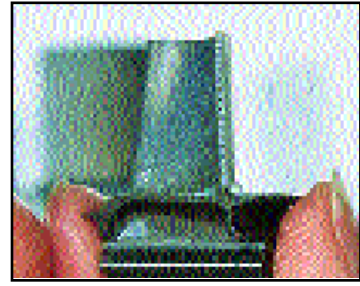


## Replacing Solvents with a Water Based System that Will Clean Parts Used in Refurbishing Helicopters.



### Background

This Army Depot is responsible for the maintenance and refurbishment of six (6) premier types of helicopters such as: Scawhawk, Black Hawk, Chinook, Apache, Super Cobra, and Huey. At specified intervals, all helicopters are directed to this depot where they are disassembled. The T-700 series engines are then sent to a GG-Rotor Shop for repair. Before leaving, all the rebuilt parts need to be thoroughly cleaned. They were previously using perchloroethylene, a hazardous chemical, in a vapor degreaser. This method of cleaning was mandated to change in the interest of pollution prevention.

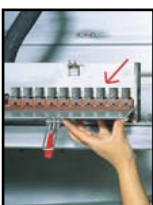
### Problem

The GG-Rotor shop is cleaning serpentine, radially cooled "HPT" blades as well as various miscellaneous helicopter engine parts. The "HPT" blades are peppered with tiny EDM holes and they eventually wear down from air friction and have to be rebuilt. Metal is added, the ends are re-contoured, and EDM holes are re-cut. After being rebuilt, the parts have to be cleaned - EDM slag removed, dielectric fluid removed, etc. All helicopter parts needed to be cleaned in one machine due to budgetary restraints.



### Solution

Design a dual purpose machine to flush nineteen (19) of each size blade simultaneously in the top section and utilize the bottom turntable to clean various other helicopter parts. The "HPT" blades are put inside a pressurized "box" with the "root" end of the blades sliding into a UHMW strip. Solution from the wash tank is forced into the lower chamber of the box. The water is then forced into the root holes of the blades, up through the central cavity, and out the EDM holes at the top. Using heated compressed air, the blades are then dried. The unit is also designed to accommodate several different base adapters to clean various sized blades.



The bottom turntable allows for the cleaning of all other helicopter parts such as: shroud supports, cooling plates, discs, nozzle segments, and shroud segments.

### System

A F-4000-P Stainless Steel Unit with wash, rinse and a heated compressed air dry system.