

Shot Peening Education in Japan

By Dr. Eng. Katsuji Tosha

According to books I've researched on the subject, shot peening may have been introduced in Japan as early as 1935. The process was called "sand blasting" or "steel ball blasting" at that time, not "shot peening".

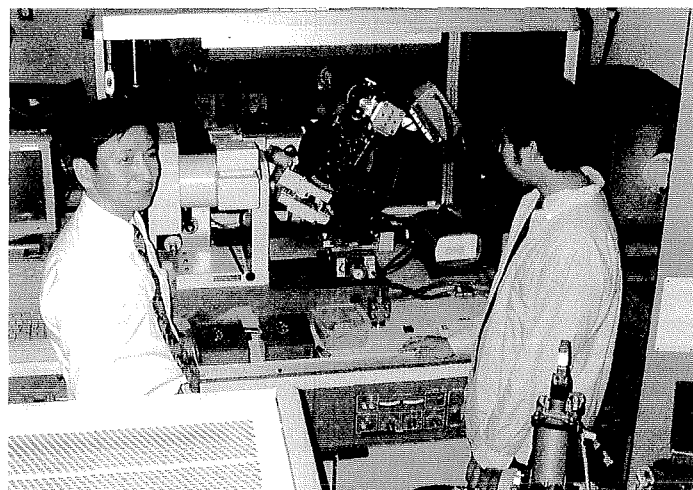
It was a book called "Shot Peening", published in 1950 by Wheelabrator Corporation, that provided Japanese researchers with the necessary information to start researching and performing experiments in shot peening. We can begin to track the working process in literature published after 1952. After that time, Japanese industries accepted an order to repair springs for trucks used at the beginning of the Korean War. They discovered that the technology could be performed on springs to improve fatigue strength.

In the academic world, Dr. K. Iida, President of JSSP (The Society of Shot Peening Technology of Japan), was a great educator in the field of shot peening. He studied shot peening when he was a graduate student at the University of Tokyo. After he completed the doctoral course, he accepted a position at Meiji University and continued to research shot peening for the next 42 years. During those years, he taught shot peening in the classroom and laboratory to undergraduate and graduate students. After that, I began to teach the classes and lead the laboratory studies at Meiji University.

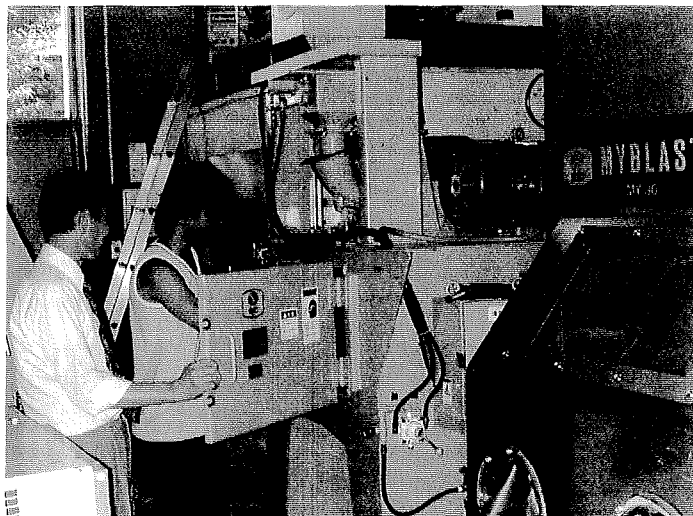
Meiji is a private university with approximately 28,000 students. The university has eight schools: Law, Commerce, Political Science and Economics, Arts and Letters, Science and Technology, Agriculture, and Business Administration, Information and Communication. I am a Professor in the Department of Mechanical Engineering in the School of Science and Technology. For the school's second term (October 1 - January 31), I will have three graduate students and 10 undergraduate students in my laboratory. We have many pieces of equipment in our lab including two air shot peening machines and one wheel machine; machine tools including a surface grinder, cylindrical grinder, lathe, shaper and drilling machine; fatigue testing equipment; hardness testing equipment; residual stress measuring equipment; an optical microscope; peening sensors; and two Almen gages. My undergraduate class topics for 2004 will be Manufacturing Processes I and II (120 students in each class) and Machining and Grinding (120 students). The graduate classes are Machining Theory and Practice I (70 students) and II (50 students).

Several of Japan's 200 technical colleges have shot peening as the main focus of study. There are 11 JSSP members who are studying in colleges or universities.

I am confident that shot peening technology will continue to advance in Japan as the best process to improve selected mechanical properties and also as a new technology for many other fields throughout the world.



Dr. Eng. Tosha Katsuji and a student in front of the lab's x-ray diffraction machine.



The engineering lab at Meiji University has two air shot peening machines and a wheel peening machine.

Editor's Note: Dr. Eng. Tosha Katsuji has made a major contribution to the study of shot peening. His papers are available for review in the online library at www.shotpeener.com. You may email him tosha@isc.meiji.ac.jp.