

RobotStudio® Machining PowerPac

Increased engineering efficiency within machining applications

The RobotStudio Machining PowerPac — an add-in for RobotStudio, ABB's powerful computer-based robotics programming tool — creates and optimizes machining tool paths and reduces programming complexity and cost by improving product quality through the creation of more accurate paths.

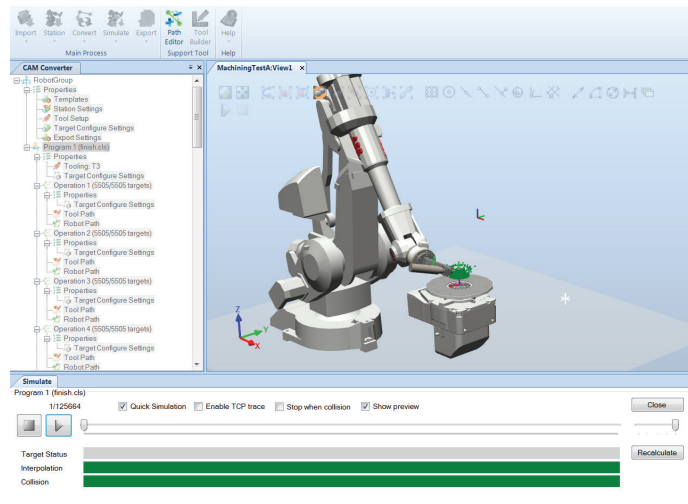
RobotStudio is built on the ABB VirtualController, an exact copy of the real software which runs your robots in production. It allows realistic simulations to be performed, using real robot programs and configuration files that are identical to those used on the shop floor.

RobotStudio Machining PowerPac - Creating complex paths in just seconds

The most outstanding feature of RobotStudio Machining PowerPac is an intuitive wizard that guides users in creating accurate targets and paths from surfaces and edges on an imported CAD model. Process settings such as tool type, tool width, overlap rate, machining angles, etc., can be set in different pages of the wizard. All these settings, together with path optimization parameters and pre-defined path generation patterns, are used to make the targets and paths. It is possible to browse the wizard pages forward and backwards to adjust the process settings before creating the path. Before finalizing the path generation, a preview shows how the paths look before they are finally created. So, in just a few steps you can create hundreds of paths with thousands of targets.

CAM converter

The Machining PowerPac is able to convert CNC G-Code to RAPID program, where both the parsing rule and convert rule can



be customized to match different machine setups. It fully supports 5-axis APT/ISO standard G-Code which is also extendable via templates. Multiple strategies can be applied when calculating the target configuration of the imported CNC code. Users can also verify and modify the robot path offline before exporting to RAPID. The user interface design follows Computer Aided Manufacturing (CAM) style, is able to reflect the CAM engineer's background, and is easy to use with minimum requirements.

Path and target optimization

Using RobotStudio Machining PowerPac you can generate the robot positions needed to follow the surface or edge of an imported CAD model. You can also optimize TCP speed, acceleration or axes to gain cycle time. Another time-saving feature is the possibility to automatically define the optimal robot configuration for a path in just one click. For more machining-related parameters, one can easily change the machining speed and the different machining angles of targets along a path.

Speed optimization

The software can also optimize the machining speed according to the curvature of a surface or edge. The minimum/maximum values of the machining speed are defined to be in accordance with the smallest/biggest curvature of the machining points on the surface.

Spin Angle optimization

Another feature is optimization of the tool's spin angle. The spin angle defines how much a target can rotate around the Z axis of the reference coordinate system. Using spin angle optimization, the rotation of the robot can be "compensated" for by rotating a series of targets, which greatly improves the reach ability and performance.

Path and target editing from Path View

The PowerPac has a graphical path view that can be used to edit existing paths and targets, create new instructions, or generate new paths. Another feature is that the Path View allows the user to, automatically or manually, set path configuration on selected paths. The Path View can be used to step between targets, making it easy to edit and simulate the created paths. In general, the Path View is a very powerful and useful tool for offline programming.

In control of the process parameters

There are three machining templates provided in this PowerPac, supporting both position-controlled and force-controlled machining processes. All of the parameters included in these templates can be customized by the user based on different application requirements, and they can be easily re-used.

Improved path accuracy

As the targets and paths are automatically generated from the surfaces and edges of a CAD model, a consistent and accurate result can be achieved independent of user skills. The software will automatically create a sufficient number of targets in a path to make sure the path precisely matches the machining surface or edge.

Seamless integration

The RobotStudio Machining PowerPac is fully integrated into RobotStudio. All the existing tools and features of the software are available for use. The complete robot program can be downloaded to a real robot controller without any translation. This is a unique feature of the virtual robot technology, a technique only available from ABB. RobotStudio Machining PowerPac not only supports the traditional position control processes but also supports force-controlled processes-i.e. programs generated in Machining PowerPac work seamless with RobotWare Machining Force Control, ABB's software for force-controlled machining.

Features

- CAM Converter
 - Convert CAM G-code to robot RAPID language
 - Support G-code ISO 6983, DIN 66025 and APT-CL
- Path programming wizard
 - Create/select surface or edge to be machined
 - Set machining process parameters
 - Pre-defined path generation patterns
 - Set path and target parameters
- Path and target optimization and modification
- Path simulation
- Program export as RAPID or RobotWare Machining Force Control
- Calibration
- Pre-defined and configurable machining templates
- Check/heal CAD models

Requirements

- RobotStudio 5.60 or higher
- Microsoft Windows 7
- Recommended hardware (selected features, see full list in manual)
 - CPU: 2.0 GHz Intel Pentium 4 or faster processor
 - Memory: min 2 GB RAM recommended
 - Available disk space: 5+ GB on the system disk,
 - 250+ MB on the installation disk

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