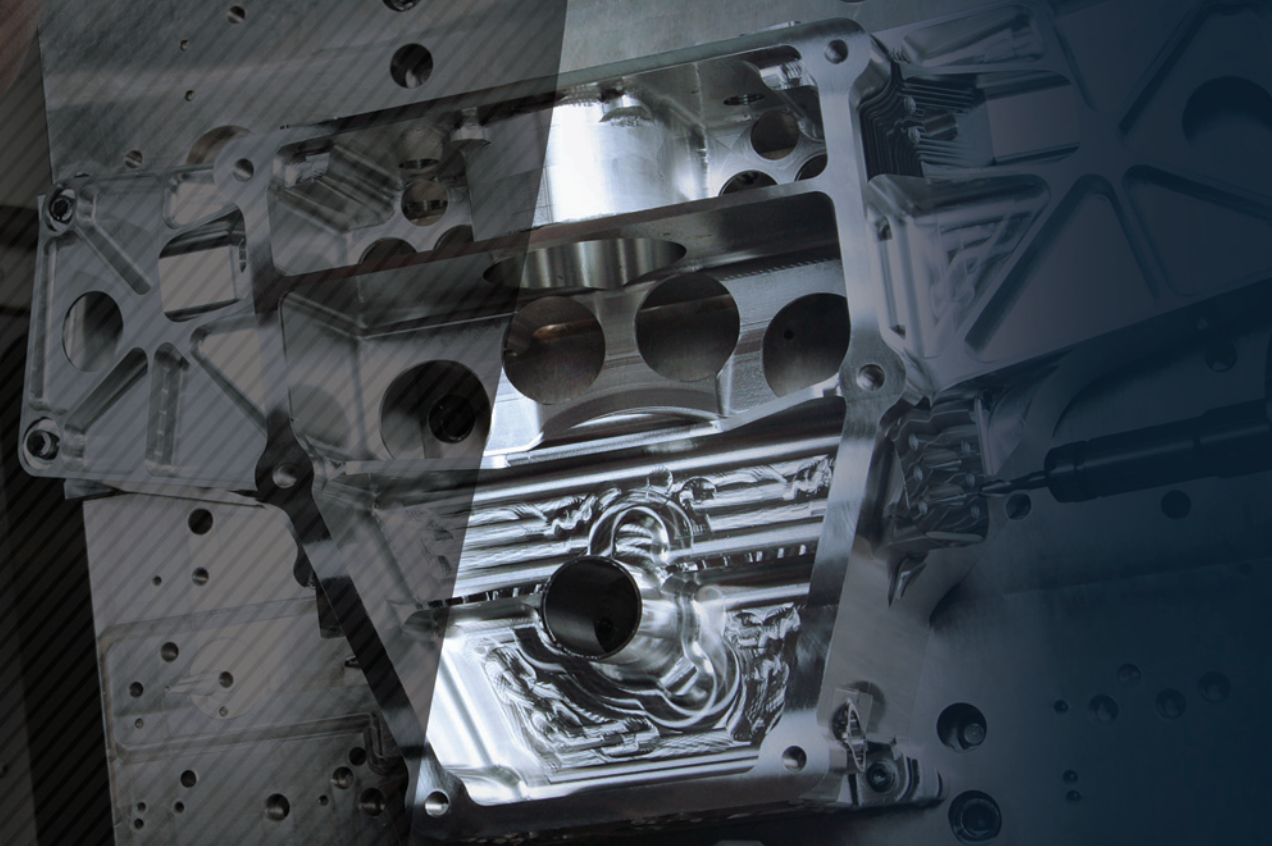Delcam | Advanced Manufacturing Solutions

# PowerMILL

World leading 2, 3 and 5-axis CAM software

www.powermill.com

# Delcam

## Complete CADCAM Solutions

- 150 subsidiaries and partners in 80 countries
- More than 800 employees
- The world's largest CAM development team*
- 40,000 customers worldwide
- 40 years of experience developing CADCAM solutions
- Headquartered in a purpose-built 63,000 sq. ft. facility in Birmingham, UK

> " I believe the combination of leading edge software, hardware and expertise provided by Delcam represents a phenomenal offering to new and existing customers around the world. "
>
> Clive Martell, Chief Executive, Delcam plc
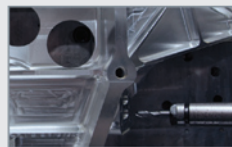
**DID YOU KNOW ?**

**Delcam develops all its machining code in-house and tests it in its own Advanced Manufacturing Facility.**

## Delcam Advanced Manufacturing Solutions

### Powering your productivity

### PowerMILL
PowerMILL is the world's leading specialist NC CAM software for the manufacture of complex shapes, providing advanced machining strategies to minimise machining time and maximise finish quality.

### PowerSHAPE
PowerSHAPE integrates surface, solid and triangle modelling. Design complex 3D models from scratch, or prepare imported data for manufacture, quickly, simply and accurately.
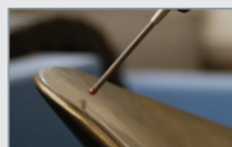
### PowerINSPECT
PowerINSPECT delivers a CAD-based inspection solution that can accept data from all types of hardware, including manual and CNC coordinate measuring machines, portable arms, optical measuring devices, and CNC machine tools.
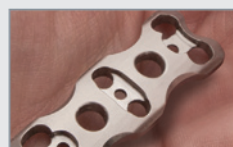
### FeatureCAM
FeatureCAM is the unique CAM system that uses feature-based and knowledge-based technologies for automated machining, minimising programming times for mills, lathes, turn/mill, and wire machines.

### Delcam for SolidWorks
Delcam for SolidWorks is a SolidWorks Gold Partner product that revolutionises CAM programming inside SolidWorks.

