OguSoft
Teknoloji
AUTODESK.
Reseller
PowerMILL
Robot
Fast, accurate multi-axis programming for robots
www.ogusoft.com

- A wholly-owned, independently-operated subsidiary of Autodesk
- 150 offices and partners in over 80 countries
- More than 800 employees
- The world's largest CAM development team*
- 50,000 customers worldwide
- 40 years of experience developing CADCAM solutions
- Headquartered in a purpose-built 63,000 sq. ft. facility in Birmingham, UK

DID YOU **KNOW** ?

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

PowerMILL Robot

Fast, accurate multi-axis programming for robots

Advanced machining strategies, minimising cycle times and maximising finish quality

PowerMILL's high-speed finishing, multi-axis machining, exceptionally fast calculations and powerful toolpath editing help you to machine high quality parts faster. Based on over 40 years of CADCAM experience, PowerMILL offers an unrivalled breadth of functionality. From specialist applications such as engine ports, to machining with multi-axis robots, PowerMILL has it covered.

Multi-axis programming for robots

Programming the multi-axis control systems for robots has traditionally been a complex and laborious task. Robots can be programmed using teach-and-learn methods, but these require a lot of fine tuning to achieve the perfect path. PowerMILL Robot lets you program robots with external axes like rotary tables and linear tracks as easily as you could program a 5-axis NC machine. Accurate 3D simulation shows exactly how your robot will behave, bringing complete peace-of-mind.

See how our Robot Solutions can help your business **www.delcam-robotics.com**

DID YOU **KNOW** ?

Famous London landmarks were machined from Cadbury chocolate at the London 2012 Olympics using PowerMILL Robot.

*According to CIMdata

APPLICATIONS

Sculpting stone and wood

PowerMILL Robot can be used to generate milling toolpaths for complex stone and wood sculptures.

Pacific Forest in Singapore has improved efficiency and productivity by 200% by using ABB robots with PowerMILL Robot to produce high quality wood products for the building of lifestyle homes and hotel resorts.

TRANSFORMER 2500 from THIBAUT

Machining foam and resin

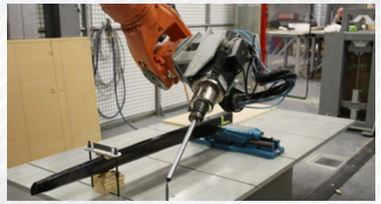
If you are using robots to machine statues or carvings out of foam and resin then PowerMILL Robot will significantly reduce your programming times and increase productivity.

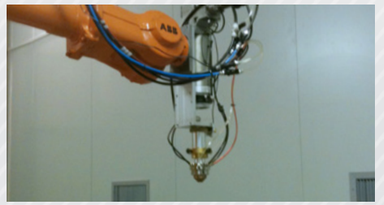
Weta Workshop in Wellington, New Zealand, use PowerMILL to program a seven-axis car-assembly robot for manufacturing large-scale sculpture pieces for films such as the Lord of the Rings trilogy, King Kong and The Chronicles of Narnia, as well as high-end collectibles and fine-art bronzes.

Trimming and deburring

PowerMILL Robot enables you to trim and deburr a wide range of materials with robots using a variety of tools and techniques, including mills, abrasive disks, brushes and pads.

Southern Spars in Auckland, New Zealand, use PowerMILL to program robots for the manufacture of leading edge mast and rigging systems for racing yachts.





Laser and plasma cutting

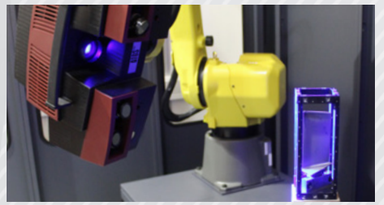
Laser cutting with robots is a very useful manufacturing process to cut different types of materials including paper, wood, plastic, and metal, by melting the material in the beam path.

Geometrix Automation and Robotic Solution in Pune, India, use PowerMILL Robot to manufacture sheet metal automotive parts using the process of laser cutting with an ABB robot.

Laser cladding

PowerMILL Robot can drive robots to repair worn or damaged surfaces through the process of laser cladding. Laser cladding with robots can also be used to tailor the surface of a part for improved corrosion or wear resistance.

The Welding Institute in the UK generate toolpaths with PowerMILL for a Kuka KR 30 HA robot to repair aircraft engine turbine blades and impellers for automotive turbo chargers by laser cladding inconel and stainless steel.



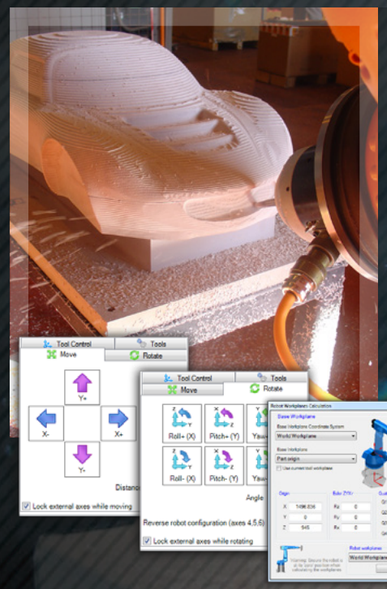
Linishing and grinding

PowerMILL Robot can be used to drive robots for grinding or belt sanding applications to improve the flatness and accuracy of a surface.

