SURFCAM Basic Training

Objectives

To provide a comprehensive understanding of the SURFCAM wireframe geometry modeler for points, lines, arcs, splines. To facilitate the use of SURFCAM to create and manipulate toolpaths and G-code output to produce quality parts accurately and efficiently using 2-axis Milling, Turning, and 2-Axis Wire EDM toolpath generators. To provide an overview of SURFCAM file structures, how to activate postprocessors, and various utility programs.

Prerequisites

The prospective trainee should (a) have a good understanding of machining practices and shop floor terminology, (b) have a basic understanding of the use of Microsoft Windows, and (c) possess basic typing skills. Students should have read the ***Getting Started with SURFCAM*** section of the SURFCAM on-line documentation.

Scope and Disclaimer

While it is our goal to accomplish as much of this agenda as possible, classes vary in scope and subject matter depending to a large degree on the make-up of the trainees in a particular session. Additional subjects may be covered and subjects deleted as the software is updated and changed. Any attendee is welcome to bring an actual file to class that may be of particular interest and an instructor may work one-on-one with that person if time and scheduling permits.

Class Duration & Classroom Hours

This class is intended to be taught in three 8-hour days. Classroom hours are from 8:30 AM to 12:00 noon, and from 1:00pm to 5:30pm, allowing one hour for lunch break.

SURFCAM Wire-Frame Geometry

User Interface Basics

Demonstrate and explain SURFCAM Windows tools and concepts. Overview of icons, help files (F-1, AVI's etc.), menu items and keyboard picks, intelligent cursor, HOT keys, views, layers and file Open, Save, SaveAs menus. Importing & exporting geometry from & to other CAD or CAM systems.

Wire-Frame Geometry Creation

Use all standard geometry types (points, point groups, lines, circles, arcs and splines) to create various real world parts in progressive degrees of difficulty. Samples parts used give a good understanding of the application of common elements and construction techniques needed for common machine shop applications. All parts distributed during class may be copied and used for later reference.

Wire-Frame Geometry Editing

Examples are used to show how to edit the color, delete or trim geometry. Use of the Transform menu to copy, move, rotate and offset existing single or multiple elements.

Layers, Masking, and Views

Creating new layers, controlling visibility and select-ability of items by layer, moving geometry to a new layer. Masking by entity type, color, or both. Switching between standard views. Construction view appearance and orientation is explored and examples of both World and View coordinates are used. Creating custom views, changing a view name or deleting an existing view.

Mill, Lathe & Wire EDM Machining

Terminology

A thorough in-depth explanation of terms that will be encountered in the creation of all toolpaths using SURFCAM. Tool descriptions, tool libraries, material libraries, curve tolerances, feeds and speeds, work planes, construction vs. machining views etc.

2-Axis Machining Strategies

Practical examples are used to simulate most machining applications for Milling, such as Contour, Pocket, Drill, Face Mill, Pilot Hole, and 3D contour cutting. Likewise, example files cover Lathe features including turning, facing, thread, grooving, and cutoff. More specialized applications are covered, including clamp avoidance, toolpath associativity, advanced hole processing, multiple pocket to depth, material roughing, undercuts and 2-Axis wire EDM. Toolpaths are verified using SURFCAM's graphical toolpath editor.

Dimensioning, Text & Engraving

Use of all menu items for linear, angular, radial, or diameter dimensions, plus leader lines to cover most practical dimensioning applications. Use of Stroke vs. True Type fonts for notes or 2D engraving along a line, arc, or complex chain of curves.

NC Operations Manager

Use of SURFCAM'S CNC Operation manager to control single toolpaths & entire setup sections. A review is provided to sow the many features of the NC Operations Manager, including reordering of multiple toolpaths, adding and deleting toolpaths, adding setup sections, generating setup sheets, regenerating toolpaths with various parameter changes, or use of toolpaths from one part on a totally different job.

NC Verify

Use of SURFCAM's integrated material removal simulator (NC Verify), including stock definitions, standard views, zoom and pan features, fast forward vs. block by block simulation, stopping at each tool change, changing tool colors, and replay speed controls.

NC Utilities

Overview of CAM-related utilities provided with SURFCAM, including CAM, Gear & Involute shape generators, NC-Code converter, APT CLfile converter, and more.

File Management & Postprocessor Basics

A brief overview of SURFCAM's directory structure, postprocessor basics, how to edit a post, what files to backup, how to activate a library post, and the standard postprocessor library. Included in this discussion is how to report a problem, what files are needed, etc.