

HAMUEL HSTM 150 HD

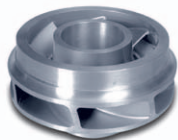


High-precision 5-axes machining of your components

The turn-milling centre featuring a horizontal part arrangement is especially suited for the machining of turbine and compressor blades, blisks or radial compressors. Here, the configuration of the working area ensures optimum mass distribution, as well as excellent loading possibilities, and good visibility of the machining situation. The machine meets the highest demands of modern blade machining, where the attainable accuracies and surface qualities are concerned. Its sturdiness and rigidity, along with the integrated HSC-support, warrant for utmost productivity. The compact machine design permits its quick and flexible installation at the customer factory – without any special requirements regarding the foundation.

Your advantages in short:

- Excellent surface quality owing to the rigid, low-vibration design
- Separation of work-piece (A, C, U) and tool axes (X, Y, Z, B) for utmost machine dynamics
- Identical kinematic and dynamic conditions for the X-, Y- and Z-axis
- Very good chip removal from the working area
- Quick installation and commissioning
- Maximum acceleration values up to 1g
- Mineral cast machine bed for excellent damping
- Consideration of the latest know-how for all operating and control elements



HAMUEL

Advanced manufacturing processes for increased productivity, improved efficiency and excellent manufacturing quality.

CNC-technology at its best



HAMUEL Maschinenbau GmbH & Co. KG
Industriestraße 6
96484 Meeder (Germany)
Phone: +49 9566 9224 0
Fax: +49 9566 9224 80
info@hamuel.de
www.hamuel.de



Solutions for aerospace and energy production



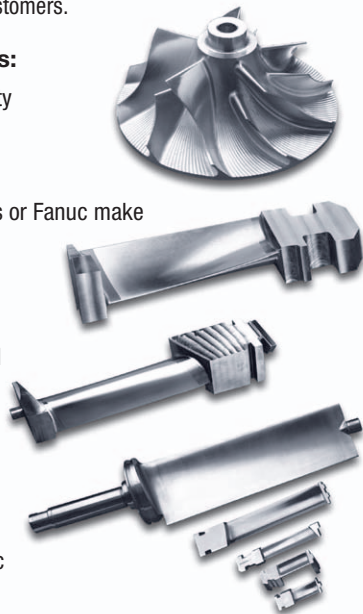
HAMUEL HSTM 300 HD



The machines of the HSTM series have been designed for manufacturing intricate work-piece geometries by simultaneous 5-axes machining in a single clamping operation. These work-pieces comprise turbine blades, impellers and blisks, as well as work-pieces with free-form surfaces. The HSTM series is available in the executions HSTM 150 HD to HSTM 3000 XXL for blade lengths up to 3,000 mm. The respective spindle powers are suitable for the machining of aluminium, titanium, steel, as well as of special materials, such as titanium aluminide and nickel-based alloys. Where precision, productivity and efficiency are concerned, these machines meet the highest demands of our customers.

The HSTM series guarantees:

- Great static and dynamic rigidity
- Thermal stability in all axes
- Modular design
- CNC control system of Siemens or Fanuc make
- Ergonomic design
- Work-piece loading from front, top or side of machine
- Motor spindles with high speed and strong torque
- Clamping devices for turning and milling processes
- Possibility of using various cooling lubricant systems
- Simple application of automatic work-piece changing systems

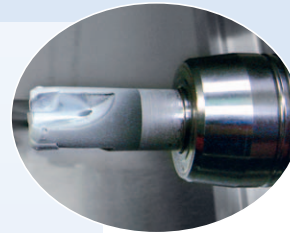


CO₂-cooling

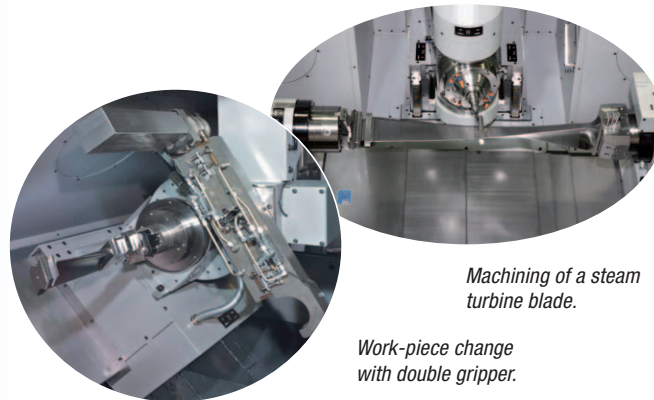
Extremely high process temperatures may form, when highly temperature resistant steels and super-alloys are machined for applications in energy technology and aerospace industry, but also in automotive engineering. This particularly applies to the rough-machining of such materials. The consequences are an extreme tool wear, reduced cutting speeds, and thus long machining times and high machining costs. On the whole, under technical and economic aspects traditional cooling strategies don't present the optimum choice for many special processes. The latest findings show cryogenic cooling to be the best new method of cooling. Cryogenic cooling is targeted cooling, where the temperature of the cooling medium is extraordinarily low.

Advantages of CO₂-cooling:

- A dry machining process and thus dry chips
- No health hazards from cooling lubricant emissions
- No costs for service, care and disposal in connection with cooling lubricants
- Machining free of contaminations, e.g. for medical and aerospace applications
- Little work-piece distortion owing to lower work-piece temperatures
- Retro-fit CO₂-technology available in the market



Tool after machining under CO₂-cooling.



*Machining of a steam turbine blade.
Work-piece change with double gripper.*

Any type of turbine blade, no matter which dimension or material, can be machined in one single clamping operation with utmost precision and optimum speed.

Blisk processing

Blisks, so-called blade integrated disks, are increasingly used in the compression section of jet engines to reduce weight, to increase efficiency and to minimize maintenance. The HAMUEL 5-axes turn-milling centre of the HSTM B HD series is particularly suited for the machining of blisks at diameters of up to 850 mm in a horizontal work-piece arrangement. Where the attainable accuracies and surface qualities are concerned, our blisk machine meets the utmost demands of modern blisk machining. Using a special blisk machining software, we have optimised our milling strategies in such a way that the best surface qualities and blisk geometries possible are obtained in the processing of titanium, nickel-based alloys and titanium aluminides.



Optimised milling strategies ensure the highly efficient and economic machining of blisks.