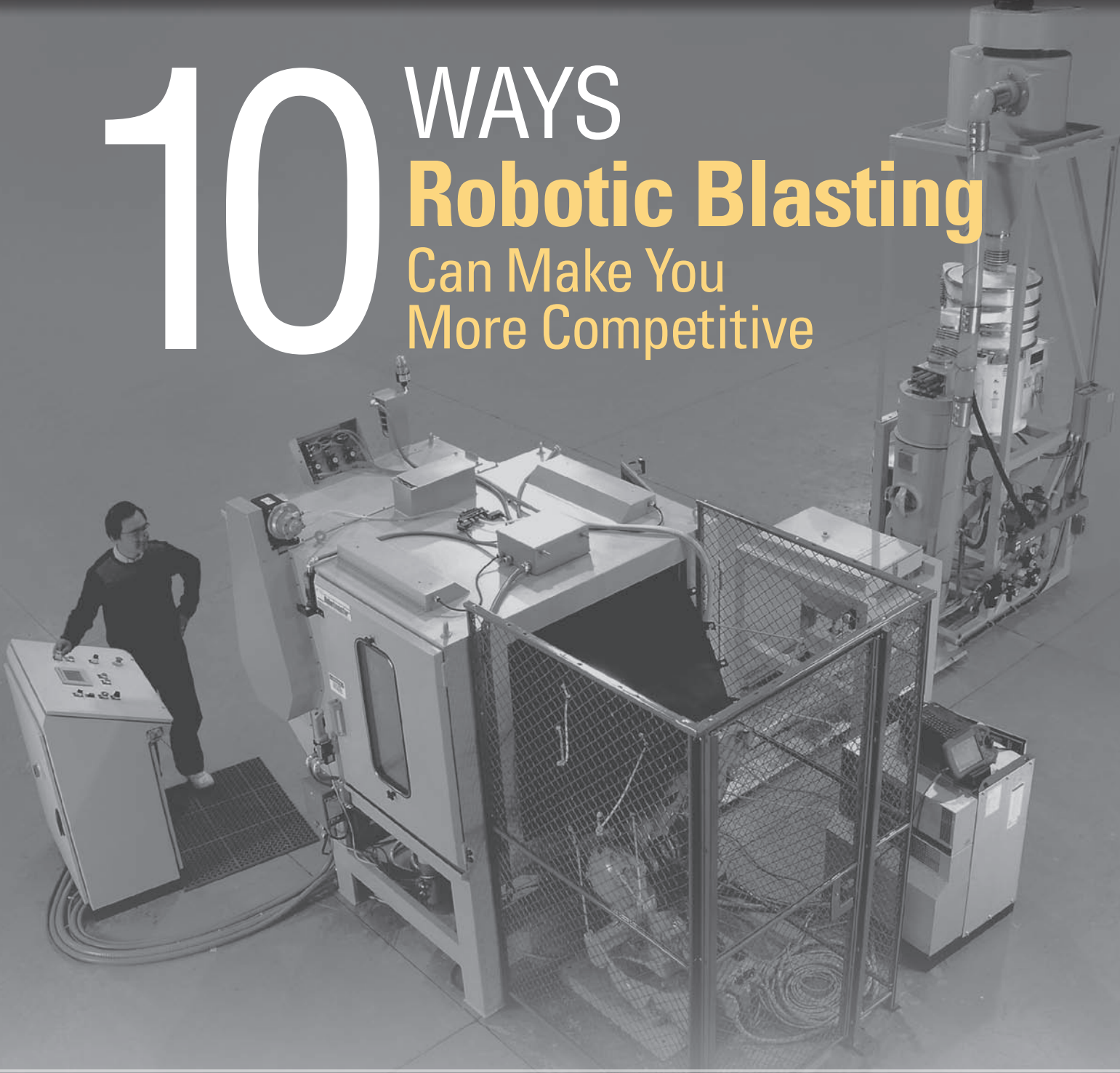




WHERE QUALITY COMES TO THE SURFACE

# 10 WAYS Robotic Blasting Can Make You More Competitive



QUALITY • ENGINEERING • MANUFACTURING • SUPPORT

## Robots in general industry have been proven to deliver a host of benefits in a wide variety of applications.

End users introducing robots to their production processes have typically seen a significant transformation in their productivity and efficiency, with higher levels of output, product quality and flexibility among the many improvements reported.

## For surface preparation and shot peening of complex precision components, robot blasting offers an impressive package of benefits.

In a nutshell, it delivers a greater degree of control, with a precise blast stand off distance and blasting angle to the work piece, as well as accurately regulated nozzle motion and surface speed, with minimum overspray and the maximum blast efficiency. The resulting higher quality and cost advantages achieved by robotic blasting for companies in mature industrial economies is a strong defense against competitors in low cost economies, but following are ten additional benefits that may not be quite so obvious.

# 1 Reducing Operating Costs

Robotic blasting enables you to reduce both your direct and overhead costs, making a dramatic difference in your competitiveness.

Take compressed air (energy) consumption, for example - a robot directing a single blast nozzle can correctly blast very complex surfaces where an automatic multiple-gun machine may require 6 or 8 nozzles to blast the same complex surface. In one study, a 6-nozzle machine drawing 45 CFM per nozzle required \$9,200 /year of compressed air energy, which was replaced by a single 75 CFM nozzle that consumed \$2,545/year.

