



AN INSIDER'S PERSPECTIVE

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When and Why to Buy a Refurbished Machine

A FEW YEARS AGO, when representing a large wheelblast machine manufacturer, I had the opportunity to visit a custom heat treat shop in the Detroit area. This shop had machines from the 1950s and were looking to add new equipment. Upon further enquiry, I learned that even the machines from the 50s were purchased used! We often hear the terms “self-destructing” and “self-consuming” when referring to blast machines. However, this heat treat shop discredits these terms because of its attention to maintenance and essential upgrades. In a technologically intense world, albeit with its relatively slow pace in our industry, my visit opened my eyes to a new world of possibilities with refurbished machines.

This article summarizes my discussions with companies that refurbish machines, and users of such equipment. Specifically, the article will attempt to address the following points: (a) Used and Refurbished: industry definitions, (b) When to consider a refurbished machine (c) Which machines have refurbishment potential, (d) The advantages of refurbished machines, and (e) The limitations of refurbished machines.

USED AND REBURISHED MACHINES

The term “used” machine needs little introduction. My own interpretation reads, “a machine that is sourced from its current user, who may or may not have been actively using it, and the new owner uses the machine with or without modifications.” If your experience with a used machine has been to use it without any modification, repair or refurbishment in a new process, you are indeed very fortunate! Refurbishment of a used machine is a very common practice due to the poor condition of the machine and/or to prepare it for a new application. Other than the obvious reasons relating to the machine’s condition, the extent of refurbishment depends on several factors including the need to blast a new part style, the need for a faster cycle, an upgrade to the control system for conformance with specifications, to list a few.

Common refurbishments can be classified based on the machine type.

Wheelblast	Airblast
Blast wheels (new, efficient designs), critical wheel wear components, wheel motors, etc. Media flow control valves and slide gates, if worn or outdated	Blast tank valves, seal kits and flow control Blast nozzles and hoses
Cabinet liners: inline and wall liners	Cabinet refurbishment is less common for airblast
Cabinet seals (hanging seals in pass-through machines)	Nozzle/Lance entry seals

Refurbishments common to both machine types include:

- Classifier screens: Check and replace with right size, as necessary.
- Control system: Replace circuits, outdated or discontinued components, and upgrade relay logics to PLC and pushbuttons to TouchScreen Operator Interfaces.
- Dust collectors: Refurbish or replace units so that they conform to safety standards. This is a very critical aspect to consider and will be discussed in a later section.

WHEN TO CONSIDER A REBURISHED MACHINE

AGTOS GmbH operates two manufacturing facilities, one in Emsdetten, Germany and another in Konin, Poland. AGTOS manufactures quality wheelblast machines and refurbishes used machines. During my recent visit to their Poland facility, Thomas Herhold, one of their Sales Managers, directed me to an older AGTOS four-wheel plate and structural machine that had been brought in for refurbishment with the goal of adapting it to its new home in Mexico. AGTOS has been in business for almost 20 years and they are now seeing some of their earlier designs return for refurbishment. “We enjoy long-term relationships with our customers and the trust helps us make joint decisions on whether to procure new equipment or consider an AGTOS refurbished machine,” said



Thomas Herhold, a Sales Manager at AGTOS GmbH, stands in front of an AGTOS refurbished machine.

Thomas. The decision matrix at AGTOS can be broken down as follows:

Economics: “In my experience, most companies consider a new machine if the repair or refurbishment costs on their existing machine exceeds 40% of the price of a new machine. However, even at this point, customers get involved in an additional step of sourcing a used machine that is newer than their existing machine and adding the cost of refurbishing it to bring it to the standards of a new machine. Most times, this refurbishment results in an almost new machine at a fraction of the cost of a new one,” said Thomas.

Technology: “In a wheelblast machine, if refurbishing with newer wheels will increase your productivity and the lifetime of your wear parts, then it’s worth the effort. The rest of the machine consists of the enclosure and reclaim system, which if in good condition, add to the justification of considering refurbishment. At AGTOS, we regularly refurbish competitors’ machines with our blast wheels,” added Thomas.

Though the pace of technological advancement is relatively slow in our industry, controls, pneumatics, and work-handling tools have experienced rapid development. If these advances could enhance the productivity of your

existing process, it may be time to consider refurbishing your existing machine. Two such examples of advancements could be: (a) a vision system to monitor the process and increase safety, and (b) a used robot to ease labor costs by automating the handling.

Frequent Program Changes or Short-Term Programs: Customers, particularly Tier Two and Three in the automotive industry, need equipment to address process requirements for specific auto platforms. These machines may not find utility upon completion of the program since the part style is subject to change. Such projects are better served with a refurbished machine than a new one.

