quickly program multitasking machines — at times, completely automatically from a design. While in the past it took much longer to program a part than to cut it on a multitasking machine, today these machine tools are utilized more and more frequently for very small production, prototypes and/or single parts. Mill-turn machines represent an enormous potential for profitability, but possess inherent programming challenges due to their complexity. The right CAM system is a key factor for success in the mill-turn equation. It's a critical choice that determines the ultimate productivity of your machine investment. The ongoing development of ever-more sophisticated machine tools has created a need for CAM software that responds to the needs of those operating advanced tools that are able to handle increasingly complex tasks.

The mill-turn market is both increasing in size and becoming more diversified in terms of the nature of its various uses. In response to the introduction of new, powerful and easy-to-use CAM software systems that result in ever more rapid and efficient programming, this market is increasing in size, and has expanded from a nearly "all production" market to a market that also produces smaller lots and, in some cases, has made the switch to the "single-part manufacturing" of prototypes.

These machines can now be set up and programmed very quickly to produce complete parts, which makes them very useful for the creation of prototypes that would otherwise require the use of subsequent testing.

#### The continuing evolution of multitasking machining

Multi-axis machines can be run very efficiently, making it possible for true 5-axis

parts to be manufactured — including the swarf cutting of brackets, hydraulic components with cross drilling, precision items for the medical market, and much more. The combination of full milling and full turning capabilities has inspired users to think of new ways to cut parts that have never — and could never before — have been performed.

In addition to ESPRIT's continuously expanding 5-axis capabilities, DP Technology strives to form partnerships that result in the ability of users to utilize a growing arsenal of sophisticated machine tools.

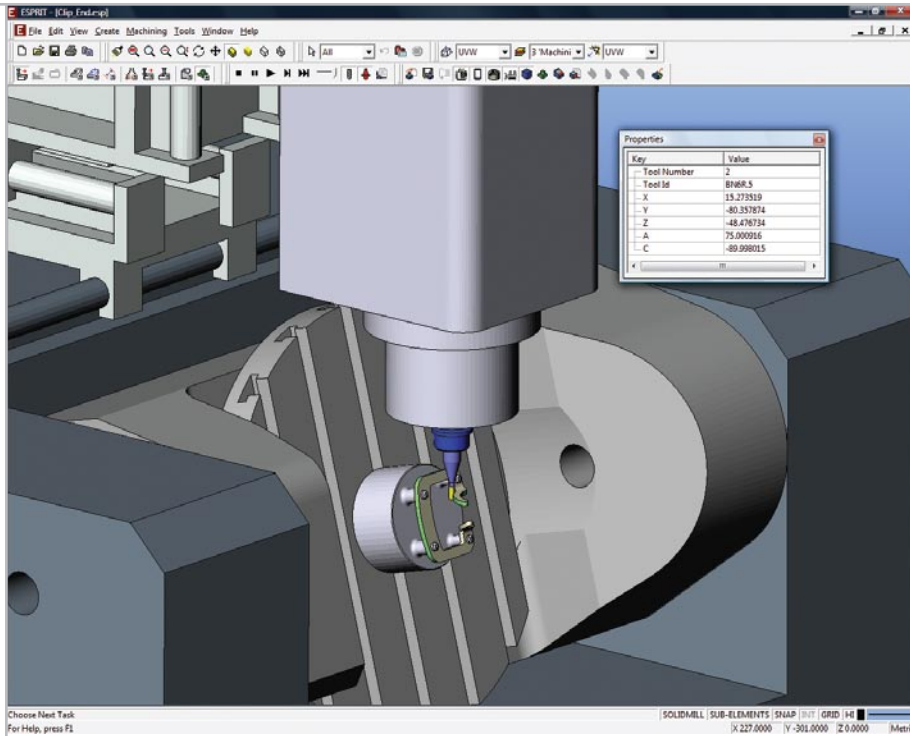
For example, Mori-Seiki, Kennametal Inc. and DP Technology jointly developed a new turning cycle that paves the way for faster, more efficient cutting. This cutting-edge turning tool, called a turning spinning tool, features a cutting point that rotates as it cuts, allowing for the greater and easier dissipation of heat — which in turn results in faster cutting and an increase in both tool life and surface finish.

After being contacted by Mori Seiki in October of 2007, DP Technology became the only CAM company that demonstrated it was able to take on the challenge of creating a CAM add-in to support the new tool functionality, and the ESPRIT Turning Spinning Tool Add-In was complete by the end of November. A successful test cut was performed in early 2008 at Mori Seiki's Chicago Technical Center. (See page four in this issue.)

The new ESPRIT Turning Spinning Tool Add-In makes it easy to use Mori Seiki's new spinning tool technology. The add-in provides a new interface to define the size and shape of the tool being used and adds new machining technology parameters to all standard turning operations in ESPRIT that let the user define the rotation speed of the tool spindle and the angle of inclination for the cutting plane.

These ideas triggered by the new capabilities offered by new machines must be developed and implemented very quickly to allow increased productivity and competitiveness.

*Continued on Page 21*



The new Swarf milling allows cutting with the side of an endmill along the selected surfaces of a part. Swarf milling is one of 22 new 5-axis machining strategies that have been added to the existing 5-axis functionalities of both ESPRIT SolidMill and SolidMillTurn FreeForm.

## ESPRIT 2009 includes new, innovative, productivity enhancing technology for CNC programmers of Mills, Lathes and Wire EDM machines

**E**SPRIT® 2009, the latest version of ESPRIT software, is the result of a balanced effort focusing on both the shorter term needs of its existing customers and the longer term direction of the metal-working community.

A significant number of new, innovative technologies in the areas of 3- and 5-axis milling, feature recognition and user interface are being introduced with this new version, as well as a long list of productivity enhancing features for milling, turning and wire EDM part programming. ESPRIT 2009 is designed to run on both the Microsoft Windows XP and Microsoft Vista operating systems.

### **New 3- and 5-axis machining cycles**

Twenty-two new 5-axis machining strategies have been added to the existing 5-axis functionalities of both ESPRIT

SolidMill® and SolidMillTurn FreeForm®. These new simultaneous 5-axis machining cycles are available for both milling and mill-turn machines, translating to even greater machining flexibility and improved cycle times. The full performance of these machining cycles is realized when they are run on multi-core computers, which results in an up to 145 percent performance increase for each core added (1 to 2, 2 to 4, etc.).

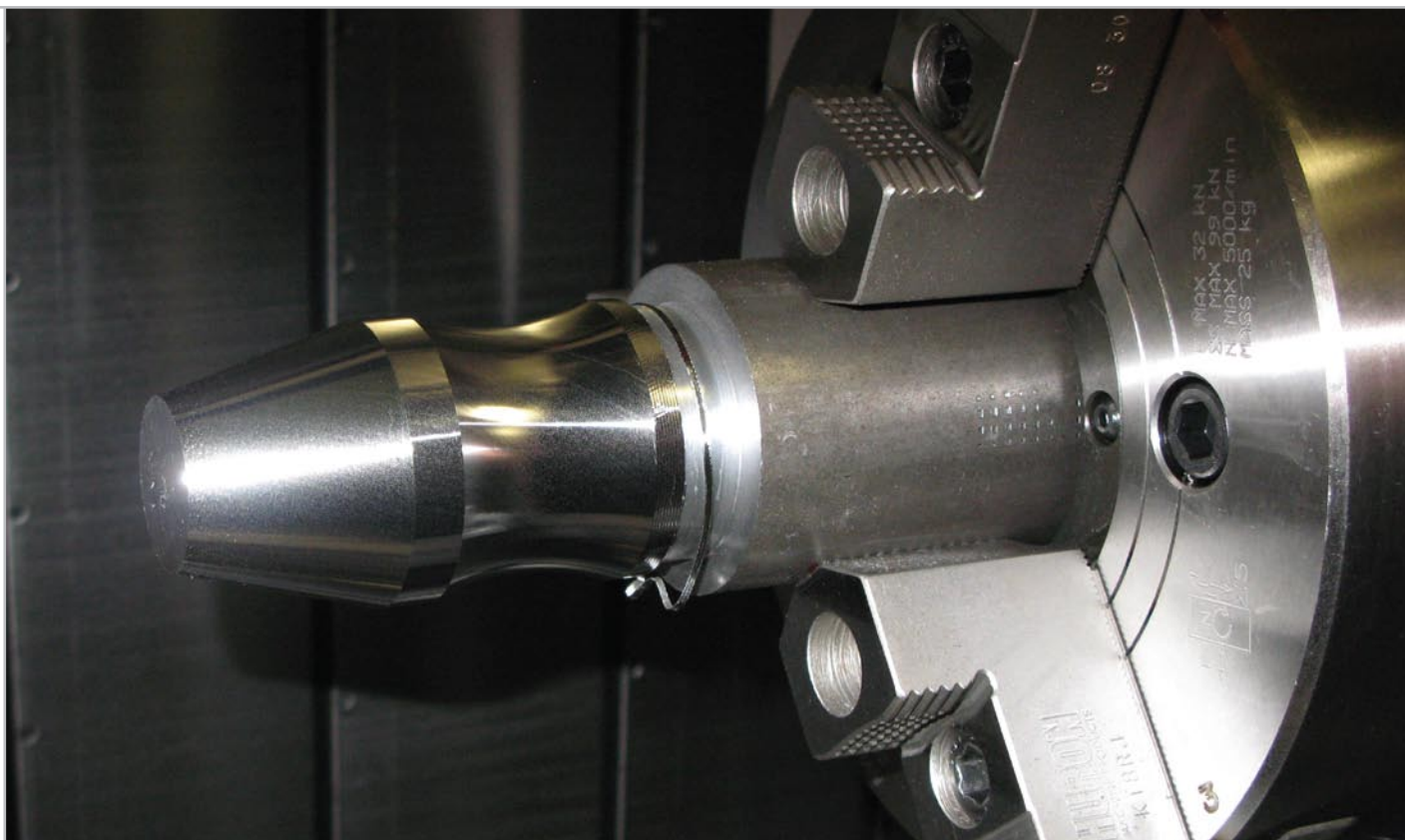
The new patent-pending FreeForm 5-axis composite machining cycle debuting in ESPRIT 2009 allows the user to independently define the machining pattern and the tool orientation strategy to be used when creating the simultaneous 5-axis tool path and includes 20 different machining strategies (cycles) in one, resulting in a wide range of easily manageable possibilities. The

new ESPRIT composite machining cycle gives the user the ability to perform simultaneous 5-axis machining for a wide variety of different parts and industries, including aerospace, medical, and automotive, through one simple user interface.

Five-axis swarf milling, 5-axis contour milling and 3-axis z-level undercut machining round out the list of new machining cycles available for FreeForm machining in this new software release. By using these new multi-axis machining cycles, customers can gain flexibility by running their parts on either traditional mills or on the more advanced mill-turn machines while gaining productivity by reducing the number of setups required to completely machine their parts.

*Continued on Page 22*





## ESPRIT Turning Spinning Tool Add-In

*DP Technology and Mori Seiki perform successful test cut using new cutting-tool technology*

*By Ann Mazakas*

**DP** Technology performed a successful test cut last winter using new turning spinning tool technology developed jointly by Mori Seiki, a leader in the manufacturing of multi-axis mill-turn centers, and Kenametal Inc., a leader in cutting-tool technology.

Designed to distribute heat and wear more effectively than a single-point lathe tool, the new turning spinning tool technology can increase productivity by up to 500 percent and tool life by up to 2,000 percent. This new cutting technology employs a specialized insert — similar in design to a round, or full-radius insert — mounted at the bottom of a cylindrical tool shank held in a rotary spindle.