### PartMaker
PartMaker applies a Patented Visual Programming approach to automate the programming of multi-axis Swiss-type lathes and Turn-Mill Centres.
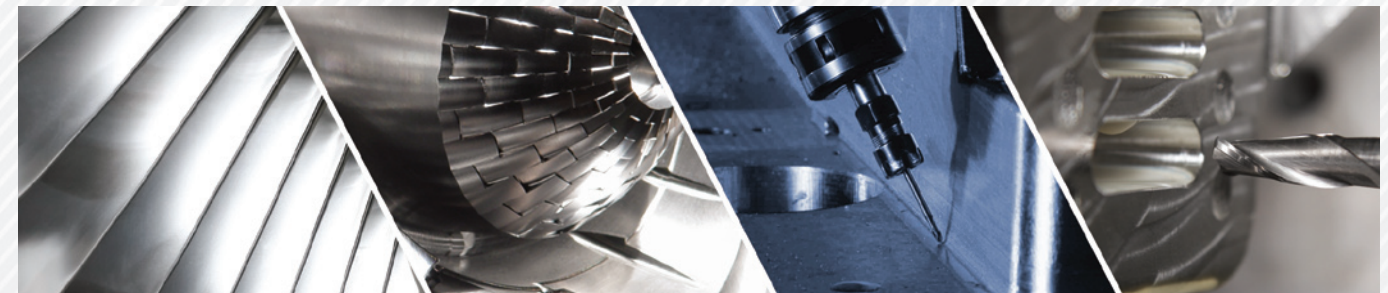
### Connect with Delcam
www.delcam.com | www.delcam.tv | www.delcam.tv/lz | www.youtube.com/delcamams
www.facebook.com/delcamams | www.twitter.com/delcamams

# PowerMILL

## World leading 2, 3 and 5-axis CAM software



### What is the most important factor when you choose a CAM system?

☐ Speed  ☐ Flexibility  ☐ Reliability  ☐ Ease of Use  ☐ Optimisation  ☐ Customisation

☑ All of the above?

PowerMILL is the choice for thousands of organisations around the world that need a CAM system to cope with their ever-increasing production demands. Built on over 40 years of CADCAM know-how, PowerMILL helps you create perfect toolpaths first time, every time.

**Fast**
Minimise your calculation times with 64-bit support, multi-threading, and background processing.

**Flexible**
Maximise your workshop facilities, with complete control over 3- to 5-axis mills and 8-axis robots.

**Reliable**
Detect and avoid collisions for complete confidence and peace of mind.

**Easy-to-Use**
Quickly program complex multi-axis machines for a fast return on investment.

**Optimised**
Modify toolpaths easily with PowerMILL's powerful editing tools.

**Customised**
Automate specialist processes, or calculate simple toolpaths unattended.

> " We will continue to work with Delcam because they are a forward thinking company. They listen to the problems that you might have and they are always developing the product. They're moving with the times and continually improving. "
>
> Paul Crosby, Crosby Composites

www.delcam.tv/crosbycomposites

# 2D MACHINING

2D machining operations such as facing, chamfering and drilling are an integral part of complex 3D projects. As well as being a world leader in innovative high speed and multi-axis machining, PowerMILL also provides powerful and comprehensive 2D machining functionality.

### Easily program 2D features

Perform 2D pocketing and profiling operations in PowerMILL directly from 2D wireframe curves to quickly machine boss, pocket and side features. You can determine the number or radial cuts and axial cuts, while PowerMILL automatically compensates for the tool radius. Pocketing and profiling supports rest machining of stock models, and you can also use PowerMILL for 2D chamfering and boring operations. All 2D features can be fully gouge and collision checked against any 3D model.
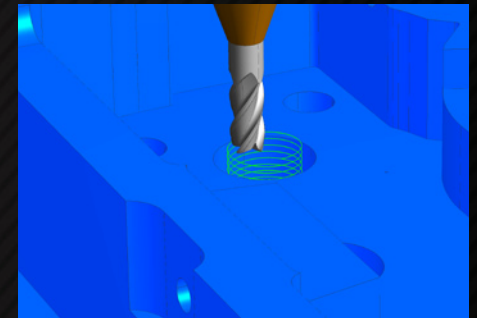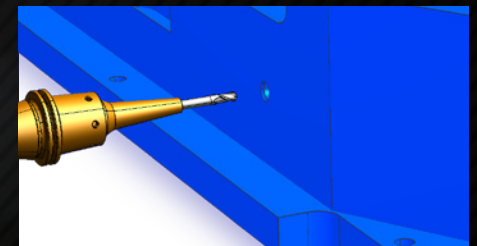
### Optimise machining performance

PowerMILL automatically identifies any flat areas of the model and modifies the roughing strategies to optimise overall machining performance. In addition, all 2D functionality is supported for 3+2 machining.
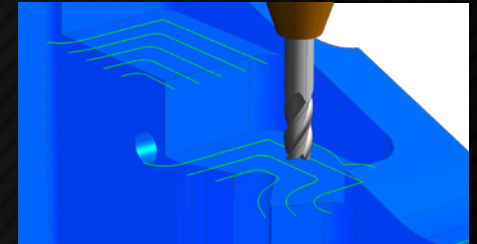
### Drilling holes

Drilling holes with PowerMILL could not be simpler, as PowerMILL identifies hole diameter, depth and orientation automatically. PowerMILL is ideal for component manufacture and gives you the choice of helically machining holes rather than drilling. Pre-defined drilling methods enable you to standardise and automate the machining of hole features.

**DID YOU KNOW ?** **PowerMILL lets you edit toolpaths on the fly without needing to recalculate them.**

## BENEFITS

Minimise tool changes for reduced cycle time

Eliminate over-machining for optimised machining performance

Reduce tooling costs

"The ability to work with simple 2D toolpaths to very complex 5-axis surface machining, while maintaining simple-to-use forms, is of great benefit.

Andrew Collins, Noonan Race Engineering
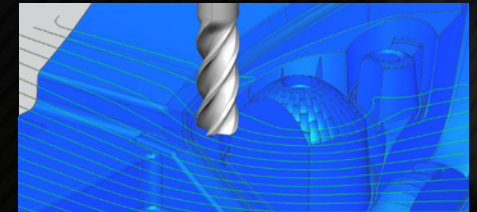
# HIGH SPEED MACHINING

Delcam has been at the leading edge of High Speed Machining technologies for many years, helping customers such as Magna Automotive, TATA Group and First Auto Works machine components in the shortest possible time. A combination of innovative techniques ensures rapid delivery of high quality machined components by maintaining constant cutter loads and minimising sudden changes in cutting motion.

## High-efficiency Roughing

High-efficiency roughing keeps the load on the cutter as constant as possible and minimises sudden changes in the cutting direction.

### Raceline Machining

PowerMILL's patented Raceline machining smooths roughing passes as the offsets move further from the main form.

