



Fig. 8. Carburized shot particle, before and after wear removal of hard case.

Fig. 9. High-manganese shot particle before and after substantial wear.

to martensite – with some retained austenite. Subsequent tempering reduces the brittleness of the surface layer whilst maintaining wear resistance. An alternate approach could be even more effective – using high-manganese steel for shot manufacture.

Figs. 8 and 9 (Page 30) give a schematic comparison of the two approaches (carburized versus high-manganese). Both cast and cut-wire shot can be carburized. Cast high-manganese shot can be surface hardened by plastic deformation – in a similar way to that used for rounding cut-wire shot. With carburized steel shot the hardened case is progressively worn away in use – eventually removing the case altogether, see fig.8.. With high-manganese steel shot the wearing mechanism (high speed impact with components) constantly regenerates surface work-hardening, see fig.9.

DISCUSSION AND CONCLUSIONS

In order to benefit from shot peening, steel components must have certain properties. These include:

- Ability to be work-hardened,
- Retention of induced compressive residual stresses,
- Some degree of under-engineering and
- Favorable phase transformations.

The first two properties are well-established. Under-engineering means that the component would, in the absence of shot peening, fail prematurely – particularly in fatigue situations. This leads to the general concept of shot peening being a weight-saving technique. Favorable phase transformations are particularly significant for steel components that contain retained austenite.

Some emphasis has been placed on the possible uses of high-manganese steels. These, in the author’s opinion, have not yet received sufficient attention as useful shot-peened products. A great deal of research is currently being carried out to try and solve the mystery of why they develop such substantial, durable, surface hardening. ●

Joe McGreal Promoted to Vice President of Sales and Marketing

Joe McGreal of Ervin Industries, Inc. has been promoted to Vice President of Sales and Marketing. Mr. McGreal was the General Sales Manager for Ervin and has been with the company for the past 14 years.

Ervin Industries, established in 1920, is a privately held company based in Ann Arbor, Michigan. ●



Leaders Recognized at Nadcap Meeting

At the October 2013 Nadcap meeting in Pittsburgh, Pennsylvania, the following individuals were acknowledged for their outstanding contribution to quality through participation in Nadcap.

In recognition of service as Chairperson of the Measurement & Inspection (M&I) Task Group: **Phil Bamforth - Rolls-Royce**

In recognition of service as Vice Chairperson of the Aerospace Quality Systems (AQS) Task Group: **Harold Finch - Spirit AeroSystems**

For work on development of Non Metallic Materials Manufacturing fiber and core checklist: **Laura Benedetti - SAFRAN**

In recognition of long-term Non-Destructive Testing (NDT) Task Group support: **David Vaughn - Spirit AeroSystems**

For work on translation of the Conventional Machining checklist into Spanish: **Mario Enriquez, Ken Abram, and the Honeywell Chihuahua Conventional Machining team**

For outstanding support of Sealants Task Group, NMC, and Supplier Support Committee (SSC): **Suzanna DeMoss - 3M**

For contribution and work on Nadcap Management Council: **Amie Emerson - Spirit AeroSystems and Peter Krutoholow - Sikorsky Aircraft**

Joe Pinto, PRI’s Executive Vice President & Chief Operating Officer explained “It is only with the support and dedication of aerospace industry leaders that Nadcap can continue to meet their needs in a collaborative, open way. The number of awards given out for so many different reasons to different companies underlines the commitment of the aerospace industry to supply chain quality through Nadcap. I would like to add my personal thanks and congratulations to all award recipients for their well-deserved recognition by their peers.” ●