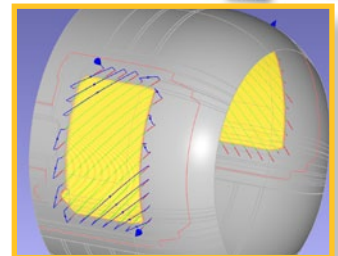
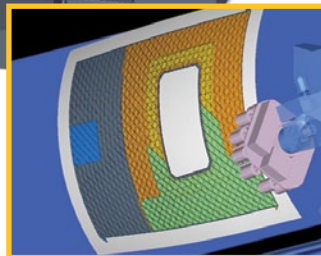
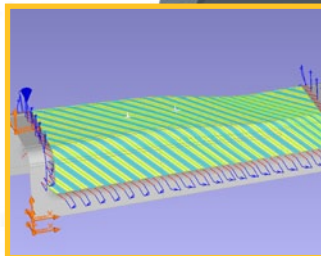
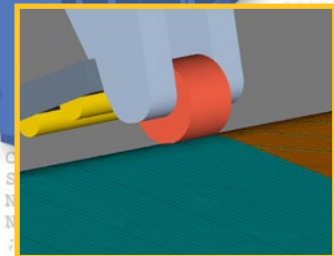


Machine-independent Programming & Simulation Software for Fiber-placement

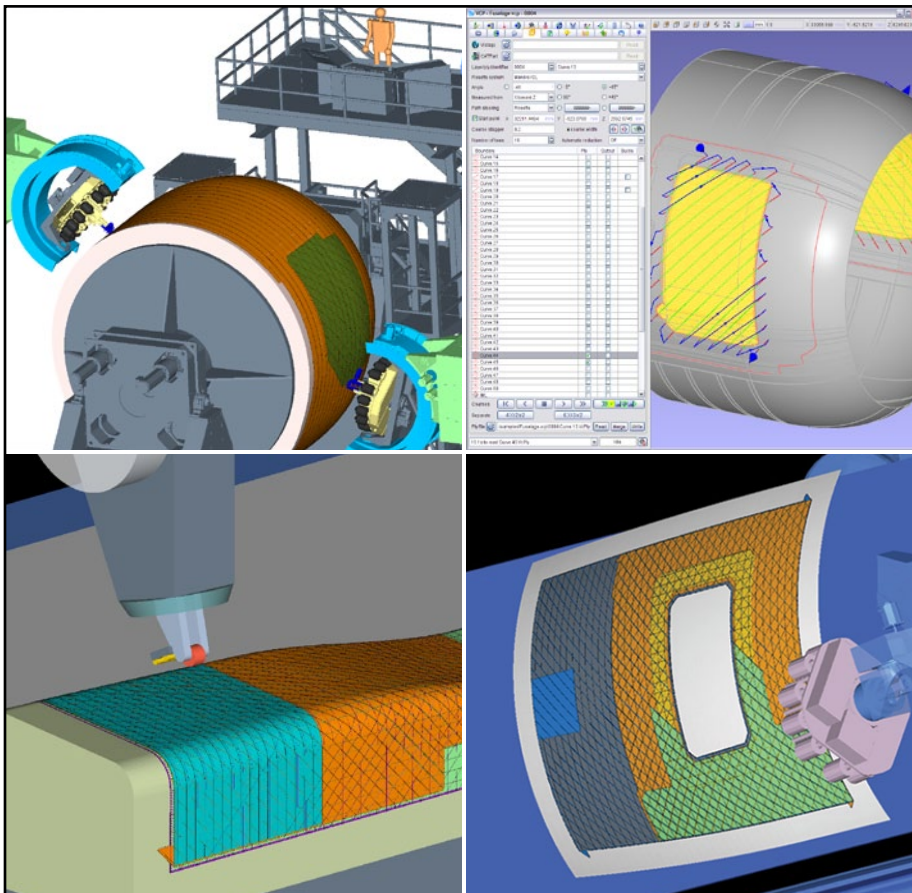
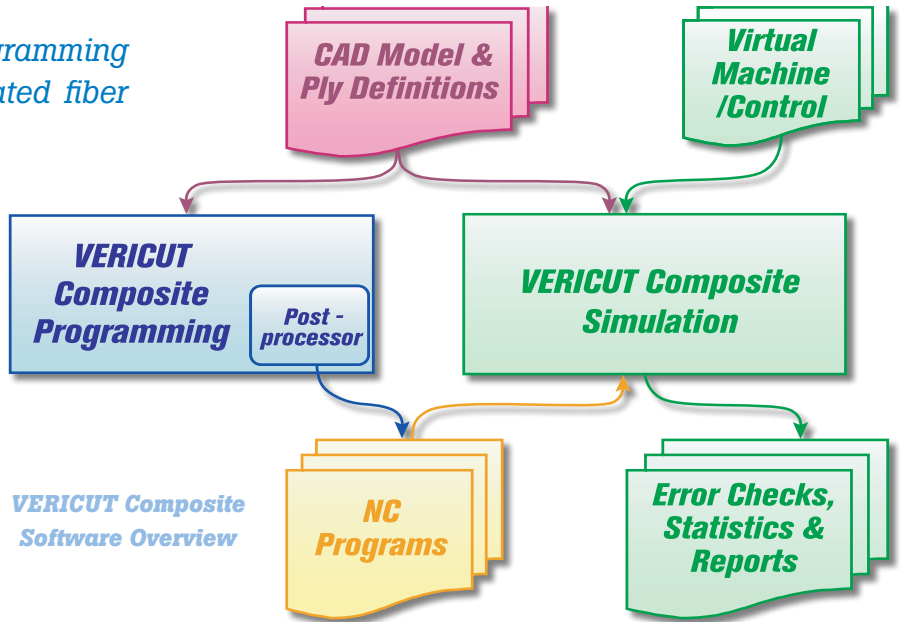


CNC Composite Applications

Machine-independent off-line programming & simulation software for automated fiber placement (AFP) CNC machines

VERICUT Composite Programming (VCP)

VCP reads CAD surfaces and ply boundary information and adds material to fill the plies according to user-specified manufacturing standards and requirements. Layup paths are then linked together to form specific layup sequences and are output as NC programs for the automated layup machine.

