

NAS NORTH ISLAND - NAVY REGION SOUTHWEST NAVY ENVIRONMENTAL LEADERSHIP PROGRAM

POLLUTION PREVENTION

ISOPROPYL ALCOHOL (IPA) VAPOR DEGREASER

LEAD ACTIVITY

Naval Aviation Depot (NADEP) North Island

STATUS

Completed

MISSION

Replace chlorofluorocarbon (CFC) 12 and stoddard solvent

DESCRIPTION

In response to the Montreal protocol to eliminate the usage of ozone depleting substances (ODS), Naval Aviation Depot, North Island (NADEP) in association with NELP has evaluated and implemented an alternative drying system that meets established military cleaning requirements. The system uses IPA vapor degreasing as an alternative to solvent cleaning. Stoddard solvent is typically used to clean aircraft bearings during refurbishment.



IPA Degreaser Operation

The cleaning process uses a cascading line of solvent immersion tanks to remove grease, oil, and carbon from the bearings. Following the cleaning process, a thin, residual solvent film remains on the bearings and must be removed before continued processing. Normally, the residual film is removed using a freon (CFC-12) vapor degreaser. Aqueous-based cleaners cannot replace solvent cleaners for cleaning bearings because they may cause flash rusting.

The IPA system involves immersing the bearings in a bath of IPA vapor; the vapor condenses on the bearings and flushes the surface clean of contaminants. The bearing is then withdrawn through cooling coils that flush any residual IPA off the bearings. The IPA vapor degreasing process was found to meet the established drying standards and eliminate the use of a Class I ODS (freon). The IPA turn-key unit costs approximately \$200,000, including installation. The IPA Vapor Degreaser has been so successful that NADEP is pursuing procurement of another unit.

BENEFITS

- Eliminated the use of a Class I ODS, and helped NADEP achieve Navy's ODS phase- out goals
- Reduced cost; the freon vapor degreaser used about 150 gallons of freon per year; the current cost of freon is \$150 per gallon (IPA sells for less than \$5 per gallon, resulting in a savings of \$21,750 per year)
- Cost savings of \$59,034 per year

UPDATED: 01/23/02