Dave Barkley, trainer with Electronics Inc. Education Division, demonstrates flapper peening at the 2009 China workshop.

China:
An Emerging Peening Market

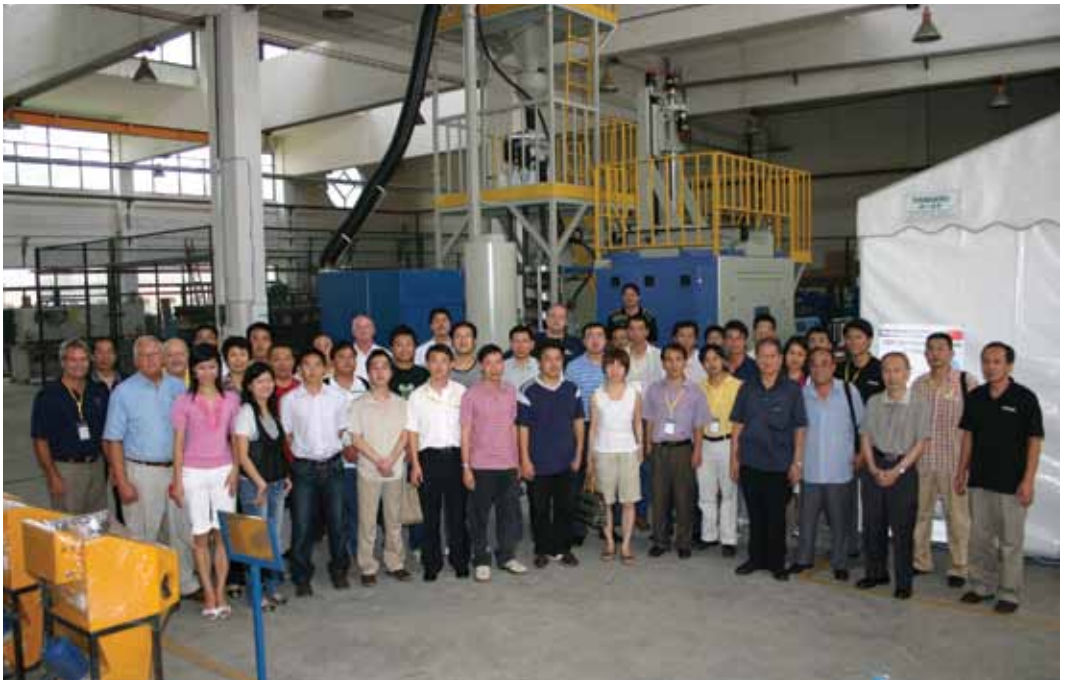
To establish its role as a major subcontractor for the building and repair of aircraft, China collaborates with foreign firms like Boeing, Airbus, Rolls Royce, and General Electric to achieve technological transfers. In the past 10 years, China's manufacturing capabilities and labor intensive MRO facilities have been enhanced to meet future international and domestic needs of aircraft demand. This trend is set to continue as China improves its transport infrastructure in the next decade.

For special processes like shot peening, which are so critical for aerospace, there are limited FAA-certified training courses in the country. So the first problem for the aerospace industry here is the lack of qualified personnel to execute this process effectively. The second is the language medium for these training courses. Chinese is still by far the main language in China so it's not surprising when AMS and engineering specifications are interpreted differently from what they should be.

I started participating in Electronics Inc. Education Division's shot peening workshops in Singapore in 2004. In 2008, Electronics Inc. Education Division (EIED) and Pakpal agreed to host a shot peening workshop in Chinese and provide proper training in China. We had no idea where it would lead us. First, we had to ensure that lecture materials were translated correctly and the terminology was consistent. Then we had to make sure that all questions would be translated on the spot. Getting proper FAA certificates for their training is a priority for many, so we wanted students to understand and answer their examination questions in Chinese.

The logic behind shot peening is pretty simple to explain: It's a method of inducing compressive stresses to relieve metal fatigue. Everything gets complex once students start asking relevant questions: What is the difference between intensity and arc height? How does media affect your coverage? How do you control machine parameters to ensure repeatability in your process? How do part geometries and specifications affect your decision on the kind of equipment needed?

Adam Chai coordinates the Electronics Inc. Education Division workshop in China. He is Director of Corporate Affairs for Pakpal Surface Technology, a manufacturer of Dry/Wet Blasting and Peening Equipment that specializes in CNC peening equipment for the Chinese aerospace industry.



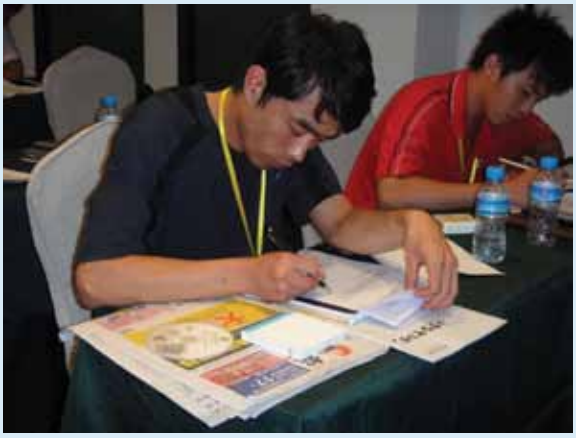
The 2009 workshop attendees at the Pakpal Surface Technology facility in Shenzhen, China

How do you interpret your specifications like AMS2430 or AMS2431? I can't get the intensity, can't I just use the arc height with full coverage on the strips and forget about the saturation curves? (The answer to the last one is obviously no, and we'll explain why in Chinese during the workshop.)

