

LEC EvoLET
LEC Evolutionary Large Engines
Technology for Sustainable Energy
and Transport Systems

Programme: COMET – Competence Centers for Excellent Technologies:

Programme line: COMET Centre K1

Project type: multi-firm/strategic
 Duration: 2015–2021



HIGH-PRECISION MEASUREMENT WITH LEC MCHECK

THE SOFTWARE LEC MCHECK IS A COMPLETELY NEW SOLUTION THAT PROVIDES RELIABLE DIAGNOSIS OF SENSOR FAULTS ON TEST BEDS THAT FREQUENTLY CHANGE TEST SETUPS SUCH AS R&D ENGINE TEST BEDS: LEC MCHECK RECOGNIZES FAULTY MEASUREMENTS EARLY AND IDENTIFIES DEFECTS, SENSORS OR MEASURING DEVICES. THIS SIGNIFICANTLY IMPROVES THE QUALITY OF MEASUREMENT DATA WHILE SAVING VALUABLE TEST BED TIME.

Greater Precision of Test Bed Measurements with Intelligent Fault Diagnosis Software

Measurements on engine test beds are highly complex, and it is often difficult to evaluate measurement results. When the numerous parameters of internal combustion engines are measured, faults can easily arise due to falsely calibrated or even defective sensors. Since experimental investigations on an engine test bed are generally a significant cost factor in engine development, the quality of measurements must be maximized. According to current studies, faults that are detected too late result in up to 40% more measurement effort. It is even more problematic when faults are not discovered at all. The

consequence may be poor decision-making during the development process. This is exactly what the LEC works to remedy with its intelligent fault diagnosis software LEC MCheck.

LEC MCheck as a Key Innovation

Following many years of developing the software for in-house use, the LEC is now bringing to market a special product for automated quality control of test bed measurements that has been successfully tested with its partners.

SUCCESS STORY



Fig. 1: LEC MCheck mode of operation and dashboard © LEC

Figure 1 presents how LEC MCheck works. Thanks to its modular concept and the combination of data-driven and physics-based methods, it can be adapted quickly to new test engines and tasks without the need for a great amount of configuration. With the software, secure and reliable monitoring of the quality of measurement data and early recognition and correction of measurement faults are possible online and directly on the test bed. Its clear dashboard design and simple operation support the test bed operators that apply it.

One special feature of LEC MCheck is that expert knowledge is integrated into the system via a library. The fault diagnosis software is ideally suited to carry out a wide range of complex measurement tasks in many areas and contributes to an increase in overall efficiency.

Impacts and Effects

The LEC is one of the world's top research institutions in large engine technology and a pioneer in digitalization. The completely novel tool LEC MCheck is highly innovative software that combines the LEC's sound understanding of the industry with software development know-how. Originally developed for engine test beds, the modular and expandable software architecture may also be used with other systems. LEC MCheck demonstrates the great innovative power of the company and its ability to think outside the box while it enters new markets as a provider of sensor technology and special software.

Project coordination

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This Success Story was provided by the center's management for publication on the FFG website. The COMET Center LEC EvoLET is funded by BMK, BMDW and the provinces of Styria, Tirol and Vienna as part of the COMET – Competence Centers for Excellent Technologies. The COMET programme is run by the FFG. Further information on COMET: www.ffg.at/comet