### Vortex – High Speed Area Clearance

Machining parts with Vortex, Delcam's latest patent pending roughing technology, allows you to gain the maximum benefit from solid carbide tooling and reduce machining times by up to 60%. Vortex can be used for 2 and 3-axis roughing, positional 5-axis area clearance and for rest machining based on stock models or reference toolpaths.
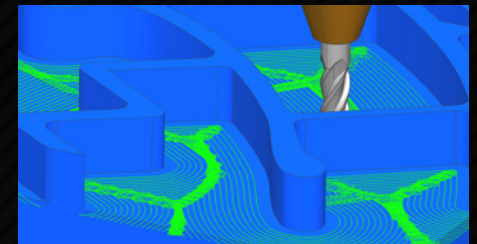
### Intelligent Stock Removal

PowerMILL intelligently removes small islands of residual stock by inserting a smooth extension to the area. A combination of tool radii and step-over can cause these islands.
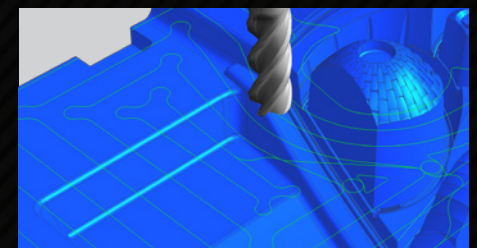
### Rest Roughing and Simulation

PowerMILL's stock model and intelligent ordering ensure constant cutting conditions and minimise wasteful air moves. At any time, you can simulate and visualise the remaining stock to help you choose appropriate strategies and cutters to remove the remaining stock.
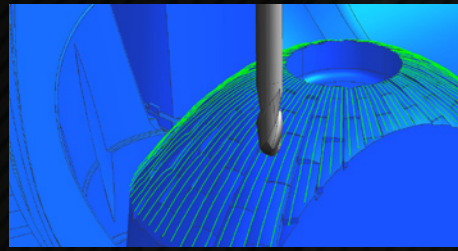
" PowerMILL allows me to machine my parts better and faster than any software I've ever used.

Paul Miranda, Magna Advanced Technologies,
a Department of Magna International Inc.

www.delcam.tv/magna
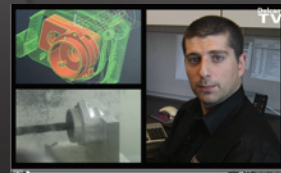
# High Speed Finishing

High speed finishing controls toolpath smoothing and tool loading. PowerMILL minimises the sharp changes in tool direction.



### Pattern Finishing

Depending on the part shape, you can use raster, radial or spiral strategies to provide maximum efficiency. Full control of the leads and links ensures smooth transitions between cutting moves.
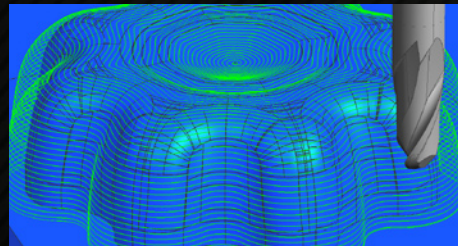


### 3D Offset Finishing

3D offset machining provides excellent surface finish as you can control the distance between successive passes by cusp height. This varies the stepover on steep surfaces and shallow contoured areas.

Spiral offset finishing prevents 'witness marks' by keeping the tool in constant contact with the model in one smooth spiral motion.
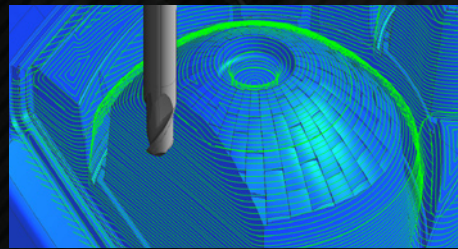


### Steep and Shallow Finishing

Optimised steep and shallow machining combines 3D offset toolpaths in the shallow areas with constant Z finishing on steep walls, producing optimal toolpaths automatically. PowerMILL controls the overlapping areas between the two strategies.
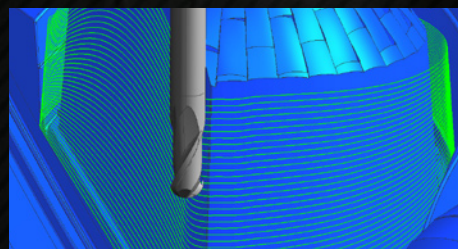


### Parametric Machining

Parametric offset machining intelligently morphs toolpaths across a surface with a varying rather than constant stepover. This strategy machines the complete area without any sharp changes in direction.

## DID YOU KNOW **?**

PowerMILL's High Speed Machining capabilities make it easy for you to produce efficient micromachining roughing strategies for parts smaller than 1mm.

See how our customers use PowerMILL's High Speed Machining: **www.delcam.tv**
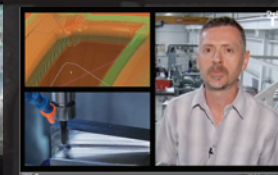Or to learn more, visit: **www.delcam.tv/lz**

## BENEFITS

Maximise material removal rates while maintaining tool life, surface finish and accuracy

Reduce tool loading and optimise stock engagement for machining directly into hardened materials

Prolong the life of your machine tools

Create smooth roughing passes for faster machining times

**www.delcam.tv/neovision**

"PowerMILL allows me to machine parts quickly, accurately and not go back to remanufacture. The different machining strategies allow us to be more creative and make changes on the go. It's made my career a whole lot easier!

Tom LeMire, NeoVision Technology

# Vortex

## Vortex – Revolutionising High Speed Roughing

Vortex* is Delcam's latest high-speed area clearance technology. Deeper cuts use the full flute length as the cutting surface, allowing you to gain the maximum benefit from solid carbide tooling and reduce machining times by up to 60%. It can be used for 2 and 3-axis roughing, positional 5-axis area clearance and for rest machining based on stock models or reference toolpaths.
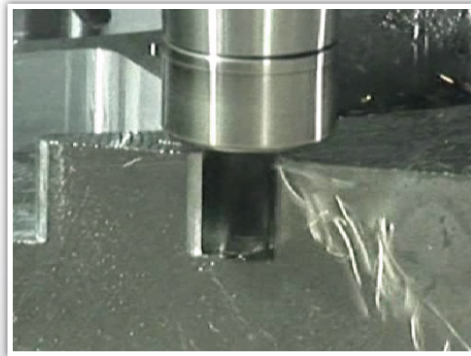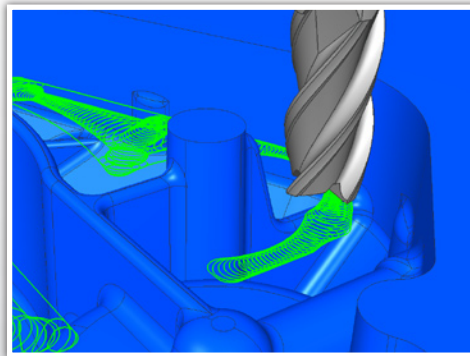
### BENEFITS

Avoid tool breakage or chipping by eliminating sudden changes in cutter loading

Preserve the cutting tool's coating, and avoid localised overheating of the workpiece, by maintaining stable cutting conditions

Use all of the available cutting length of the tool by taking step-downs of up to three times tool diameter

Reduce machining times by up to 60% compared to conventional High Speed Machining

> "With the Vortex toolpath it's amazing to see and hear just how easily the tool is cutting through this 35 HRc mold steel."
>
> Steve Neal, Area Sales Manager , SGS Carbide Tools

# MachineDNA

### BENEFITS

Increase productivity by achieving your specific machine's optimum feed rates, rather than theoretical values

Take full advantage of newly installed or refurbished machines and equipment by capturing their unique DNA quickly and simply, creating the most efficient toolpaths from day one

Eliminate guess-work and operator error

Reduce tooling costs by maximising cutter life, whilst improving surface finish and part quality

## Machine DNA – Revolutionise Your Manufacturing Process

MachineDNA* is Delcam's groundbreaking technology fully integrated inside each Advanced Manufacturing CAM solution that calibrates your machine tools and feeds back the data to PowerMILL. Toolpath strategies such as Vortex are automatically optimised to account for your specific machine tool characteristics, producing better quality parts even faster.

