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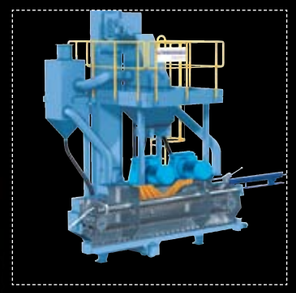
Shot peening systems for coil springs RDS



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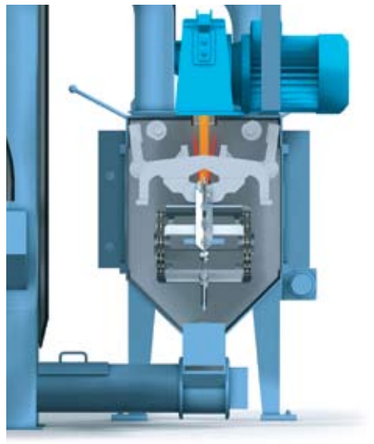
Shot peening systems



Shot peening systems for valve springs and small pressure springs

Cost effective and reliable

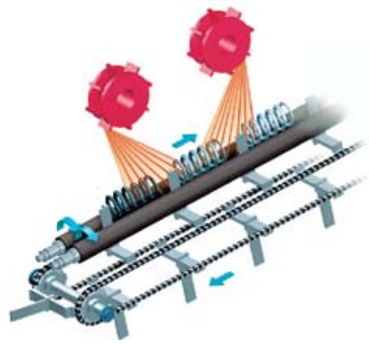
Shot peening is an advanced, cost effective and reliable technology especially developed to enhance the fatigue strength of workpieces subjected to high alternating stress. Shot peening serves to render the workpieces load resistant to the highest degree their material characteristics will permit. Shot peening is cost effective and reliable. It is often the sole treatment method or substitutes complicated, cost-intensive procedures and can be applied practically independent of shape and size of the workpieces – thus permitting a wide field of application.

Process-safety

Coil springs, such as valve springs or small pressure springs, are typical workpieces whose endurance and service life is significantly increased by shot peening. Small metal workpieces can in fact be shot peened in bulk on tumblast machines, however, this method does not provide process safety nowadays required. RDS Mini shot peening systems are designed to handle single springs - which is a prerequisite for process-safe shot peening - in a continuous operation (longitudinal, rotary through-feed principle). Blasting in through-feed operation is simple and save; it allows part tracking and is ideally suited for automatic production lines. Adjustable parameters ensure defined processing in uniform and repeatable quality. With suitably adapted loading and unloading devices, the shot peening process can be integrated into continuous production lines.

Process-safe shot peening

RDS Shot Peening machine with automatic workpiece loading

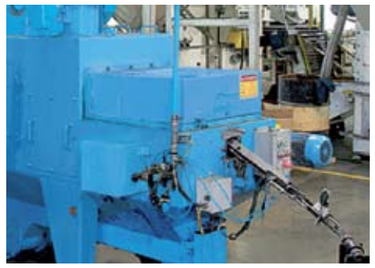


Process-save, fully automatic shot peening

Operating principle

In RDS Shot Peening Systems, single work-pieces travel on horizontal rollers through the machine. The machines are designed to strengthen valve springs and suspension springs at a throughput rate of about 5,000 springs per hour, depending on relevant requirements. The springs are fed to the machine individually on a straight-line conveyor and then move through the blasting zone. Axial movements are effected by cams attached to chains. Inside the blasting zone the springs are properly guided by adjustable baffle plates which also serve to focus the blast stream on the work-pieces for optimal exposure within the "hot spot" of the blast pattern. The parameters of the shot peening process, such as shot quantity, blast wheel speed/ throwing velocity, the speed at which the work-pieces rotate and the dwell time, can all be regulated to suit the requirements of a specific type of work-piece. It is this definition of all treatment parameters that ensures process-safety at all times

Features, benefits



Exit area of the shot peening machine

Benefits

- Shot peening based on the throughput principle is simple process-safe and suitable for automatic production lines with a continuous workpiece flow without intermediate storage.
- Individually adjustable parameters ensure workpiece-specific shot peening of the desired quality.
- Automatic systems of high performance and manufacturing consistency reduce production costs.
- A solid machine structure and high-quality machine components ensure long service life and low maintenance costs.

