Programming & Simulation Software for Automated Fiber Placement (AFP) & Tape Laying (ATL)
**VERICUT Composite Paths for Engineering (VCPe)**

VCPe gives a composite part designer, mechanical engineer or process engineer access to the same software tools NC programmers use to create Automated Fiber Placement (AFP) NC program paths that are subsequently used in the workshop to lay-up a composite part. Using these tools the part designer or engineer can easily create and experiment with various AFP path options and evaluate the effects AFP manufacturing has on a composite part’s design intent. By producing actual AFP tape courses that could be used to program AFP fabrication equipment in the workshop, the user can measure and evaluate the effects of AFP path trajectory, material steering, surface curvature, course convergence and other process constraints as they would be applied in manufacturing. Tape course geometry can be written to various CAD formats for further evaluation by the user’s existing analysis methods and tools.

**VERICUT Composite Programming (VCP) & Simulation (VCS)**

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 or the automated layup machine. VCP can be used to program any number of machines, and includes support for probing, knife trimming paths, laser projection, and automated tape laying machines (ATL). VCP is also offered for a single platform (VCPsp) with optional modules.

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 created automatically. VCS can be used to simulate any number of machines, and includes support for probing. VCS is also offered for a single platform (VCSsp) with probing optional.
**VCP Process Features:**

**Reads CATIA, NX, CREO, STEP, or ACIS models**
- Other surface 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
- Follows the natural path of the form’s surface

**Add thickness to form for subsequent sequences**

**Links paths to create form layup sequences**
- Automatic and manual linkage of 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
- Configure machine-specific events
- Output safe start and restart sequences

**VCS Analysis Features:**

**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
CGTech is the leader in CNC machine simulation, verification, and optimization software technology. Since 1988, our products have become the standard in manufacturing industry sectors including aerospace, automotive and ground transportation, mold and die, consumer products, power generation, and heavy industry. Today with offices throughout Europe and Asia, and a global network of resellers, CGTech software is used by companies of all sizes, universities, trade schools, and government agencies.

CGTech maintains an active Technology Partnership program. VERICUT users in this program include many of the world’s leading machine builders, CAD/CAM developers, and manufacturing software companies.

VERICUT customer support is provided by a team of dedicated technical support engineers. Full training, implementation, and contract consulting services are available.

When you invest in VERICUT, you’re not just buying a software program, you’re teaming up with a manufacturing partner with the best reputation in the business!