*Patent pending

# INNOVATIVE TECHNOLOGIES

PowerMILL combines multi-threading technologies with background processing to enable you to take advantage of the latest hardware developments. Background processing allows you to organise your activities so that you don't have to wait for PowerMILL to calculate toolpaths. Multi-threading reduces your programming times.

### BENEFITS

Four times faster raster toolpath calculations

Less waiting time whilst toolpaths are calculating
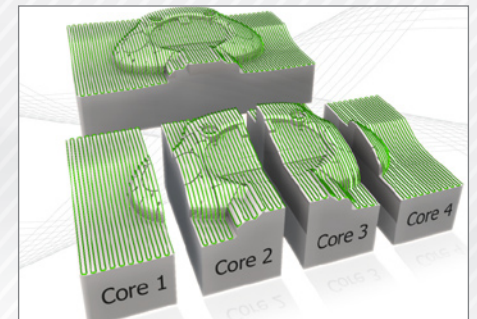
Increases capacity for additional work

Significantly improves manufacturing productivity

Reduces lead times

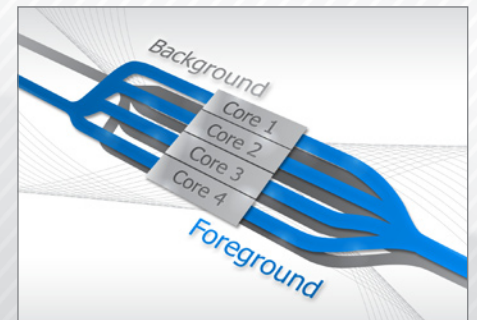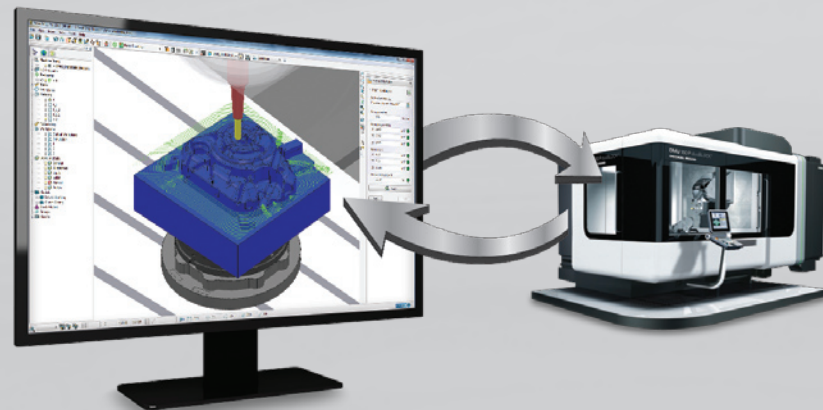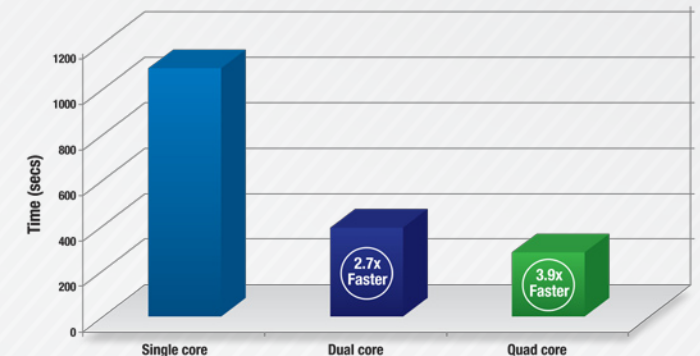Ability to handle even larger memory intensive files

## Multi-threading

Also known as parallel processing, multi-threading performs different parts of a complex calculation at the same time. This takes a single function and automatically processes it on all the cores in the CPU chip to reduce overall calculation time. To benefit from parallel processing you need a computer with more than one processor. Multi-threading can greatly reduce calculation times.

Core 1   Core 2   Core 3   Core 4

## Background Processing

PowerMILL allows you to perform background operations, such as toolpath or boundary creation, while at the same time enabling you to continue preparing, editing and even calculating toolpaths in the foreground, with minimal degradation in processing speed. This effectively doubles your potential productivity. Background processing works on any hardware but the benefits are greater on multi-core machines.

Background
Core 1
Core 2
Core 3
Core 4
Foreground

## Light Cluster Toolpath Calculation Time Comparison



Time (secs): 0, 200, 400, 600, 800, 1000, 1200

Single core | Dual core (2.7x Faster) | Quad core (3.9x Faster)

### DID YOU KNOW ?

Unlike any other CAM system, PowerMILL multi-threads both foreground and background processes, letting you send NC programs to your machine tools in the shortest time possible. Download a whitepaper from www.powermill.com to find out more.
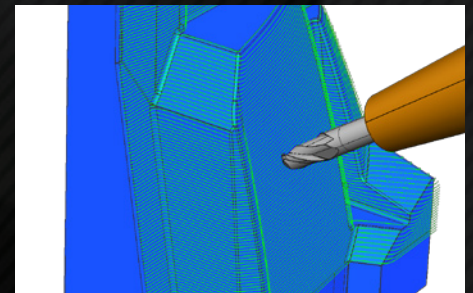
# 5-AXIS MACHINING

Opportunities to shorten delivery times, boost productivity, and increase profitability make 5-axis machining very appealing. PowerMILL's 5-axis technologies guarantee superior surface finish quality, eliminate erratic machine motion, and significantly reduce programming times.

## Easy 5-axis Programming

### 3+2 Machining

Rotating the tool from a vertical to an angled position not only improves cutting conditions but also allows you to reach more areas of the component you wish to machine. PowerMILL's intuitive user interface makes it easy to generate such toolpaths, enabling you to machine your parts more aggressively, reduce cycle times and improve surface finish.



