

# DELMIA PRISMATIC AND TURNING MACHINIST

## OBJECTIVE

DELMIA® Prismatic and Turning Machinist creates, optimizes and validates prismatic milling and turning programs. By utilizing Milling and Turning in one workspace, programmers can quickly build complex mill/turn toolpaths while verifying clearances and toolpath movements. This type of kinematic calculations ensures the part can be machined correctly without costly errors or crashes.

## OVERVIEW

DELMIA Prismatic and Turning Machinist delivers the ability to program milling and turning machines to produce 3D parts that require advanced 2.5-axis milling and turning operations. Complex multi-tasking mill-turn machines with synchronization and part transfer capabilities can be programmed in a realistic virtual workplace in the 3DEXPERIENCE® platform. DELMIA Prismatic and Turning Machinist provides a full set of features for workpiece setup, cutter tool assembly and toolpath simulation that include material removal and NC code generation. Enterprise Intellectual Property (IP) can be captured and used for collaboration between stakeholders to develop, validate and optimize NC programs.

## BENEFITS

### Accelerate NC programming

Users can quickly author and edit NC programs. Intuitive graphic dialog boxes, traffic light indicators for undefined machining parameters and help icons for each parameter operation make the process highly efficient.

### Program machines with powerful multitasking mill-turn capabilities

Programmers can author NC programs for complex mill-turn machines with multiple spindles and turrets using synchronization features, balance turning and part-transfer capabilities. Through an immersive, intuitive interface, users can synchronize operations and passes within a process and define part-transfer activities.

### Mitigate risk to production

The 3D environment enables users to create optimized NC programs in the manufacturing context including NC machine, cutter, tool assemblies, NC accessories and other elements. This provides a better understanding of the machining cell and helps to ensure that the toolpath and machining strategy take the tool's physical environment into account. It reduces the risk of unexpected issues and production delays. This provides a better understanding of

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### Advanced simulation capability

Users are able to program, optimize and validate the machining in the most efficient way. NC Programmers can identify toolpath errors earlier in the machining process and shorten programming time.

### Maximize machine tool utilization

DELMIA Prismatic and Turning Machinist's full range of operations and strategies helps programmers create toolpath programs that minimize non-value-added motion. Optimized NC programs—including high-speed machining features—reduce overall machining cycle time. DELMIA Prismatic and Turning Machinist takes in-process parts into account to generate collision-free toolpaths.

### A single design-to-machining solution to understand engineering changes

Based on the 3DEXPERIENCE platform, DELMIA Prismatic and Turning Machinist provides an unrivaled level of associativity between product engineering, manufacturing processes and resources. Companies can manage concurrent engineering and manufacturing flows better and shorten the design-to-manufacturing cycle. It offers the best available support of design changes or design variants and the rapid creation of programs for families of parts. Native implementation links connect machining programs to engineering and manufacturing data. These links can be used to see which machining programs are impacted by engineering or manufacturing changes. Like a new cutter—for example—and to see whether machining data is up-to-date concerning engineering changes.

### Leverage intellectual property

DELMIA Prismatic and Turning Machinist improves automation and standardization of NC toolpath programs.

Users can define and store machining processes as dedicated templates and save them in catalogs for reuse. Company IP is capitalized and re-used to make programming more efficient. The gains in productivity and machining-work standardization are significant.

## CAPABILITIES

### Manage and program machining resources with powerful multi-tasking mill-turn capabilities

DELMIA Prismatic and Turning Machinist lets users manage tools and tool assemblies in 3D. These resources can be retrieved through standard search capabilities using relevant machining attributes and instantiated in a machining cell. Users can see the impact of changes on the definition of objects such as parts or cutting tools across all NC processes and programs. DELMIA Prismatic and Turning Machinist supports a default or customized representation of the cutter and tool assemblies that are used for verification, simulation with material removal and collision checking. Programmers can author NC programs for complex mill-turn machines with multiple spindles and turrets using synchronization features and balance turning capabilities. Through an immersive, intuitive interface, users can synchronize operations and passes within a process and define part-transfer activities.

### Automatic association of prismatic machining features with part design

DELMIA Prismatic and Turning Machinist automatically recognizes the prismatic machining features of the product design, thus a manufacturing view of the design part is generated, including all drilling and milling features. Through this embedded feature-recognition technology, DELMIA Prismatic and Turning Machinist enables toolpath programming for geometrical-machined, feature-creation design parts—even those with no design feature specifications.

### Efficient programming of turning and mill-turn machines

DELMIA Prismatic and Turning Machinist offers a full set of high-end turning operations such as roughing, finishing, groove turning, groove finishing and thread turning for accurate toolpath definition. NC Programmers can also author turning operations to address B- and C-axis interpolations of mill-turn machines.

### Creation and optimization of 2.5-axis milling, drilling and probing operations

DELMIA Prismatic and Turning Machinist offers a broad range of machining operations for toolpath definition, including pocketing, facing and contouring. These operations can be defined as multi-level and multi-pass. At the user's request, the toolpath can be optimized for high-speed machining. Point-to-point machining is available, as well as a full set of axial operations from standard drilling to complex boring and chamfering. Several dedicated strategies for the hard material are included, such as trochoidal milling, concentric milling and

spiral morphing. The concentric approach controls the radial engagement to maximize the efficiency of the machine while protecting the cutter. DELMIA Prismatic and Turning Machinist offers unique functionalities for creating and verifying milling, drilling and probing operations. Probing operations are very flexible and can be customized with associated user parameters. DELMIA Prismatic and Turning Machinist extends the 2.5-axis capabilities by offering best-in-class 4-axis pocketing that includes a variety of strategies, island management and user-defined lead angle on the tool axis for better cutting conditions. This operation also supports non-cylindrical and non-conical surfaces and revolution surfaces going beyond the 180 degrees.

### On-the-Go (Disconnected Mode)

The new *On-the-Go* option allows Simulation Engineers to disconnect from the **3DEXPERIENCE**® platform for up to 30 days. Once disconnected, users can continue to use the capabilities of the machining application. Toolpaths, operations, profiles and other features can be created and edited while disconnected. Upon reconnecting, automatic data reconciliation will ensure changes are preserved in the database.

### Quick toolpath verification and editing

Toolpath replay allows the generation and verification of individual operations or the complete program. Users can visualize the in-process part and analyze the remaining material. Alternative machining strategies can be tested to obtain collision-free trajectories. The toolpath can be replicated, mirrored, translated and locally edited.

The *Compare Part and Remaining Stock* command display only the differences. DELMIA Prismatic and Turning Machinist improves toolpath verification by pinpointing a lack of material or material in excess.

### High levels of automation and standardization

A stored template can be retrieved and applied to the design features of part geometry. The company's IP is capitalized and re-used to make programming more efficient. NC objects and attributes are handled as knowledge objects to increase the level of automation and standardization in NC program creation.

### Seamless NC data generation

DELMIA Prismatic and Turning Machinist offers smooth production of the APT source and NC Code ISO format through the integrated post-processor execution engine, the library of standard post-processor syntax mapping tables and Post Processor samples. The output formats can easily be customized. Additional files generated by the post-processor are also automatically saved in the same container in the **3DEXPERIENCE** platform, thus ensuring that all relevant outputs for a given part are available at the same location and are up-to-date. The manufacturing program's essential information can be exported as documentation for ready reference on the shop floor.

## Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE**® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 220,000 customers of all sizes in all industries in more than 140 countries. For more information, visit [www.3ds.com](http://www.3ds.com).



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