“This technology is promising because of all the advantages it provides,” said Olivier Thenoz, DP’s mill-turn product manager. “In the end, it means better productivity.”



*Pictured above are Nitin Chaphalkar, team leader, MTL, and Olivier Thenoz, DP Technology mill-turn product manager, beside a Mori Seiki NT4200 machine.*

Thenoz teamed up with Nitin Chaphalkar, engineering team leader for Mori Seiki's Machining Technology Laboratory (MTL) at the company's Chicago Technical Center to perform the cut. The test included roughing and finishing operations on the outer diameter (OD) with a Mori Seiki NT4200. The full capabilities of the turning spinning tool were put to the test with OD passes on straights, tapers and arcs without the use of coolant on the steel work piece.

"The advantage of the spinning tool is that there is no one single point on the tool that is in contact with the work piece all the time," Thenoz said, "and this is very good for heat dissipation

to the material throughout the cut, and the repositioning moves necessary with the use of single-point tools cutting in a single direction were not required.

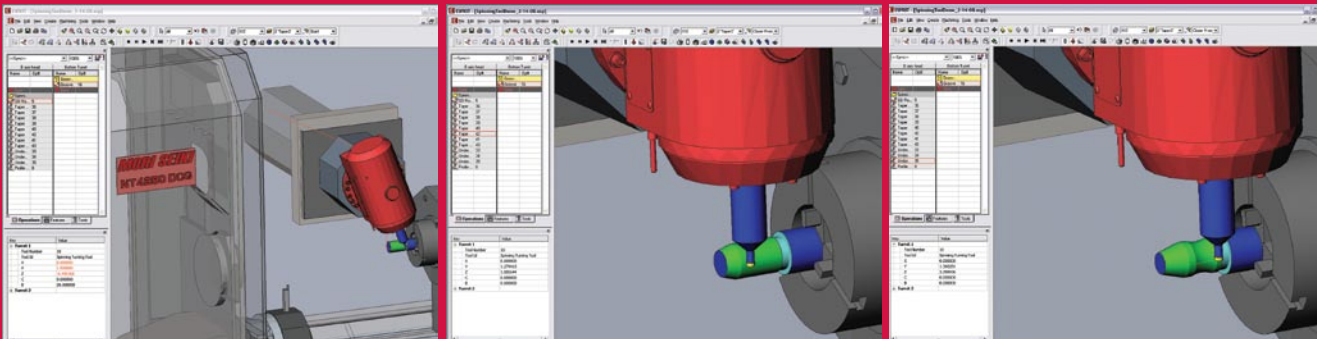
According to Chaphalkar, Kennametal Inc. pioneered the foundations of the turning spinning tool. Mori Seiki continued development and took its version of the tool into several CAM companies to solicit a solution for the new technology.

After being contacted by Mori Seiki in October of 2007, DP Technology became the only CAM company that demonstrated it was able to take on the challenge, and the ESPRIT® Turning Spinning Tool Add-In was complete by the end of November.

in Chicago in May of 2008, in addition to ESPRIT World Conference 2008, IMTS 2008, and JIMTOF 2008. It will be shown later this year at EMO 2009.

"It's a great partnership with Mori Seiki," Thenoz said of the development of the turning spinning tool technology. "It's important for us to be involved in this project and to have the opportunity to perform test cuts like this one."

The new ESPRIT Turning Spinning Tool Add-In makes it easy to use Mori Seiki's new spinning tool technology. The add-in provides a new interface to define the size and shape of the tool being used and adds new machining technology parameters to



and tool wear. Cutting conditions are no longer limited by the heat generated in the process, but by power available in the machine."

"Cutting forces generated while machining with single-point tools impart a bending movement on the tool and give rise to vibrations," Chaphalkar said, explaining the potential benefits of an axially loaded tool. "In the case of axially loaded tools, such as a spinning tool, most of the cutting forces are directed axially into the spindle and hence significantly reduce vibrations. The point of this tool is to reduce vibration and chatter, and to increase tool life and productivity."

For the initial OD rough cut, the spinning tool was inclined at a 20-degree angle, which, according to research conducted by MTL, is the angle that allows the most effective heat evacuation for this application. The turning spinning tool is also well adapted to cutting in a back-and-forth motion, and this capability was also put to the test on taper and arc moves — with impressive results. The tool remained close

Chaphalkar said that, while he was able to program basic functions by hand, the ESPRIT Turning Spinning Tool Add-In is the right solution for making the most of the tool. "With ESPRIT, the programming complexities are made easier and customers will be able to use the technology efficiently," he said.

Thenoz said that developing for ease-of-use while making the most of new technology means better results for end-users with diverse needs.

"We are looking for new programming challenges and are trying to stay ahead of all the new cutting technology," Thenoz said. "We have shown that before, with the new B-axis turning, and this is a continuation of that philosophy. We want advanced functionalities and, at the same time, functionalities for everyone."

Mori Seiki plans to employ the new turning spinning tool technology in Mori Seiki Japan for "our own manufacturing operations," Chaphalkar said. The technology was exhibited at a Mori Seiki open house

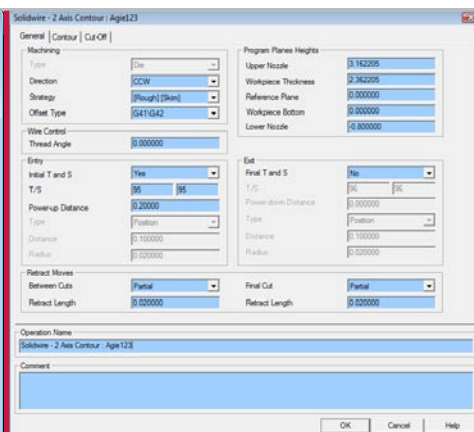
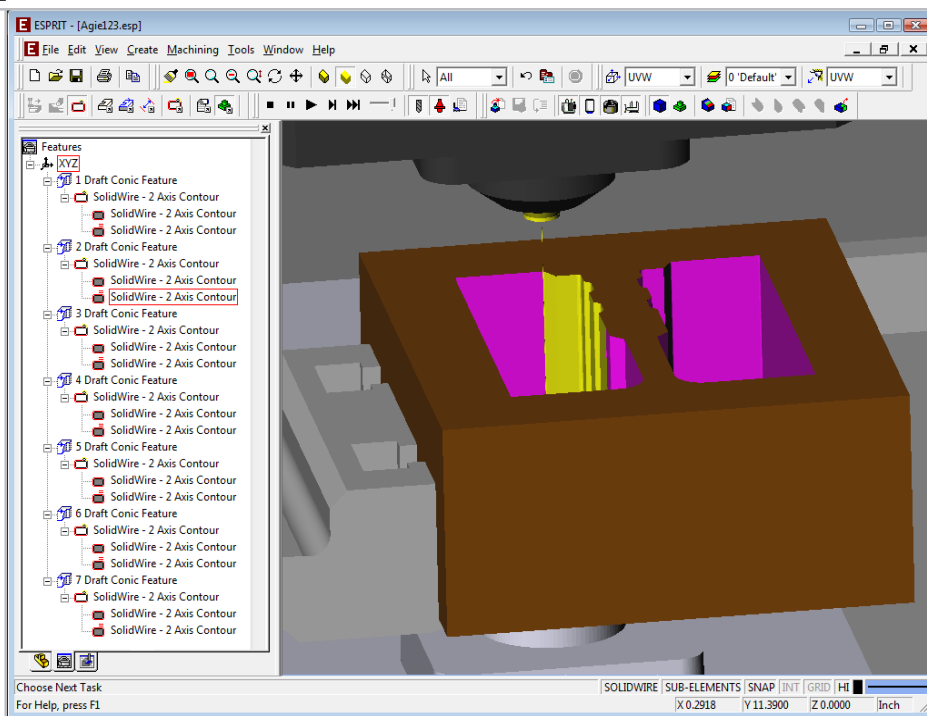
all standard turning operations in ESPRIT that let the user define the rotation speed of the tool spindle and the angle of inclination for the cutting plane.

For spinning tool turning operations, it is typical to set the tool spindle and turning spindles to the same revolutions per minute (RPM). The user has the option of creating the tool path in +Y or -Y in the YZ plane, and also has the ability to rotate the cutting plane about the Z axis to allow machining above or below the center line. The tilt of the tool is handled using a standard parameter available for any ESPRIT turning operation. ESPRIT supports full simulation of the cutting path with collision detection. The add-in also includes updated post processors for Mori Seiki machines.

*Ann Mazakas is Manager of Technical Communications at DP Technology Corp.*

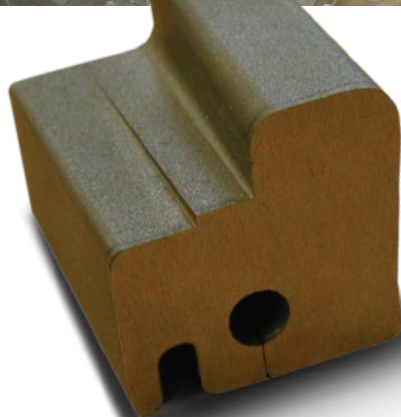






The new technology for the Agie 123 made available in ESPRIT 2009 includes advanced draft feature recognition for both geometry and solids, improved simulation, support for 2-axis and 4 axis features created from geometry or solids, and a new application programming interface(API).

## Successful test cuts performed with Agie 123 upgrades available in ESPRIT 2009



We've all heard it before: *An old dog can't learn new tricks.* But when the "old dog" is an Agie 123 machine tool and the bag of tricks is ESPRIT 2009, even the most die-hard adherents to that tried-and-true wisdom may just beg to differ.

The University of Pittsburgh's Manufacturing Assistance Center (MAC), served as a testing ground last spring for upgraded Agie 123 technology made available in ESPRIT 2009 to ensure that DP customers who use the older machines are armed with software capabilities similar to those available for the newer EDM machines.

"We are committed to our existing customers, who have been using this technology for the last 20 years," said Dave Bartholomew, DP EDM product manager. "We want to bring them up to a level that's consistent with the existing software and bring them to parity with that of all we offer for the newer wire EDM machines."

Jana Pham, DP senior software engineer, and Christophe Rogazy, DP EDM product manager, performed the tests of the new technology with the aid of Robert Beatty, MAC's plant manager.

"It is an older machine, but quite a few people still use it," Beatty said of the Agie, adding that upgrades available in ESPRIT 2009 help ensure that reliable code is consistently and more easily produced. "I like the increased functionality that has been added for the Agie. The new software interface makes programming fast and simple."

