

Multifunctional and air-conditioned Tribometer MFT-5000

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General information

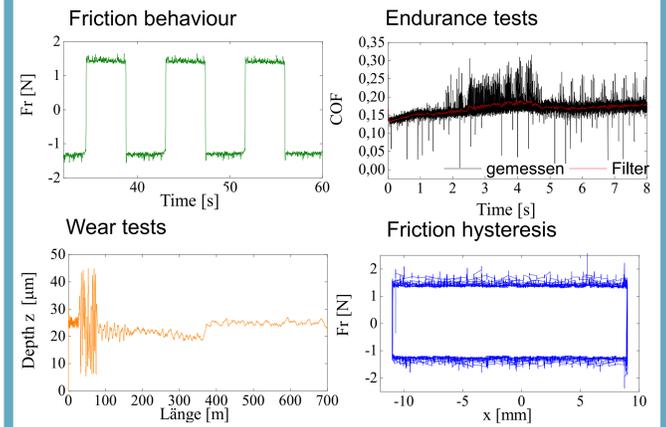
The Institute of Mechanics and Adaptronics (iMA) has a multifunctional, modular, air-conditioned tribometer for investigating the tribological properties of friction pairs.

Examinations

- Friction behaviour
- Wear tests
- Endurance tests
- Measurement of static friction
- Measurement of friction hysteresis

Examination orders

- Pin/Disc DIN ISO 7148-1
- Ball/Disc DIN EN 1071-13
- Block/Ring DIN ISO 7148-1



Key characteristics

A. Standing unit

- Test force range up to 5000 N
- Z-axis travel up to 150 mm, resolution: 0.5 micrometres, travel speed: 0.002-5 mm/s
- Servo-controlled charging, fully programmable
- In-situ monitoring of wear depth, accuracy: 5 micrometres
- Automatic detection of installed modules and drives

B. 2D force sensor: down force and friction force measurements

- Range: 0.5 to 50 N; resolution: 1.5 mN

C. Sample Testing Stage: 150 mm x 250 mm

- X-direction: speed 0.001–6 mm/s, maximum range of motion: 150 mm
- Y-direction: Speed 0.001–50 mm/s, maximum range of motion : 250 mm

D. Pin disc and ball disc

- Rotational speed 0.1 to 8000 rpm; feed rate: 0.005 to 50 m/s
- Max. torque 5.9 Nm at 2000 rpm, 4.8 Nm at 4650 rpm, 2.45 Nm at 8000 rpm * Complies with DIN ISO 7148-1 and DIN EN 1071-13
- Universal ball and pen holder (diameter 3 to 10 mm)
- Universal lower plate holder for rotary drive (diameter 40 to 80 mm)

E. Block ring

- Speed 0.1 to 5000 rpm, resolution: 0.1 rpm
- Block holder for block-on-ring with self-levelling device

F. High/low temperature modules

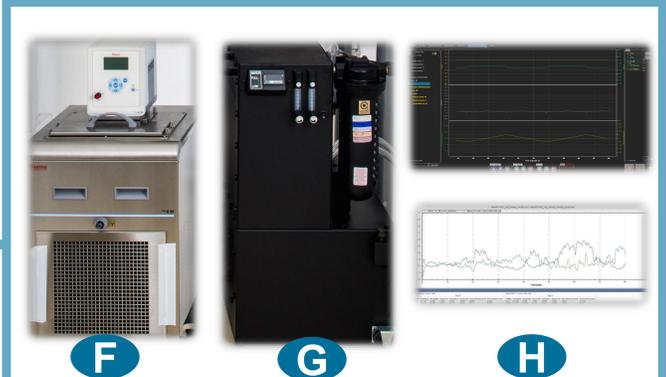
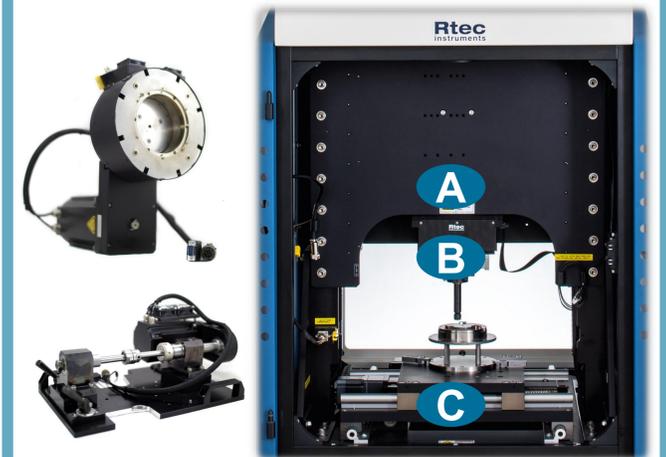
- Adjustable temperature range -40 to 200 °C
- Temperature chamber for torsional modulus with temperature resolution 0.1°C
- Temperature chamber for blocks on a ring with a temperature resolution 0.1°C

G. Device for adjusting air humidity

- Humidity range: 3% to 95% RH

H. Data acquisition and analysis

- Synchronous recording of all geometric and dynamic variables in real time
- Simultaneous recording of the u (v) or u(s) curve
- 16-bit high-speed data acquisition card, sampling rate up to 200 kHz
- 2-channel force signal amplifier (load and friction), up to 14 additional channels
- Fully automatic and programmable motion and drive control
- Export of measurement data in ASCII or CSV format



Publications

Zhenwei Miao 2023;



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