

Retrofit to a vertical lathe

Saving costs and maintaining the machine certification: Compared to a new purchase, a retrofit usually offers many advantages and allows for the integration of customer-specific process technologies.

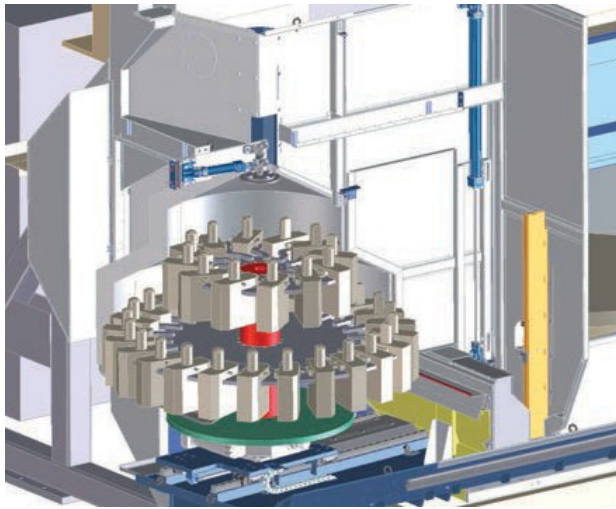
Machine overhauls from a single source

The vertical lathe of the company MTU Aero Engines GmbH is used to produce parts for engines. With exception of the solid certified machine bed, the machine was readjusted to implement new workflows. All departments of the Frintrop GmbH were deeply committed to achieve the retrofit:

- The field of engineering comprised the development and construction of new mechanical processes and system components – including measurement, control and drive technology.
- In the field of development, construction and production, a new housing solution with attached enclosure for peripheral equipment was developed.
- Project management conducted the whole expediting and cost control process and coordinated all works related to engineering, production and assembly between the customer and the Frintrop GmbH.



PROJECT



Engineering aimed at maximum precision in processing:
The services department of the Frintrop GmbH developed the new workflows and designed all system and drive components.



In general, the vertical lathe sections are sealed from the chip space via power-driven doors. These are opened automatically to enable a fast tool supply in the processing room.



The waist-high partition wall in front of the chip space allows for a safe operation when the doors are open.

*“We have used all know-how of the Frintrop GmbH and achieved our goals: highest processing quality combined with an efficient component manufacturing.”
Martin Moschna, Project Manager MTU Aero Engines GmbH*

ENGINEERING FOR PRECISE WORKFLOWS

The whole tool change process was rearranged and brought significant quality, security and time advantages about. The changers of the vertical lathe on the right and left side of the chip space enable a fast tooling process. Service doors provide access to the changers of the vertical lathe for parallel retrofitting during processing.

The tool changers glide on rails into the chip space. For this purpose a special glide and drive technology was developed which achieves a new dimension of processing precision – including automated measurement and tool check.

SAFETY FIRST WHEN IT COMES TO SYSTEM SOLUTIONS

A basic principle of the Frintrop GmbH is: The development of our housings is based on the machining process. At every stage of planning human safety and therefore an exact hazard analysis is our top priority. The result of this is a constructive housing design for the intended turning and drilling process in regard to the sheet thickness and the stability with specifications of the bursting safety.

The geometry of the interior casing enables a free chip fall and an ideal chip disposal. The lubricant discharge is reduced to a minimum. The overall structure of the casing ensures

- ideal movement processes
- easy accessibility of workpieces
- good monitoring of the process and of rotary movements
- easy access for all maintenance and service works.

REPORT



In the front of the picture the maintenance flap for the tool changer room is displayed, the service doors for this area are equipped with vision panels. The operator door to the chip space opens automatically to the right and to the left.



Due to the direct integration of peripheral equipment on the back of the machine a little area for the setup of the complete system is created.



The service doors and maintenance flaps enable easy access to the whole drive technology on the back of the machine.

"In engineering as well as in construction and project management we were able to exploit all of our potential with logistical and financial advantages for our customer of MTU Aero Engines." Henry Frintrop, Executive Manager Frintrop GmbH

ADDED VALUE THROUGH COMPLETENESS

The pre-assembly and functional assembly of important assemblies took place at the site in Gönningen, Germany. The chassis for the functional assembly also served to secure the transport and eliminated the need for readjusting measures at the site of the customer. At the time of the machine start-up the customer received a comprehensive documentation which could be added directly to the complete documentation of the machine. Assembly, maintenance and repair instructions are part of the scope of services and create a real added value for customers due to the well thought-out documentation structures.

30 PERCENT LESS COSTS DUE TO RETROFIT

A Retrofit ensures that the existing certification which is bound to the machine bed can be maintained. Usually only little changes of the production environment are required. A new hall is not necessary and workflows are only minimally affected. The machine design can be adapted to parts and the processing technology can be updated according to the state of the art. Another advantage: No need to invest in irrelevant additional functions of new machines.

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