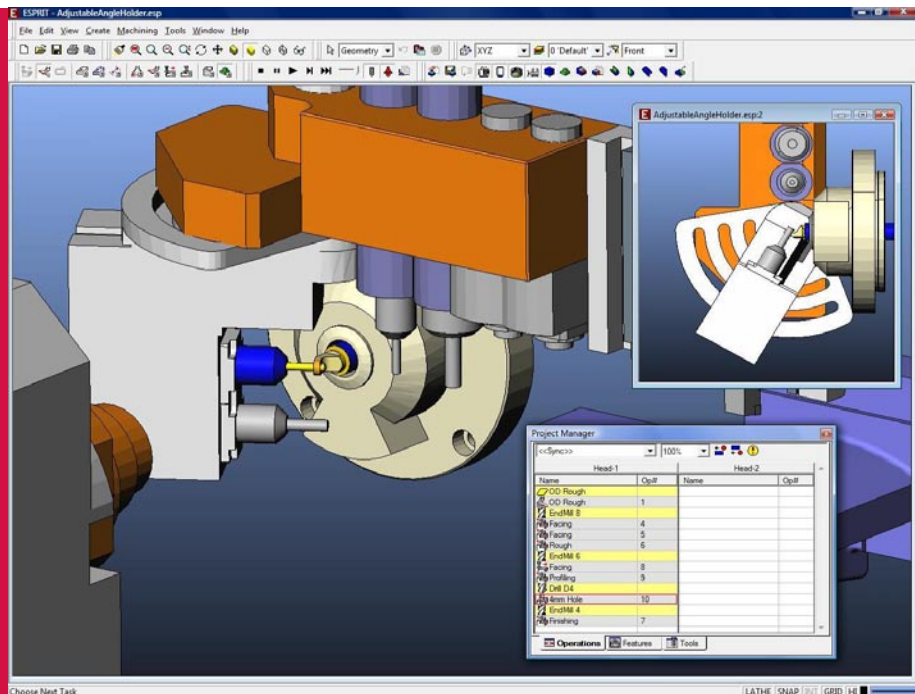
The new technology for the Agie 123 made available in ESPRIT 2009 includes advanced draft feature recognition for both geometry and solids, improved simulation, support for 2-axis and 4-axis features created from geometry or solids, and a new application programming interface (API). "The software for these older machines was limited when compared to our software for newer models," Pham said. "These improvements make using the software much more intuitive and provide a similar level of programming capability for both these older machines, as well as the latest wire EDMs."



## ESPRIT selected as a preferred CAM system by Citizen Machinery

*ESPRIT includes functions specific to and customized for Citizen Swiss-style lathes, including a custom Citizen machine set-up interface with machine data pages for L, M, A, C, E, R, K and B- series machines.*

*Shown is a Citizen L7- 20 machine with guide bushing, sliding head stock, gang style tooling, including an angle tool configuration.*



DP Technology and Citizen Machinery have entered into a signed agreement to collaborate on both technical and marketing activities in support of Citizen's customers world-wide.

As one of Citizen's preferred CAM systems, ESPRIT® will be referred to the company's customers and distributors — including Marubeni Citizen Cincom in the United States — as one of a few selected solutions for meeting the wide variety of Citizen and Citizen-customer machining needs. ESPRIT will be featured on Citizen's machine-tool displays at trade shows and open houses around the world.

Responding to increasing demand from users who desire software that yields better production value and greater machining utilization, Citizen and DP

Technology will collaborate technically to provide CAM solutions that streamline operations on the shop floor. To simplify the programming process, Citizen and DP Technology have ongoing development to maintain a suite of post processors and machining configurations within ESPRIT to support the full line of Citizen machines.

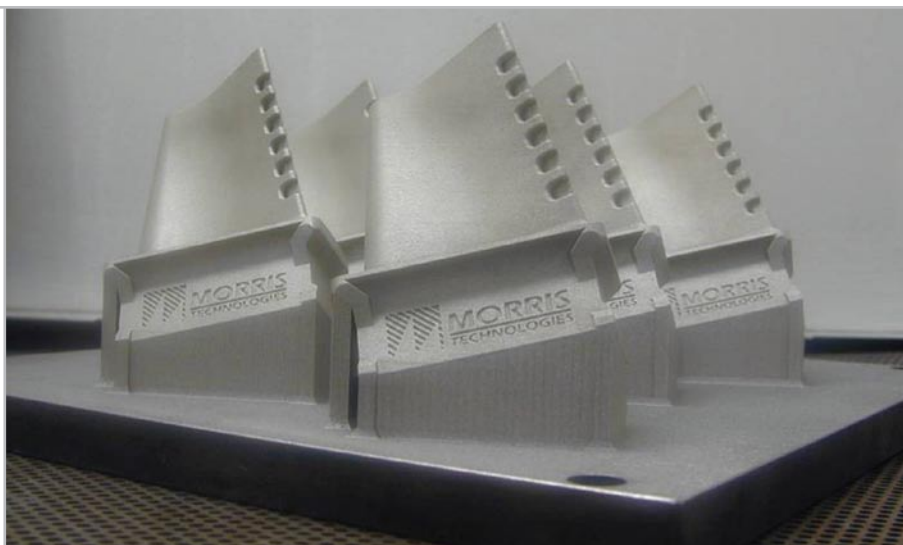
ESPRIT includes functions specific to and customized for Citizen Swiss-style lathes, including a custom Citizen machine set-up interface with machine data pages for L, M, A, C, E, R, K and B-series machines; a custom tool interface that manages tool shifts and Citizen holders; accurate machine simulation with embedded machine models; and post processors for Citizen lathes.

### About Citizen Machinery

Citizen Machinery has become a world leader in CNC Swiss turning through continuous innovations and the superior quality of Citizen machines. Because of its high regard for customers, Citizen focuses on maximizing satisfaction by addressing customer needs (including after-sales services) and increasing the value of collaboration.

Citizen Machinery looks to the future by continuing a reputation that has been built on solid relationships, being an innovative pioneer in the machine tool manufacturing industry and providing a valuable working relationship with customers.





*Shown here are some DMLS-produced blades from Morris Technologies. Morris Technologies is the leading North American provider of DMLS-produced parts.*

## Ability to Program Complex Geometry

By Jerry Fireman

**A**dvanced CNC programming software that can handle complex shapes has allowed prototype manufacturer, Morris Technologies Inc. (Cincinnati, Ohio), to double its revenues. The software enables the company to take on jobs that would be too time-consuming to program by hand. "Programming complicated parts by hand does not work for customers who need to prove out a design," explains Doug Burns, a prototyping machinist at Morris Technologies. "They need fast turnaround. With ESPRIT (from DP Technology), we can write programs for 4-axis wire electrical discharge machining in 10 to 15 minutes. Most programs for the 4-axis lathes take about an hour. This is many times faster than we could do by hand." ESPRIT supports the company's use of Direct Metal Laser Sintering (DMLS), a revolutionary technology that produces prototypes in a fraction of the time of conventional processes. ESPRIT is used to quickly write programs for DMLS parts that need subsequent machining.

Morris Technologies was founded in 1994. The company produces prototype parts and short runs for customers in the aerospace, medical, automotive and consumer products industries. It excels at complex, multi-axis type of parts and works with many materials including aluminums, steels, plastics, composites,

foams and exotic metals. In addition to highly advanced CNC machining and rapid prototyping, the company offers a broad range of product development services including engineering and design, rapid tooling and injection molding and urethane reproductions. Part of the company's success has been due to its ability to respond rapidly to client requests. "We are able to turn most projects around within days, whether it is one part or a short-run manufacturing project," says Burns.

### Leading with Technology

Another factor contributing to the company's success is its use of state-of-the-art equipment and leading-edge technologies. Its equipment line-up includes machines from manufacturers such as Mori Seiki, Marubeni Citizen-Cincom, Charmilles, Belmont, Extrude Hone and others. Morris Technologies is also the leading North American provider of DMLS, which the company has offered since 2003. Well known outside the U.S., DMLS is now beginning to gain recognition here. It is an 'additive' technology that builds parts by sintering very fine layers of metal powders layer-by-layer from the bottom up until the part is complete.

Morris Technologies was the first company in North America to acquire this

technology. The company uses it primarily for smaller, complex parts that would be time-consuming and expensive to make using other, more traditional methodologies. "This is something unique about us," Burns explains. "We generally don't make a part by just cutting metal. We use DMLS to grow it and then if necessary we'll machine it." Applications are wide-ranging and include inserts for plastic injection molding and die casting as well as direct parts for a variety of applications in all the industries the company serves. With the emergence of advanced materials such as the super alloy cobalt chromium (CoCr) and 17-4 PH Stainless, coupled with the design freedoms this technology offers, new applications are constantly being discovered. In some cases, DMLS can make parts that previously could not be made any other way.

### Machining after DMLS

Most DMLS parts require some machining to meet customers' levels of precision. When this is the case, the company uses horizontal production machining (Mori-Seiki NH 4000) or vertical CNC mills, lathes (including new Swiss Turning capability) and EDM (wire & plunge) to complete the part. In the past, the company used CNC programming software that could handle 3-axis equipment. With the growing complexity of the parts produced with DMLS



(and the more advanced, 4-axis equipment to machine them) came the need for more advanced programming software. Burns, whose job it is to program the 4-axis machines, writes "probably one program a day," he says. He was involved in the selection of the new software, ESPRIT. "ESPRIT was chosen because it can handle complex shapes," he says. "Another advantage is that it can run every machine we have and every machine we will purchase in the future. We chose ESPRIT because we wanted one piece of software that could handle everything, rather than five or six different programs."

The process of creating a DMLS part that requires subsequent machining begins

with the receipt of customer's solid model in STEP or IGES format. Working from the customer's data is beneficial to both parties, as Burns explains. "Because ESPRIT allows us to work directly from the solid models, our customers do not have to spend time creating prints, which in turn allows us to get their parts manufactured faster. This allows us to provide value to our customers by reducing the amount of work they have to do."

Burns imports this into ESPRIT where he quickly applies preliminary toolpaths to the geometry to get an idea of how long the job will take. Based on that information, he prepares the quote. When the company gets the job, Burns begins

enables it to divide the surfaces of incoming geometry into logical sections that are ready to be assigned cutting tools. When this capability is combined with previously created machining operations, creating a toolpath is almost automatic. The programmer simply opens the ESPRIT library and drags and drops operations onto the features the software has identified.

"The advantage of feature recognition is that you can create machine instructions for frequently used features and ESPRIT will automatically apply them to the features it identifies," explains Burns. Burns often takes advantage of ESPRIT's ability to manually create features and establish machining operations. After creating the

## Lets Prototype Maker Double Revenues

### Quick Take

#### Industry/Product:

Aerospace, medical, automotive and consumer products  
Rapid prototyping

#### Machining Application:

Wire EDM  
Direct Metal Laser Sintering (DMLS)  
Milling  
Turning

#### CAM application:

Knowledge-based machining  
Feature Recognition  
Add-in utilities

#### Equipment:

Mori Seiki  
Marubeni Citizen-Cincom  
Charmilles  
Belmont  
Extrude Hone

the process of creating the actual toolpaths that will be used to manufacture the part. He opens the solid model and orients it for manufacturing. In the case of parts that will be machined on the lathe, he selects the ESPRIT feature that automatically creates a turning profile. Many parts that he works with are half round and half square. "ESPRIT looks at the solid model and realizes what can be turned and which part is square," he explains. "It adjusts the turning so that it doesn't violate the square, which we go back and mill later."

ESPRIT's knowledge-based machining capabilities remove much of the manual drudgery from programming and enable programmers to focus much more time and attention on higher-level tasks such as optimizing machine productivity and maintaining quality. For example, the software's feature recognition capability

features, he assigns the tool and selects the type of milling operation by filling in the software's set-up page. He also takes advantage of the software's ability to simulate the machining process on the screen. "This lets me make sure there are no crashes and that the machine is not doing anything weird," he says. "What I see on the screen is what happens on the machine. And if it works on the screen, it always works on the machine."

