NovAtel Keeps an Eye on Quality with Sequence Work Instructions

Consider what the world would be like without dependable Global Navigation Satellite Systems (GNSS). Air and sea transportation would come to a halt. Militaries would be blinded. The list of consequences goes on.

Fortunately, this scenario is unlikely. Nonetheless, reliable components and subsystems are essential for GNSS to operate for the productivity, safety and security of their users.

NovAtel Inc. is the world's leading original equipment manufacturer (OEM) supplier of precision GNSS products, including receivers, antennas, enclosures and firmware. These products are recognized for their high quality as well as low power consumption and comprehensive message suites for configuration and data logging.

The company's components and subsystems are found worldwide in precision agriculture machine guidance, surveying, Geographical Information System (GIS) mapping, port automation, mining, marine and defense applications – as well as in U.S., Japanese, European, Chinese and Indian aviation ground networks.

Driving NovAtel's worldwide success is a commitment to customer satisfaction and continuous improvement. This dedication to quality is brought to light at the company's Calgary, Canada, assembly facility where engineers and assemblers rely on precise work instructions for high quality, standardized products.

Sequence Keeps it Flowing

Since 2007, the facility has used Sequence Enterprise software work instructions from FFD, Inc., Knoxville, Tenn. Dennis Ho, NovAtel's manufacturing manager, says the software package helps the company deliver high quality products on time with very low defect rates.

"We use it for assembly," Ho says. "We are heavily involved in lean manufacturing, so everything is all standardized. It is flow process and Sequence helped us make sure our products are standardized and built the same way."

Before the NovAtel team discovered Sequence, they depended on Microsoft Word to capture work instructions. “Word is very time consuming, cumbersome and difficult to maintain,” Ho says. “Before we switched to Sequence, it was very difficult to track the changes reflected in the latest document.”

Non-relational / free-form text editors, such as Word or Excel, do not have the inherent “structure” to accommodate manufacturing information. It is left to the user to build this structure into the documentation. As a result, authors spend a significant amount of their time on non-value added tasks, including organization and formatting of information.

“Today, everything is online,” Ho says. “Before, we had to print a Word document. Now, every station has a terminal, and we can look online and we always have the latest version.”

“Every engineering change is automatically updated in the MRP system and/or Sequence. In the past, even the simplest changes could take 1-1/2 hours. Today, it takes five minutes,” Ho says.

“The typical hierarchy of manufacturing information focuses on parts, assemblies and products,” says FFD Founder and President Barry Lucas. “Parts are assembled to form assemblies. Once formed, assemblies become parts used in other assemblies. The final product is an amalgam of parts and assemblies, sub-assemblies and subsub-assemblies. In Sequence, each assembly is associated with a BoM, assembly tools, a set of instructions, references, calibration procedures and best practices.”

Line operators can independently request changes -- reviewed on a weekly basis by the engineering team -- without leaving their stations. If NovAtel encounters any quality issues they can immediately determine where the changes are made and correct the problem.

“Now the requests for changes are tracked from one spot,” Ho says. “Before, the assemblers had to use a spreadsheet to track update requests. The updates would take so long that operators got frustrated and stopped doing it.”

Looking Ahead

Today, NovAtel is expanding Sequence Enterprise to another area of the plant. Ho says the decision to use the work instructions in another area came because “The work instructions ensure the quality that our customers expect.”

“We translate the engineering documentation onto the shop floor,” Ho says. “Any new instructions are approved by engineering far in advance and that is how we ensure that we translate the engineering documentation properly. That helps with our quality control.”

“Before it would take forever to train our operators, now it is automatic,” continues Ho. “We no longer rely solely on general engineering drawings. Now it is all automatic without the Word problems.

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