

Naval Center Develops Innovative Parts Cleaner

ENVIRONMENTALLY FRIENDLY SYSTEM HANDLES CRITICAL COMPONENTS THAT CAN'T BE EXPOSED TO WATER BEFORE COATING.

The Naval Air Warfare Center Aircraft Division (NAWCAD) at Joint Base McGuire-Dix-Lakehurst in Lakehurst, N.J., has developed a new, environmentally friendly way to clean aircraft wheel bearings and other critical components that can't be exposed to water before being coated. The land-based and shipboard system, which replaces an old system that was headed for obsolescence, is expected to save time, money and labor.

NAWCAD Lakehurst has been replacing existing solvent part washer units at designated land-based activities and on ships at Fleet Readiness Centers at the rate of six per month since installation began in August 2011. This is important to Naval Air Station (NAS) Lemoore and other California Naval operations because staff would not have been able to perform even basic maintenance with old solvents that did not comply with air quality regulations.

The Clarus PCS-10 system uses agitation in a turbulent solvent bath that doesn't pollute.

"Excellent solvency, corrosion inhibition, low toxicity, fast drying times, high flash point and minimal odor are expected benefits," says



An Airman replaces retaining rings on an F-16 Fighting Falcon's main landing gear.

Christopher Mahendra, project engineer. "It is simpler in terms of both supportability and training to develop a common, flexible unit for all of the Naval activities engaged in similar processes."

The PCS-10 was designed and tested to meet shipboard shock, mechanical vibration and electromagnetic interference requirements. One challenge during testing was meeting volatile organic

compound (VOC) emission requirements for solvent cleaning units. At the inception of the PCS-10 project, the air quality control district in California's Central Valley, the controlling regulatory body for the air pollution standards that NAS Lemoore must follow, had the most stringent requirements.

With the PCS-10, cleaning fluids are continuously filtered.

"Older units would result in a waste volume that would need to be disposed of, with an associated cost that could be substantial, depending upon whether it was classified as hazardous or non-hazardous due to heavy metal content and the local disposal regulations," Mahendra says.

POSITIVE RESPONSE

Teams from Lakehurst's common support equipment competency as well as contractors have been installing the units, and, so far, response has been positive.

"From the fleet comments I have gotten back and from my own surveys of the previous cleaning operation, as this unit is much more automated, there will be substantial labor savings," Mahendra says. "Labor savings translate into cost savings."

When installation is complete, 91

new solvent cleaning units will have replaced 20-year-old washers and dryers that were used to clean critical components before coating. These components are important because aircraft wheels accelerate from zero to 180 knots or more in seconds. On landings, they bear the aircraft's weight and deceleration force from touchdown to stop in just a few seconds. All the while, critical bearings make each forced motion possible.

Tolerances are such that no critical part may come in contact with water. The only liquid these critical parts ever come into contact with is a solvent designed to penetrate heavy grease, dirt and bits of corrosion suspended in the grease, and then to carry them all away. In the Clarus PCS-10, only the solvent returns after it is filtered from the rest. It must be sprayed again from many directions while the basket of critical items is repeatedly raised and lowered, targeting all the hard-to-reach surfaces.

CLEANED PARTS NO LONGER CARRIED

The PCS-10 brings immediate changes aboard ships. Sailors no longer carry cleaned parts across a maintenance room to another unit to dry them. Instead, they clean the parts and remove them dry from the new, self-contained units for evaluation, repacking (with grease) and re-use. The old, manual units also required constant resetting, while the new system is completely automated and cleans faster.

"The installations we do aboard ships take two to three weeks," says Dan Burton, corrosion control installation lead at NAWCAD Lakehurst. "Initially, there is hesitation as we represent change, but by the time we complete the installations and operator training, they love us and the solvent parts washer."

"In a year and a half, we

have had no complaints about the washer or our training. By the time we leave the ship, all sailors that would need to use the unit are fully capable of operating the parts washer."

In addition to increased productivity and operator safety, another benefit of the PCS-10 system is that, in addition to aircraft wheel bearings, it can clean virtually any other small part that cannot be exposed to water, as long as it fits in the load basket and is below the weight limit. ■

Information provided by NAWCAD Lakehurst Public Affairs

This new Clarus PCS-10 land-based and shipboard solvent part washer was recently installed at NAWCAD in Lakehurst, N.J. The environmentally friendly and automated machine is used to clean aircraft wheel bearings and other critical components.



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