

POWER UP

Where Your Power Solutions Begin



Opportunities Turn to Orders for Rotor Weld Business

by David Bird

The Charlotte repair shop experienced a surge of incoming rotor weld orders. The summer season, which is typically slow for the repair shop in terms of welding capacity, filled up quite well. Siemens Charlotte received five orders requiring welding operations to be performed on six rotors. In addition to the firm orders, there are verbal commitments to repair four additional rotors. All are spare turbines due to ship to customers at the end of the 2005 calendar year and during the spring of 2006. Siemens Charlotte received most weld repair orders from Central America and the United States. Two of the 10 jobs have come from Mexico.

Many different weld repairs are being performed, five of which include fossil LP turbine High-Efficiency Low-Pressure (HELP)



Salamanca rotor weld

blade package upgrades. Included in the HELP blade package are upgraded rotor L-0 and L-1 blade attachments. The shop will weld to assist in enhancing blade attachments from the current "F" root to an upgraded "P" root design.

Another fossil LP rotor weld repair includes the removal and replacement of four rows of L-0 and L-1 rotor steeples. The rotor blade attachments have experienced

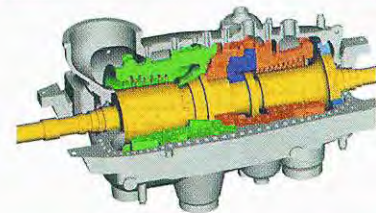
steep cracks as a result of stress corrosion. Upgraded materials are being used to replace the existing L-1 materials and are much more resistant to stress corrosion cracking (SCC).

Among the flow of LP rotor weld jobs, the shop is repairing a cracked RT2566 HP frame rotor. The crack, located in the center adjacent to the control stage area, extends from the surface

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Vericut Software Improves Machining Productivity and First Time Yield

by Klemens Huch

In an effort to increase both the productivity of the Numerical Control (NC) programmers and the accuracy of the first-time yield of NC tapes, CGTech's Vericut machine simulation software is being developed by the NC Group within Generator Technical Services and the Steam NC Group.

What is Vericut?

Vericut is a computer program. It uses 3-D CAD models of the machine, the machine attachments, the tool holders, the cutting tools, the design model of the part, the forging model, a working model of the machine control functions and the actual numerical control output (G-Code - NC tape) to produce a computer-generated graphical 3-D simulation of the part being machined. The programmers can watch this simulation as it is being generated.

What Does Vericut Do?

The software will generate a cut model of the part. The software compares the three models (design, forging and cut) and looks for differences, verifying that the cut model matches the design model. The differences could include too much stock removed, too little stock removed and collisions (interference of holders, attachments and non-cutting portions of the tool). The software generates a report showing where these differences occurred in the NC tape.

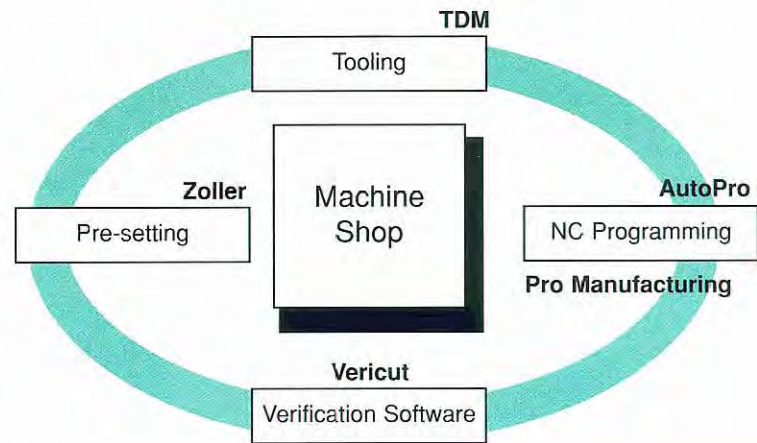
Where are We Now?

Vericut is being used to verify NC tapes on the RL4 100-inch lathe in

the generator shop and on the Fadal in valve components. Models of the HB8 and the HB14 horizontal machining centers in the generator shop and the HB11 horizontal machining center in the steam shop are being tested.

Vericut is only one module of a plan to increase the Charlotte plant's machining productivity. Tool Data Management, Tool Pre-setting and Pro/NC are also new software tools under development.

The verification software is one element in a new machining concept that will function as an integrated system (see graphic above). This system will take the product model information out of Pro Engineer, the process information from Pro Manufacture and/or Auto Pro and the tooling information from the Tool Database Management System as inputs for the verification process. The Vericut software will take all these inputs and verify the process and the "real tooling" against the solid product model (product design) for accuracy of the final machining configuration.



General Machine Shop Improvement Project Project Initiation

Why

- Charlotte generator rotor machining is a core capability within the PG Manufacturing Network
- To meet our technical services objectives of process improvement and cycle time reduction, we focused on the following operational objectives:
 1. Productivity: Reduce non-value-added operator activities
 2. First-Time Yield: Reduce NC tape errors
- Improve accuracy and distribution of information and tooling to sustain machining as a core competence with newer technology