Prototype Manufacturing or Designing a New Process: Manufacturing facilities that develop prototypes regularly experiment with their processes. If the testing involves blast cleaning or shot peening, such facilities could consider a refurbished machine that offers a wide range of flexibility. For instance, a table-type machine with fixtures that allow a part to be placed flat, hung on a spinner, rotated on rollers, etc., will fit the bill. The refurbishment could include multiple wheel locations with wheels actuated as required to take advantage of different target angles. This machine will allow the user to develop the process without being locked into a new machine that might require the process to adapt to it.

These are some of the more common reasons to consider a refurbished machine. The next step is to create a list of criteria when considering a refurbished machine.

WHAT TO LOOK FOR IN A REFRUBISHED MACHINE

Langtry Blast Technologies, based in Burlington, Ontario, Canada, specializes in new and refurbished wheel and airblast machines. Mike Langtry, the owner, had some interesting insights to share.

“We have seen some very good quality used machines come up for sale in the market. We typically buy a machine to refurbish and re-sell if we know of a customer interested in something similar. In broad terms, when looking at refurbished machines (or those that offer the potential for refurbishment), we look for design flexibility and a sound structure,” he said. “We’re also noticing an increased number of customers approaching us to refurbish their existing machines with controls, HMIs (Human Machine Interfaces) and process control components such as classifiers, pressure feedback loops and flow control devices to help them conform to Nadcap and other audits and specifications.”

Design flexibility: “Plain and multi-table machines (both wheel and air type), spinner hangers and mesh-belts offer greatest possibilities for retrofit/refurbishment. If the available work envelope satisfies the potential application

requirements, adding a nozzle carriage or robot to target this envelope is relatively easy," Mike said.

Sound Structure: "Extensive cutting, welding and other modifications to the cabinet are never a good idea. If the refurbishment requires such changes, either to address the needs of the future project, or to compensate for a bad initial design, the refurbishment costs will be prohibitive. Look for a machine where you don't have to go about re-designing the basics such as the cabinet and reclaim systems. Also, pay attention to the capacity of the reclaim system to handle the increased shot flow if your refurbishment plans involve increasing throughput with a higher HP wheel or greater quantity of nozzles," he advised.

Safety: Due to new safety regulations that will apply to all newly installed machines, this discussion won't be complete without a note on safety. If refurbishment involves updating the safety system in the machine, one of the key elements to consider is its ventilation and dust collection. Components manufactured from metals such as aluminum and magnesium have the propensity to generate dust that is explosive. Some blast media also exhibit such properties. Current safety standards require updating the ventilation and dust collection systems with fire suppression and explosion protection features such as fire-retardant filters, rotary airlock valves, explosion vents, isolation and no-return valves. Such modifications could add up to a considerable investment requirement and very well exceed the cost of other refurbishment initiatives in the machine.

Brian McGillivray, the President of Vibra Finish in Mississauga, Ontario, manages a large contract blast cleaning business that employs over 20 new and refurbished machines. He adds to the above list with the following remarks: "When considering a used machine that needs to be refurbished, consider your in-house resources. Blast machines are maintenance prone and, whether new or used, it will benefit you to be self-reliant. Vibra Finish has a five-member maintenance team that's strong in tackling all technical aspects of blast machines," he said.

When discussing the possibility of refurbished machines for shot peening, Brian cautions us: "It all depends on how this machine was originally used—whether it was used for cleaning or peening. A cleaning machine will certainly need refurbishment in the process control department with flow control valves, a classifier, closed feedback loops for air pressure or wheel speed, and a definite upgrade to the control system. Bear in mind that the machine will still need to pass an audit, particularly if your plans involve peening aerospace components." This doesn't mean that refurbished machines are not a solution for shot peening. One must consider this option on the merits of each project.

ADVANTAGES AND LIMITATIONS OF REBURBISHED MACHINES

- When this article was written, the North American economy was in an expansion cycle. It isn't uncommon for manufacturers to quote lead times that exceed normal times by 25%. This brings us to one of the major advantages of refurbished machines—the majority of the design work, at least for the fundamentals of the machine, is already completed. All major blast machine companies dedicate a percentage of their resources to the refurbishment business and the lead time to refurbish a machine will be a fraction of the time to design and build a new machine. The cost factor doesn't need further elaboration.
- Obsolescence in advanced countries due to technological developments and/or the increase in labor costs result in old machines being sold to less developed markets, usually at bargain prices. However, the transportation cost and the cost of dismantling the machine are factors to consider. The machine's owner will seldom want to employ resources to dismantle the machine for the buyer.
- It is difficult to make a final recommendation on the benefits of a refurbished machine since this judgment is reliant on its upgrades. However, Brian McGillivray's comment on in-house resources is very important to consider. Unlike a new machine from a manufacturer and the leverage one might wield by squeezing out an extra year of warranty, refurbished machines may not come with such a luxury.

If your finishing operation fits into the criteria listed earlier in our discussions, exploring a used machine for refurbishment will be an educational experience. This might even give you the knowledge to negotiate the purchase of a new machine! ●

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