

Blasting of Aluminum – Business as Usual? 铝铸件的抛丸清理—常规方式能否适用？

The engineers and technicians at AGTOS have intensively dealt with the topic of aluminum. Numerous tests have been conducted in cooperation with customers. Even machines specially constructed for this material have been developed. Many experiences were gained in the AGTOS test center as well as in practice with well-known customers. Consequently, sophisticated solutions for the blasting of and with aluminum are offered.

Increasingly, aluminum workpieces are also treated with blasting abrasive of the same material. This can provide advantages, but has an impact on the construction of the machine.

Due to the physical properties, such as, e.g. the specific weight which is lower in comparison to steel abrasive, special considerations have to be taken into account when constructing shot blast machines. This starts with the repose angle, which affects some components of the shot blast machine, e.g. hopper and bunker. The volume of certain components have to be adjusted as well.

The optimization of the turbines must be considered in this case. The special flow behavior of aluminum blasting abrasive must be taken into account. Therefore, the turbines are constructed to work optimally with various aluminum grains. Aluminum blasting abrasive must be handled gently. Increased heat generation within the turbines is avoided because it destroys the aluminum abrasive. This is the only way to achieve a good blasting result within economical operations.

In the case of shot blast machines from AGTOS, the destruction of this valuable “tool” within the shot blast machine is avoided as far as possible without having any effect on the workpiece surface. Abrasive loss is also prevented. This saves valuable material and also helps to reduce operating costs. After the blasting process, a highly efficient blow-off device cleans the workpieces and discharge of the abrasive is prevented. The above-described measures are directed to the economic operation of the shot blast machine with comparably low operating costs.

The blasting technology should at best always adapt to the internal material flow. Therefore, wire mesh conveyor blast machines are a machine type frequently requested by automated operators. The main advantage of this type of shot blast machines is that the wire mesh belt enables the blasting from below and above, without having to turn or hang the workpieces manually.

The workpieces which are going to be blasted are placed on a wire mesh belt, via automatic transfer or by a manipulator (in exceptional cases manually), which transports them through the machine.

They first pass through the inlet sluice. This seals the adjoining blasting chamber to the outside. In the blasting chamber, high performance turbines throw the blasting abrasive onto the workpieces at a high speed. The wire mesh belt is constructed in such a way that the workpieces

AGTOS公司的工程师和技术人员对铝进行了大量的研究，并与客户合作进行了大量的实验。甚至专门为这种材料设计的设备也已经研发完成。在AGTOS公司测试中心以及知名客户的应用中获得了许多经验数据，因此，得出用于铝合金零部件的先进的抛丸清理解决方案。

如今，铝合金零部件也越来越多地使用相同材质的抛丸磨料进行清理。这种处理方式有优点，但是对设备的结构产生影响。

基于铝合金的物理特性，例如，比重轻于钢制磨料，在设计抛丸机时必须考虑这些特殊的因素。从休止角开始，将影响抛丸机部分部件的设计，例如，料斗和料仓。某些零部件的装入量也必须调整。

在这种情况下，必须考虑抛丸涡轮的优化，也必须考虑铝质喷丸磨料的流动特性。因此，涡轮的结构应该能够与各种铝颗粒完美协同工作。铝质喷丸磨料的处理必须仔细，需要避免在涡轮内热量上升，因为它会破坏铝磨料。这是用较为经济的操作方式获得良好抛丸效果的唯一办法。

对于AGTOS公司的抛丸机，尽可能避免破坏抛丸机内这种有价值的“工具”，而不对铸件表面产生任何影响。同时也避免磨料损失。这不仅节省了宝贵的材料，也有助于降低运营成本。在喷丸处理之后，高效的吹除装置会吹去铸件上残留的磨料，防止磨料带出。上述措施针对运营成本相对较低的抛丸机的经济运行。

抛丸技术最好能始终适应内部材料流动。因此，网带式传输抛丸机可以按操作者要求自动化工作。这种抛丸机的主要优点是能够从网带下方和上方进行抛丸清理，而不必手动转动或悬挂工件。

将要被喷丸的零部件通过自动传送或机械手（在特殊情况下采取手动方式）被放置在网带上进行传送。

工件首先通过入口闸门，闸门密封将相邻的抛丸室与外部隔开。在抛丸室内，高性能的涡轮将磨料高速喷射到工件上。网带的结构使得工件可以从顶部和底部同时被喷射。喷丸清理后，吹走残留的磨料和灰

can be blasted at the same time from the top and bottom. After the blasting process, the workpieces are cleaned due to blowing off the remaining abrasive and dust. The dust will be separated due to the supplied filter unit and the blasting abrasive will return to the circuit of the machine.

