# The Large Engines Competence Center

The Large Engines Competence Center, LEC for short, is one of the world's leading research institutions for sustainable large engine technologies and develops innovative solutions for green energy and transportation systems. Since 2015, the LEC is a funded COMET K1-Center. As a pioneer in climate-friendly innovation and virtual development, the center serves as a global innovation hub for sustainable, environmentally sound transportation and power generation systems for a rapid and economically feasible transition from today's conventional systems to systems with a zero carbon footprint. With its research, a globally unique infrastructure and a large international partner network, it contributes significantly to global decarbonization and massive emission reductions. The research focus is on the use of renewable energies (green e-fuels such as hydrogen, ammonia, methanol, etc.), digital technologies and overall system optimization.
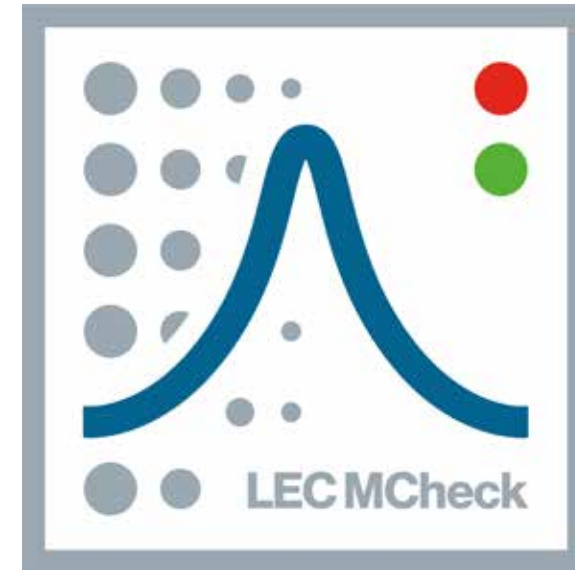
LEC MCheck

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Evolutionary Engine Technologies for a Sustainable Tomorrow

LEC MCHECK
SOFTWARE FOR MEASUREMENT QUALITY CHECKS AND FAULT DIAGNOSIS

LEC MCheck is an innovative software for the diagnosis of sensor faults on test beds with changing test carriers, such as engine test beds. LEC MCheck detects faulty measurements at an early stage and is able to identify faulty sensors, which not only improves the quality of the measured data but also increases the efficiency of the test bed.

LEC MCheck Key Features

- Automated system for measurement data plausibility check and error detection of measured values

- Verification of the measurement data quality by means of different physical and statistical methods

- Identification of the faulty sensor

- Use of thermodynamic correlations of different measured values for plausibility check of a measuring point

- Automatic generation of data-based models

- Dynamic determination of confidence intervals and limit values for plausibility criteria

- Determination of the monitoring quality

Fault detection
- Threshold monitored residuals
- Automatic threshold determination

Fault isolation
- Determination of fault probabilities based on geometric analysis

Graphical user interface
- Comprehensive configuration possibilities
- Detailed presentation of results

Symptom generation
- Modular concept for residual generation enables highly flexible application
- A formula tool enables user-defined plausibility rules
- Comprehensive library of physics based models for engine test beds
- Advanced methods for generating data-driven models