Machine components

1. Loading device for work-pieces
2. Machine housing with inlet/exit area, sealing gates
3. Transport rollers and transport chain with cams to carry the springs through the machine
4. Unloading device
5. Abrasive circuit and separation system
6. Dust extraction system, sound proofing (optional). Peripheral equipment for automatic loading and unloading of work-pieces can be adapted to suit specific needs, i.e. separation of bulk loads / single work-piece transport or straightlinear travel of single work-pieces.

Continuous production

Outstanding, well proven machine concepts

Highly flexible periphery

Wheelabrator shot blast installations with their compact structure and space-saving design will fit into existing production lines and will limit operator attendance to periodic inspections. The machine components within the blasting zone (housing and blast wheels) are made of highly wear-resistant material or are shielded against abrasion. This ensures longer service life and lower operating costs. Simple but very effective sealing elements help to prevent leakage of stray shot. Specific design measures and close manufacturing tolerances enable easy replacement of wear parts. One aspect that applies in particular in this respect: The original fits and has been tuned carefully to the field of application with regard to material selection and design. Maintenance work can be executed quickly and conveniently thanks to integrated platforms or via large maintenance doors.

It's the correct choice of shot that counts

Use of the right shot is essential for shot peening. Undersized abrasive reduces the peening effect, whereas oversized grain will interfere with the desired coverage. The removal of dust, scale and undersized shot is therefore imperative. This important pre-requisite is met by the dust and pneumatic separation system. It fulfils the following functions:

- Separation and elimination of scale and dust from the abrasive
- Elimination of undersized abrasive which is no longer suitable to maintain a proper shot peening function (i.e. no need of a grain classifier).

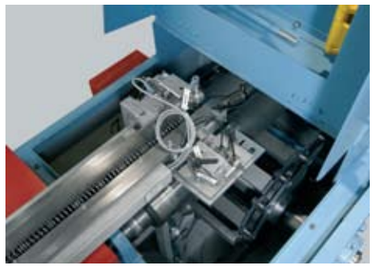
As the life time of the wear parts depends primarily on the degree of purity of the abrasive, the following is applicable:

- The better the separator, the higher it's profitability
- The cleaner the abrasive, the cleaner the work-pieces.

Besides the wear and tear issue, the abrasive consistency in the distribution of the grain size is – in particular for shot peening – a key criterion in terms of quality oriented manufacturing. Loss in quality or insufficient shot peening results can thus be excluded. New shot is automatically fed into the cycle via an electronically controlled replenisher.

Blast wheel


Separation of springs


Single work-pieces are fed into the machine


Blast room, transport rollers

The blast wheels: Highly efficient and precise

Wheelabrator blast wheels are known for high capacity and maximum energy efficiency. They are available in different sizes to meet individual requirements. Due to the reversibility of the blast wheel rotation, the range of applications can be considerably extended.

The throwing power of the wheels and shot impact are fine-tuned to suit specific applications and to ensure optimal energy efficiency. The amount of abrasive can be adjusted from the operator's panel. The abrasive is mechanically pre-accelerated and delivered to the blast wheel in a continuous stream, fully utilising the drive power of the motors to achieve the best blast cleaning effect.

The careful arrangement of the blast wheels plus the ability to adjust the throwing angle of the abrasive, assure that work-pieces are always blast cleaned in the hot spot. Machine components within the throwing range of the blast wheels are made of highly wear-resistant material to avoid excessive wear.

1. Wheel body
2. Control cage
3. Impeller
4. Blade

Technical data

Type		RDS-2 MINI
Exterior diameter of workpieces	mm	20 - 40
Workpiece length	mm	25 - 65
Output max. parts/hr		5 000*
Number of blast wheels		2
Power per blast wheel	kW	22
Maximum speed of blast wheels	rpm	3 000
Maximum throwing speed	m/sec	50 - 75
Length L	mm	4 500
Width B	mm	2 900
Heigth H	mm	5 110
Height level of inlet/outlet opening	mm	1 200
Number/diameter of transport rollers	mm	2 / 100
Speed of transport rollers	rpm	15 - 45
Axial transport		by cams
Throughput speed	m/min	5 - 15
Installed power	kW	60
Dust collecting capacity	Nm^3/hr	5 000

*depending on specific requirements. Other workpiece dimensions on request.