Purpose of the TAM panel

Defined as a "Penetrant System Testing and Monitoring Panel" or "TAM Panel" is used as a quick and efficient means for determing the continued serviceability of liquid penetrant inspection systems. Fluorescent, water wash and non-water wash; hydrophilic and lipophilic, and Visible penetrants.

Five Star Test Panels will verify that all system elements (penetrant, emulsifier, wash, dryer, and developer) are functioning properly. It brings attention to major shifts in the system's operating parameters. For example: If the grit becomes cloudy with background the panel has discovered contamination in either your developer or penetrant tank. If you're locating three instead of five indications on your panel either check your pre-cleaning or rinse station or it's time to have your panel recalibrated.

TAM panels remain the most practical means for meeting the MIL-STD-6866 paragraph 5.8.3 requirement for a daily system performance check. There are two versions of the panel. In one, the chrome plated section is polished and mirror like. In the other, the chrome section has been lightly grit blasted to dull the mirror finish. We manufacture both types; grit and polished.

General Practices

TAM panels are used at the beginning of each work shift to monitor a penetrant system for any sudden changes in materials or hardware performance. Conduct the "system test" prior to pre-inspection or certification of production parts.

Five Star Test Panels are usually shipped and used in pairs. Designate one panel in a pair as the "working panel" and the other as the "control" or "master" panel. Use the working panel to conduct routine system tests. Periodically use the control panel to validate the working panel, or to verify system changes revealed by the working panel.

Use normal production procedures but we recommend using the minimum allowed penetrant dwell and developing time and the maximum allowed wash and drying times. For example, if the allowable penetrant dwell time is 10 to 30 minutes and the wash time is 1 to 3 minutes, the TAM panel should be processed with the shortest penetrant dwell time (10 minutes) and the longest wash time (3 minutes.)

Record your results in a log. Make sure each panel is clean and completely dry before use. The panel may be processed with other parts. We recommend a solo run, nevertheless, if it is processed with other parts, insure that the other parts do not damage the panel. We also recommend removing your test panel from the part basket prior to pre-cleaning to prevent the panel from being damaged from thermal shock.

Processing

Use Five Star's steel handle and immerse the panel (to or just below the hinge for ease of rinsing and cleaning) into the penetrant tank, dwell, place the handle at a 45 degree angle to make a stand, and if necessary into the emulsifier tank, dwell, and rinse. Rinse the panel in the stand position. After a thorough rinsing; dry the panel in a processing dryer (stand position) or let it hang by it's handle on a ledge until dry. Inspect your completely dry test panel under a black light and record your results.

Here's a couple more helpful hints...

A Level II sensitivity penetrant should locate two to three or the C, D & E crack indications. Level III sensitivity penetrants are now capable of finding four sometimes all five crack indications (A,B,C,D&E) on the test panel.

Handle the Five Star Test Panel with reasonable care to avoid scratches. Clean each test panel immediately after use.

Use a separate set of Five Star test panels for each penetrant system. Do not use different penetrant sensitivity levels on the same set of panels.

Five Star Test Panels should be checked periodically against each other using unused penetrant materials.

It's also beneficial to compare periodically the working panel processed with material from the production line against the control panel processed with new materials from the laboratory.

Five Star Maintenance

Post cleaning is essential in order to delay or prevent clogging of the small cracks which the Five Star panel contains. Each panel should be cleaned immediately after each test by submerging in solvent, observing all safety precautions, for a minimum of four hours. Panels may also be submerged in solvent overnight between tests to discourage clogging. If you allow penetrant material to remain on the panel it will dry and oxidize in the cracks.

Ultrasonic cleaning is preferred for routine post cleaning; avoid overheating the panel. If ultrasonic equipment is unavailable, wash the panel using the instructions above.

Solvent in the cracks will interfere with tests, and must be evaporated before using the panel. Allow the test panel to dry completely before conducting any test. If dryness is doubted, oven dry the panel.

If your TAM panel appears to be clogged after it is dry, spray the panel with a heavy coat of non-aqueous developer. Place the panel in an oven set at about 180 degrees Fahrenheit for ten minutes. The developer and heating will draw dissolved penetrant residue to the surface. Allow the panel to cool, and without removing the developer, examine it under a black light. If the cracks are readable, continue applying developer, heating and examining the panel until the cracks are no longer readable.

Note: the five induced cracks will become naturally larger from temperature recycling and ordinary use due to the thin chrome plating in manufacturing Five Star Test Panels. The grit blasted section may become smooth from wiping and handling.

All TAM panels should be recalibrated periodically. To conform to Pratt & Whitney specs it is suggested that each panel be recalibrated and recertified annually. Five Star panels may be returned to your distributor to be sent to our facility for complete cleaning, crack measurement and recertification. If the panel conforms to specifications it will be recertified and returned with a certificate of conformance. When the panel does not meet specifications you will be advised of the reason(s), panel will be returned free of calibration charge and assistance offered in purchasing a new panel.