Environmentally Compliant Painting at Hill AFB

Presented by Ken Walter EPEI
Battelle

Walterk@battelle.org
(801) 586 - 1933
Agenda

- Information about powder paint
- Background
- Transition issues
- Qualification of powder paint primer issues
- Technical issues
- Metal specific issues
- How to improve the process
- Q & A Session
Information about powder paint
Background

- System originally at Kelly AFB
  - Had 5800 ft$^2$ shop space
  - Major pieces of Equipment
    - 5 stage washer
    - dry off oven
    - Back to Back paint booths
    - Cure oven (conveyor and batch)
  - Information availability
Transition to Hill AFB

- System as transitioned to Hill AFB
  - Has 2100 ft² shop space
  - Major pieces of Equipment
    - Back to Back paint booths
    - Cure oven (conveyor and batch)
  - Pushing to only do powder paint
  - Installation issues (Environmental & Safety)

- Substrates to be coated Al, Steel, Mag, Ti, and Stainless

- Coat parts and assembled components
Transition to Hill (2)
Qualifying a Non-Chromated Primer

- Primer coat was applied by another organization
- Worked with engineers for evaluation criteria
- Tests performed
  - Impact resistance
  - Scratch resistance
  - Elevated temperature solvent soak in oil 24 hours
  - Flexibility
  - Stripablity
  - Thermal Degradation
Mistakes in the Primer Qualification Process

- Did not evaluate shear
- Only looked at Al parts - coated Mag, Stainless mating surfaces
- Did go back and start the qualification process over using the CTIO starting with Al
Technical Issues

- Oil
  - Assemblies that went through a functional test
  - Only allowed cleaning process is Isopropyl Alcohol
  - Tried lots of methods
Technical Issues (2)

- Painting over old paint
  - Magnesium gearbox and steel electrical starter
  - Cases with >10 mils of paint std military epoxy
  - Apply prime coat with chrome primer
  - Scuff sand and coat with powder paint primer
Metal Specific Issues

- **Steel & Aluminum**
  - None

- **Magnesium**
  - Big problems getting the primer coat to adhere to the base metal

- **Titanium**
  - Was painted by accident with primer. Seemed to be a good coating but was removed due to non conformance issues
How to Improve the Process

- Besides the prime coat tests
- Internally vented system
- 3 batch ovens
- Corrosion control station
- Wet/solvent prime booth
- Solvent/wet topcoat booth
Questions????