

*Process Detailing & Validation*



DELMIA V5

# DPMPOWERTRAIN™



*The Complete Digital  
Planning Solution for  
Automotive Powertrain  
Manufacturing*



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# DPM POWERTRAIN™

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DELMIA V5 DPM POWERTRAIN™ is a complete, integrated solution to addresses the machining process planning lifecycle for automotive powertrain development. DPM Powertrain seamlessly integrates product engineering and process planning in a collaborative engineering environment enabling process designing, planning, verifying, managing, and documenting the machining processes.

## *The Value of V5 DPM POWERTRAIN*

- *Communicate design and process changes automatically throughout the enterprise*
- *Reduce lead time from product design to actual production*
- *Generate CNC programs and validate tool paths by reusing process data*
- *Machining processes are planned based on CATIA V5 design data*
- *Re-use process data to inspect the machined part using DELMIA Inspect*
- *Create setups in Process Engineer to load into DPM Powertrain through the Manufacturing Hub*
- *Better control costs and investments on capital equipment*

### *The Solution for the Automotive Powertrain Industry*

DELMIA V5 DPM POWERTRAIN offers a powerful machining process planning solution for process planners and manufacturing engineers. DPM POWERTRAIN incorporates a single unified interface for reviewing the results of sequenced machining operations in the process plan, producing process sheets, and generating NC programs.

V5 DPM POWERTRAIN offers the first truly collaborative environment for designing, planning, verifying, managing, and documenting machining processes within a single application framework. It is designed to seamlessly integrate product engineering and process planning through the Manufacturing Hub, thereby reducing the lead time from concept to production.

V5 DPM POWERTRAIN addresses the needs of machining process planning and documentation for prismatic and turned parts.

### *Manage Design Changes*

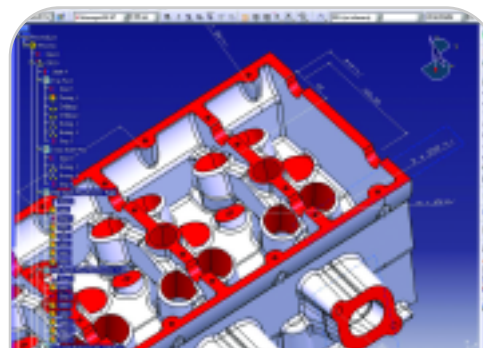
In today's manufacturing world, every product undergoes frequent design changes. V5 DPM POWERTRAIN automatically and seamlessly propagates design changes to machining process plans, operations, and the process sheets. This automatic update makes changes immediately available to all involved departments and eliminates the traditional paper-induced lag time from change to notification

leading to efficient communication and faster product realization.

### *Unique In-Process Model*

V5 DPM POWERTRAIN automatically generates In-Process Models (IPM) based on machining operations sequenced in the process plan. The IPM is a 3D representation of the state of the product at each step in the machining process.

These IPMs allow the user to verify the results of the machining operation as 3D geometry based on the process plan parameters. Changes to the product design and process plan are automatically reflected in the IPM and the associated 2D drawings greatly enhancing employee productivity and final product accuracy.



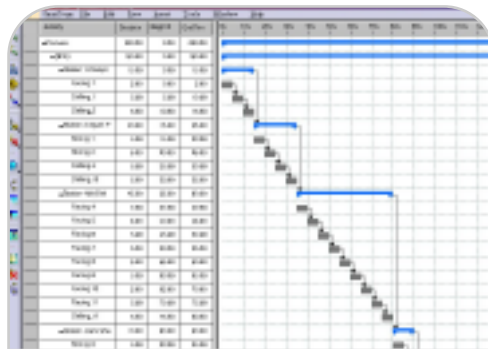
#### **V5 DPM POWERTRAIN**

*allows engineers to easily manage in-process machining tolerances*



### Easy-to-Use Process Planning Tools

V5 DPM POWERTRAIN allows users to completely define a machining process by creating and sequencing hierarchies of machining operations. To help with this process, V5 DPM Powertrain can create a list of machinable features from a CATIA V5 design part. This list provides the process planner with a “to do” list depicting which elements of the product need to be accounted for when creating the machining process plan, thereby reducing process planning time while minimizing the risk of missing necessary operations. Users can add detail to their operations by assigning products transformed by the operation and the resources that act on the products. The machining process plan can then be used to generate tool paths and NC programs.



