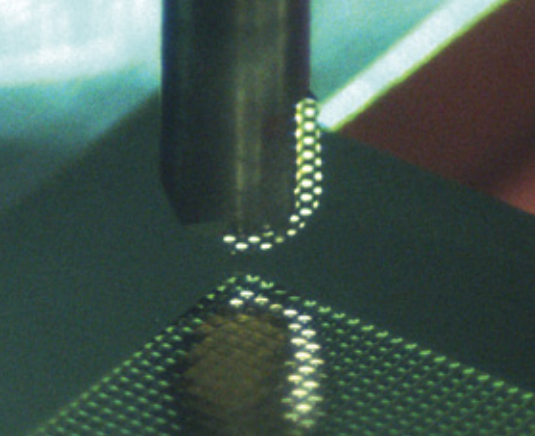


# ULTRA-PRECISION HYDROSTATIC MILLING MACHINES





Microlens array

## Ultraprecision Milling Machines of the MMC H Series

The ultraprecision milling machines (UP milling machines) of the MMC H Series (Micro Milling Center Hydrostatic) are the result of our 30 years of experience and are specifically developed for multi-axis ultraprecision milling (and planing).

### Highest Precision and Versatility

Using diamond tools, optical surfaces can be produced with the highest form and geometry requirements in non-ferrous metals such as brass, copper, aluminum, nickel-phosphorus, as well as plastics. Machining of steels is also easily possible.

Form tolerances of  $< 1 \mu\text{m}$  and surface roughness values typically between 1–4 nm (Sa) are achievable for component dimensions up to 850 x 300 x 350 mm<sup>3</sup> and beyond.

### Proven Across Numerous Industries

Our systems are already successfully used in the following sectors:

- Optics and Laser Technology
- Medical Technology
- Semiconductor Industry
- Tool and Mold Making, Automotive
- Fundamental Research
- Aerospace
- Luxury Goods (Watches, Jewelry)

### Unique Design

Our machines are characterized by the following features:

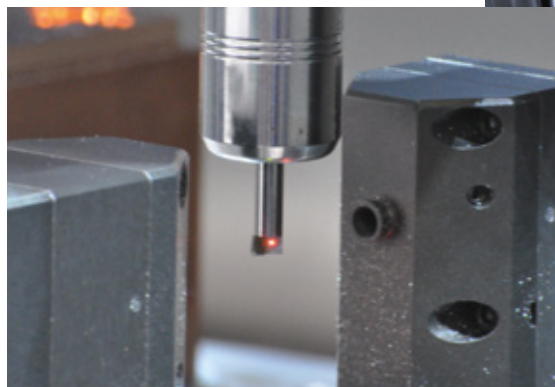
- Natural granite base
- Hydrostatic bearings
- Linear direct drives
- Ultra-high-resolution measuring systems
- High-speed milling spindles
- PLC with highest computational accuracy
- X/Y axes on the workpiece side
- Z-axis on the portal

If your requirements go beyond our standard machines, we also develop customized solutions.

### Base Models: MMC600H and MMC900H

The MMC600H and MMC900H models differ primarily in the length of the main axis. The 900H allows for the machining of larger components and offers additional options such as:

- Integrated Fizeau interferometer
- Flycutter on an additional Z-axis
- Additional Z-axis for measurement tasks
- Further automation options such as:
  - Robotic workpiece loading
  - Automatic workpiece alignment after integrated measurement



Automatic tool measurement



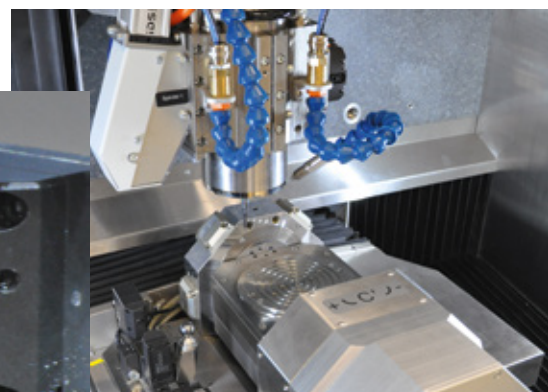
5-axis UP-milled particle accelerator component (CERN)

### Extensive Accessory Options

Our wide range of accessory options helps you achieve the best possible results:

- Automatic tool changer
- Automatic tool measurement
- Integrated cameras
- 5-axis machining, rotary tables
- 3D probe
- Minimum quantity lubrication
- Extraction system
- Air temperature control inside the machine
- Active leveling system
- Enhanced floor insulation
- Various high-frequency spindles

These are just some of the most commonly used options. Contact us and our experts will work with you to create the perfect package for your production portfolio.



Interior of MMC600H with 5-axis machining

