Manual override

This Fabrication team improved efficiency and accuracy by automating operator instruction manuals for machines

By Dawsalee Griffin

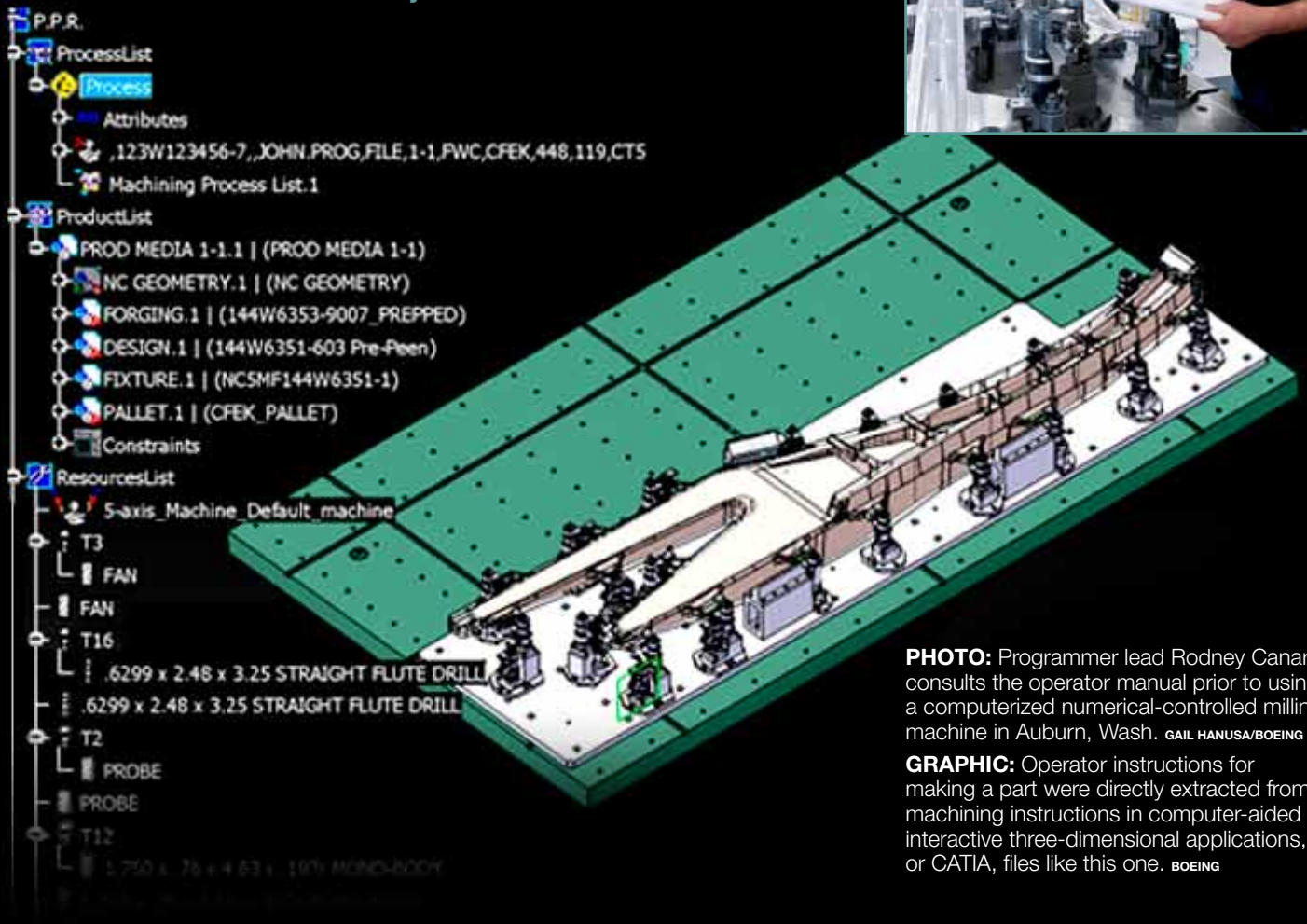

PHOTO: Programmer lead Rodney Canary consults the operator manual prior to using a computerized numerical-controlled milling machine in Auburn, Wash. GAIL HANUSA/BOEING

GRAPHIC: Operator instructions for making a part were directly extracted from machining instructions in computer-aided interactive three-dimensional applications, or CATIA, files like this one. BOEING

Rod Canary used to spend hours creating an operator instructions manual every time he wrote a new machined-part program.

Now, he and the other programmers for the computerized numerical-controlled machines at the Boeing Fabrication facility in Auburn, Wash., create the operator manual for each part in minutes.

What began last year as an effort within a programming group to automate operator instructions has proved so successful it may one day be incorporated into Boeing's best practices.

Until a year ago, operator instructions for the machines had to be manually created and updated as Word documents. Each time a programmer updated machine instructions, he or she had to make changes to the operator instructions. This manual process risked keying errors and unclear directions. The documents also failed to capture the additional tips that machine operators had written on their copies of the documents.

Multiply this by up to 10 or more instructions per part for the thousands of parts Boeing Fabrication uses numerical-controlled machines to manufacture and the potential for error is huge.

"The operator has to know what he's going to do," said programming manager Corey Cassell, "and exactly what's going to happen when he presses the 'go' button."

The solution, according to Canary, programmer applications lead, was to automate production of the instructions manual. A team of programmers worked to set up a database and a program that would extract operator instructions directly from the computer-aided interactive three-dimensional application, or CATIA, files that contain the machine instructions.

The new process did what the team expected. Besides improving the quality of operator instructions, it reduced the time needed to produce them by about 70 percent and increased their accuracy by about 90 percent.

Although the project began as an in-house process improvement, there is interest from other parts of Fabrication and Boeing organizations.

"Philadelphia is using the tool, with some improvements that we are looking to adopt," said Canary. "Boeing Portland has also expressed interest in the tool."

And the process of improvement continues. ■

dawsalee.griffin@boeing.com