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737 wing-line inspector Bill Tarbet uses Online Work Instructions for easy access to digital information, including installation plans, which used to be printed and displayed on metal flip files known as “cookie sheets,” shown to his right.

Less paper, greater efficiency

How using Online Work Instructions helps speed quality-related processes—and win one lunch

By KATHRINE BECK

It was 12:50 p.m., second shift, in the 777 wing line in Everett, Wash. A mechanic told quality inspector Larry Westerman that he needed some paperwork modified by a manufacturing engineer.

Westerman glanced at the clock. “It was 10 minutes until lunchtime,” he recalled. “I told him, I’ll bet you lunch we get this fixed by lunchtime.”

The bet was on—and Westerman won his cheeseburger and fries with four minutes to spare, thanks to Online Work Instructions.

OWI is a new, Boeing-designed paperless system that’s making life easier for Commercial Airplanes mechanics and inspectors—and saving Boeing and its customers time and money. Paperwork that formerly lived in a folder now has been moved to electronic computer work stations available throughout the factory.

Westerman said that under the old system, the change that won him lunch could have taken “a day, maybe a day and a half.”

OWI is part of ongoing efforts in Commercial Airplanes Manufacturing and Quality to improve and standardize processes. It also helps support Lean+, one of four Boeing companywide growth and productivity initiatives.

Deployment of OWI began in November 2005, starting with several areas in Renton, Everett and Frederickson, Wash. By October, the last assembly work area was converted to the new system. OWI is now in use at all Commercial Airplanes assembly sites in the Puget Sound region of Washington state, with possible future expansion to fabrication areas.

PAPER TRAIL

It takes a lot of paper to build an airplane. Before OWI, BCA printed between 60,000 and 80,000 pieces of paper a day. Mechanics used installation plans with job instructions in words and pictures to

certify that work was properly completed and all steps had been properly performed. Both mechanics and quality inspectors signed off on the paperwork with their personal stamp.

Installation plans came with two copies—a green paper and a white paper. Mechanics used the white copy to make sure they were doing the job exactly as specified, and they kept it with them on the job for reference. The mechanic and the inspector had to sign off on the green paper, which Westerman said was stored “at a central location, but not always a convenient location.” Sometimes, a mechanic had to leave the work area and climb two flights of stairs to stamp the green paper. If there were missing stamps, mechanics and inspectors had to go back and make sure the work was done.

Now, the FAA has accepted the electronic signoff. The days of the hand stamp and inkpad are over, and paperwork is accessible to anyone who needs it via the closest computer station.

“Maybe there was some initial resistance. But if we took this away now, [mechanics and inspectors would] be really upset.”

—Tom Mlakar, Commercial Airplanes Manufacturing and Quality Systems Integration manager, on how Online Work Instructions, a paperless quality-inspection system, has made life easier for mechanics and inspectors

With OWI, there’s no confusion about signoffs. A blurred stamp is illegible, but an electronic signoff can’t blur. Paperwork can’t get lost, either.

And with OWI, there are no missing stamps, because the system doesn’t allow final buyoff of the job until all operations have the required stamps from mechanics and inspectors.

The OWI system also provides links to many other resources. Among them: the

nonconformance system that tracks discrepancies such as a cracked part or wrong-length bolt, gives instructions for correcting it and documents the fix.

And, OWI has links to drawings and to online “wizards” that help a mechanic know, for example, exactly how far to torque a bolt; to information on electrical hookups; and to specifications and standards.

If mechanics need to consult with a manufacturing engineer or get paperwork changed, they can use the OWI callboard function. The engineer can make the change immediately on the screen.

‘MECHANIC- AND INSPECTOR-CENTRIC’

OWI is updated through ongoing block-point changes to continuously improve the quality of the system.

Mark McGrath, IT manager, BCA Manufacturing Execution Systems, was responsible for designing OWI. He said when it came to designing and building the system, the needs of the mechanic and inspector were always foremost “because we’re in business to build airplanes. This is designed to be mechanic- and inspector-centric.”

OWI was built in consultation with mechanic and inspector subject matter experts in the factory. The subject matter experts also led deployment, teaching others about the system and troubleshooting. One of them was 737 Final Assembly functional test mechanic Glenn Konertz. “We’ve talked about going paperless and it’s here, and I’m glad to be a part of it,” he said.

“We’re saving money in places we didn’t anticipate,” said Tom Mlakar, BCA Manufacturing and Quality Systems Integration manager. “We didn’t realize how much time the inspectors spent just in checking that paper.”

Mlakar added that there were additional savings in avoiding paying for long-term storage or searching for completed paper, and in eliminating the lag time created when white and green papers were on a truck on their way to the plant.

“Mechanics and inspectors appear to be very happy with the system,” he said. “Maybe there was some initial resistance. But if we took this away now, they’d be really upset.” ■

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