The AGTOS wire mesh conveyor blast machines are constructed for the heaviest strain. Due to the installed high performance turbines, an optimal covering of the surface is achieved. This is the guarantee for short blasting times and high quality results.

The automatic blasting device installed directly above the turbines ensures that it is only blasted when workpieces are in the blasting area. This minimizes the wear on the shot blast machine. A blow-off device removes the abrasive remaining on the workpieces.

Many companies work with a hanging workpiece transportation within the plant. For this case of operation, AGTOS has developed the continuous overhead rail shot blast machine for the blasting of and with aluminum. Conventional hanger-type blast machines are also available for bag-railway operation.

The blasting process starts with the entry of the hangers loaded with the workpieces into the blasting machine. An inlet sluice seals the blasting chamber to the surrounding. The hangers pass through the blasting chamber, while the turbines impinge them.

After the blasting process, an outlet sluice follows. A blow-off device helps to recover the blasting abrasive. The hangers can now be fed to further processing steps or to the dispatch.

Rubber belt tumble blast machines with a rubber belt or steel mill tumble blast machines with a belt made of steel plates are the solution of processing workpieces, which are moved in containers such as boxes or pallet cages. However, due to the fact that the workpieces always touch each other during the blasting, loading and unloading, these machine types are not used or rarely used for processing (usually thin-walled) aluminum workpieces. ■

尘，工件得到了清理。由于配备了过滤设备，灰尘将被分离，残留的磨料将返回到机器的回路中。

AGTOS网带式传输抛丸机的构造可以承受最重的力。由于安装了高性能涡轮，可以实现最佳的表面覆盖。这些保证了短时间的抛丸和高质量的结果。

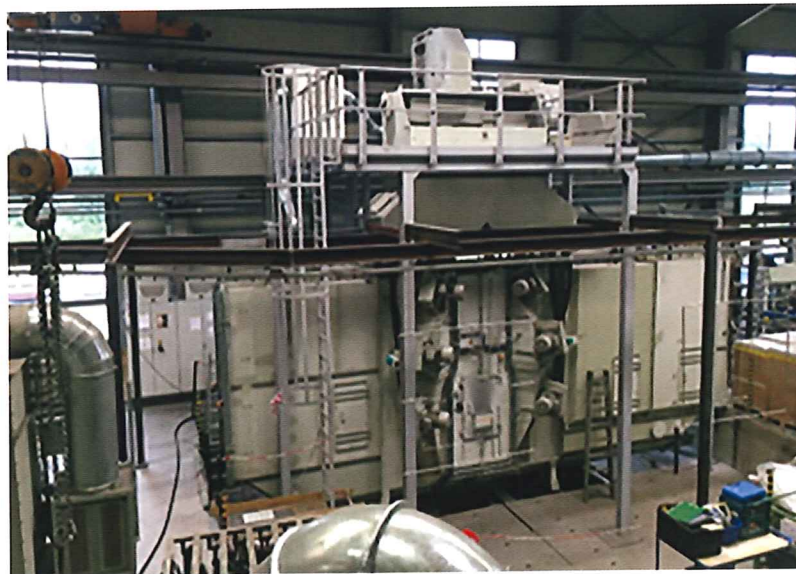
直接安装在涡轮上方的自动抛丸装置确保了只有工件在抛丸区域时才被喷丸处理，最大限度地减少了抛丸机的磨损。送风装置去除残留在工件上的磨料。

很多公司使用工厂内的悬挂工件运输设施。在这种情况下，AGTOS公司开发了用于铝或含有铝金属的吊链连续抛丸机。传统的吊挂式抛丸机也可用于袋式运输。

抛丸过程从悬挂有工件的吊钩进入抛丸机开始。入口闸门密封将抛丸室与周围环境分隔。吊钩在涡轮机撞击时穿过抛丸室。

抛丸过程之后，随之到达出口闸门。送风装置有助于回收喷砂磨料。吊钩则可以用于下一步的处理过程或运输。

橡胶带式翻滚抛丸机或钢板型材滚筒抛丸机也是清理工件的解决方案，这些工件被装入料箱或网箱等容器中。但是，由于工件在抛丸、装卸过程中经常互相触碰，在清理（通常是薄壁）铝工件时不使用或很少使用这种机型。 ■



Test center DHT for aluminum: AGTOS Continuous overhead rail shot blast machine for processing aluminum workpieces.

铝件的测试中心
DHT：AGTOS公司用于处理铝工件的吊链连续式抛丸机。