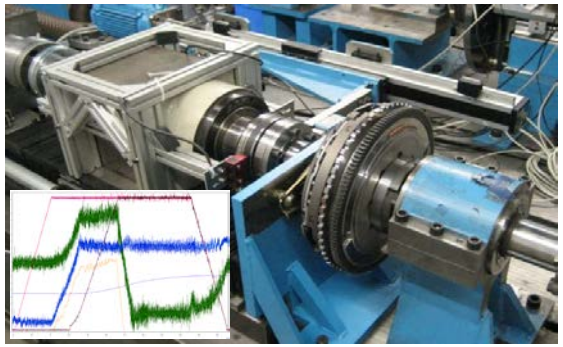
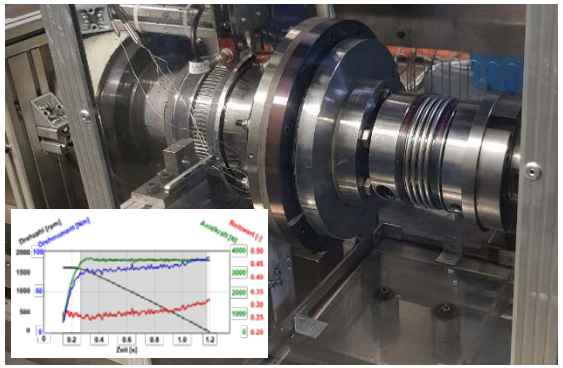
Exemplary research

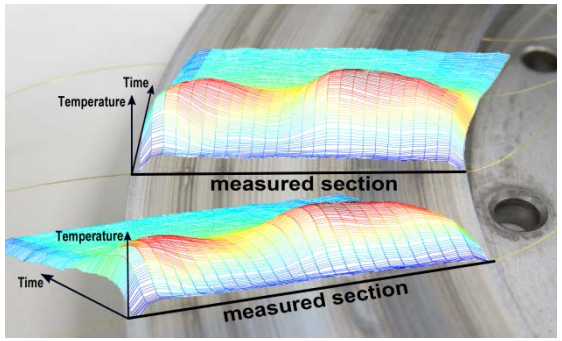
Testing of entire clutch and brake systems



Testing reduced to the friction contact



Measurement of the temperature distribution using fiber optic sensing technology with high spatial measurement density



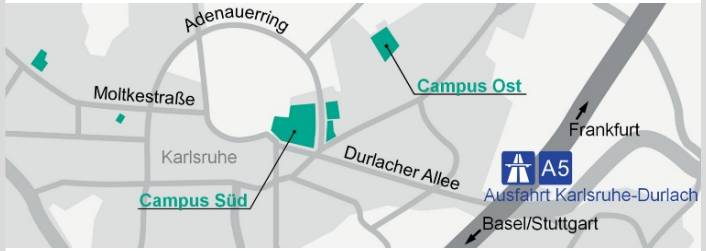
Contact

Karlsruhe Institute of Technology (KIT)
IPEK ▪ Institute of Product Engineering

Dipl.-Ing. Sascha Ott
Managing Director

Campus South, Building 50.33
Gotthard-Franz-Straße 9 | 76131 Karlsruhe
Phone +49 721 608-43681
E-Mail Sascha.Ott@kit.edu

www.ipek.kit.edu



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TRP

Dry Friction Test Bench

IPEK ▪ Institute of Product Engineering

Test Bench Specifications

Engines

- nominal power: 124 kW
- rotational speed: 3000 rpm
- Torque M_R: 400 Nm

Setup

- Torsional stiffness adjustable from 6-50 Hz
- Clamp Force up to 10 kN

Air Conditioning System

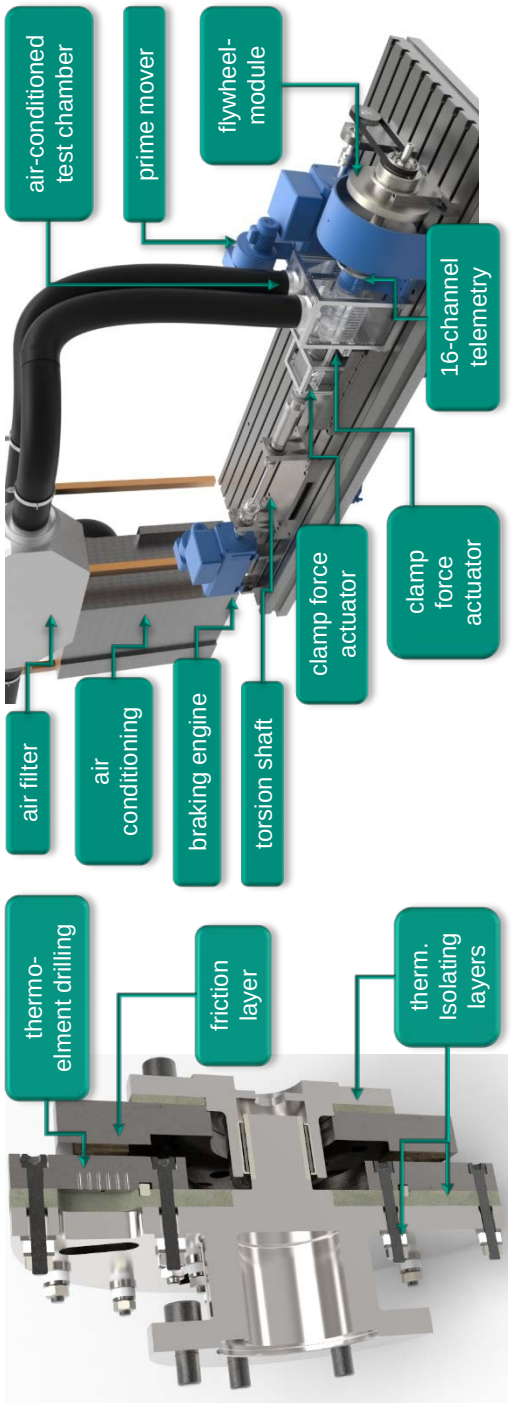
- Temperature between -40 - 160 °C
- Relative humidity from 10% to 95 %

Measurement Equipment

- Clamp Force and Torque Flange
- Axial force and torque measuring hub
- 16 - Channel Telemetry for Temperature Measurement
- Distributed fiber sensing
- Thermal camera
- Incremental encoder

Control Modes

- Control of rpm, torque, axial force, friction work and temperature in the friction contact and in the pressure plate.



Research Focus

- Investigation of friction linings (organic, ceramic, sinter) in dry friction systems
- Testing of entire clutch and brake systems
- Clutch characterization
- Comparative Benchmark of friction facings
- Investigation of the dynamic behavior of the friction system
- Investigation of the influence of environmental conditions in clutch and brake systems
- Measurement of the temperatures near to the friction contact by using 16-Channel Telemetry, fiber sensing technology or a thermal camera
- Investigation of the thermo-mechanical behavior of the friction system during the slipping phase

Test Programs

- Synchronization
- Braking
- Break-away
- Speed ramps, load or torque controlled
- Continuous slip at constant load, torque or drive
- Continuously adjustable mass simulation
- Non-stop operation