NX Feature Based Hole Making
Increase productivity and repeatability in generating tool paths for hole-making

Summary
NX Feature Based Hole Making is an automated CAM application within NX CAM that incorporates knowledge-based intelligence, and offers an automated process for programming the drilling and milling of holes. The solution can identify holes on a part, sort them by type and other key parameters, and then automatically apply machining best practices – producing highly optimized numerical control (NC) output. For components with a large number of holes, the new module can reduce programming time by as much as 90 percent, maximizing the use of standard machining methods and tooling. The output can be optimized in relation to tool changing, improving machine utilization, and reducing machining times.

Features
- A range of hole identification tools, including feature recognition
- Part model input data can be NX design models; or geometry from third-party CAD programs
- Includes a standard set of user-extendable hole types
- Easy user customizing option via a spreadsheet mechanism
- Knowledge-based automation to sort holes into groups by type, size and other key parameters
- Automatic application of intelligent machining process templates for each hole type
- Generation of tool paths optimized by tool change and/or travel
- Optimized connection with NX Mold Wizard and Progressive Die Wizard for maximum automation and data reuse

Extending the business value of CAM
A key value of NX Feature Based Hole Making is the greatly reduced programming time for new parts with many holes. Compared to traditional CAM methods, the savings can eliminate weeks of programming time on a complex part.

The system works with a range of input data from fully associative Unigraphics® NX part files, to simple solids from other CAD systems. This flexible approach optimizes the value of the available hole feature data and maximizes the applicability of Feature Based Hole Making and NX CAM.

Intelligent machining process templates within the solution ensure that approved, best practice methods are used, enabling less experienced users to apply methods developed by expert NC programmers – an increasingly important issue as manufacturing skills become harder to retain.

Output can be optimized to take full advantage of machine utilization and efficiency. For example, the tool path across the entire set of holes can be optimized to reduce tool changes or to lessen machine travel distances.

Major capabilities
Hole feature identification, with position, type and other key attributes
Feature Based Hole Making offers fully automated hole identification methods that can be augmented by interactive procedures. The process supports automatic identification of NX modeling features as well as hole feature recognition that can be applied to basic model geometry, such as that created by translations from other CAD systems.
Benefits
Enables significantly faster programming for parts with many holes
Promotes use of approved standard tooling
Captures best practices in machining method templates and rules
Optimizes the NC output for minimized tool changes and/or machine travel parameters
Improves product quality through the use of standardized, proven CAM processes
Improves machine and tool utilization through optimization of NC output

Application of standard methods by hole-machining templates
The hole-machining process templates and the rules within them that are automatically applied to each group of hole types can be edited, or added to, allowing customers to customize the system to match their specific methods. An easy to use spreadsheet style input mechanism is available as a method of setting key parameters of the system.

Optimization of the machine tool output based on key parameters
Having applied the process templates, the software evaluates the complete set of machining operations for the set of holes on a part. The user has the ability to optimize the sequence to consolidate all operations using the same tool (minimizing tool changes) or to optimize tool travel and the utilization of key machine characteristics.

Automatic tool path processing; output of machining data, post processed file, shop documentation, tooling data
The integrated cutter path creation functionality includes geometry collision avoidance, hole depth consideration, engage/retract options, machine control options, cut methods and other features, which give the user complete control of the path generation process. The user can take advantage of the cutter path and material removal visualization integrated within NX CAM. The output can be post-processed using Unigraphics NX post processor for a specific machine controller in the usual way.

Interface with NX Mold Wizard
NX Featured Based Hole Making has a special interface with NX Mold Wizard, a highly automated mold design solution. In this case, numerous hole features typically added to the mold bases are automatically identified by Featured Based Hole Making, providing significant advantages in reduction of NC programming and data re-entry time.

Supported platforms
Hewlett-Packard: HP-UX
Microsoft: Windows XP
SGI - IRIX
Sun Solaris

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