

Amusement Park Ride Prompts Finishing Process Concept

WALTHER TROWAL developed the new M-TMD drag finisher line for processing work pieces requiring perfect surface finishes. The work pieces, mounted to rotating satellite stations, undergo multiple overlapping, pre-programmed, rotational movements. This rotational variation produces optimum finishing results.

Typical work piece examples from the medical engineering industry are hip and knee implants requiring a high gloss polish. In the aerospace industry, turbine blades and other components must receive a first-class finish with precise edge radiusing and very smooth surfaces. Examples from the automotive industry include the vanes of turbochargers, which must not be nicked or damaged during the finishing process.

Christoph Cruse, General Sales Manager at Walther Trowal, foresees a big demand from those customers. “With our new equipment line, we address precision component manufacturers who want perfect surface finishes, and where any blemishes like scratches could require scrapping a part. We also target manufacturers demanding tolerances of just a few microns. For these work pieces the M-TMD drag finishers with their optimum flow characteristics open entirely new possibilities,” he said.

A rotation within the rotation is the functional principle. In standard drag finishers, the work pieces are mounted to rotating work stations and “dragged” through the grinding or polishing media. This movement creates a high processing intensity and produces excellent results on many parts.

The work stations consist of multi-spindle heads with each spindle holding one work piece. In addition to the carousel and work station rotation, each spindle has its own rotational movement. In other words: The spindles move in a circle within two larger circles formed by the carousel and work station rotation. This is similar to the movement of the cabins in “Octopus” rides that can be found in amusement parks.

The drag finisher M-TMD 4 is equipped with four multi-spindle heads (work stations) with each head containing three spindles. Six to 18 work pieces can be processed at the same time. The independently adjustable rotational speed and rotational direction of the spindle heads and spindles creates a wide range of different movement patterns. In addition, the spindle heads can be tilted in different angles. This allows adjusting the flow characteristics to the specific shape of the



The cabins in “Octopus” rides that can be found at any amusement park inspired the movement of the spindles in the new M-TMD drag finisher line.



The multi-spindle heads allow up to 18 parts. Different parts were mounted onto one spindle head in this photo.

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various work pieces. Multi-stage processing programs can be easily implemented with the PLC controller.

The work bowl is vibrating for the optimum mixing of the grinding or polishing media during the final processing. This guarantees a high degree of process consistency. The media fines and undersize media, along with the metal fines from the work pieces, are continuously discharged from the machine. This is another contribution towards process stability and consistency.

The new Trowal machines can be operated in wet as well as dry processing mode. For surface grinding and smoothing, as well as for certain polishing operations, compounds and water are used. In the case of targeted edge radiusing with tolerances of a few micron, for example, hard metal drill bits and milling heads, a dry process with special grinding granulate is utilized. Dry processing with organic polishing media and paste is also suitable for high gloss polishing.

Multiple finishing steps, from pre-grinding all the way to the final polishing stage, takes in one single machine without the need to remove and remount the work pieces to the work stations: One work bowl filled with a certain finishing media can be easily and quickly removed with a pallet truck and replaced with a bowl containing another media.

The first unit of the new machine generation has been installed in the Walther Trowal test lab in Haan/Germany. It is available for processing trials with customer work pieces allowing the customers to prove their finishing process before making an investment decision. This ensures that the customer specifications can be fully met. Once the trials have yielded a viable process, the work piece range and quantity is analyzed to determine machine type and size, media and compound type, process water treatment system and drying method. For more information, contact Meik Seidler at +49 2129.571-204 or m.seidler@walther-trowal.de.



Work bowls containing different media types can be easily and quickly exchanged with a pallet truck.










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