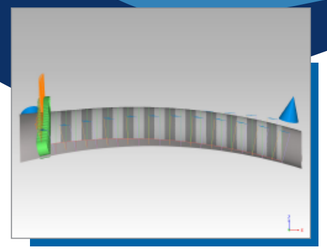
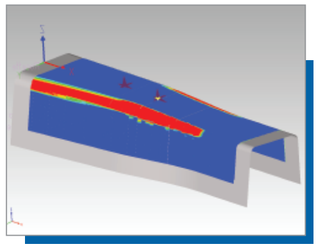
VCP/VCS Key Features



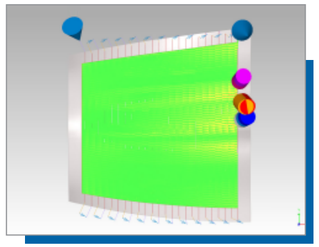
Laminate Manager
This feature organizes and manages all of the project files so that more time can be spent on the details that matter: optimization of the final composite part.

Processing
Users can choose how far to automate their composites programming with customizable strategies – anywhere from generating a single ply to exporting part programs for the entire laminate.



Laminate Analysis
With abundant analysis tools, users can inspect and visualize defects. These tools allow engineers to review the compliance of composite manufacturing specifications.

Post-Processing
VCP utilizes Python -based post-processors that are extremely flexible with the structure in which ply data is processed.

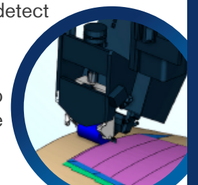


Intuitive GUI
VCP has a modern and easy-to-use ribbon interfaces and menu layouts that are consistent with all CGTech products.

Contour Programming
The Contour Programming feature of VCP allows users to control a variety of motion platforms directly with pre-defined contours.

Collision Avoidance Algorithm
The collision avoidance algorithm allows VCP to detect and avoid collisions with customizable granularity.

Material Projection
VCS and VCP have both had improvements to material projection and display, resulting in a more accurate representation of material placement.



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Programming & Simulation Software for Automated Fiber Placement (AFP) & Tape Laying (ATL) Machines

What is AFP & ATL?

Automated Fiber Placement (AFP) and Automated Tape Layup (ATL) are methods to fabricate near-net-shape fiber-reinforced parts using a CNC machine to apply layers of material to a mold.

Material (or "tows") can be placed over contoured shapes and allows for manufacturing of complex geometry. During these processes, material is applied through the end of the machine and compacted onto the form.

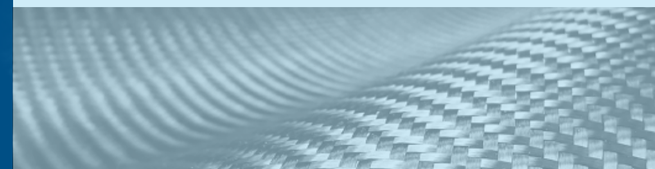
CAD/CAM Interfaces

VERICUT Composite Programming (VCP) & VERICUT Composite Simulation (VCS) offer seamless integration with a wide variety of CAD/CAM & MTBs, with more joining all the time:

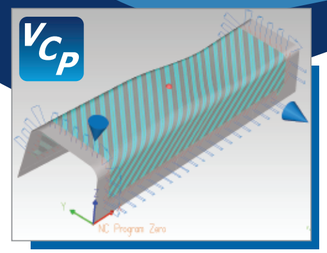
CATIA · SIEMENS NX · SOLIDWORKS · FIBERSIM

Machine Tool Builder Partners

ELECTROIMPACT · mTORRES · ACCUDYNE SYSTEMS, INC. · AUTOMATED DYNAMICS Performance in Composites · AFPT · BROETJE AUTOMATION · fives



VERICUT Composites Programming (VCP)

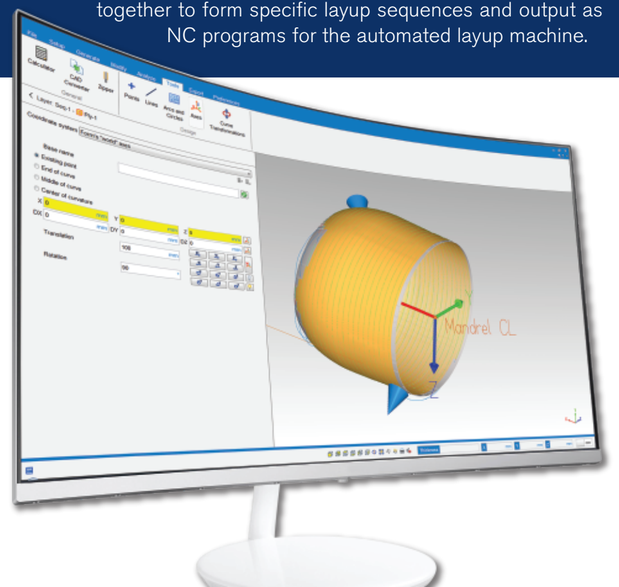


VCP gives composite part designers complete control over their part. With a wide variety of path laying algorithms, engineers can ensure that they capture the design intent of their composite work piece. Using tools inside of VCP, the part designer or engineer can easily create and experiment with various AFP path options. They can also evaluate the effects of AFP manufacturing on a composite part's design intent.

