

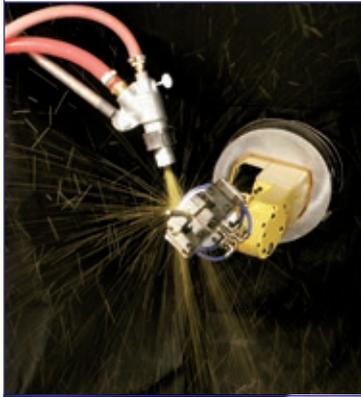
Robotic blast finishing

automated blast finishing

10 Reasons for robot blasting



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10 Ways Robot Blasting Can Make You More Competitive

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 amongst the many improvements reported. For complex precision components and shot peening robotically controlled blasting delivers an outstanding range of benefits. In a nutshell it delivers a precise blast stand off distance to work pieces and controlled movement path with minimum overspray and the maximum blast efficiency. The resulting higher quality and cost competitiveness achieved by robotic blasting for Western companies is the key driver against low cost economies but the hidden secondary benefits are not quite so obvious which this document sets out to explain.

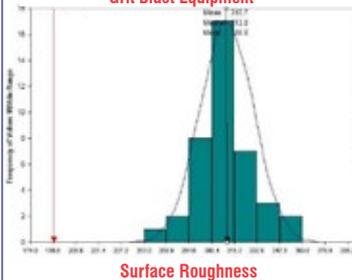
1. Reducing Operating Costs

- Robotic blasting enables you to reduce both your direct and overhead costs, making dramatic difference to your competitiveness.
- Take compressed air energy consumption for example, a robotic manipulation of a single blast nozzle can correctly blast very complex surfaces where an automatic Multiblast® machine may require 6 or 8 nozzles to blast the same complex surface. In a study a Multiblast® with 6 nozzles of 45 CFM each required €7,290 /yr of compressed air energy which was replaced by a single 75 CFM nozzle at €2,025 /yr.
- In the same study media consumption was reduced by 50% due to less breakdown due to cross firing of media. Labour costs were eliminated as loading became in work to other process steps.

2. Improve Product Quality And Consistency

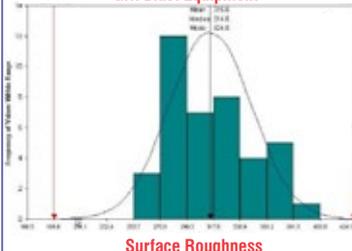
- Robotic grit blasting and advanced motion control programming optimises the blast angle, stand off distance, surface speed and avoids cross fire of media compared to manual or Multiblast® techniques. The resulting surface texture is far more consistent when measured in surface texture parameters like 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.

Distribution Chart for Robotic Grit Blast Equipment



Surface Roughness

Distribution Chart for Automatic Grit Blast Equipment



Surface Roughness

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3. Increase Production Output Rates

- It goes without saying that robots don't take breaks, don't need vacations or need any supervision. Manual blasting can be an arduous task especially fully suited blasting in blast rooms which require 30 to 50% rest allowances to be built into the operator 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 programming of the robot off-line allows new products to be programmed whilst current production is on-gong. A short validation run of the blast recipe means new products are introduced without lengthy downtime.

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 changes. 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 need a brand new traditional 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 multi nozzle system.
- As well as compressed air savings the ancillary media reclamation system is smaller and simpler. For shot peening this means a smaller sieve classifier, smaller roundness 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 break down. In trials a 30% reduction in media consumption was achieved.
- Combine the blast technique with a Guyson media cyclone and sieve reclamation system and yields of consistently processed work pieces demanded by your customers is assured.



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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 programming 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 maybe unpleasant, arduous or health-threatening tasks that may be currently undertaken 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 or intensive processes, such as repetitive strain injuries (RSI) and vibration white finger.

9. Reduce Labour 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 an ideal 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 companies are gaining back competitiveness against low cost economies by adopting robotic blasting processes.

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 walls or even on ceilings 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 systems reduce the size of the ancillary reclamation system of the cyclone, sieve separator and dust collector further reducing expensive floor space demands.