Aerospace Filter Manufacturer Fills Skills Gap with Sequence Paperless Work Instructions

Baby boomers are taking decades of skill and knowledge with them as they leave their plants for retirement. On top of that, U.S. manufacturers are concerned that Millennials do not have the digital knowledge they need to perform plant floor operations. The result is the widely-publicized skills gap that U.S. companies must address to keep up with global competition.

One CA based aerospace manufacturer is addressing the skills gap head on by introducing paperless work instructions on the shop floor. The workorder-specific instructions provide complete traceability for the entire build process, capturing tribal-knowledge for existing and future employees.

Taking it a step further, the manufacturer of liquid and air filters used in fighter jets, submarines and almost any vehicle used in aerospace and defense applications, recently employed one college intern and two recent graduates to transition from a tribal knowledge and printed instruction system, greatly improving their understanding of how a plant floor works.

The company's manufacturing engineering manager says she selected the team as part of a detailed plan to systematically transition the plant to digital work instructions that includes photos and video.

The plan initially focused on the most complicated build processes, some involving more than 200 hundred pieces each, including nuts, bolts and rings. "If we began in an easy place, we may have set standards so low that we could not apply them to more complicated areas," she says.

The team's assignment was to work closely with the plant floor technicians to capture their production knowledge and input it into Sequence Enterprise Work Instruction Software. Now fully integrated into the plant's Oracle ERP system, the software simplifies complex manual assemblies and gives the company an easy way to author, review, approve, deploy and validate the work instructions required to build its products.

"I hired the new graduates and the intern based on their people skills, not because they had 4.0's in mechanical engineering," she says. "Their job was to own the work instructions, down to the fonts, and put them into the procedures. They were not jaded by our processes and did not have the 'we've always done it this way' mentality.

"I needed personable people who the floor technicians would trust," the engineering manager continues. "Could they have a candid conversation about engineering? Could they explain it to me in super technical detail? Could they explain it to me as if I didn't know anything?"

The team had challenges. The more established employees, one in particular who had worked at the facility for more than 20 years, were reluctant about change. Initially, an effort to 6S the areas was even rebuffed.

"She said 'I don't like this girl. She wants to touch my stuff,'" the manager says. "I said she's just here to help you. Can we at least try and see what happens? Now she loves her organized space and Sequence software. She has become the biggest user of the software. That is because the interns did not go in there as engineers and tell the workers what to do."

The intern, a junior at UCLA majoring in mechanical engineering, says the paid, 12-week internship gave her good exposure to the manufacturing industry.

"It was a valuable experience. I approached the employees with respect, and they showed me how they performed their jobs. It was not complicated to input the steps into the software even though we were working with a large database."

Success and Plant Wide Rollout

In September 2015, the team completed the first area of the plant. Today, the company's quality management team is pulling reports from the software. Other engineers at the plant are being trained to introduce the paperless software to other departments. The organization's goal is to go completely paperless by July 2016.

"The Sequence software rollout was cost justified based on the hours of just two full time people," says the engineering manager. "More than 100 people work on parts and we can show that cost justification for the salaried team as well. Now my engineering team can fix things by using the work instructions instead of constantly going back and forth to make repairs."

Plant wide there are more than 25,000 part numbers. However, perhaps only 30 percent of the parts are used annually, further making the case for capturing the work instructions.

"We may not work on something for three to five years or longer before we get an order," the manager says. "In the past we had to struggle with this each day. If three operators did an assembly, they would all do it differently. Now they just use a standard template with the global operation and then they're done. We have to fill in a few variables, but the software is so much faster than Microsoft Office. Hands down it is not even comparable."

Sequence Enterprise

Designed for the manufacturing enterprise needing work instructions that are collaboratively authored, fully integrated with ERP/PLM/MES and deployed in a real time, interactive paperless environment.

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