Global Aerospace Primes and their supply chain work with Delcam Professional Services using PowerMILL Robot on high value components. Robot end effectors, applied to the components, include devices for metrology and improvement of surface finish.

FEATURES

PowerMILL Robot eliminates the complex and laborious nature traditionally associated with programming robots. With unlimited access to PowerMILL's renowned toolpath strategies, you can easily program and simulate robot paths and post native robot language to a range of robots.

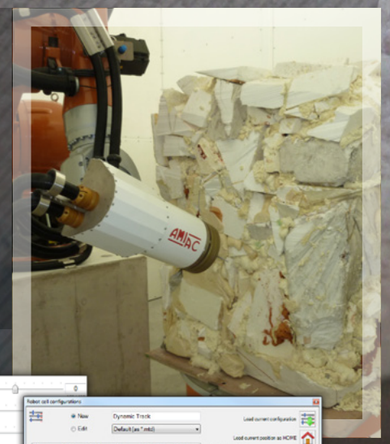


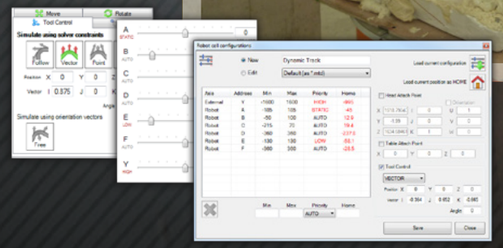
Programming

- Create robot NC programs, including toolpath link simulation and tool change simulation
- Program robots holding spindles for tool to part applications - ideal for machining large, heavy parts for prototype manufacturing or low production runs
- Suitable for programming part to tool applications, such as grinding or linishing, and mass production runs
- Increase the working area of robots with external axes, such as linear tracks and rotary tables, for greater flexibility over the size and types of parts you can manufacture
- Quickly position robots using a 'Remote Control' interface similar to the robot teach pendant, and easily move a robot to the required location with Jog options

Simulation

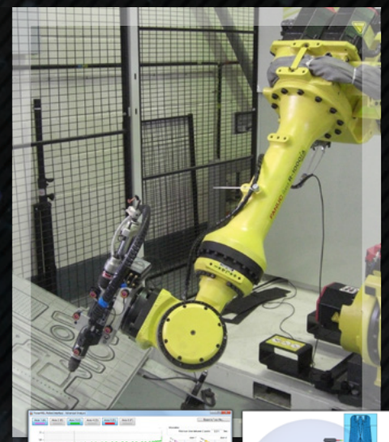
- Define a solver strategy to achieve the desired robot simulation and control the robot's movements through different variables such as axis limits, axis priorities and tool workplane constraints
- Output a simulation directly into a robot's native language, eliminating any need for a third party translation
- Save your favourite robot cell configurations such as axis limits, tool constraints and home position with PowerMILL Robot's cell configurator, and simulate the robot within your set constraints

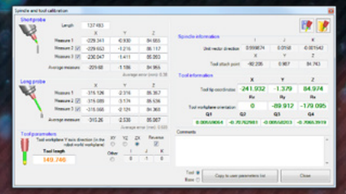


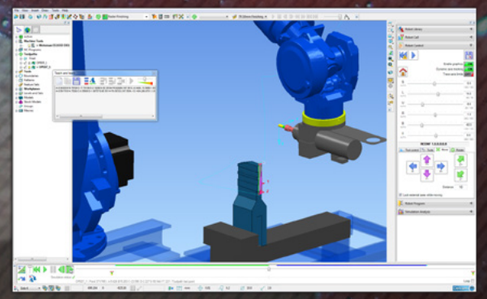


Analysis

- Display the robot's working envelope to optimise the part position within the envelope and give maximum access to part machining
- View the maximum range of movements required of each axis for the robot to execute toolpaths to analyse the robot's behaviour and movements throughout the operation
- Learn about any issues that may prevent toolpaths from being completed with notifications of the robot potentially reaching axis limits and singularities
- Gain a better understanding of how the robot will move with advanced point-based graphs that display axis limits, wrist singularity and axis reversals
- View the acceleration and deceleration of the robot's axes with time-based graphs
- Remove the need to teach every tool and save time with accurate tool and spindle calibration functions
- Benefit from advice on tool and base workplane data setup, based on your current project settings
- Create user defined toolpath transitions with manual teach and learn options and collision checking







DID YOU KNOW ?

PowerMILL Robot supports an ever growing list of popular robots such as Kuka, ABB, Fanuc, Motoman, Stäubli, Hyundai and Kawasaki.

