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A world's first in surface finishing: Mechanical surface treatment of oversized workpieces

AIRTECH in Frankfurt offers the opportunity to see the first machine in the world to be capable of finishing very large workpieces in a single automated process. Workpieces up to 1000 mm in length and approx. 500 mm in diameter can be processed in the DF-H, using the well-established drag finishing process.

Grinding, deburring and polishing of large items

Until now, surfaces of this size could only be finished manually. Manual finishing, with its inherent complexity, presents many problems for such large workpieces. In addition, a much more serious drawback is the lack of reliability and consistency achieved by manual processes. Especially in areas such as the aerospace industry, the manufacture of turbines and turbine engines as well as in the more traditional mechanical engineering and plant equipment sectors, reliable and consistent high precision finishing of workpiece surfaces is a key quality criterion.

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A new generation of drag finishing machines

In contrast to previous drag finishing machines, the DF-H (whereby H stands for horizontal) the process container holding the medium is arranged horizontally in the form of a trough instead of as a conventional vertical drum. This trough is filled with grinding or polishing granulate which is adapted to suit the processing stage required (deburring, smoothing, polishing, edge rounding, etc.).

Photo DF-H (OTEC):



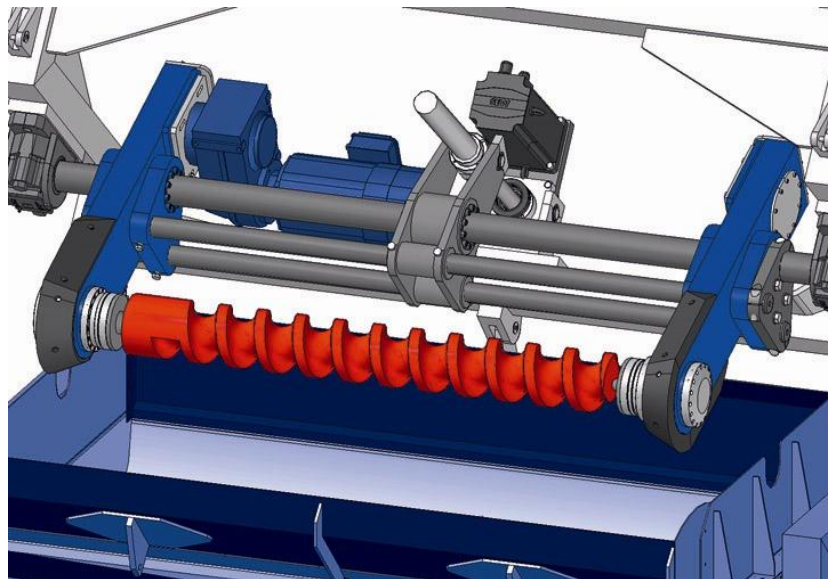
The new DF-H machine for horizontally clamped workpieces

Each workpiece is then lowered into the trough in a fully automatic process. During this process, the workpiece rotates and oscillates in a predefined manner. An alternating swivelling motion of the workpiece holder ensures even and fast processing. Clamping the workpieces horizontally eliminates the effect of immersion depth on long workpieces.

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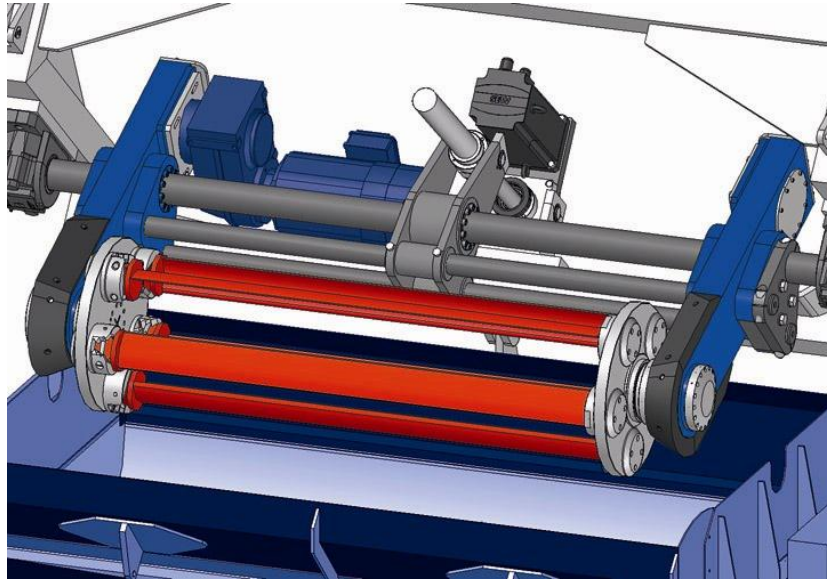
By using a multi-clamping device, it is possible to finish four workpieces at the same time (see figs. 1 and 2). The handling of the DF-H differs from that of conventional drag finishing machines, too. In order to carry out regularly repeated processing routines efficiently and consistently, up to 200 process programs can be stored.

Fig. 1 (OTEC):



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Fig. 2 (OTEC):



The workpieces can be positioned centrally between the tips of the holders (fig. 1) or off centre in a batch of up to 4 workpieces (fig. 2).

Drag finishing - what does it actually mean?

The drag finishing process (in which workpieces are dragged through a container filled with grinding or polishing granulates) is a process designed for finishing the surfaces of tools or other workpieces. Originally developed for the jewellery industry in order to facilitate the polishing of heavy rings to a mirror finish, this process is now widely used in other manufacturing sectors, above all because it is economical and offers a greater degree of precision than conventional grinding and polishing processes.

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OTEC Präzisionsfinish GmbH

The company was founded in 1996 and has quickly become established as a technological leader in the surface finishing market with many new machine concepts, inventions and improvements to its credit.

OTEC develops and manufactures innovative machine designs customised to meet the particular requirements of each specific industry and offering the best in terms of economy, handling and precision – and which are far superior to conventional processes. Some 60 employees at the corporate headquarters in southern Germany and a worldwide distribution network guarantee top-quality in terms of customer service and technical processes.

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