#### V5 DPM POWERTRAIN

*aids in the creation and verification of machining process plans*

These capabilities provide lathe machining tools or prismatic machining tools to machine 3D parts using a full set of turning operations and 2.5 axis milling and drilling operations including high speed milling technology for accurate tool path definition. Material removal can also be simulated for accurate validation of tool paths. The integration of CATIA NC programs in DELMIA provides overall manufacturing process integration, simulation, and optimization by sharing a common Process-Product-Resource structure.

### Enhance In-Process Models with CAD

V5 DPM Powertrain's optional CAD capabilities allow users to design fixtures for the IPMs. The user can extract associative 2D drawings with tolerances capturing both geometric and process information, then detail and annotate the draw-

ings in a highly productive and intuitive environment. The drawings can be then automatically updated. Users can easily establish mechanical assembly constraints, create and modify tooling and fixtures, and effectively communicate these changes to the design engineers.

### Re-use Process Plans to Define and Validate NC Programs

V5 DPM Powertrain's easy-to-learn user interface allows the user to quickly define tool paths based on machining process plans providing a high level of automation and knowledge re-use.

## The V5 DPM POWERTRAIN Advantage

- Definition of machine operations
- Sequencing of machine operations
- Knowledge based creation of machining process plans
- Management of in-process machining tolerances
- Verification of machining parameters
- Generation of process sheets
- Validation of tool paths
- Generation of NC programs
- Generate process documentation
- Standard PERT, GANTT, and 3D viewers to view process and cycle time information
- 3D Validation of process plans

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## *DPM POWERTRAIN & the Manufacturing Hub*

DELMIA's entire solution portfolio work on top a unique data model called the Manufacturing Hub, which allow manufacturers to store, manage and reuse all product, process, and resource information required throughout the product lifecycle.

The Manufacturing Hub is part of a collaborative, PPR data system that supports Dassault Systemes' Product Lifecycle Management solution. This PPR data system ensures the seamless integration between CATIA, ENOVIA, SMARTEAM and DELMIA. CATIA provides the product design solution; DELMIA provides the manufacturing engineering solution; and ENOVIA & SMARTEAM provide the lifecycle applications and decision support tools.

With DELMIA digital manufacturing solutions, companies have the power to capture, manage and share their best practices and ensure everyone has access to the right information, at the right time.

## *The DELMIA Digital Manufacturing Solution*

DELMIA's portfolio of digital manufacturing solutions are categorized in three distinct domain suites, based on how they impact the flow of the manufacturing process. Each domain employs a set of tools that steps through the entire manufacturing process from concept to implementation.



### *Process Planning*

Provides a comprehensive process and resource planning support environment. The resulting process diagrams can provide a clear overview of the sequences and links between processes and resources early in product design conception.

- Layout Planning
- Time Measurement
- Process & Resource Planning
- Product Evaluation
- Cost Analysis
- Line Balancing



### *Process Detailing & Validation*

Employs the structure and diagrams of the Process Planning solutions into the application specific disciplines of manufacturing. Verify process methodologies with actual product geometry and define processes to a greater level of detail within a 3D environment.

- Manufacturing and Maintenance
- Assembly Sequences
- Factory/Cell Layouts
- Machining Operations
- Workforce Performance and Interactivity
- Shop Floor Instructions



### *Resource Modeling & Simulation*

Provides a comprehensive process and resource planning support environment. The resulting process diagrams can provide a clear overview of the sequences and links between processes and resources early in product design conception.

- Factory Flow Simulations
- Robotic Workcell Setup and OLP
- NC Machining
- Ergonomic Analysis
- Inspection



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