Air Blasting: Sometimes It's *Buy One, Get One Free!*

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Those of you who are regular readers of my column know that I believe there to be an infinite number of applications for air blasting and shot peening. Of course, I see many repeat applications because the same result is desired for many different types of parts. Fabricated metal parts have common needs: machined and stamped parts need deburring, forged parts need descaling, cast parts need investment removal, and heat-treated parts need an improved appearance. Occasionally there are parts with multiple problems that can be solved by blasting.

To set the stage for this discussion, I will offer that many years ago (and I know this only from hear-say as it happened before I was born – although Jack Champaigne may have been there at the time!), J. O. Almen, a 1930s engineer for General Motors Buick Motor Division, discovered that when automotive valve springs were blasted to remove carbon to prevent oil contamination, the blasted springs began to have a much longer wear life than unblasted ones. Certainly this discovery was an exciting one for the industry as it proved that beyond improving the appearance of the blasted object, it added far greater value to the process.

Over the course of my many years in this business, I have seen this same scenario over and over. And it continues to be very exciting to me as well as to my customers. While the applications and results differ, the blasting process often offers two successful solutions for the price of one.

Sometimes, the dual benefits are produced all at once in a single blasting session, as in the spring example. Power plant connecting rods are blasted to remove forging scale, but blasting also improves their fatigue life. File teeth are blasted with glass bead to remove heat-treat scale, but they end up much sharper than those cleaned with wire brushes. Stainless steel ice machine parts are blasted to remove weld stain, but at the same time they are graced with a uniform sateen finish that replaces an additional buffing step.

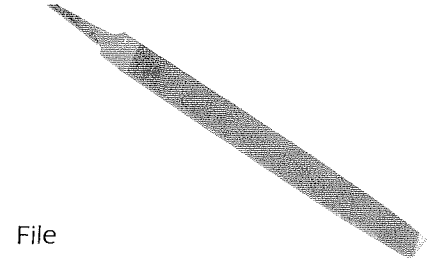
Surgical instruments, such as laparoscopic tools, are treated to remove sharp burrs, and in the process receive a satin finish – a bonus result that removes the shine from the part that would have been otherwise treated to eliminate glare in the surgeon's eyes during the operation. Manufactured anatomical parts used to replace human body parts are blasted to achieve a certain level of surface cleanliness, and the blasting process also imparts a texture to the parts, improving the 'bonding' of metal to bone tissue during post-operative recuperation.

In other cases, our customers have experienced dual benefits from purchasing a single machine that can be used for two different processes. Depending upon production requirements, often a single machine can be used at two stages of production, eliminating further capital investment.

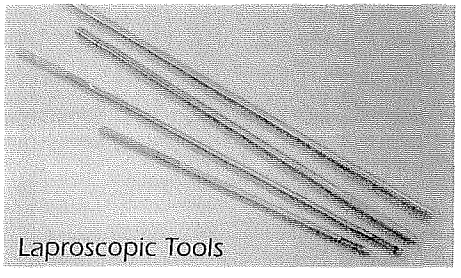
In the automotive and power transmission industries, sprockets require deburring before heat-treatment, and descaling afterward. Similarly, transmission and differential gears and splines must be deburred prior to heat-treating and descaled following the heat-treat process.

Firearm parts are blasted to remove burrs as well as to improve the product's appearance. Stainless steel thermos bottles are blasted to remove heat scale and to improve the appearance of the finished product.

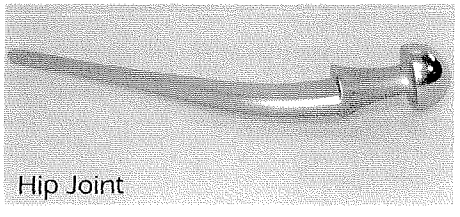
Some industries benefit in numerous ways from air blasting. For instance, many aircraft engine parts are shot peened for improved fatigue life, but also for cleaning, and for surface finish. It was discovered that when engine pistons were blasted to



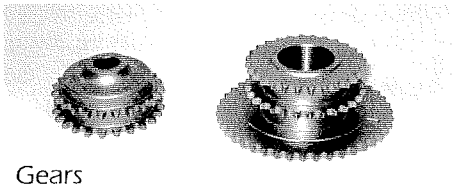
File



Laproscopic Tools

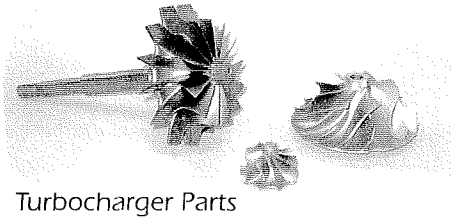


Hip Joint



Gears

Sprockets



Turbocharger Parts

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remove burrs, two side benefits to performance were realized: a blasted piston better retained oil, and engine performance improved due to reduce friction.

In many instances, the same parts are blasted during the manufacturing process and again are blasted during the rebuilding process for the aftermarket. A good example of this is turbo-charger wheels. They must be deburred when they are newly manufactured after machining, and when they are rebuilt they are blasted to clean them.

As already discussed in this article, customers frequently report a surprise side benefit. They find that not only do they process their parts more quickly, but also the part's new appearance represents a vast improvement over manually processed parts.

Sometimes they are amazed by the processing speed when comparing the production throughput of an automated cabinet with a manual production line or even a manually blasted part with a manually wire brushed part. Certainly, once they see blasting, they believe.

As you might expect, if you ask me, I'll tell you that blasting almost always provides 'bonus' results. Customers are more often than not amazed by the performance of the equipment we design for them – and being on the receiving end of their enthusiasm is a side benefit of my job.

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Who's Who in Shot Peening

Past Recipients of The Shot Peener of the Year Award

Since 1992, **The Shot Peener** has given **The Shot Peener of the Year award** to individuals in our industry that have made significant contributions to the advancement of shot peening. We've listed the year of the award, the recipient and their place of employment at the time they received the award.

1992
Charlie Mason ▪ Menasco Aerospace Ltd.

1993
Pete Bailey ▪ GE Aircraft Engines
Bob Thompson ▪ GE Aircraft Engines
Jim Whalen ▪ GE Aircraft Engines

1994
Charlie Barrett ▪ Metal Improvement Company

1995
Dr. Kisuke Iida ▪ Meiji University

1996
Dr. M.C. Sharma ▪ Maulana Azad College of Technology

1997
Dr. Ing. R. Kopp ▪ Institute Metal Forming of RWTH

1998
Dipl. Phys. Wolfgang Linnemann
Kugelstrahlzentrum Aachen

1999
Andrew Levers ▪ British Aerospace Airbus

2000
Jonathan Clarke ▪ Delta Air Lines
Prof. Lothar Wagner ▪ Technical University of Brandenburg

2001
Dr. David Kirk ▪ Coventry University, U.K.
Dale Lombardo ▪ GE Aircraft Engines
Bill Miller ▪ The Boeing Company

2002
David Francis ▪ Metal Improvement Company
Shaker Meguid ▪ University of Toronto

2003
Paul Prevey ▪ Lambda Research
Dr. Niku-Lari ▪ IITT International