



SAE Specifications Update

As chairman of the Surface Enhancement Division of the Fatigue Design and Evaluation Committee, I have had a unique opportunity to participate in the development of shot peening standard practices. I have witnessed the evolution of concerns from media production and maintenance issues to practices of determination of coverage and measurement of intensity. Throughout this association I am impressed with the enthusiasm of the many dedicated committee members that forge ahead with new and exciting practices.

At our last meeting on May 12 in Troy, Michigan at the SAE Detroit office, we discussed several significant changes and these will be posted at the SAE web site for ballot as you read this. There were minor changes suggested for J442 regarding the Almen holder. The dimensions of the holder described in AMS-S-13165 (now cancelled) are different than those describe in J442. We decided to adopt the 13165 holder drawing as an alternate acceptable device thus prolonging the life of those holders. A change in J2277 would add the word "Determination" to the title to make to "Shot Peening Coverage Determination" since the document deals with methods of determining coverage, not specifying how much coverage should be obtained.

Changes in J443 address methods of determining intensity when "saturation" is achieved in one pass through a machine or one rotation on a turntable. It also addresses a new method of selecting the exposure time for intensity confirmation when two or more holders are mounted on a fixture. The present practice requires exposure of each strip location at its T1 saturation time. Multiple holders will have multiple saturation times. A very common practice is to expose the holder fixture to the longest duration saturation time and then accept/reject based upon the resulting arc heights. That's not valid with the present specification. A novel technique is introduced that allows a single exposure time but with a new accept/reject criteria. In my four decades of involvement with shot peening I found one, and only one, shop that actually performed the confirmation tests appropriately. I was visiting Holger Polanetzki (2008 Shot Peener of the Year) at MTU and during a shop visit I asked

the operators how they performed the confirmation tests since there were five holders on the fixture. I was flabbergasted. They ran each strip holder location at its own saturation time. I was impressed. I never thought I'd see it happen. I understand that both Boeing and GE are addressing this issue in their own standard practices. It's great to see this improvement in shop practices.

The spring meeting of this committee is held each year at the SAE Detroit office in Troy, Michigan. The fall meeting will be held on Monday, Oct 26, in Albuquerque, New Mexico (prior to the annual Electronics Inc. Shot Peening workshop).

Other meeting news: The Aerospace Materials Engineering Committee meeting will be held in Chicago, Illinois on August 4-5. The Surface Enhancement Division will meet on Monday and I will report to the main group on Tuesday. Hot topics for that meeting are cancellation of AMS-S-13165, modifications to AMS 2430 and AMS 2432 and various sub-parts of AMS 2431 regarding media.

If you are not already a member of these committees and would like to become involved, send me an e-mail at jack.champaigne@electronics-inc.com.

Other news: Dr. Kirk's new versions of his Saturation Curve Solver programs are compatible with Microsoft Office 2007. Microsoft rearranged the tool bar location for "Solver" and Dr. Kirk had to revise the instructions to comply with the newer version.

He has also made available a spreadsheet program called "Coverage Predictor." It's a teaching tool to illustrate how much time might be needed to obtain full coverage when you have performed a partial coverage experiment. For instance, if you expose a part to one minute of peening and estimate that it has 40% coverage, how many minutes would be required to achieve 98% coverage? Fire up this program, enter 40 in the appropriate cell and observe the size and shape of the accompanying graph. This would work with a turntable application as well. Plug in the estimated coverage after one rotation of the table and the graph will illustrate a predicted time needed for full coverage. Thank you Dr. Kirk for making these programs available to everyone free of charge. ●