### Simultaneous 5-axis

PowerMILL's 5-axis simultaneous machining strategies allow you to maintain complete control of the tool orientation around the workpiece. This is perfect for trimming around composite components or using swarf machining to mill an aerospace rib using the flank of the tool. You can also machine complex parts in a single setup to significantly reduce production costs and save time.
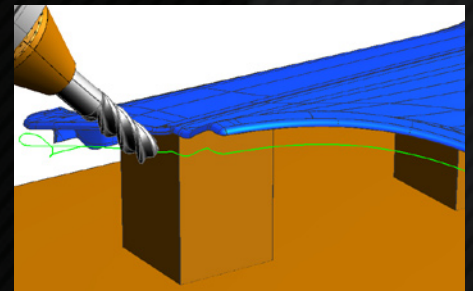


### 5-axis Rest Finishing

When rest finishing corner regions you can take advantage of PowerMILL's intelligent 3+2 and 5-axis strategies to remove any remaining stock safely and reliably. PowerMILL's automatic corner finishing routines decide where to machine the steep or shallow regions of remaining material, resulting in faster programming times, longer tool life and improved surface finish.
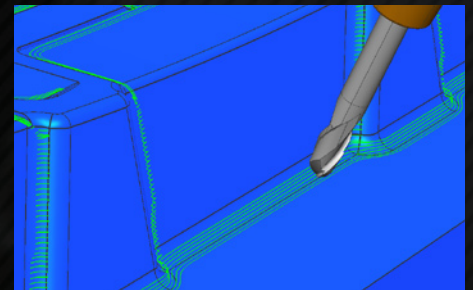


"I see Delcam as a key technology partner as we move into more complex 5-axis machining work."

**Paul Mellor, Hyde Aero Products**

www.delcam.tv/hydeaero
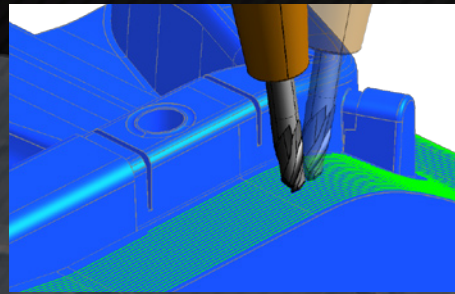
### Improving Machine Motion, Cycle Times and Surface Finish

Controlling what happens at the head of the machine as well as the tool contact point is critical if you want to achieve successful 5-axis machining. Poor tool axis control produces erratic machine motion, uneven surface finish, premature tool wear or, worst of all, collisions.
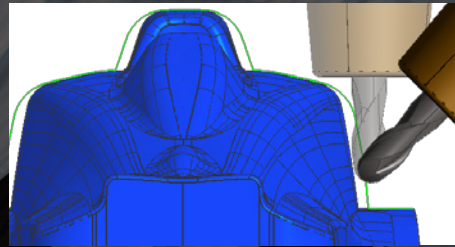
### Automatic Collision Avoidance

PowerMILL's collision avoidance tools automatically tilt the cutter away from obstacles by a specified clearance. When clear of the obstacle, the tool returns to the original cutting angle. In addition to avoiding obstacles, this is also useful when machining undercut regions.
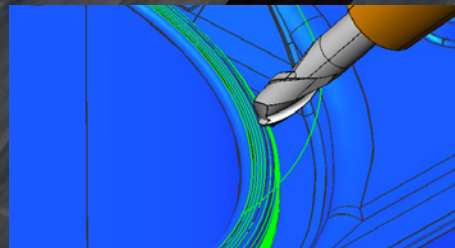
### Total Control with Tool Axis Editing

For optimum control of your 5-axis machine, you can adjust the tool axis settings for individual areas of the toolpath. This fine tuning of a toolpath can make a huge difference in the overall quality and allows the machine tool to run as smoothly as possible.

**DID YOU KNOW ?**

Combining point distribution with PowerMILL's unrivalled tool axis control ensures unbeatable results when machining both 3-axis and 5-axis parts.

See how our customers use PowerMILL's 5-axis machining: **www.delcam.tv**
Or to learn more, visit: **www.delcam.tv/lz**

### BENEFITS

Provide faster and more accurate machining by using shorter, more rigid cutters

Improve surface finish and part quality

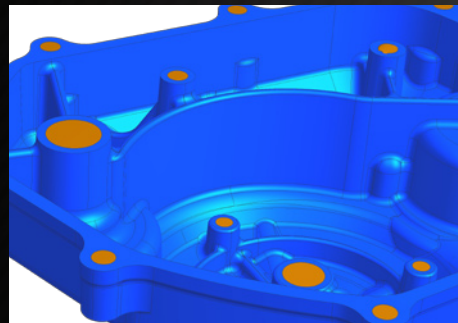Machine complex components in a single setup

Access undercut regions
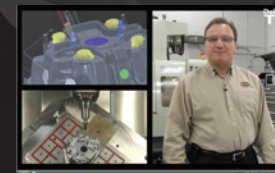
"PowerMILL is second to none. With PowerMILL and the use of their 5-axis software we're able to machine undercuts in far less setups. The amount of time saving is incredible.

**Rick Hecker, Eifel**

www.delcam.tv/eifel

# MODELLING
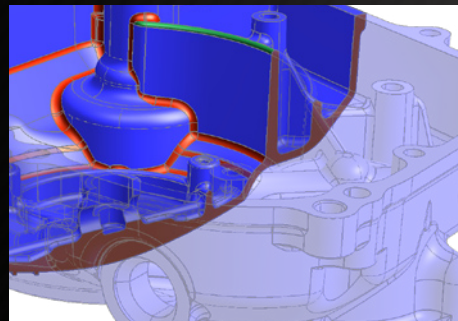## FOR MANUFACTURE

# POWERMILL FOR
# ELECTRODES

PowerMILL Modelling gives you all the modelling-for-manufacture tools you need to repair and prepare your customers' data. This enables you to resolve any manufacturing issues before you start cutting metal, without the need for a separate CAD system.

Delcam Electrode's streamlined workflow helps you manufacture complex EDM electrodes in the shortest possible time. From initial design, through manufacture, to final inspection, Delcam Electrode provides the complete solution. A single .TRODE file contains all the manufacturing information, simplifying data management and ensuring consistency in your processes.

### Repair
Comprehensive model repair tools let you find and fix any modelling or translation problems.

- Recreate missing or damaged surfaces
- Fill holes and gaps
- Remove duplicate geometry
- Repair trimming errors

### Prepare
Interactive model analysis tools identify potential manufacturing issues before machining starts.

- Find thin walls and small radii that need special machining operations
- Offset surfaces to provide machining allowance
- Merge surfaces to simplify machining
- Create multi-axis reference surfaces
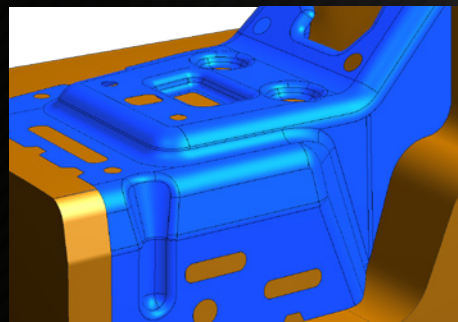
### Modify
Powerful modelling-for-manufacture tools allow you to make any changes you need quickly and easily.

