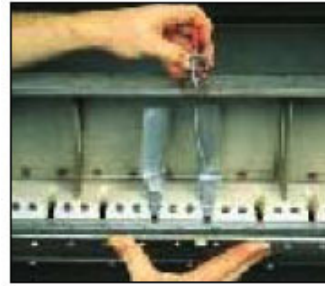


BETTER ENGINEERING  
**CASE STUDY-1000**

Parts washing system for G.E. AIRCRAFT ENGINES to clean jet engine high pressure turbine (HPT) blades.

**Remove slag and machining fluids from HPT blades more efficiently than prior methods.**



**Background**

Hundreds of "Fins" surround the center "Rotor" section of Jet Engines. These fins are actually high pressure turbine (HPT) blades which are very complex. The surface of the part is peppered with tiny EDM holes which lead to a central cavity and larger "root holes" in the rectangular end.

**Problem**

These blades 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. The previous method of cleaning was slow and cumbersome.

**Solution**

Flush, don't spray. Put the parts inside a sealed box which is divided into upper and lower chambers. The "root" end of the parts slide into a UHMW strip which then becomes the barrier between the upper and lower chambers of the box. Solution from the wash tank is forced into the upper chamber of the box. Under pressure, the water was forced into the EDM holes, through the central cavity and out the root holes.

The process was reversed in the rinse stage. Rinse water was pumped into the lower half of the box under pressure. The water was forced into the root holes of the blades, up through the central cavity, and out the EDM holes at the top.



**PCS System**



**System**

A two tank "PCS" system with a vertical pneumatic doorway. Inside, there are three (3) boxes in which the parts are flushed. The fronts of the boxes hinge downward. Solenoid valves control the openings to the top and bottom halves of each flushing box. All wetted parts are stainless steel. Parts washing system for G.E. AIRCRAFT ENGINES to clean jet engine high pressure turbine (HPT) blades. Remove slag and machining fluids from HPT blades more efficiently than prior methods.

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