The Penetrant Professor from Met-L-Chek®

The Fall Meeting and Convention of ASNT in Palm Springs, CA

This meeting was just great. There were approximately 1530 people in attendance, which is quite a bit higher than past meetings, and there were 152 exhibitors displaying various wares. The MT/PT technical session featured a number of talks of interest. In particular, in the last issue of this newsletter, we suggested that the talk by **John Brausch** on UV lights would be of prime interest. John is at the Air Force Materials laboratory (AFRL) and has made preliminary tests on a number of UV lights that are alternatives to the well known standard mercury vapor lights. His findings indicate that **one must be careful about the technical details of several of the new UV sources**. A task group that includes representatives of the UV-A lamp manufacturers has been convened to address this subject.

John's findings suggest that:

1) *Visible light filters should be implemented on all UV-A lamps use for fluorescent inspection processes to reduce white-light emission and veiling glare.*

2) *UV-A safety glasses that are certified to absorb UV-A radiation-between 180nm and 400nm are effective at reducing veiling glare for those lamps that incorporate visible light filters*

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3) *Adjustable and parabolic reflectors can result in either very intense narrow beams or even dead zones.*

4) *Data gathered by* **Richard Lopez** *at Iowa State University indicates the peak UV-A wavelength should be near 365nm (based on fluorescent penetrant excitation response).*

5) *It is the opinion of AFRL that additional industry guidance is required to address several of these factors including*

a.Peak wavelength requirements (currently addressed in ASTM update)

b. Effective beam diameter requirements and elimination of dead zones

c. UV-A lamp filtering requirements to reduce visible light emission and eliminate veiling glare

d. Maximum UV-A intensity requirements.

We are members of the task group and will stay tuned to this important subject, reporting on things of note in this newsletter. In the meantime, John points out that among the various UV sources that he tested, the mercury vapor lights have a minimum of white light in their output when properly filtered, and that when used with the proper UV-A safety glasses they result in essentially glare free inspection.

George Hopman gave practical advice as to how to prepare for a NADCAP audit. George has ample experience in this area and his advice was sound, including the suggestions that since one is advised in advance as to what the auditor will be concentrating on, it is very helpful to make a "self audit" in

advance of the actual audit that examines the identical items that the **NADCAP** auditor will be looking at. If you pass your own audit, it is highly likely that you will also pass the **NADCAP** audit with no adverse findings. George also advised how to forestall questions where the auditor has discretion in his determination concerning compliance with **NADCAP**. Simple things like having fresh solutions in the tanks at the time of the audit can preclude the auditor from questioning whether the solution is clean enough, etc. Making sure that photos of the TAM panels accurately reflect what the panel shows is a very good way to demonstrate that attention has been paid to this important detail. George had many more suggestions that were practical and designed to make an audit as painless as possible.

Gregg Sanko, of Oakite Products Inc/Chemetall gave an interesting talk about the cleaning process. We do not hear enough about this important step in the penetrant inspection process, and Gregg gave a detailed discussion on the subject. In particular he mentioned the new European specification named **REACH**, which limits or restricts certain chemical ingredients that may be used in penetrant inspection products. Any manufacturer who sells penetrant products in Europe meets the **REACH** requirements, so if this specification migrates to the US, **Met-L-Chek already meets it**.

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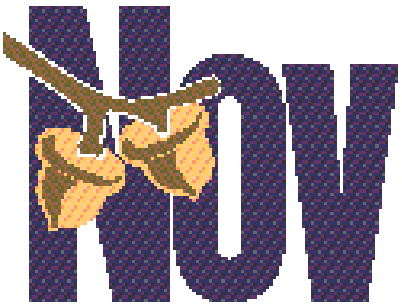

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Bill Mooz, **Met-L-Chek Company**, gave a talk describing some of the history of the development of the specification by which inspection penetrants are qualified. This process happened over an approximate 30 year period and involved the invention and development of a variety of different devices that were designed to measure various characteristics of the penetrant inspection materials. Almost all of these devices were tested and discarded because they were unable to test the ability of a penetrant system to measure the response in quantifiable terms on actual cracks that were examples of what was encountered in the inspection of parts. The surviving system, which is used today, uses low cycle fatigue cracked bars and a spotmeter that focuses on the indication response and measures its brightness. It is this system that defines the sensitivity level of a penetrant system.

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