- Create or modify fillets to simplify machining
- Add draft angles to ease part ejection after moulding
- Identify and shield regions where EDM electrodes are needed
- Create complex split surfaces and shut-out faces

### BENEFITS

Fix modelling or translation problems on the shop floor

Eliminate production delays

Identify potential manufacturing problems before machining starts

Complete all your manufacturing operations quickly and efficiently

### BENEFITS

Single supplier integrated solution, integrating the complete design, manufacture and inspection process

A single .TRODE file transfers data through the complete manufacturing process

User knowledge is easily recorded to create automated processes

Ease of customisation - machine how you want to with your own tooling and strategies

Quickly and easily capture the electrode region and edit the solid with new Direct Modelling tools

### Electrode Design
The Delcam Electrode wizard gives you the benefit of using PowerSHAPE's new Direct Modelling tools to extract a solid core, edit solid features and create an electrode solid. You can easily:

- Define the electrode with blank, holder, spark gaps and EDM setting information
- Add inspection points
- Create electrode setting documentation
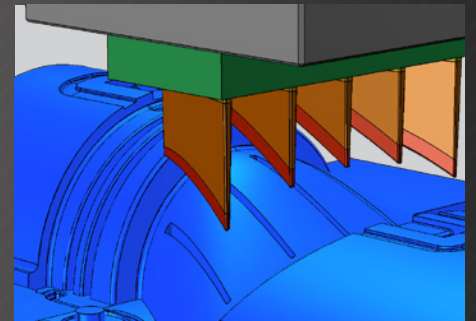
### Automated Toolpaths
PowerMILL uses the Delcam Electrode wizard to read the .TRODE file from PowerSHAPE and imports:

- Colour identification of burn, clearance and blank faces
- Electrode blank size
- Spark gaps, which are then automatically applied to your toolpaths

You can dynamically analyse the electrode draft and radius and import your tools and machining strategies in a single click.
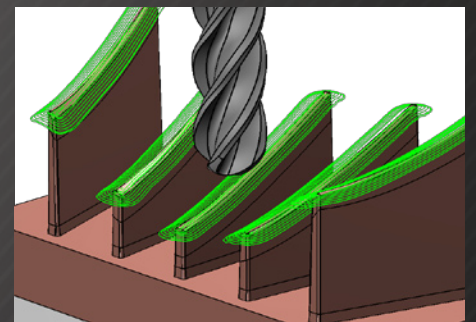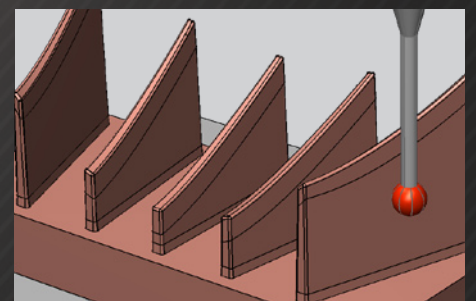
### Automated Inspection
PowerINSPECT uses the Delcam Electrode wizard to read the .TRODE file and import:
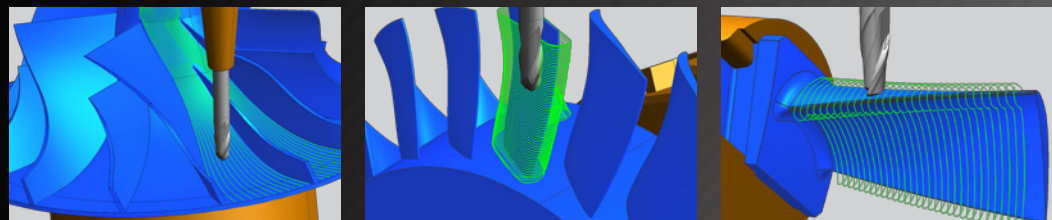- The electrode CAD model
- Pre-defined inspection points
- Spark gap size

You can quickly modify inspection points and create an automatic probe path and inspection report. At the end of the process you can use the wizard to perform a best fit.

# BLADES, BLISKS & IMPELLERS

# ROBOT INTERFACE

Making complex operations simple is at the core of PowerMILL's philosophy. This is particularly true for machining blades, blisks and impellers. PowerMILL's automated approach allows you to program complex parts efficiently, with minimal effort. Intelligent collision avoidance ensures programs run safely, with no collisions of the tool or holder and avoiding all fixturing and clamps.

The PowerMILL Robot Interface lets you program robots as easily as you could program a 5-axis NC machine. Accurate 3D simulation shows exactly how your robot will behave, bringing you complete peace-of-mind.



## Simplifying the Process
Dedicated strategies guide you through the complete process of machining your component. PowerMILL's knowledge of the stock remaining ensures that bulk material is safely removed before finishing begins.

## Fine Tuning Toolpaths
In addition to the dedicated strategies, you can enhance toolpaths with intelligent toolpath point distribution. This optimises programs for your machine control, ensuring the smoothest surface finish and highest accuracy.

Watch an aluminium propeller blade programmed by PowerMILL being machined on a Mori Seiki NT4300 using the technique of pinch milling.

**www.delcam.tv/blademachining**
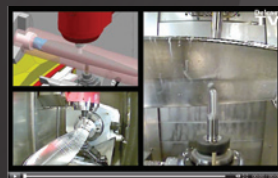


# ADAPTIVE MACHINING

Adaptive manufacturing replaces the traditional, linear approach of CAD to CAM to CNC machine to final inspection with one which uses in-cycle inspection to constantly adapt the process. Delcam's adaptive manufacturing solution can be configured to suit the specific needs of a given application, ensuring parts are produced to the required standards.

Delcam's adaptive machining process allows you to repair blade tips and leading edges in a range of applications including:
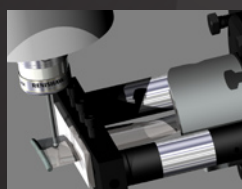

Compressor blades


Turbine blades


Fan blades


Blisks

## The Solution
Repair of worn or damaged turbine blades using Delcam's unique adaptive machining process is an economical alternative to machining new parts.