The programming process is a bit different for wire EDM. Burns still imports the customer's model and orients it for manufacturing. For 2-axis wire EDM, he manually applies the chain feature to the part, which identifies what will actually be cut by the wire. ESPRIT has an add-in utility that integrates it with the company's Charmilles machine. Using that

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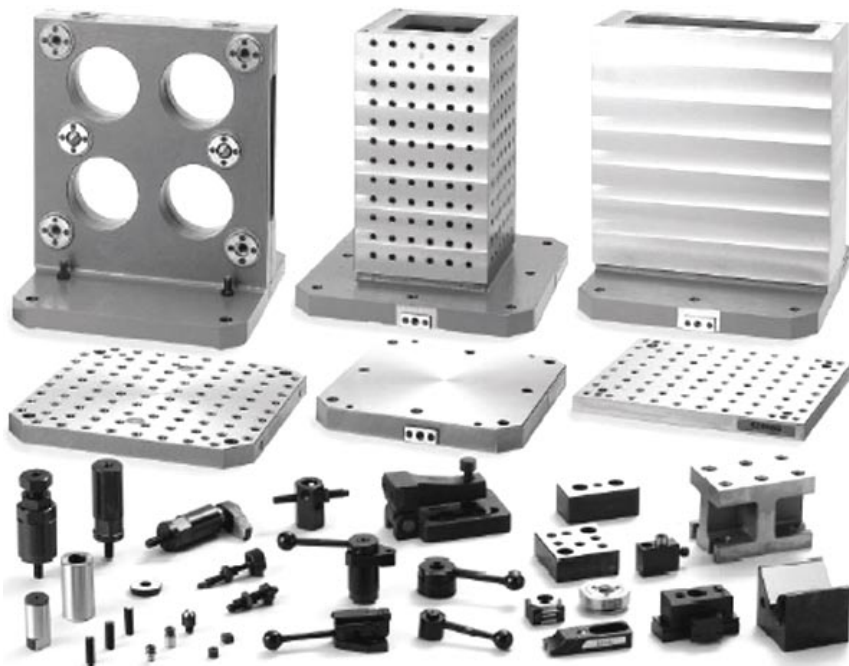
*Shown here are DMLS impellers produced by Morris Technologies.*





# Imao Corporation dramatically increases its facto

by Masashi Murai, Imao Corporation



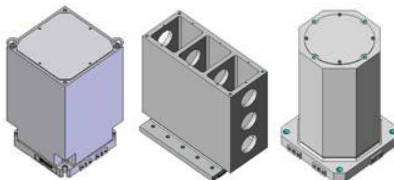
Standard fixturing products

The Imao Corporation develops, manufactures and sells fixtures, called standard fixturing components, for machine tools, including machining centers

Available for immediate delivery and developed with ease of use in mind to achieve shorter fixture production and setup time, the use of Imao's standard fixturing components results in getting products to market quickly, in addition to decreased production costs to user companies.

Imao Corp. provides improved productivity to customers by pairing hardware (fixtures) and software, and uses the same system at its own machining factory to improve its productivity.

Fixture products, as shown below, machined by Imao at its factory, are mostly of special shapes and in small volumes, as each product is produced "one at a time."



Machined parts (fixture products)

Due to the necessity of producing specialized fixtures, fixture production is most often a lengthy process. Contributing to the length of this overall process, time-intensive test cuts

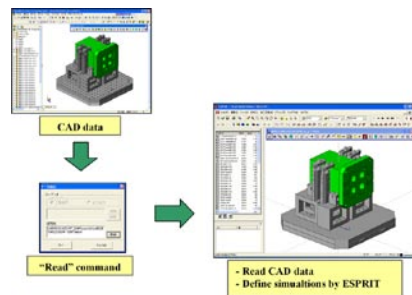
must be made to verify fixtures and machining programs after the production of fixtures and stocks is complete. With "one at a time" production, it becomes necessary to produce fixtures and conduct test cuts in every instance, meaning that a massive amount of time is used for the production of each product. At Imao's factory, the lengthy production time for each product and resulting low productivity was a big problem.

To resolve the situation, Imao built the system shown to the right and worked on achieving improved productivity by "quick preparations of fixtures" and "removing the test cut process".

As far as software is concerned, the system consists mainly of CAD (computer-aided-design), CAM (computer-aided-machining), simulation and tools management for the intention of eliminating the test cut process. However, smooth operation of the system cannot be achieved only by using each piece of software side by side; smooth operation depends upon properly connecting all pieces of the software.

ESPRIT® is placed at the main position of the software portion of this system and, by customizing ESPRIT for connectivity with other pieces of software, smooth operation was achieved.

Following is an example of ESPRIT customization in this system:

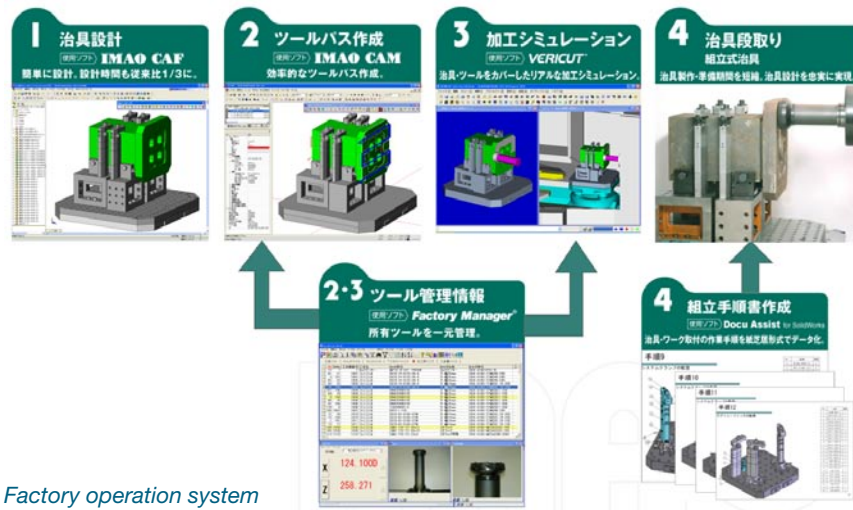


## Quick Take

**Industry/Product:**  
Machining Centers  
Standard fixturing components

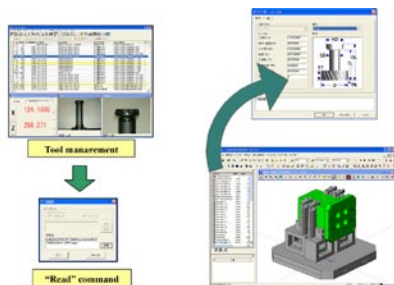
**CAM application:**  
Automation  
Customization

## ry's machining efficiency by integrating ESPRIT

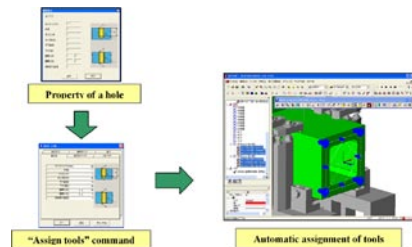


Factory operation system

- Automatic loading of CAD data
- Create "Read" command.
- Load data created by CAD into ESPRIT in different layers of "machined parts" and "fixtures," and also automatically define ESPRIT's simulations. This achieves smaller workload in setting up to start using ESPRIT.
- Automatic definition of tools based on tool management information
- Create "Read" command.
- The previously mentioned command automatically defines tools on ESPRIT based on "tool diameters" and "tool lengths" managed by tool management software. This achieves smaller workload in tool definition.
- By creating the same status of tools as attached on machines, more accurate tool paths can be generated.

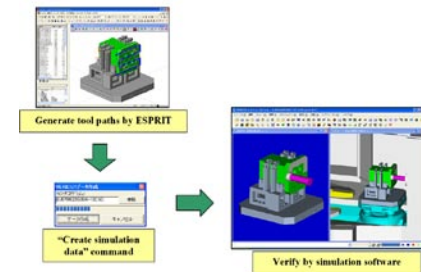


- Automatic tool assignment based on property of holes on CAD
- Create "Assign tools" command.
- Automatically assign appropriate tools, based on property information of holes added on CAD. Machining conditions are assigned, too. This achieves workload in tool assignment.



- Automatic output of simulation data
- Create "Create simulation data" command.
- Automatically create data for simulation software. This achieves smaller workload in setups to use simulation software. The simulation software uses machining programs and can do verification just like actual machines.

These customizations not only reduce workloads, but also increase accuracy by automating the process of connectivity between software pieces that was formerly done manually. Customization of ESPRIT was done internally at Imao, and this is another important point.



ESPRIT is equipped with APIs as a standard, and it is easy to do customizations by Visual Basic® without specialized programming knowledge. At Imao Corp., we believe software can be more customized in more practical ways if customized by designers and machinists who use the software, as opposed to those who specialize only in software. In this case, the customization was easily achieved by using the customization facility available in ESPRIT.

As a result of building this system, the test cut process that previously took several hours to half a day was eliminated, and production time was dramatically reduced.

Also, production by test cuts was previously done by "manned operations" of machines. With "manned operations," it was possible to operate machines for about eight to 10 hours a day. With this system, "unmanned operations" have become possible, and the operation time of machines has greatly increased, to 20 hours a day.

Since 1961, Imao Corp. has provided standard machine elements, modular construction systems and workholding products that can contribute to labor saving and convenience in different industries.

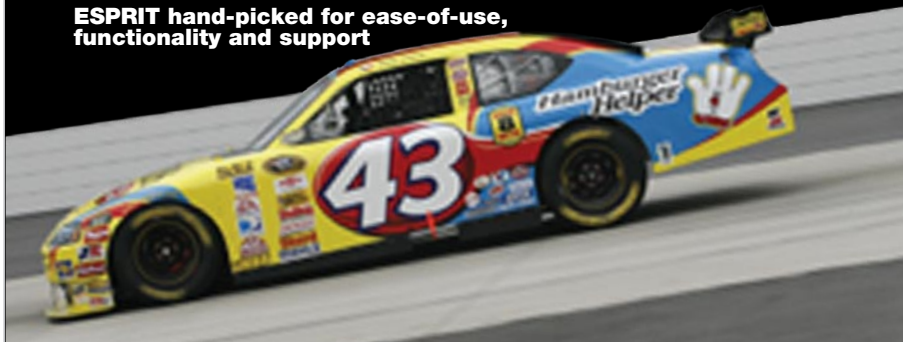






# DP Technology leads the pack with NASCAR racing team Petty Enterprises

**ESPRIT hand-picked for ease-of-use, functionality and support**



**DP** has been hand-picked to become an official sponsor and technology partner of Petty Enterprises, a NASCAR (National Association for Stock Car Auto Racing) racing team based in North Carolina.

DP Technology continues to lead the pack on the racetrack with the sponsorship of two NASCAR Sprint Cup Series racing teams, namely the No. 43 Cheerios/Betty Crocker Dodge and the No. 45 Marathon/Wells Fargo/PVA Dodge, owned and operated by Petty Enterprises. These two NASCAR teams are the eighth and ninth sponsored by DP Technology.

"They wanted our software because they figured out it was the best software out there," said Bill Haas, vice president of special projects for DP Technology.

Having become unsatisfied with its previous CAM software due to "lack of improvements and growth versatility," Petty Enterprises was in the process of investigating various new CAM software packages when engineers from the company visited an ESPRIT booth at a machining industry trade show in North Carolina, according to Bobby Turner, design engineer for Petty Enterprises.

"While investigating, we also learned that an engineer in the office had used ESPRIT at a machine shop he worked at prior to Petty Enterprises," Turner said.

Petty Enterprises will use ESPRIT to write programming code for its HAAS V4 CNC machine, which is used to make several different kinds of parts for its racecars — ranging from the chassis and suspension

to the body. "Pretty much everything except engine components," Turner said.

Petty Enterprises is currently in the process of implementing ESPRIT software which, when fully implemented, will improve the production of parts for the racing teams' vehicles. "It should save us some time and money, which in turn will allow us to spend more time improving parts and spending money in other important areas," Turner said.

The new partners have opted to join forces through 2010. "We wanted to find software that would be easy to use, meet our current and future CNC needs, and have a support staff that could help us with training or any other technical assistance," Derrick Finley, technical director for Petty Enterprises, said. "Out of the different CAM packages we investigated, we found ESPRIT to be the software that best fit these needs. The support and training we have had thus far has been phenomenal, and the people at ESPRIT have been a great pleasure to work with."

