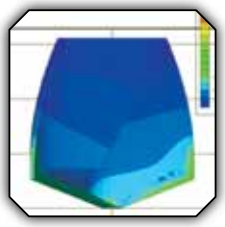
THIRD WAVE AdvantEdge™

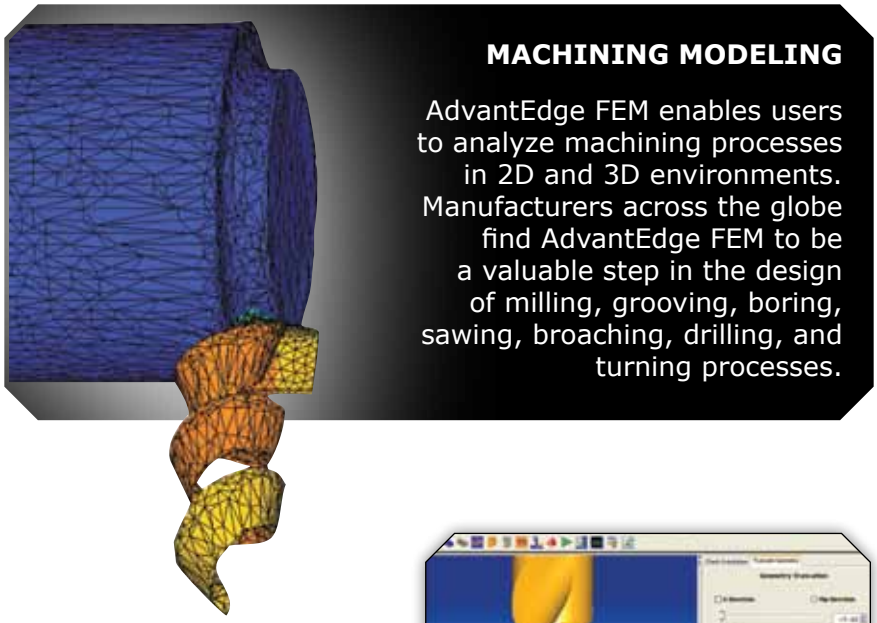
ADVANTEDGE FEM

AdvantEdge FEM is a CAE software solution for the optimization of metal cutting. This modeling software is used by those looking to improve tool design, increase material removal rates, extend tool life, improve part quality, and much more. Use AdvantEdge FEM to decrease the need for trial and error testing — ultimately getting to market faster.

TEMPERATURE AND STRESS ANALYSES

AdvantEdge FEM users are empowered to analyze temperature and stress in order to predict tool wear behavior and performance. By comparing case-by-case scenarios, users can easily identify and implement optimum parameters.





MACHINING MODELING

AdvantEdge FEM enables users to analyze machining processes in 2D and 3D environments. Manufacturers across the globe find AdvantEdge FEM to be a valuable step in the design of milling, grooving, boring, sawing, broaching, drilling, and turning processes.

USER-FRIENDLY CAD IMPORT

Users of AdvantEdge FEM are able to easily import solid model geometries from CAD software for faster, more accurate results. With several import interfaces, AdvantEdge FEM can be utilized for analyzing a wide variety of files including STL, STEP, VRML, and DXF.

How it Works

1. Define tool geometry or import from CAD program
2. Select tool and workpiece materials
3. Input cutting conditions
4. Run simulations
5. Compare simulation results for different cutting conditions or tool geometries to find optimal results
   - » Analyze temperature and stress profiles to gage reductions in tool wear
   - » Use chip formation to predict improved chip evacuation
   - » Evaluate force plots to lower cutting forces and power consumption

How You Benefit

- » Increased material removal rates
- » Improved tool life
- » Predicted chip shape
- » Shortened product design cycles
- » Reduced trial and error testing iterations

THIRD WAVE SYSTEMS

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AdvantEdge FEM Product Specifications

Software and Minimum System Requirements

- Windows XP, Windows XP 64B, Windows Vista, Windows 7
- 4.0 GB of disk space for installation; extra space required for each project
- AdvantEdge FEM 2D:
  - » 3.6 GHz single core Intel Xeon/AMD or higher processor; or 2.0 GHz dual/quad core Intel/AMD or higher processor
  - » 1 GB of RAM
  - » NVidia graphic card display
- AdvantEdge FEM 3D:
  - » 3.6 GHz single core Intel Xeon/AMD or higher processor; or 3.0 GHz dual/quad core Intel Xeon/AMD or higher processor
  - » 2 GB of RAM
  - » NVidia graphic card display
- Parallel Computing (AdvantEdge FEM 2D or 3D):
  - » Dual processor with single, dual, or quad core configurations
  - » 2.0 GB of RAM

Processes

AdvantEdge FEM 2D	AdvantEdge FEM 3D
» Milling	» Milling
» Turning	» Turning
» Broaching	» Drilling
» Sawing	» Boring
	» Tapping
	» Grooving

Features

- STEP/STL/VRML tool import capability
- Standard and custom tool creation
- Library of 130+ workpiece materials
- User-defined material and constitutive models
- Residual stress modeling

Outputs

- Plot force, torque, power, peak tool temperature, stress, and tool deflection over time
- Plot contours of temperature, heat rate, stress, strain, pressure, and velocity in correlation to tool and/or workpiece

Benchmark Data

AdvantEdge FEM 3D parallel performance improvement seen in 8-core configurations (pictured at right)