Two Identically Constructed Shot Peening Machines For Vehicle Manufacturer

SLF Oberflächentechnik GmbH, a well-known German manufacturer of blasting and spraying plants, has supplied and commissioned two identically constructed, fully automatic machines for shot peening of planetary carriers to the Mercedes-Benz factory located in Rastatt, Germany. Having its roots as a supplier of plants for the surface treatment of large and very large components like rolling stock vehicles, wind power plant segments or utility vehicles, SLF has in the last years expanded its product portfolio by blasting systems for the treatment of smaller (serial) parts as, for example, gear parts for the automotive industry.

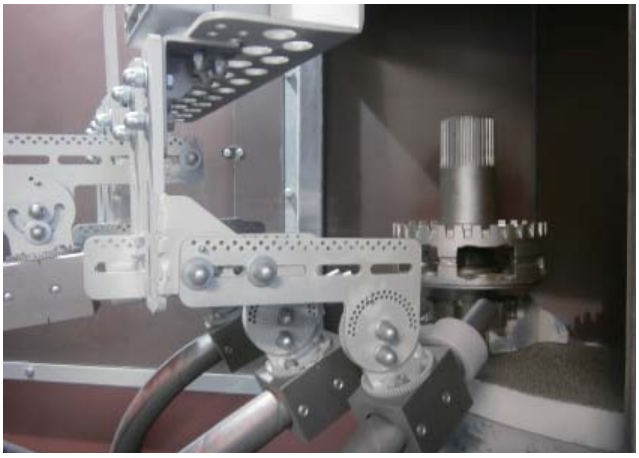
In total each shot peening machine including the filter unit and the compressor unit covers a surface of approximately 70 m². The whole system is encased by sound insulated panels.

The machines supplied to Mercedes Benz mainly consist of a blasting cabin of 1,75 x 1,75 x 2,00 m in size, an integrated indexing table with six satellites for the work piece holding devices, a pressure blast system with five nozzles, an integrated blow-off station for cleaning of the work pieces, the blast media transport system with the associated blast media recycling system, another additional blow-off station, a special design wet filter unit and the work piece feed supply and removal system applying an industry robot.

Automatic surveillance of blasting process parameters

The loading of each single work piece holding device with the work pieces that have to be blasted as well as the covering of these with the individually manufactured work piece covers happens via a handling robot. Prior to this, both the work piece and the cover are being positioned very exactly by means of a small rotary table installed on the outside of the blasting cabin onto which the work piece is then being placed by the robot. A photoelectric sensor detects the position of the work piece, the robot adjusts it and once it is in accordance with the blasting process, the robot grabs it and moves it onto the holding device installed on the indexing table. After loading has taken place, the indexing table moves forward by one position and transports the work piece into the blasting zone of the cabin. Both sluices in the cabin front are subsequently being closed. After this, the blasting process is being started using five blast nozzles and a vertically moving nozzle oscillation unit. The upper part of the planetary carrier is then being blasted in compliance with various individually adjustable blasting parameters like blasting pressure and blast media flow rate using cut wire.

At the end of the pre-set blasting time the blasting process stops and the work piece is being transported within the cabin into the cleaning zone where it is being blown-off by compressed air. One indexing movement further follows the treatment of another work piece until the work piece that has been blasted at the beginning is being released from



Five blasting nozzles blast the work pieces in exact compliance with several blasting process parameters

The work piece is automatically being positioned

the blasting cabin through the second sluice. Firstly, the robot removes the work piece cover and subsequently the work piece itself from the loading and unloading area of the machine. Both components, the cover and the work piece are then being blown-off once more in the separate blow-off station. The work piece is then being placed on the work piece transport belt that moves it to the next machine in the production hall.

The blast media transport and recycling system consists of – among the usual components like bucket elevator and wind sifting unit – of a trieur and a tumbler screening machine. The screening unit filters oversize and undersize blast media out of the current process, the trieur working in bypass mode sorts out non-round blast media.

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