The Web sites of both DP Technology and Petty Enterprises will be linked so that visitors to each site will be able to access the partner site.

## Continued from Page 9

utility, Burns works with the Charmilles machine's technology files (the settings for the burn) within ESPRIT. After he enters these specifications, ESPRIT uses the information to offset the toolpath for the overburn of the wire.

With 4-axis wire EDM, upper and lower heads move independently of each other. In many cases it takes only a few mouse clicks to begin cutting parts on these machines because ESPRIT can recognize the solid model and apply toolpaths automatically. "In the more difficult cases, either bad solid models or really complex geometry, I manually define upper and lower toolpaths," Burns explains. "Then I link them together.

ESPRIT recognizes if I am doing a four-axis cut or taper cut."

## Manufacturing the "Unmanufacturable"

ESPRIT supports Morris Technologies' strategy of using the most advanced manufacturing equipment available. "ESPRIT is allowing us to take on new capabilities such as 4-axis wire EDM and 4-axis lathes," says Burns. "It would be possible to program this equipment without ESPRIT but it would take too long." With the ability to create CNC programs for all but the most unique shapes in less than an hour, ESPRIT also supports Morris Technologies' mission to respond rapidly to its customers' requests.

ESPRIT is also helping the company win business no matter how complex the parts involved. "ESPRIT has allowed us to manufacture parts that would otherwise be impossible to manufacture by conventional methods," says Burns. Programs written on ESPRIT account for approximately one-half of Morris Technologies' machining work, which means that the software has helped the company double its revenues.

A version of this article, edited by Senior Editor Elizabeth Modic, appeared in the March/April 2008 issue of *Aerospace Manufacturing and Design* magazine.

## ESPRIT World Conference 2008: Denver

The ESPRIT community invades the mile-high city ...



### And the trophy goes to...

#### Five standout resellers take the president's prize

DP President Paul Ricard (foreground) presents President's Club trophies to outstanding ESPRIT resellers, including, from left to right, Susanne Greger of CAMcenter GmbH; Henk Anema of Somatech; Bruno Maso of Delta First; Rick Rauh of CIM Integraters and Roland Mast of ICAM AG.

Each year, a handful of ESPRIT resellers who have gone above and beyond the call of duty to represent DP Technology are recognized for their efforts at the annual ESPRIT World Conference.

Simone Festevoli, applications engineer for DP Italy, throws a strike at Denver's Lucky Strike Lanes, the site of the ESPRIT World Conference 2008 special event.

Dr. Christopher A. Brown, a professor of mechanical engineering at the Worcester Polytechnic Institute, makes his point to the audience at the conference general session, which was attended by more than 300 members of the ESPRIT community.

While ESPRIT World Conference 2008 is a thing of the—recent—past, those who visited Denver, Colo., to take part in DP Technology's largest annual gathering of the ESPRIT® community may very well be seeing its effects in the months, and possibly years, to come.

Attended by over 300 members of the ESPRIT community—including resellers, end-users and business partners—EWC 2008 was a platform for the debut of ESPRIT 2009 and ESPRIT Mold, as well as an opportunity for participants to receive detailed technical training and provide feedback on the new software.

It is this in-depth instruction that yields lasting results on the shop floor.

#### Our distinguished guests ...

In addition to changeable Denver weather in a variety of flavors, attendees of EWC 2008 were treated to addresses by a handful of guest speakers every bit as diverse as the climate.

From Dr. Masahiko Mori, president and representative director of Mori Seiki Co., Ltd., to Dr. Christopher A. Brown, a professor of mechanical engineering at the Worcester Polytechnic Institute, the conference general session offered a bit of something for everyone. Designed to provide a striking cross-section of the CAM users and the metalworking community, the roster of speakers was made up of those who thrive in different, but equally important facets, of the machining industry.

In addition to those delivered by Mori and Brown, presentations by Dr. Joaquim Berlak of Fauser AG and Nobuhisa Seya san, production technology engineer for Hitachi, Ltd., were well received by the audience. Presentations made by DP Technology personnel—namely President



**“Getting the Beta version of the new release is a real benefit that our customers appreciate. One-on-one time with leaders in our industry, like Dr. Mori, is priceless and would seldom happen at one's shop. To be heard and to have a real say in the future direction of ESPRIT is just one more reason that our customers know they made 'The Right Choice.' ”**

**—Rick Rauh of ESPRIT reseller CIM Integraters**

Paul Ricard, CEO Dan Frayssinet, Director of Sales-Americas Don Davies, and Vice President of Marketing and Research and Development Chuck Mathews—also took a place at the general session.

#### Introducing ESPRIT 2009 and ESPRIT Mold Version 10

In-depth technical training is what ESPRIT World Conference is really all about.

While social networking, special events and the informative general session are important elements, technical instruction is the backbone—or the meat-and-potatoes—of the comprehensive ESPRIT community experience.

Conference attendees walk away with new skills—most specifically how to use



the latest features within ESPRIT 2009 and ESPRIT Mold Version 10—as well as a better, more detailed understanding of the existing features in ESPRIT. Those who attend have the opportunity to consult with ESPRIT experts one-on-one in customer-driven, hands-on labs, as well as the ability to bring post-processing questions and issues for any style of milling, turning or wire EDM machining.

Conference attendees were also able to learn how to automate common or repetitive tasks tailored specifically to their machining needs, as well as how to create, store and retrieve machining processes that utilize the best machining practices for the parts most often machined.

Conference participant Daniel Parry, man-



ufacturing technician specialist for the Paper Converting Machine Company of Green Bay, Wis., said that the opportunity to work with members of DP's research

good and we are learning a lot," said DP reseller Alexandre Teixeira of UVW Computacao Grafica Ltda., based in Sorocaba, Sao Paulo, Brazil, at the conference.

year," Rauh said. "Our customers clearly see the value of attending the conference each year."

**"For me, the true value in attending the Esprit World Conference is to meet face-to-face with DP people I usually only interact with on the phone or via e-mail. Spending both professional and social time with these folks at the conference helps foster a long-term, well-rounded relationship that I believe benefits both parties. ESPRIT holds the best software conference I've ever attended."**

**—Michael Lubin of S&C Electric Company**

and development team, as well as the ability to share experiences with other users, made his trip to Denver invaluable.

"One of the best parts of being here is being able to work with people," Parry said at the conference. "These are the people who make the product and you are able to get real answers and hopefully be able to influence the future of the product." The conference proved just as valuable for DP resellers, who sought to learn the nuts and bolts of the new product. "The classes are

He added that the new 5-axis milling and mill-turn capabilities are upgrades that set ESPRIT 2009 apart. "We saw something in 5-axis milling and turning that we weren't doing and that the competition cannot do."

ESPRIT reseller Rick Rauh of CIM Integraters said that ESPRIT World Conference is popular for company personnel and customers alike. "The Annual Conference is a highlight on the calendar for us as we had over a dozen of our customers attend this

A new addition to the conference technical course roster in 2008 was ESPRIT Boot Camp, a class for new users that provides an introduction to milling and turning programming with ESPRIT, conducted over three-and-a-half days. ESPRIT Boot Camp is equivalent in technical content to a standard ESPRIT training and tailor-made for new users.



## *CIM Integraters of Tulsa, Oklahoma, certified in the ESPRIT CAM Center Reseller Program*

**DP** Technology is pleased to announce that U.S. ESPRIT® reseller CIM Integraters has become a certified member of its ESPRIT CAM Center Program.

Based in Owasso, Okla., a suburb of Tulsa, CIM Integraters opened its doors in 1989 and has served as an ESPRIT reseller since 1998. "CIM Integraters' formula for success was founded on providing superior customer support while focusing the business on one product," said Randy Rauh, the company's president.

Striving to improve manufacturing efficiency in the four-state region of Oklahoma, Arkansas, Kansas and Missouri, CIM Integraters operates a dedicated training facility equipped with experienced trainers and technical support. The company also produces a range of AVI tutorials that have provided training for ESPRIT users worldwide.

"First developed as a way to better train our own users, the tutorials have turned into much more. Covering all ESPRIT modules and including Knowledge-Base™ and post processors, learning ESPRIT has never been easier — no matter where you are," Rauh said.



*The staff of new DP CAM Center Program reseller CIM Integraters: In the back row, from left to right, are Rick Rauh, Steve Wilson and Randy Rauh. In the front row, from left to right, are Megan Rauh, Rhonda Guinn and Randy Hahne.*

The ESPRIT CAM Center Program is a prestigious certification earned by leading ESPRIT resellers who have proven to provide the highest level of commitment to ESPRIT customers. This program identifies those leading resellers who have demonstrated success with their customers and it provides new customers with a recognizable authorized source for ESPRIT software and service.

"Our transition to becoming an ESPRIT CAM Center has been very smooth," said Rick Rauh, director of sales and

marketing for CIM. "One of the best benefits of becoming an ESPRIT Cam Center is associating our name directly with the product we sell and support. With the strong product recognition in our area, we no longer have to explain what CIM Integraters does. With our new trade show booth, we look forward to attending future shows displaying and selling ESPRIT proudly."

For more information about CIM Integraters and its tutorials, visit [www.cimtulsa.com](http://www.cimtulsa.com)





## *DP Technology revamps corporate headquarters*



In keeping with a trend of growth at its centers of business around the world, DP Technology is currently in the process of remodeling and expanding its corporate headquarters to better serve the needs of customers and staff.

In the midst of being redesigned with productivity, comfort, convenience and energy conservation in mind, DP's corporate headquarters is located in Ventura County, roughly 50 miles north of Los Angeles.

With the acquisition of an adjoining structure, the 12,000 square-foot building that has served as DP's headquarters since 1989 is nearly finished undergoing a complete reconstruction that will result in an expansion to just under 20,000 square feet. This massive face-lift includes the remodeling of all of the two adjoining buildings, resulting in a 70 percent increase in overall office space to create a more efficient and spacious working environment.

"The business and development offices of 15 to 20 years ago had large, centrally located spaces," said Bill Haas, DP's vice president of special projects. "Today's office and development environment requires the individual work station be almost completely self-sufficient, capable of handling laptops, multiple computers and multiple monitors."

The remodeled site includes triple the amount of space formerly devoted to DP's research and development department, in addition to more than double the amount of space devoted to specialized

training — a must in light of DP's growing roster of technical instruction services. The improved space will also serve as an ideal locale to conduct group training classes, meetings and presentations.

Over the past two years, DP has expanded sales and support operations within and outside the United States. With new offices and increased sales and support in China and Europe, as well as expanded offices in Japan, the need for an overhaul of corporate headquarters became ever more apparent.

DP's goal with the structural and stylistic revamping of its headquarters is to bring the outdoors in — primarily by capitalizing on the qualities of natural light and designing an environment that includes tones lifted from nature's palette.

The addition of windows and the subtraction of inner walls — which are being replaced with half walls and half glass — will allow for the increased flow of natural light and a decrease in the use of artificial lighting. Existing lighting will be replaced with a modern, high-efficiency option.

Despite the building's notable increase in size, "our energy footprint will remain the same as it is now, due to the many energy-efficient equipment and design features being employed," Haas said.

Efforts to make the construction process "as green as possible," as well as to decrease energy use over time, Haas said, include the use of 100-percent recycled porcelain tile and the insulation of all internal

walls. The installation of electronic dampers in the air conditioning and heating system, waterless urinals, highly efficient non-traditional instant hot water heaters and a total of 400 rooftop solar panels are intended to decrease long-term energy dependency on non-renewal energy sources. According to Haas, the network of solar panels is capable of "providing 75 to 80 percent of our total electrical needs."