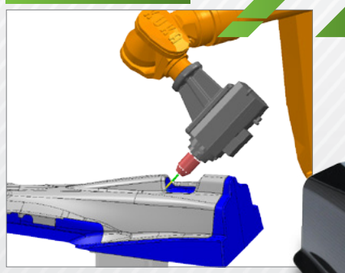
> "You get a scan, you generate some toolpaths and within an hour we're cutting parts. It's a dream."
>
> **Robert Brena, Garner Holt Productions**

www.delcam.tv/garnerholt

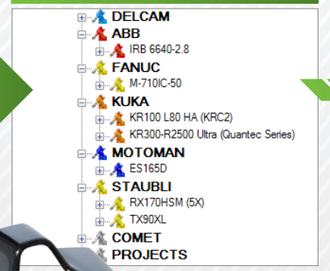
WORKFLOW

PowerMILL Robot helps you get the most out of your robotic platform in the shortest possible time. A simplified workflow makes it easy to program, simulate, review and refine toolpaths, whilst enabling your robots to achieve levels of accuracy similar to many CNC milling machines.

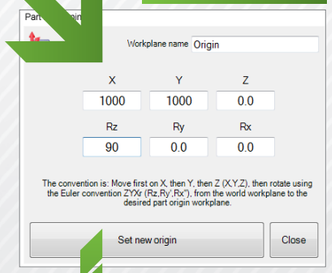
1. Calculate toolpaths



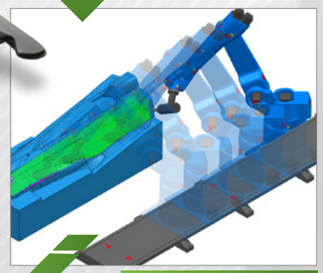
2. Select the robot cell from the library



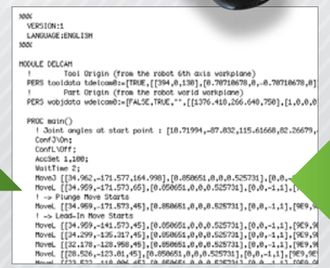
3. Set the part position



4. Simulate and analyse toolpaths



5. Convert toolpath to native language



6. Start machining

BENEFITS

Full robot programming and simulation in a single application

Program robots as easily as a 5-axis machine tool

Manual axis adjustment to avoid singularities

Eliminate lengthy 'teach and learn' activities

"PowerMILL was able to meet both the requirements for ease of use and for programming speed."

Stephen Young, Southern Spars

DID YOU KNOW ?

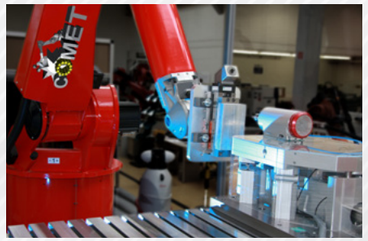
Delcam tests the development of PowerMILL Robot using its own in-house robots.

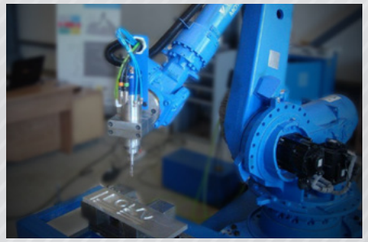
ROBOTICS R&D

COMET Project

Delcam co-ordinated the 30-month COMET project focused on improving the accuracy of machining with industrial robots. Funded by the European Commission, the project developed innovative robotic machining systems that are flexible, reliable and predictable with an average of 30% cost efficiency savings in comparison to machine tools. In order to achieve this, the COMET project addressed the following critical limitations of machining with industrial robots:

- A lack of absolute positioning accuracy
- An inability to reject disturbances in terms of process forces
- A lack of reliable programming and simulation tools that ensure right first time machining





Objectives:

- Pioneer a new generation of adaptive production systems using industrial robots
- Demonstrate the new technologies machining aluminium and steel parts from the following industrial sectors:
  - Automotive
  - Aerospace
  - Mould and die
  - High precision components
- Disseminate project results and develop training programs

The COMET project created a revolutionary solution enabling the use of industrial robots for high-end machining. In combination with an innovative Plug-and-Produce platform, this provides manufacturers with cost effective, flexible and reliable manufacturing solutions. Delcam focused on developing an integrated Programming and Simulation environment for adaptive robot path generation for machining with Industrial Robots (PSIR). As a result of working with numerous robotics experts in the COMET project, Delcam has been able to implement the latest robot machining technologies into PowerMILL Robot to make it easier than ever to program industrial robots.

www.cometproject.eu

"Machining with the COMET project will make industrial manufacturing cheaper, the setup of the robots more flexible, and it will also increase accuracy."

Dr. Ir. Jan Ramboer, European Commission

DID YOU KNOW ?

Delcam invests more than £10 million every year in R&D.

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