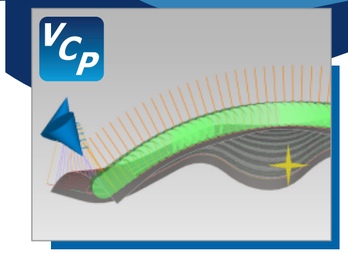
The user can measure and evaluate the effects of AFP path trajectory, material steering, surface curvature, course convergence and other process constraints as they would be applied in manufacturing.

VCP can be used to program any number of machines. It includes support for probing, knife trimming paths, laser projection, and Automated Tape Laying (ATL) machines. Data exportation is also available for further in-depth evaluation by the user's existing analysis methods and tools.

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 output as NC programs for the automated layup machine.



VCP Process Features



Reads CATIA, STEP, Siemens NX, Pro E, Creo, SolidWorks, ACIS and other surface models

Reads Fibersim, CATIA, and other external ply geometry and information including:

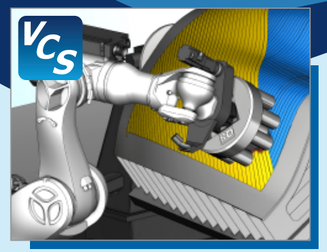
- Boundary geometry
- Ply direction, and
- Start points

Generates layup paths based on manufacturing engineering specifications, including:

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

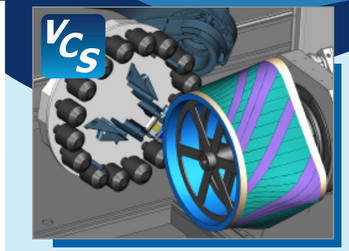
Creates NC code for **any** machine vendor, including:
Electroimpact, MTorres, Accudyne, AFPT, and others!

VERICUT Composites Simulation (VCS)



VCS gives an entire organization the confidence needed to run composite NC machines correctly the first time. Regardless of the programming system used (VCP or others), users can validate NC code to identify issues, such as: collisions, NC syntax errors, and material placement quality. Because the material is applied to the layup form via NC program instructions in a virtual CNC simulation environment, the simulated part 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 to help build confidence with operators and management. VCS can be used to simulate any number of machines, and includes support for probing, knife trimming paths, laser projection, Automated Fiber Placement (AFP), and Automated Tape Laying (ATL) machines.

VCS Analysis Features



Reads CAD geometry of the layup form, machine axes, and work cell

- For collision detection and material application simulation

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 from any source and simulates the layup process based on actual 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

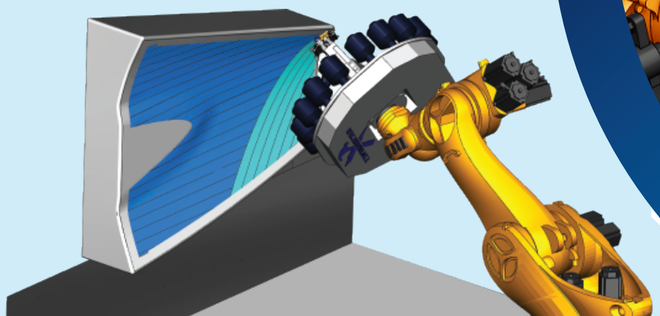
Checks the process for compaction roller/form conformance and direction

- 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

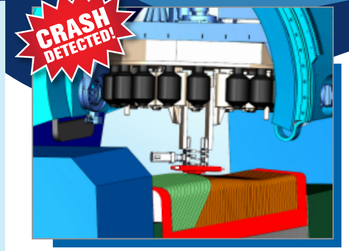
Measures and inspects added material for manufacturing requirements

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

Exports reports of machine warnings and errors generated during simulation



NC Program Simulation



Keep process problems off the shop floor and avoid:

- Breaking expensive tooling and machine parts
- Wasting expensive machine time proofing out programs
- Adding delays to an already tight schedule
- Wasting costly material on incorrect NC programs