Designed by Pittman Group Architects of Camarillo, Calif., the project's principal architect, with construction by Front-Runner Enterprises of Camarillo, Calif., the overall result is an environment that provides more spacious, thoughtfully configured work stations, roomy walkways, convenient common areas and plenty of greenery. Among the common areas will be an atrium with a large tree at its center.

"We started off with the basic concept that form was to follow function and we were not going to make compromises in this area," Haas said. "As employees and guests move about the facility, it gives them a change of environment — and a mental break."

Form will follow function in the new Tuscan-inspired lunchroom, which will be equipped — like all meeting areas — with flat paneled monitors and/or projectors, as well as wireless Internet connections.

Construction was completed in early Fall.



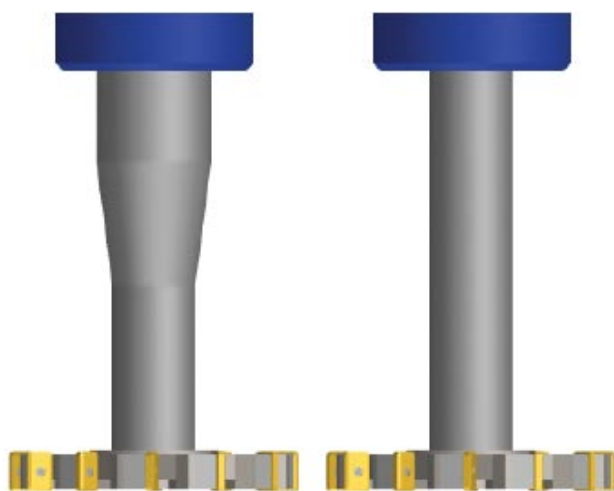


# Enhanced Slot Mill Tool

In ESPRIT 2009, the slot mill tool has been improved to support a new type: “Side Slot Mill.” The Slot Mill Tool also benefits from the other milling tool enhancements in ESPRIT 2009, such as the new shank definition and collision detection. The Slot Mill Tool also benefits from the other milling tool enhancements in ESPRIT 2009, such as the new shank definition to separately define the shank from the cutting edge of the tool and shank collision detection.

- New “Side Slot” type
- Better shank definition

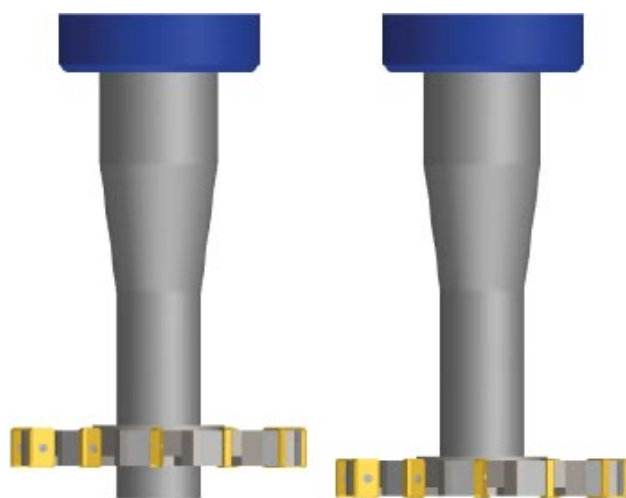
## Shank Definition



With ESPRIT 2009, the Slot Mill Tool has two new predefined shank types for more realistic simulation (including collision detection):

- Cylindrical
- Conical

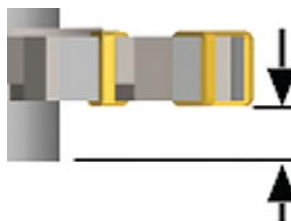
## Slot Type Definition



The Slot Mill now supports two types of slot:

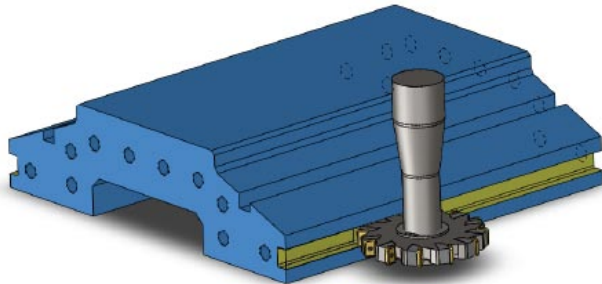
- Side Slot Mill
- T-Slot Mill

The position of the cutting edge relative to the shank on the “Side Slot” is controlled by the setting “Shank Extension”.

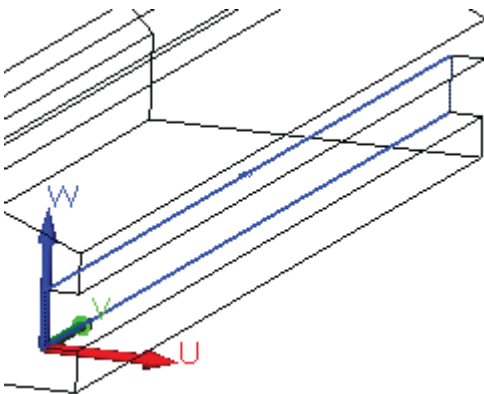


## Contouring and Side Slot Milling

ESPRIT does not have a specific "Side Slot" operation, but this type of operation can be performed using the contouring cycle.

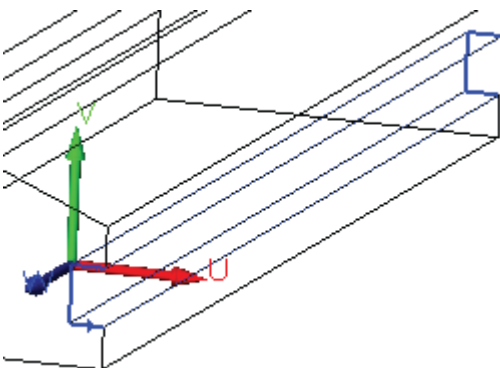


### Creating a side slot feature



In the case of a side slot, the feature should represent only the side wall of the slot. In addition, the orientation of the feature work plane needs to be in the same direction as the tool.

### Incorrect side slot feature

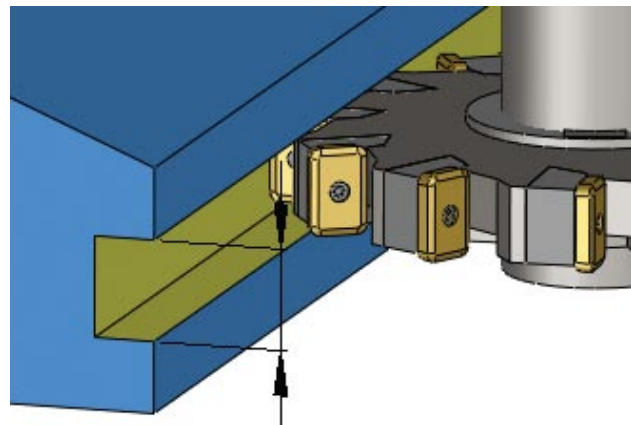


The feature should not include the top or bottom face of the slot.

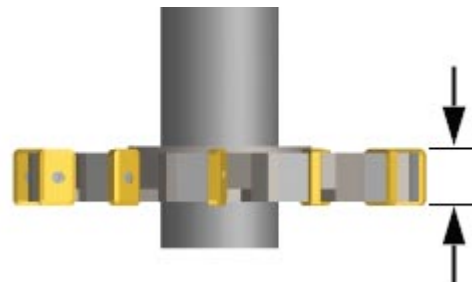
## Defining the machining depths

Depths	
Total Depth	= Feature.Depth
Incremental Depth	= Tool1("ToolThickness")

Set the Total Depth equal to the height of the slot. You can extract this value from the depth property of the feature.



Set the Incremental Depth equal to the Tool Thickness. You can extract this value from the tool properties.



Note: The Incremental Depth plus the Start Depth must equal the thickness of the tool.



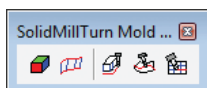




# New SolidMill and SolidMillTurn Mo

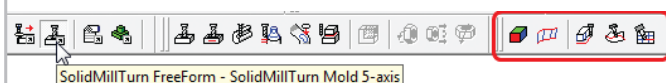
## 5-Axis Cycles

### SolidMill and SolidMillTurn Mold 5-Axis Toolbar



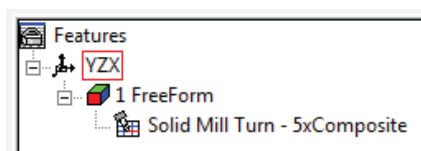
All the commands for the new 5-Axis cycles are grouped on the Mold 5-axis toolbar. These new cycles use a completely new interface and new types of features.

### Integration into the Smart toolbar



The Mold 5-Axis toolbar can be displayed using the Smart toolbar. Select SolidMill FreeForm or SolidMillTurn FreeForm to show the Mold 5-Axis toolbar.

### Feature-based 5-axis operations

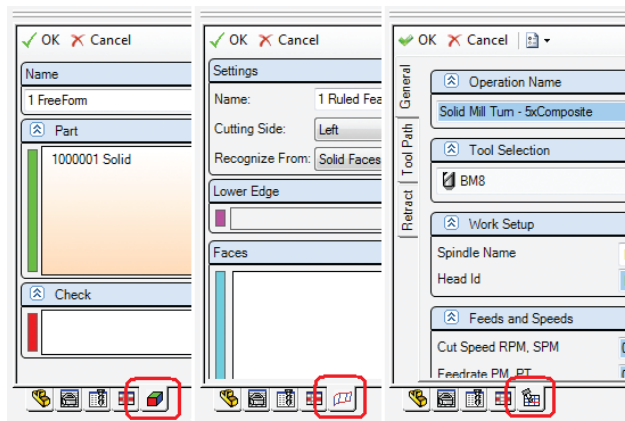


All the new 5-Axis cycles must be applied on the new Free-Form feature.

The FreeForm feature defines what is cut. The FreeForm feature must exist before creating the operation. Deleting the feature deletes the operation.

The 5-axis Swarf Milling cycle also requires a Ruled feature as a guide.

### New interface through the Project Manager

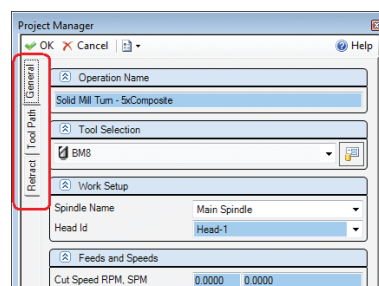


All five commands on the 5-axis toolbar open a new tab in the Project Manager to display the command parameters and options. This tab is dynamic. It displays only when required.

There are multiple advantages with this new interface:

- There is no dialog box to block the view
- Selections are made in the work area while keeping the parameters on the screen
- In case of incorrect parameters this interface lets you fix the problems
- Parameters in the tab have a dynamic layout. Anything that is not used is hidden from view.

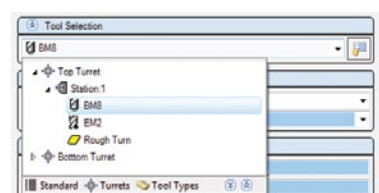
### Consistent page layout



The page layout is organized the same way for all three 5-axis cycles with three vertical tabs.

