

Efficient & Economical Use of Blasting Process

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Mec Shot is one of the leading manufacturers in the field of Abrasive / Shot blasting & peening machine. As environment changes they have continuously developed new technology as per customer requirement. To clean unfinished castings after demoulding and after intermediate processing steps and to later give the castings a final uniform and high-gloss surface the blasting is an important surface treatment for foundry products. An important application area for blasting technology is the cleaning of casting blanks. Beside the basic investment in the equipment itself, ongoing operation cost plays an important role in the blasting installations. Many components in the application areas must meet the highest demands, not only in terms of their functionality, but also with respect to their visual and tribological characteristics.

Plans were called for the integration of the latest blasting technology. The principle decision-makers by production first thoroughly researched alternative processes and finally opted for an in-house turbine-wheel shot blast unit. The visual impact made by the machine design and its execution is already one of safety and stability, an impression that has since been confirmed in actual operation. The main body of the blasting unit is made of wear-resistant manganese steel and exchangeable manganese plates provide additional anti-wear protection in the discharge area of the turbines.

Blast Wheel

The airless blast wheel is the "heart" of the shot blast system. These centrifugal "airless" wheels have an internal impeller and blade design which "slings" the shot at the parts. The blast wheel acts much like a pump. The blast wheel impeller and blades are revolving at 2880 or 3460 RPM's and propel the steel shot from 250 to 300 ft. per second.

Blast Cabinet

The blast cabinet is the "body" of the shot blast system. The blast cabinet performs two purposes; one is to support the wheels and second to contain the steel shot within a confined area and recover it back to the primary storage hopper. The cabinet is usually fabricated from manganese steel and AR plate. The blast cabinet must withstand years of heavy duty wear in a three shift, 24 hour a day capacity.

Abrasive Recovering System

The abrasive recovering system is the "circulatory system" of the machine. After the abrasive propelled by the turbines against the work pieces and strikes the parts, falls to the bottom of the machine & is collected in a hopper and is fed via a screw conveyor and recovered to a bucket elevator system. The reclaim of the media is then transported over an "air-wash" separation system. The recovery system is engineered to handle the continuous recycling of 500 to 4,000 pounds of shot per minute (respectively).

Dust Collector & Air-wash Separator

The dust collector & air-wash separator are the "lungs" of the machine. The dust collector provides the necessary ventilation to remove dust from the blast cabinet. It also provides an air stream across the "air-wash" separator to clean the small fines and foreign contaminants from the shot before its reused. All shot blast machines require good dust collection and air-wash separators for reliable & efficient long term operation. The dust then undergoes wet processing and subsequent disposal, while cleaned abrasive is returned to the high-performance turbines.

Work Handling System

The work handling system are the "legs and arms" of the system. The work handling system is the part of the machine that presents the work to be cleaned (tumble barrel, rotating table, spinner hanger fixture, etc.); other work handling systems include: overhead monorail, roll conveyer, continuous mesh belt, etc.

Electrical Controls

The electrical system (push button controls, PLC, etc.) are the "brains" of the shot blast system. The electrical system is usually wired for 230/460 power and controls the random start/stop operation of the machine and dust collector.

Machine Set-Up

The blast pattern is the most important aspect of the machine set-up. The blast pattern setting concentrates the blast directly at the parts and is called the "Hot Spot". The position of the "Hot Spot" is critical for maximum coverage and minimal cleaning times.



Machine Maintenance

The blast wheel is the most important facet to maintain on a shot blast system. It is the "heart" of the unit. The blast wheel parts are the "work horses" of the system and need to be replaced most often. The fluctuations in part life is directly related to the type of cleaning application (foundry castings, forgings, heat treated gears, etc.) and rock well hardness (Rc) of the shot/grit utilized.

P.M. Programs

Regular P.M. programs will give a schedule of repairs before the cleaning efficiency drops off, or the machine goes down.

Summary

All shot blast machines, by their very nature, are self destructive. However, they are also extremely efficient and economical to use compared with other pneumatic, mechanical or chemical means of cleaning parts. Shot blast machines are wonderful inventions to remove core sand before grinding and for enhancing product appearance from snagging as well as clean all residual removal film build-up from molds for better impressions.