Blade Fixturing
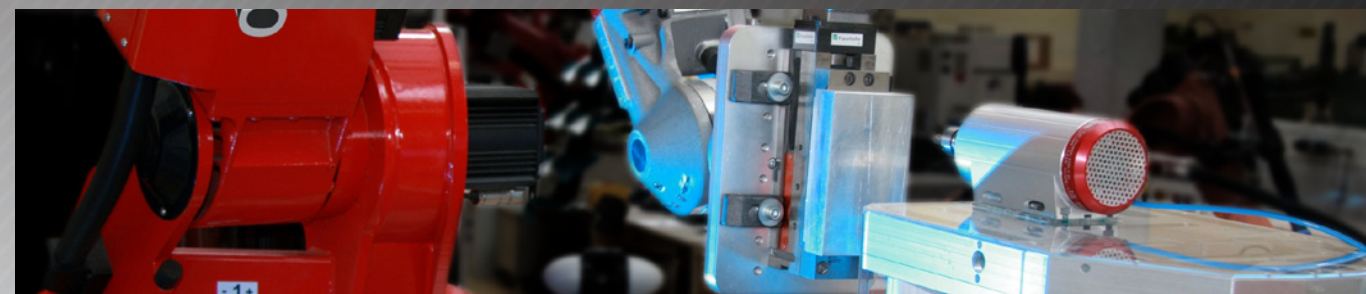

Blade Inspection


Blade Morphing


Machining Weld Bead

www.delcam-services.com

"You get a scan, you generate some toolpaths and within an hour we're cutting parts. It's a dream."

Robert Brena,
Garner Holt Productions

**www.delcam.tv/garnerholt**



## Applications
You can use PowerMILL Robot Interface to generate robot paths for a number of applications, including:

- Sculpting stone and wood
- Machining foam and resin
- Trimming and deburring
- Laser and plasma cutting
- Laser cladding
- Linishing and grinding

## Key Features

Fully integrated inside PowerMILL, the Robot Interface offers support for robots holding both parts and end effectors such as spindles and lasers. The Remote Control interface with Jog options makes it easy for you to position the robot, with additional support for external axes such as linear tracks and rotary tables. You can use a solver strategy to achieve your desired robot simulation based on variables such as axis limits, axis priorities and tool workplane constraints. Simulation can then be output directly into your robot's native language.
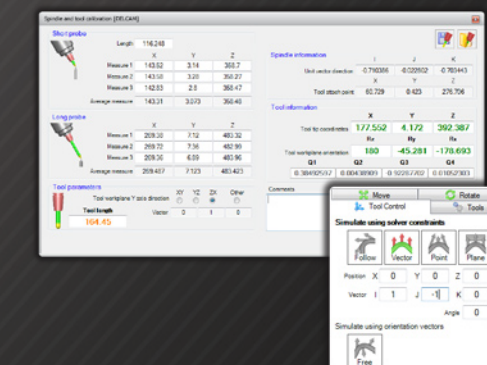
## Analysis Tools

PowerMILL Robot Interface features a robot cell configurator to enable you to save your preferred robot cell configuration, including axes limits, tool constraints and home position. You can also take advantage of analysis tools such as graphs, indicating axis limits, singularities and axis range and reversals, both on a point and time basis. Robot accuracy can be improved through easy-to-use tools such as spindle calibration, workplane calculator and dynamic robot information display.

# PORT MACHINING

# POWERMILL CUSTOMISATION

Port machining is a dedicated solution for the machining of cylinder heads and other tubular shapes. PowerMILL enables you to program fast, efficient toolpaths. Although primarily developed for manufacturing engine ports, you can also use PowerMILL's port machining solution to produce shrouded blisks, impellers and other hollow shapes.

PowerMILL's comprehensive macros, templates, and plugins allow you to automate specialist processes, or calculate toolpaths unattended. Built from the ground up as an open architecture solution, you can customise PowerMILL using templates that are exclusive to your organisation's manufacturing operations.
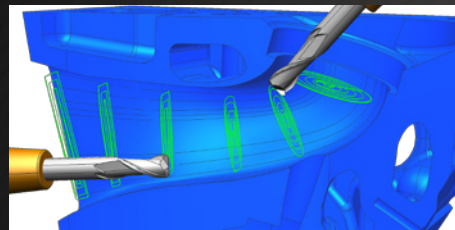
### Intelligent Roughing

PowerMILL starts machining the port with a 3-axis or 3+2-axis strategy to provide the fastest machining conditions possible with the minimum tool length for a better surface finish. You can use PowerMILL's automatic collision avoidance technology to convert the toolpaths to 5-axis in order to reach all areas of the port. When PowerMILL reaches the limits from one direction, it automatically approaches from the opposite side using the same principle of machining to remove material throughout the port.
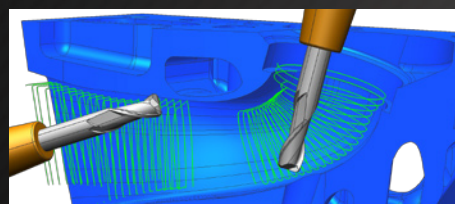
### Innovative Finishing

Plunge and spiral strategies finish machine ports. Both strategies make use of intelligent stock engagement options that automatically adjust the toolpaths to prevent surface marks being left on the component by sudden changes in tool 'push-off'.
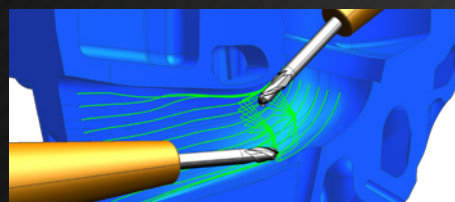
### Controlling Stock Engagement

Where two machining operations meet deep within the port, tool deflection can occur. With port machining you can control the position, length, and tool blend transition values, ensuring hand finishing is not required even in the most difficult areas.

### BENEFITS

Use High Speed Machining routines to remove material quickly and safely

Guarantee safe, error-free machining

Reduce tool loading to improve surface finish and save you money

### Templates

PowerMILL templates enable you to standardise your toolpath parameters across your organisation. You can also use templates to define parameters as expressions. For example, you can determine the stepover as a percentage of the tool diameter so that it is automatically calculated each time you activate a new tool. Setting up templates in PowerMILL makes programming more efficient by reducing the number of mouse clicks required and minimising the chance of human error.
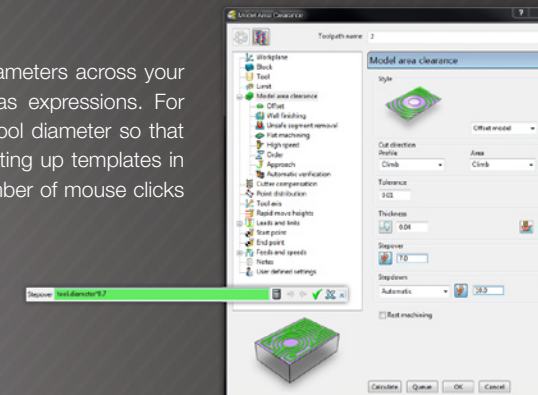
### Custom Toolbars