- General: This tab groups all the general parameters that are common to all operations
- Tool Path: All parameters for the tool path definition and the tool orientation are on this tab
- Retract: Definition of transition movement and approach/de-tach movements

### Tool selection

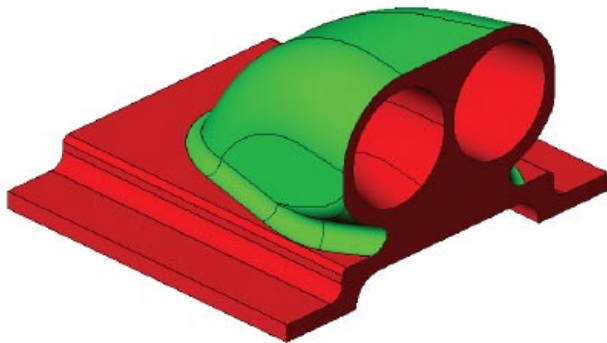


Tool Selection sorts the tool by station, by tool type or with a single list. In mill/turn, picking the tool selects the turret.

## FreeForm Features

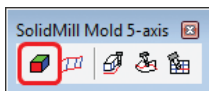
The FreeForm feature lets you group all the surfaces for the calculation of a 5-axis operation. The user can select the part surfaces to be machined and the check surfaces to be avoided. Part and check surfaces are identified visually with different colors. Part surfaces are green and check surfaces are red. Multiple features can be created on the same model and are easy to edit if the user needs to add or remove surfaces.

### FreeForm Features At-A-Glance



- Define surfaces at 'Part' or 'Check'
- Save any number of FreeForm features on the same part
- Visual display of selected surfaces: Part surfaces display in green; Check surfaces display in red
- FreeForm features are fully editable before or after 5-axis operations are applied
- Adjustable surface orientation to cut inside or outside
- Ability to name the feature before it is created

### FreeForm feature command



Select the first icon on the Mold 5-axis tool bar to start the FreeForm feature command.

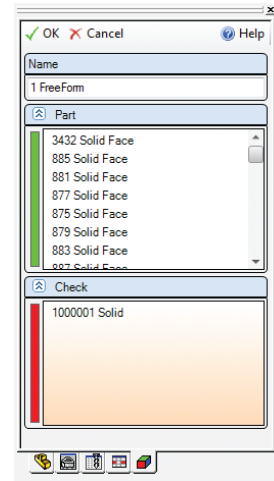
At least one FreeForm feature has to exist before you can create a 5-Axis operation.

Nota: SolidMill FreeForm operations do not work with FreeForm features.

### FreeForm Feature tab

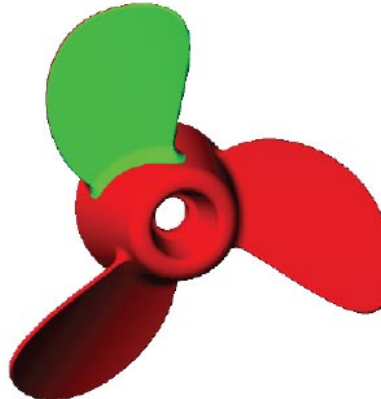
The FreeForm feature tab in the Project Manager is composed of collapsible boxes for inputting:

- The feature name
- The part elements
- The check elements



### Part versus Check elements

Part elements are surfaces to be machined. Check elements are surfaces to be avoided.



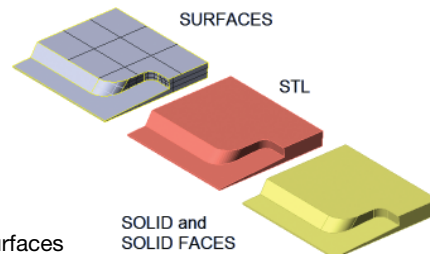
Check elements are taken into account during the calculation of the tool path but the tool will stop cutting when it reaches a check element.

Note: Check elements are considered as part elements for the 5-axis Swarf cycle.

### Valid element types

Valid element types for part and check elements are:

- Solid face
- Solid body
- Surface
- STL
- Composite of surfaces



Note: When selecting a composite, all the surfaces from the composite get added to the FreeForm feature.



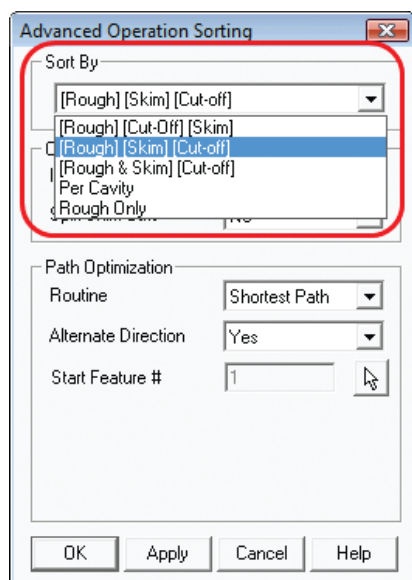
# Updated Advanced Operation Sorting

The Advanced Operation Sorting dialog has been updated to include a new Sort By option and a new setting that lets users split up each group of skim cuts to reduce the amount of time each cut is subjected to the dielectric fluid.

## Advanced Operation Sorting At-A-Glance

- Updated with additional functionality, particularly to handle the new multiple cut-off function
- New “Sort By” option [Rough][Skim][Cut-off]
- New “Split Skim Cuts” option that provides sorting by each skim cut

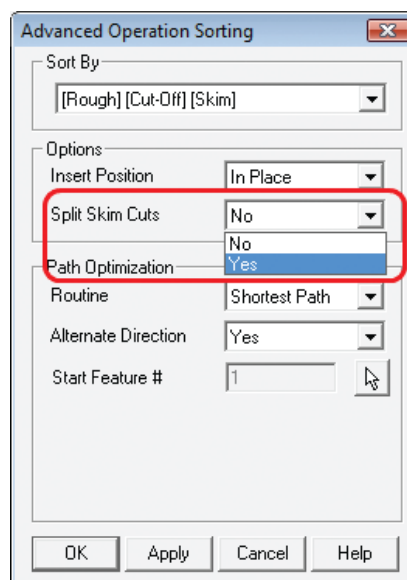
### New Sort By option



The new “[Rough][Skim][Cut-off]” option sorts all rough operations first, then all skims, and then all cut-off operations.

This option gives users the ability to do all the rough cuts first to relieve the stress from the material, and then do all the skim cuts before performing the cut-off.

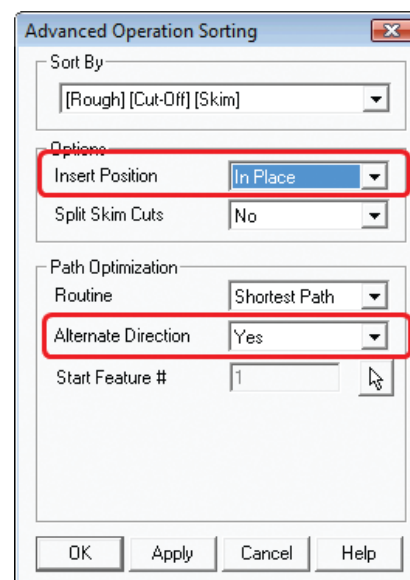
### New Split Skim Cuts option



The new “Split Skim Cuts” option is valuable for users who cut material that quickly corrodes in the tank by reducing the amount of time that each cut is subjected to the dielectric fluid.

All Rough cuts are performed first, then each individual Skim cut, followed by or preceded by the Cut-off depending on the “Sort By” strategy selected.

### Other dialog design changes



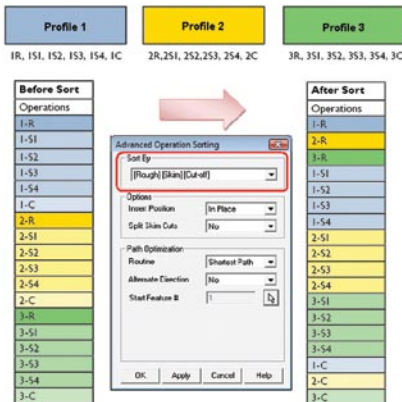
You'll also notice that the “Insert Position” options are now placed on a drop-down list instead of being listed as radio buttons.

Also, the previous “Reverse Second Cut Order” option has been moved and renamed “Alternate Direction”. This option alternates the direction of each cut when operations are reordered.



## Example of Sort By option [Rough][Skim][Cut-off]

In this example, three profiles have one rough cut, four skim cuts, and one cut-off. Before being sorted, operations are organized to perform all cuts on each profile, starting with Profile 1. After operations are sorted, all roughs are performed first, starting with the first profile. Then Skim 1 through 4 are performed for each profile, also starting with the first profile, then all cut-offs.



Continued from Page 2

This, of course, creates significant demands and added stress on CAM systems. In the past, typical developers required a span of several years between the time a customer requested new functionality and the time the new functionality was ultimately realized as a full implementation in a new version of a CAM system. World competitiveness no longer allows for the existence of this paradigm: Countries that support low-cost labor can manufacture parts by "throwing" many highly-skilled, low-wage personnel at any particular job. The only means by which expensive-labor countries can compete in this system is to strive for competitive innovation and very quickly invent new functionality that can replace staff and actually maintain better product quality by reducing the rate of mistakes on the shop floor. A computer does not make mistakes — but humans do. This system forces CAM companies to not only provide CAM systems, but to also provide "completely user-friendly development platforms," by which customers can quickly prototype new functions to test new ideas and cut better parts both faster and cheaper.

Additionally, not only do these machine tools have virtually unlimited capabilities, but the rate of new models — models that feature new and better functions — being introduced at the rate of several new models on a yearly basis, forces everyone in the machining industry to rethink the amount of expertise needed to utilize full capabilities. There is not one CAM company that can accumulate enough knowledge and keep that knowledge current enough to provide the necessary functions needed for every new machine tool being introduced to the market.

Again, this places pressure on CAM companies to work with CNC manufacturers as the new models are being developed and before they are released to the public. At release time, the new CAM functions must be operative. This is one more argument for the CAM system to offer a complete development platform that can be used by both the CAM developers and the machine tool developers to create these new cycles. In the past, two to four years of development for a new function was the standard. Today, thanks to these new development platforms, new functions can be dreamed up, prototyped, proven and developed within a few days to a few weeks.

The structure of the development platform is extremely crucial, as machine tool manufacturers and customers alike cannot be expected to learn computer programming. This implies that the creation of a new CAM system, such as ESPRIT, that can "learn" from its users, memorize what is being taught, assemble it into some widgets or add-ins for use and distribution is crucial — especially as machine tools grow more sophisticated.

This scenario must also include a comprehensive knowledge-based engine that is both intuitive and powerful. Once such a platform is operational, it allows users to trade and exchange (for free or for a fee) these new cutting functions via the Internet. CNC manufacturers who develop new cutting cycles can provide these functions at no charge, as for them it is a competitive advantage. Many end-users also provide them for free, due to the pride they feel about the new cycle they have invented. Of course, such development platforms become full-fledge Manufacturing Operating Systems, such as ESPRIT. They are to manufacturing what Windows is to personal computers.

The same development platform can be used by research centers and universities the world over. Doctorate manufacturing students and their professors can use this to test their manufacturing ideas, develop them and, in the end, release new widgets/add-ins that customers can use to cut better, faster, more efficiently, cheaper and with increased accuracy.

As users continue to accept the value of the multitasking machine on an exponential level, the savings in lead and set-up time, as well as overall cycle time, continues to become increasingly evident — as does the need for increasingly sophisticated software and well-trained staff on the shop floor. As the machinery becomes more efficient — and grows more complex in the process — the need for powerful software to accommodate those changes, while remaining relatively easy to use, is clearer than ever before.

The right CAM system is the backbone of any successful mill-turn operation.

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*Continued from Page 3*

### **FX Technology for advanced Feature Recognition**

In ESPRIT 2009, the ESPRIT FX™ feature tree, which has been upgraded and now includes better rendering and visualization options, now supports multiple CAD models and assemblies. The new associative technology introduced in ESPRIT 2009 is also fully integrated into the ESPRIT FX feature tree, linking design features built inside the CAD system with manufacturing features built inside ESPRIT.