It never fails to amaze me that each year we present the same topics, but each year there is something new to learn. This is the result of the dynamic interaction between speakers and students in the lecture room for the first two days. On the third day, optional on-site training is provided at Pakpal's equipment facility where we perform a controlled shot peening process. This is especially helpful for new service personnel. For more experienced operators, the third day gives them an opportunity to explore other issues. For example, there is only one desired intensity range but there are so many different permutations of parameters (flow rates, pressure, impingement angles, etc.) that allows you to fulfill your task. What is the most efficient way? The answers can vary widely and this stimulates a more in-depth analysis.

I feel that this collaboration effort has been unique and the entire experience has been a rewarding one. I thank EIED trainers for travelling across the world to a foreign land to provide training four years in a row. The fact that speakers, experts in the field, and students can share information in their native language has benefits unlike any other workshop or seminar. This year we had a student returning for the third time and he passed the Level III examination. I guess we must be doing something right.

Many in the aerospace and automotive industries are beginning to understand the benefits of shot peening. Unfortunately, concepts like intensity and coverage still cloud many minds, and we have only scratched the surface. I look forward to future workshops with EIED and hope to contribute more to the development of shot peening in China. There is a long way to go before we can attain complete coverage on this topic. ●

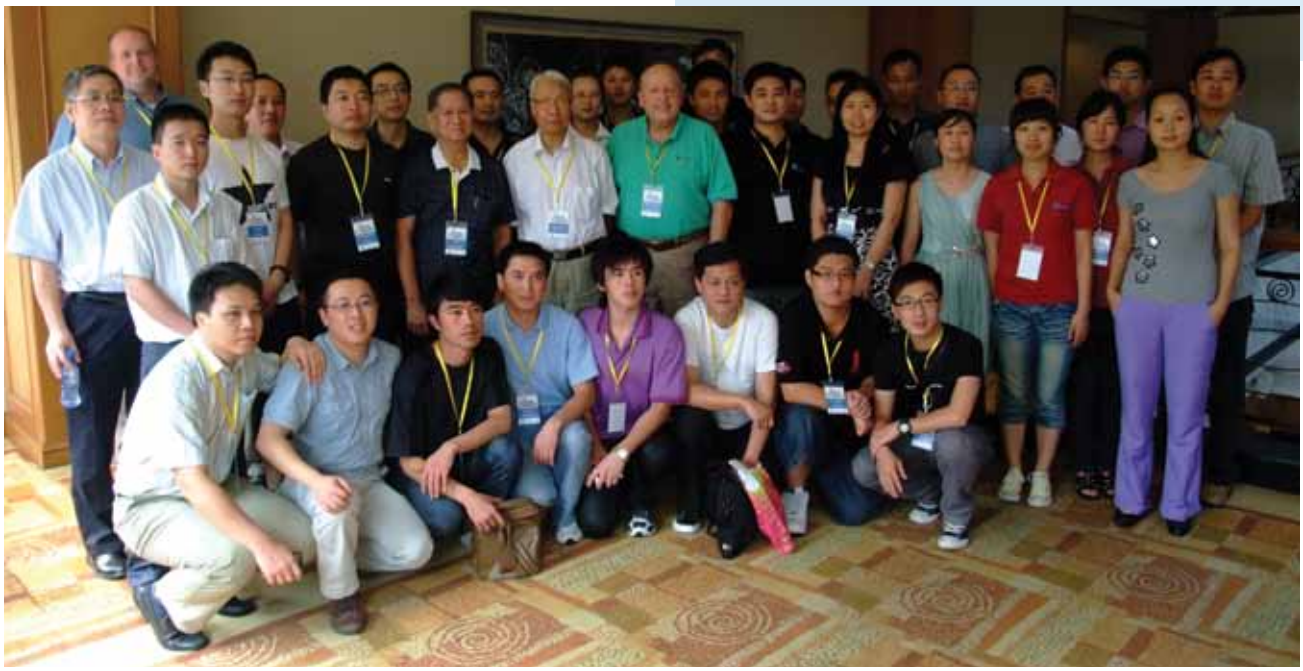


Hong Xian Da is First Student to Receive Level Three Shot Peening Achievement Certificate in China

Hong Xian Da, Peening Technical Engineer at Taikoo Landing Gear Services Co., Ltd., (TALSCO) has received the Level One, Level Two and Level Three Shot Peening Achievement Certifications. "Much of the content in the Level Three exam is based on knowledge and expertise gained from working in the shot peening industry. By passing all three exams, Mr. Hong has demonstrated a strong understanding of every aspect of a controlled shot peening process," said Dave Barkley, Director of Electronics Inc. Education Division.

"Thanks for everything, it really helps that the lessons are conducted in Mandarin as my command of English is not that strong. I also appreciate the fact that there is a lot of interaction between students from different facilities and with speakers from different backgrounds. To me this is a very important part of the workshop. It's an honor to be the first student to pass the level 3, I hope my colleague who have just passed level 2 will be next. The flapper peening exam is next on my list."

—Hong Xian Da



Instructors and students at the 2010 China workshop