



The Parting Shot Jack Champaigne

Strength through Knowledge

Improved economic conditions, by all indications, continue to gain momentum this summer in the shot peening and blast cleaning markets. Across the board, we are seeing strong demand from OEMs, rebuilders and Almen strip product sales. Pushing this upward trend is the worldwide economic recovery, but also technology and, most importantly, the automotive industry's demand for lighter and stronger materials in a highly competitive industry worldwide.

The opening keynote speaker at the last International Shot Peening Conference, held in Germany, was Peter Hutmann, BMW Group, Munich, Germany. Mr. Hutmann's paper (see page four) was presented at the conference and it's a wonderful example of how the automotive industry looks at the role of technology to reduce weight while maintaining strength. The development of lightweight and fuel efficient transportation that meets the demand for performance and strength are at the heart of what our industry can continue to offer the world.

New technology can also be seen in the application of shot peening for a unique heat treatment that also offers significant reduction to sliding friction. United States Patent 5,592,840, assigned to Fuji Kihan Co. Ltd. in Japan, describes the process in great detail (see abstract below). The process has two attributes: heat treatment and the

The development of lightweight, and thus fuel efficient and environment-friendly cars, is one of the most important challenges facing the automotive industry.

*Peter Hutmann
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creation of "micro-dents" in the surface by using very hard and very small media (50 to 300 micron size). The surface is heated above the A₃ transformation temperature and then quickly quenched due to the mass of the component and thereby hardened. The surface also receives many minute "micro-dents" that can become reservoirs for lubrication. It appears that since these dents are so shallow, the lubrication film can continue to be complete on the surface. Larger dents provided by peening with conventional size shot are deeper and the

cusps of the dent can break the lubrication film and therefore are not as effective for friction reduction.

The patent cites several examples of applications of this technology. The technology is often referred to as "micro bead" technology. Several companies, predominately in Japan, are independently developing and implementing the process.

More Strength, Less Weight will be driven home at the 2004 Shot Peening Workshop in Dearborn / Detroit. The keynote speaker, Sid Terry (retired Chrysler) will expand on the theme of using shot peening as a method to achieve the results automotive designers and engineers are seeking. The process to achieve these results and the latest industry technologies will be presented by experts from around the world.

Plan to attend this exciting workshop.

Method of Preventing Abrasion at Sliding Portion of Metal-Product

United States Patent

Patent Number: 5,592,840

Date of Patent: Jan. 14, 1997

Inventor: **Yoshio Miyasaka**, Kasugai, Japan

Assignee: **Fuji Kihan Co., Ltd.**, Aichi, Japan

Abstract

By shot-peening, shots having almost spherical shape are impacted against a surface of a portion of a metal-product, the portion being one which is to be subjected to sliding action. The shots have a hardness higher than that of the metal-product. By the shot-peening, the surface of the metal-product is heated to a temperature higher than a predetermined temperature and very small concave portions, each

having a circular arc-shaped cross section, are formed due to the impact of the shots. As a result, the structure of the surface layer of the sliding portion has high internal stress, high hardness and high toughness. Further, since very small concave portions are formed on the surface of the sliding portion, the surface tension of lubricating oil is not decreased and a stable oil film can be formed.

In addition, the surface retains high hardness and toughness, even if sliding is performed for long time periods, and the concave portions are not deformed so that a stable oil film can be maintained.

The complete patent is available at www.shotpeener.com.