



Outstanding Papers from ICSP-10

It all started in 1980 when Abbas Niku-Lari convened a meeting in Las Vegas to organize the first International Conference on Shot Peening in Paris. Close to 400 delegates attended from around the world to explore the opportunities to advance the science of peening. What evolved from that farsighted effort are tri-annual conferences held around the globe and tremendous research and development in the shot peening industry.

The most recent conference held in Tokyo continued the tradition of sharing information on innovations and adaptations in the war against metal fatigue. There were 91 papers presented in Tokyo at ICSP-10 which brings the total number of conference papers to 640. That's pretty impressive for an industry that's relatively unknown by many academics and industrial engineers and often referred to as the stepchild of the abrasive blast cleaning industry.

The following are just a few of my favorite papers from the conference.

Butt Joining of Sheet by Shot Peening

Y. Harada, K. Fukaura, A Yamamoto, S. Ujihashi, Y. Kobayashi

This article illustrated a novel concept of joining dissimilar sheets with high tensile strength by peening the surfaces of notched edges. This technology can be used in applications where welding is not feasible or desirable.

A Novel 3D Finite Element Simulation Model for the Prediction of the Residual Stress State after Shot Peening

M. Zimmermann, V. Schulze, H.U. Baron, D. Lohé

The paper takes into account component thickness when performing Finite Element analysis. It was found that a small thickness has no influence on the residual stresses present in the surface region but great influence on the tensile residual stresses present in deeper regions. The new approach of model constraint takes into account deflection effects and yields to a very good accordance with experimental results.

A Scaling Law in Shot Peening Induced Surface Material Property Deviations

A.M. Frishman, C.C. H. Lo, Y. Shen, N. Nakagawa

"A Scaling Law in Shot Peening..." shows examples of several material property deviations

under varying Almen intensities and validates the predicted scaling relations against experimental data. This tool should be able to predict residual stress profiles at varying Almen intensities. The scaling law is also found useful in assuring consistency among nondestructive characterization measurements.

Development of Fe-Based Metallic Glass Shot Amo-Beads for Peening with High Strength and Long Life

K. Okumura, K. Kajita, J. Kurosaki, H. Kimuar, A. Inoue

Spheroidal particles made with the Fe-base metallic glass were used as shot for peening and it was proved that this is of high hardness together with long-life. This new product, introduced as AMO-Beads, was the result of intensive research led by Inoue and the Institute of Material Research of Tohoku University when they discovered a number of alloys with high Glass Forming Ability (GFA).

Fatigue Property Enhancement by Fine Particle Shot Peening for Aircraft Aluminum Parts

A. Inoue, T. Sekigawa, K. Oguri

Fine particle shot peening (FPSP), popular in the Japanese auto industry for many years, is now applied to aerospace applications and tests reveal that FPSP can offer superior fatigue life to conventional shot peening. Fatigue cracks appear at the subsurface layer as compared to conventional shot peening where the cracks originate at the surface due to small flaws and laps on the surface created by the conventional shot peening process.

These papers were of interest to me for many reasons. Some covered research that may benefit EI, some covered subjects that I've been interested in for years, some covered novel, exciting concepts. There were papers presented at ICSP-10 that will be of value to you, too. The Conference Proceedings, edited by Dr. Katsuji Toshi of Meiji University and Dr. Yoshihiro Watanabe with Toyo Seiko will be available for purchase at the Toyo Seiko web site (www.toyoseiko.co.jp) and at www.shotpeener.com for \$125.00 (65 euro), plus shipping. I encourage you to take advantage of the wealth of information that has been made available, thanks to The International Conference on Shot Peening. ●