

Shot Peening Workshops with Additional Focus on Practical Training

sentenso's Workshop and Training Concepts in Europe

EI SHOT PEENING TRAINING (SPT) has been spreading all over the world, following the demands of aerospace and automotive industries in key regions. When providing training outside the United States, EI SPT links with regional industry experts with shot peening expertise that will adapt to language and cultural specialties, to support the training itself, and to improve sustainability of training's benefits with the customers. Local training partners keep contact with the students and their companies, follow-up on questions, give advice for process and equipment, or even supply equipment and services.

sentenso in Datteln, Germany is one of these strong EI SPT partners that covers shot peening training in Germany and several other countries in North, South and Mid Europe. Built on the shot peening expertise of its training managers, Volker Schneidau and Wolfgang Hennig, the company has vastly extended its activities over the years. This goes back to the first European Shot Peening Workshop held in 2008 in Sinsheim, Germany that was powered by strahlportal—Volker Schneidau's engineering firm. Since then sentenso and strahlportal have trained close to 300 students from a long list of European countries and industries with almost 400 FAA course certificates being issued. About 40% of all students have been trained in the last two years alone.

sentenso today provides both Shot Peening Workshops and on-site training. The Shot Peening Workshops are held twice each year in the German and English language. On-site trainings can be booked individually.

The Practical Approach

The unique feature of the in-house Workshops in sentenso's



Hands-on work supports the retention of training materials

Technical Center is that it is a dedicated combination of theoretical and practical elements in one training event. The regular two days of training for Level 1 and 2 are extended by a third day in order to have time for practical work on real shot peening machines, covering the core topics of media, intensity and coverage. This training is not simply an optional add-on after the seminar but it is closely woven into the agenda to directly link theory and practice and allow students to keep track of the purpose of the information.

Volker's goal when implementing training at sentenso was exactly that idea of sustainability. Hands-on work improves the retention of the learned material, providing several benefits:

- Hands-on experience helps students overcome insecurities
- Interaction with the trainers helps find and avoid typical mistakes
- Interaction with peers allows for better understanding and mutual support

Also for the new Shot Peening Workshop in the Czech Republic in September, sentenso will add value to this event by implementing practical training content (see related article on page 40).

sentenso has been successfully following this training concept for more than 10 years. Since 2012, students have enjoyed the hospitality and engagement of the sentenso team as they provide a comfortable learning environment. They are impressed by the equipment used in the shot peening process and quality management. Above all, students are convinced of the competence of the trainer team, consisting of experienced sentenso staff members. Jan Claes from ZF Wind Power Antwerpen said, "The practical training at sentenso about XRD and compressive stresses related to peening gave me a lot of insights and knowledge about the process and measurement techniques which removed my personal stress and gives me good confidence to be process owner in our factory."

Training Competence from Level 1 to 3

The trainer competence was strengthened when Wolfgang Hennig from Rolls-Royce Germany joined the team in 2019. Wolfgang has brought his considerable experience and know-how of jet engine applications to sentenso. His ongoing training engagement has encouraged several aircraft MRO companies to extend training provisions to their staff, either in sentenso Workshops or at their own sites.

SHOT PEENING TRAINING

Continued

When it comes to discussion of residual stresses, the engineer Jörg Behler conveys background knowledge and practical exercises with sentenso's X-ray stress analyzer.

Even Level 3 candidates in the Workshops take three days of training, repeating essential Level 2 contents, performing practical exercises, and then deepening their knowledge in intensive discussions with the trainers to prepare for the Level 3 exam. The exam itself is very demanding due to its open questions and the time pressure. Volker and Wolfgang stress the importance of quality thereby maintaining a high level of education and thus the value of the Level 3 training. Nadine Goertz from MTU Maintenance Berlin-Brandenburg confirms, "sentenso has a great experienced team in automotive as well as in aerospace applications. Especially for Level 3 education they found a new challenging way to train the shot peening community!"

Customized On-Site Trainings

Apart from the Workshops with the included practical training, the on-site training concept provides a number of benefits to the company such as:

- Reduced travel time and expenses
- Protection of confidential information when required
- Specialized training contents for the real process and job

More than 100 students have completed such customized trainings in various branches like aerospace, automotive, medical, and other specialized industries such as spring or machine manufacturing.

Despite these excellent reasons for on-site training, students who are trained at their own companies are missing networking opportunities with peers from other companies who often have similar challenges in their shot peening activities. Therefore, Wolfgang and Volker recommend an appropriate mixture of Workshops and on-site training, depending on the tasks students must accomplish. While networking and exchanging experiences in the Workshops, they gain specific training in process and quality management at their own facilities. ●



Training is provided in shot peening's critical fundamentals

SPECIFICATIONS

Dave Barkley | Director of Training | Electronics Inc.

The New Four-Four-Two

AS THE SPONSOR of the May 2022 publication of J442, I've asked *The Shot Peener* magazine to allow me to highlight its major changes.

A goal of the SAE Surface Enhancement Committee (SEC) is to remove redundant and conflicting information among specifications thus making them easier to understand. This was the main reason for a new J442.

The current two grades of strips used in the peening industry were defined in different specifications: J442 for standard grade strips and AMS2432 for high grade strips. AMS2432 notes all test strips must conform to J442 but adds tightened thickness, flatness (pre-bow) and hardness requirements.

The main problem with this is the specifications use of different measurement units and tolerance methods. As an example, J442 dimensioned strip thickness using minimum and maximum limits as a tolerance. AMS2432 uses a plus/minus method to tolerance strip thickness. Those unfamiliar with proper dimensioning practices could be confused on how to relate the plus/minus tolerances of AMS2432 to the limit style dimensions of J442. Errors are compounded when different rounding methods are used for converting between metric and imperial units.

This issue has been corrected with the new J442 defining both standard and high-grade Almen test strips: Grade 1 and Grade 1S. Grade 1 test strips have the same requirements as previous J442 versions and Grade 1S adds the tightened thickness, flatness, and hardness requirements from AMS2432. The names "1" and "1S" were chosen due to multiple organizations already using these terms to designate the two grades of test strips.

AMS2432 is currently being revised to simply reference the J442 Grade 1S test strip instead of outlining the tighter tolerance requirements. A provision in both specifications is added to allow a test strip manufacturer 18 months after the new AMS2432 is published to sell existing stock of incorrectly manufactured test strips.

Another change to J442 is the once optional end stops on Almen gages are now required. This, along with centering the test strip on a slightly longer holder, ensure the areas of the test strip shaded by the fastening screws will not corrupt arc height measurements. Again, redundant text concerning this will be removed in the updated AMS2432.

Finally, it's worth noting the new J442 has all new drawings and tables. This was done to correct a couple small errors and make requirements easier to find. Imperial measurements are added throughout the metric specification for reference.

Visit www.sae.org/standards for a copy of the latest SAE specifications. ●