You can easily create custom toolbars in PowerMILL to further reduce the number of clicks required to generate operations, particularly for your commonly used functions contained in the PowerMILL menu structures. Using custom toolbars helps to make programming faster and easier.
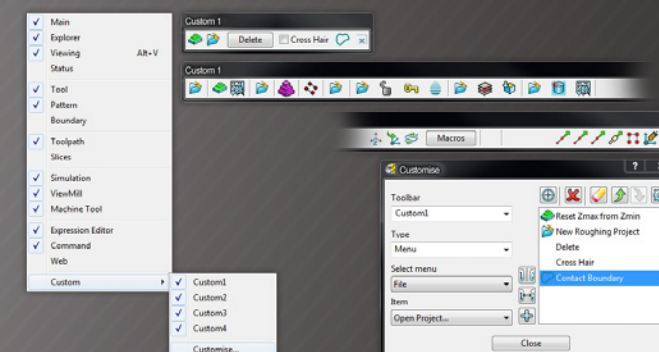
### Macros

Macros contain a sequence of commands to automate operations. You can create macros by recording operations as they occur in PowerMILL, or by entering the commands directly into a text editor. Macros can be used for drawing, resetting leads and links, setting NC preferences, defining regularly used machining sequences, and much more.

You can use advanced macros to automate decision making processes by prompting you for input. Powerful IF-ELSEIF-ELSE statements, loops and other programming functions control which operations PowerMILL performs next, depending on your responses.

```
do {
    $helix_pitch = INPUT "Enter Helix Pitch"
    $err = ERROR $helix_pitch
    if $err {
        message error "Value must be numerical"
    } elseif ($helix_pitch <= 0) {
        message error "Value must be greater than 0"
    }
} while ($err or $helix_pitch <= 0)
```

### Plugins

PowerMILL plugins enable you to completely customise how you interact with PowerMILL. They automate operations in the same way as macros while also enabling you to design your own graphical user interface which is fully integrated within PowerMILL. Plugins can respond to events that occur in PowerMILL, as well as issue commands, allowing for faster communication compared to traditional VB applications. The Plugin Manager gives you control over which plugins are enabled. Plugins must be written in a language that supports .NET, such as C# and Visual Basic.
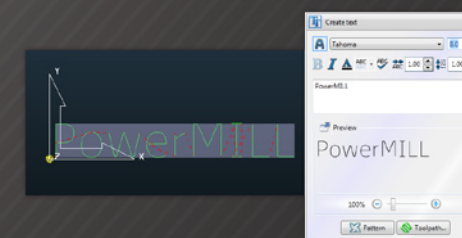
"PowerMILL is the smartest software I've ever used. It has a very powerful automatic porting routine. I can be confident that it will cut the port correctly the first time."

**Mark Olson, MBE Cylinder Heads and Manifolds**

www.delcam.tv/mbe

# TECHNICAL PARTNERSHIPS

# SUPPORT & MAINTENANCE

With the largest development team in the CAM industry*, Delcam holds regular meetings with technical partners to make them aware of our latest innovations. In return, Delcam learns about new machine tool and cutting tool technologies. This assists with the development of new software features and enhancements to enable you to take maximum advantage of the latest industry equipment.

Everyone knows that business costs must be kept as low as possible but some cost-cutting measures could actually cost you more in the long term. Software maintenance safeguards your business, letting you get the best possible return on your investment and helping you stay one step ahead of your competitors.

### Technical Collaboration
Delcam has developed strong relationships with a wide range of key stakeholders in the CADCAM industry, helping you to take advantage of the latest generation of machine tools and cutting strategies.

### Post Processors
With machines of all types becoming more sophisticated and complex, close relationships are also important in the development of post processors to ensure a smooth transfer of CAM programs to any new machines.

### Research and Development
Delcam works with technical partners from enterprises, universities and R&D centres to jointly research, develop and implement cutting edge CADCAM technologies. Projects are jointly funded by partners and funding agencies such as the European Commission and the UK Technology Strategy Board. This enables Delcam to develop the latest technologies to benefit your production requirements both now and in the future.

### Protect Your Investment
Your machine tools are an expensive investment and it is essential that they perform as efficiently as possible. The CADCAM software that helps you run those machines is under continuous development, becoming ever more efficient and cost-effective. Software maintenance ensures you are always at the forefront, using the best technology available and maximising your return.

### Avoid Costly Re-training
Software development moves rapidly with new features and functions added every release. With two major releases a year, as well as intermediate patches, it does not take long to become out-of-date and to need complete re-training.

### Get Help and Support
What happens when you hit a problem? With a maintenance contract, help is just a phone call or email away, in your own language, from your local Delcam Sales Partner. Delcam's team of support engineers are located at more than 300 offices worldwide and have thousands of man years of experience between them. This knowledge and experience not only covers Delcam's products but also the specific manufacturing technologies and processes used within the market sectors that Delcam serves. The combination of all these resources ensures that whenever a problem occurs, your downtime is kept to a minimum by getting the help you need, when you need it.

### Quickly Learn New Features
With every major release you'll receive a DVD kit containing a detailed "What's New" booklet to keep you fully up-to-date with all the latest tools and how to use them. You can also view and download tutorial videos on the new features and improvements from the Learning Zone at www.delcam.tv/lz, available in 13 different languages.

+GF+ AgieCharmilles | CMS Industries | DMG MORI SEIKI
DOOSAN Infracore | FIDIA | HAAS
HARDINGE | HERMLE | HURCO
HURON About Huron | MAKINO | Matsuura
Mazak | OPS INGERSOLL | röders TEC
MITSUBISHI | SANDVIK Coromant | SECO
SGS Solid Carbide Tools | ABB | KUKA
FANUC Robotics | YASKAWA | STÄUBLI

"We've been working with Delcam for quite a number of years now. We find their software extremely flexible and very easy to use. A lot of our customers use Delcam; it's probably one of the most preferred systems on the market."

Neil Stuart, DMG UK
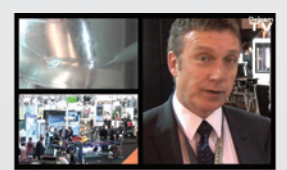
www.delcam.tv/dmg

"Delcam's technical support is great. We get upgrades and new software versions fast and implement them quickly. We can keep using 100% of our machines, be more efficient and make more money."

Vincent Cote, APN

www.delcam.tv/apn

*According to CIMdata

**Delcam** | Advanced Manufacturing Solutions

## Powering your productivity