ESPRIT 2009 includes new support for CATIA, Pro Engineer and Autodesk Inventor (support also exists for Solid-

New associative technology in ESPRIT 2009 — defined as the recognition of a given part and its subsequent downstream activities — allows for the recognition of engineering changes made to a part model and the association between the original and changed part. ESPRIT retains the link to the original CAD file as well as a link to the faces utilized for each manufacturing feature created inside ESPRIT. If the CAD model changes, ESPRIT recognizes which faces have been changed, added or deleted, and will update the associated ESPRIT feature and ultimately the manufacturing processes.

### **Innovative new user interface**

ESPRIT 2009 takes the previous redesign of the software's Operation Man-

The new ESPRIT 2009 FreeForm machining cycles also include a new style of user interface (technology page), which is docked on the left side of the screen and inside the ESPRIT Project Manager. This new user interface maximizes the area of the screen used for graphics, allowing the programmer to more easily identify which parameters should be used and what part features (geometry) should be machined. Selection of the machining parameters can now be made directly from the graphics and/or the dialog box. The new GUI is dynamic, only displaying those parameters that are required and pertinent to the task the user is performing. This new 3D user interface also includes a new 3D FreeForm Feature, which simplifies the definition of the multiple machining steps commonly

**Graphics upgrade available in ESPRIT 2009 include panning, zooming and rotate-the-view functions that have been improved in the latest software release to more closely align with the viewing functionality in each CAD application. Controlling the graphic view is now possible from a 3D mouse, a standard mouse or from the keyboard.**

Works and Solid Edge), in addition to support for assemblies and the ability to merge multiple CAD bodies — even when they are created in different CAD applications. Additional upgrades include support for multiple SolidWorks configurations, functionality that allows users to view the status of CAD files in the CAD feature tree, the ability to update imported CAD models that have been altered outside of ESPRIT, and the ability to customize the background of the CAD feature trees.

Graphics upgrades available in ESPRIT 2009 include panning, zooming and rotate-the-view functions that have been improved in the latest software release to more closely align with the viewing functionality in each CAD application. Controlling the graphic view is now possible from a 3D mouse, a standard mouse, or from the keyboard.

ager one step further with a new graphical user interface (GUI) for the ESPRIT Cutting Tool Manager. This new GUI presents the same look and feel for both milling and turning tools, with cutting tools being grouped by the milling head or lathe turret they belong to. The new tool manager also has better integration with the KnowledgeBase™ (cutting tool database). Icons show which tools have been added from the KnowledgeBase and which tools were created individually in the ESPRIT document, which can be easily added to the KnowledgeBase so they may be reused in other programs or by other programmers. Additional GUI upgrades include new dialogs for the definition of individual cutting tools, which are significantly simplified and now support the definition of the tool shank. The new GUI displays more accurate images of the tools to aid in more easily defining tool geometry.

performed in 3- and 5-axis - rough cutting, semi-finishing and finish cutting.

For wire EDM programmers, ESPRIT 2009 has a new Wizard technology that is now available to programmers of Charmilles and Sodick wire EDM machines. This Wizard technology leads the user step-by-step through the programming process, providing a “recipe” for users with little experience or training to quickly produce part programs. This new technology is also well suited to casual users who occasionally use the software, eliminating the need for them to remember exactly how to program a part since the Wizard technology leads them through the process.

### **What's New in SolidMill and SolidTurn**

ESPRIT 2009 places a heavy emphasis on integrated machining, the use of milling and, or turning in any combination on

any type of machine tool — Swiss-turn, mill-turn, B-axis machines, etc. Therefore, as with the 3- and 5-axis improvement listed above, most improvements to the software are to the benefit of all programmers.

Other new or upgraded features highlighted in the 2009 release include improvement to the following machining cycles: facing, open-pocket machining, slot milling, chamfer milling and thread milling. Additional support for advanced coordinate systems has been added, including Rotate Tool Center Point (RTCP) programming for 5-axis milling, support

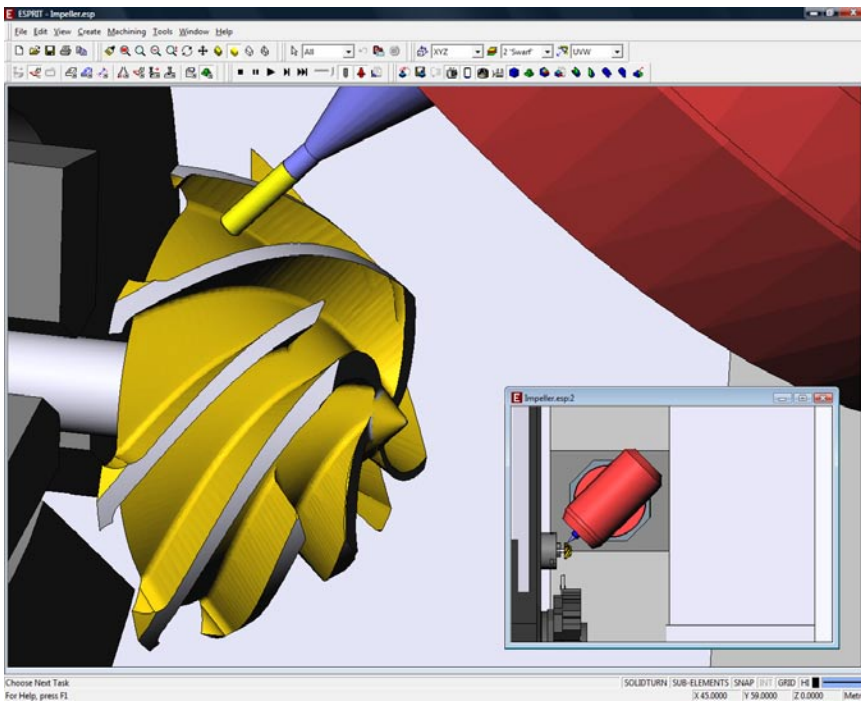
held in a rotary spindle. The advantage of the spinning tool is that there is no one single point on the tool that is in contact with the work piece all the time, and this is very good for heat dissipation and tool wear. Cutting conditions are no longer limited by the heat generated in the process, but by power available in the machine.

## Wire EDM

The technology pages (user interface) for Agie 123 and AgieVision have undergone a complete transformation in ESPRIT 2009, bringing them to parity with all other wire EDM technology

ESPRIT database, users now have the ability to add new machine data into the database by importing their Sodick machine's cutting data files directly into ESPRIT. This new ESPRIT database for Sodick is accessed directly from ESPRIT's Sodick-specific user interface (technology pages).

Multiple cut-offs, commonly referred to as "bridges," are necessary when a punch or slug (in the case of a die), may be too heavy or cumbersome to be extracted without trouble. By selecting the multiple cut-off locations, stress can be effectively released and the punch or

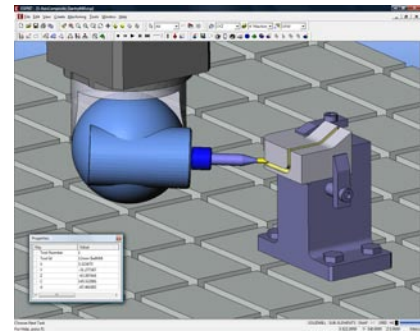
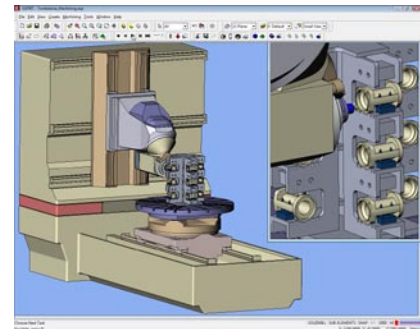


for co-linear axes, and more automated tools for addressing the differences between the coordinate system used in the original design and the machining coordinate system (workpiece orientation).

Designed to distribute heat and wear more effectively than a single-point lathe tool, the new turning spinning-tool technology available in ESPRIT 2009 can increase productivity by up to 500 percent and tool life by up to 2,000 percent. This new cutting technology employs a specialized insert — similar in design to a round, or full-radius insert — mounted at the bottom of a cylindrical tool shank

in ESPRIT. Agie customers can now take advantage of all the enhanced technology and advantages in ESPRIT Wire EDM, including automated draft feature recognition for geometry and solids, an underlying application programming interface (API), ease of use, and a new expert system for AgieVision and AgieVision V controls.

ESPRIT now contains an integrated ESPRIT cutting condition database that will generate factory recommended cutting parameters for all four Sodick Linear Controls (LP, LQ33W, LQ and LN). If a machine type is unavailable in the



slug can be extracted without trouble. Through the new multiple cut-off function in ESPRIT 2009, multiple cut-off locations are linked to "punch," "die" or "open" features. "Multiple cut-off" works on both draft conic (2-axis) and ruled features (4-axis). SolidWire® technology has been updated to recognize the multiple cut-off locations on the feature and will apply the same cut-off length to all cut-off locations.





# ESPRIT de Corps

## Save the Date! ESPRIT World Conference 2009: May 12-15

**ESPRIT World Conference (EWC)** returns to California in 2009, when surf and sun will soothe the spirit after long hours spent in the classroom ingesting all of the upgrades to be found in ESPRIT 2010 and ESPRIT Mold Version 11.

- EWC 2009 includes one half-day general session for all attendees
- 28 hours of intensive technical training over four days
- Your choice of educational sessions
- ESPRIT Boot Camp—a class for new users that will provide an introduction to milling and turning programming with ESPRIT provided over three and one-half days following the half-day opening general session.
- An additional day (Monday, May 11, 2009) of sales meetings set aside exclusively for resellers

### REGISTRATION

Conference registration has begun, as has the chance to take advantage of the early bird registration fee of \$995 USD—which includes admission to conference sessions, special events and breakfast and lunch daily. Early bird registration ends Dec. 31, 2008, so act quickly to take advantage of the special value. The regular registration rate is \$1,195 USD from Jan. 1, 2009. All rates are per person. Additional conference details will soon be provided via e-mail and ESPRITWeb.

### THE VENUE

The Sheraton San Diego Hotel & Marina offers spectacular views of the San Diego skyline, bay and marina. You will be minutes from the historic Gaslamp District and Seaport Village—making this the perfect venue for work and play alike. Lodging has been reserved at a special rate of \$164 USD per night, plus 12.565% tax. Reservations will be made by attendees directly with the hotel. Please reference ESPRIT World Conference to receive the discounted room rate.

To reserve your hotel room visit [www.dptechology.com/ewc](http://www.dptechology.com/ewc). Click on the link “Room Reservations” which leads directly to the hotel’s ESPRIT World Conference room reservation page. You may also call the hotel directly at (619) 291-2900.

Stay tuned for ongoing ESPRIT World Conference 2009 updates, which can be found, along with a conference registration form, at [www.dptechology.com/ewc](http://www.dptechology.com/ewc).

## ESPRIT de Corps

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## Movin' On Up!

Having spent a decade at its former business site, it was high time for DP's Des Plaines, Ill.-based staff to move on up to the fourth floor of a spacious, modern office building that translates to immediate rewards for personnel and customers alike. The new office—which, like its previous incarnation, is the DP branch that conducts the lion's share of ESPRIT training—can accommodate more customers more comfortably, and in more style, than the former site.

Sporting a professional and modern look, the new office includes expanded training facilities and a fully-equipped break room, as well as access to two eateries, a deli, a snack shop, a 150-seat auditorium and a security and information center. Proximity to Chicago O'Hare Airport, a nearby train station and two adjacent hotels—not more than 100 yards from the new office—make traveling to an ESPRIT training easier than ever.