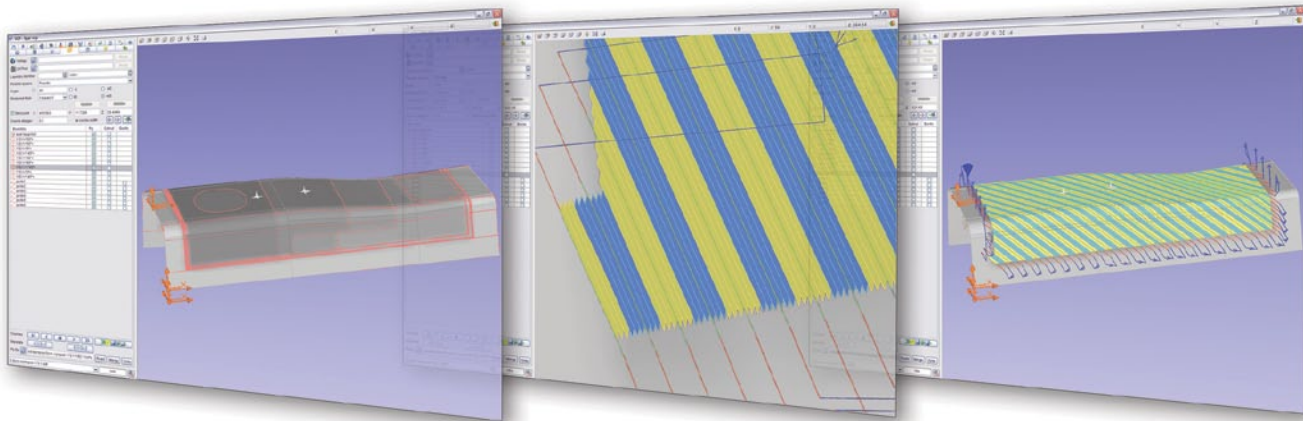


VERICUT Composite Simulation (VCS)

VCS reads CAD models and NC programs, either from VCP or other composite layup path-generation applications, and simulates the sequence of NC programs on a virtual machine. Material is applied to the layup form via NC program instructions in a virtual CNC simulation environment. The simulated material applied to the form can be measured and inspected to ensure the NC program follows manufacturing standards and requirements. A report showing simulation results and statistical information can be automatically created.



VERICUT Composite Programming Process



Reads CATIA V5 or ACIS surface models

- Other model formats available upon request

Reads FiberSim, CATIA V5 or other external ply geometry and information

- Boundary geometry
- Ply direction
- Start points

Generates layup paths based on manufacturing engineering rules

- Rosette projection at specified angles
- Parallel to guiding curve
- Following the natural path of the form's surface

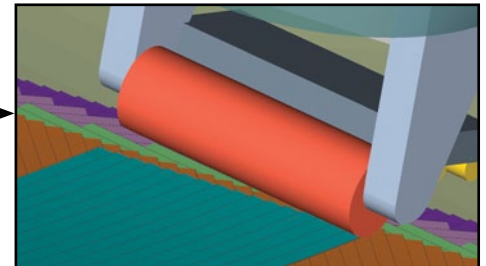
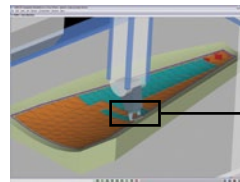
Add thickness to form for subsequent sequences

Links paths to create form layup sequences

- Automatically and manually link paths based on shortest distance and form's topology
- Insert machine-specific commands and actions
- Insert safe start and restart events

Post-processes linked paths

- Output per machine requirements
- Configurable machine-specific events
- Output safe start and restart sequences



VERICUT Composite Machine Simulation & Analysis

Reads CAD geometry of the layup form

- Used for collision detection and material application

Uses VERICUT virtual machine and control emulation to simulate the layup machinery

- Can be configured for virtually any CNC syntax and machine kinematics configuration

Reads the NC program and simulates the layup process based on NC program commands

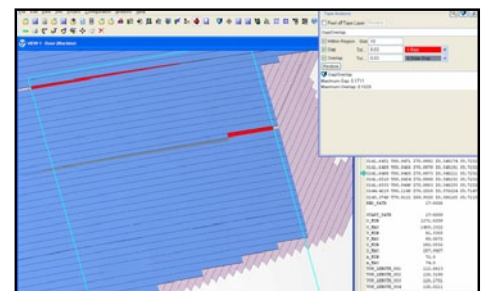
- Validate the actual NC program that will run on the layup equipment
- Add material to the form based on NC program commands
- Material is added in discrete layers/sequences, constructing the workpiece exactly like the physical process

Checks the process for compaction roller/form conformance and direction

- Verify roller orientation to path
- Verify path correctness to the form and previously applied sequences/layers of material
- Check roller conformance for bridging or excessive compaction

Added material is measurable and can be inspected for manufacturing requirements

- Measure lap, gap and thickness
- Detect steering radius violations





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