In the same study media consumption was reduced by 50%, in part due to less breakdown caused by to cross-firing of opposed guns. Labor costs were also reduced, as one operator in the work cell loaded more than one piece of process equipment.

# 2 Improve Product Quality And Consistency

Robotic grit blasting and advanced motion control programming optimizes the blast angle, stand off distance, surface speed and avoids cross fire of media compared to manual or multi-gun blasting techniques. The resulting surface texture is far more consistent when measured in surface texture parameters like Ra or Rz, as shown in the chart to the left.

Robotic shot peening also benefits from more even residual stress profile across the work piece surface due to the optimum shot impact angle being programmable and repeated time after time.



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# 4 Increased Product Manufacturing Flexibility

Robotic blasting increases the flexibility of your production processes. A simple change of an existing validated robot recipe takes minutes in the case of a manual change or seconds if the robot is integrated to a full flexible manufacturing cell. This means minimum loss of time in set-up for change-overs. Contrast this with what might be required to reposition blast nozzles in a traditional automatic machine.

These benefits magnify immensely when introducing new product designs where work piece geometries may be completely different that might otherwise require a separate, dedicated multiple-gun automatic blast machine.

# 5 Reduced Capital Costs

Robotic manipulation of a single blast nozzle around a fixtured work piece or robotic manipulation of a work piece around a fixed position nozzle is far simpler and smaller than a traditional multiple-nozzle system.

As well as compressed air savings, the ancillary media reclamation system is smaller and simpler. For shot peening this means a smaller screen classifier, smaller shape classifier, smaller cyclone and dust collector. Smaller equipment means less capital costs and lower floor space demands.

# 6 Reduce Waste Material And Increase Yield

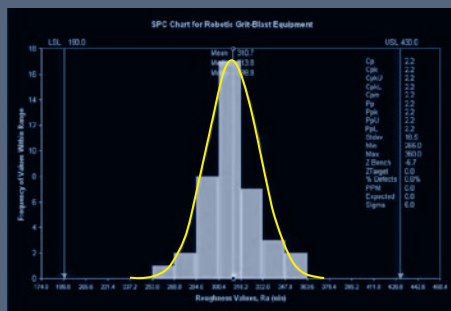
Robotic blasting replicates the same blast process time after time. The blast technique in most examples features one blast nozzle firing media at the work piece surface which avoids multiple nozzles cross firing media and artificially increasing media attrition. In trials, a 30% reduction in media consumption was achieved.

Combine the blast technique with a Guyson media cyclone and classifier reclamation system, and yields of consistently processed work pieces demanded by your customers is assured.

# 3 Increase Production Output Rates

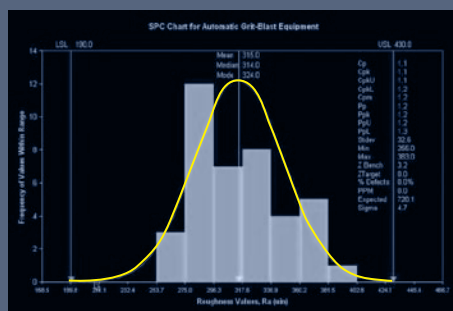
It goes without saying that robots don't take breaks, don't need vacations or require any supervision. Manual blasting can be a tedious task, especially fully suited blasting in blast rooms which require 30% to 50% rest allowances to be built-into the allowed process time. Robotic blasting removes the 30% to 50% wasted time immediately, but also removes the need for constant visual inspection and rework time because each piece receives the exact same validated blast process, time after time.

Advanced off-line programming of the robot allows new products to be programmed while current production is ongoing. A short validation run of the blast recipe means new products are introduced without lengthy downtime.



Notice the consistency in roughness values of robotic systems compared to automatic equipment.

Robotic



Automatic

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# 9 Reduce Labor Turnover

The high precision demanded by today's industrial processes requires the highest levels of skill and training. With highly skilled manual workers becoming harder to find and more expensive to employ, robots can provide a profitable alternative. Once programmed for your process, robots are ready to begin work with none of the costs associated with recruitment or ongoing training of people. Robots can also offer greater flexibility, both in terms of work patterns and the ability to handle different production tasks.

Western European and North American companies are gaining back competitiveness against manufacturers in low cost countries by adopting robotic blasting processes.

# 7 Improve Quality of Work For Employees

With a robot picking and placing a product or actually carrying out the blasting Process, you can improve the working conditions for your staff.

Operators will no longer have to work in dusty, hot or hazardous environments. In addition, by teaching employees how to use the robots, they can learn valuable new skills and do work that is more stimulating.

# 8 Comply With Safety Rules And Improve Work Place Health And Safety

Robots can readily take over blast processes that may be unpleasant, arduous or health-threatening that are currently performed manually. By using robots, you can decrease the likelihood of accidents caused by contact with machine tools or other potentially hazardous materials or processes. Robots can also help to eliminate ailments associated with repetitive motion or intensive processes, such as repetitive strain injuries (RSI), carpal tunnel syndrome and vibration white finger.

# 10 Save Space In High Value Manufacturing Areas

Robots in Guyson blast systems are often placed at the rear of the blast system in a space not suitable for humans but they can be mounted on the wall or roof of the cabinet to reduce space. They can also be programmed to work in confined spaces so you don't lose valuable floor space.

The use of a robotic single nozzle blast system reduces the size of the ancillary reclamation system of the cyclone, screen separator and dust collector, further reducing demands for expensive floor space.



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