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.

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Evolutionary Engine Technologies for a Sustainable Tomorrow

User Benefits

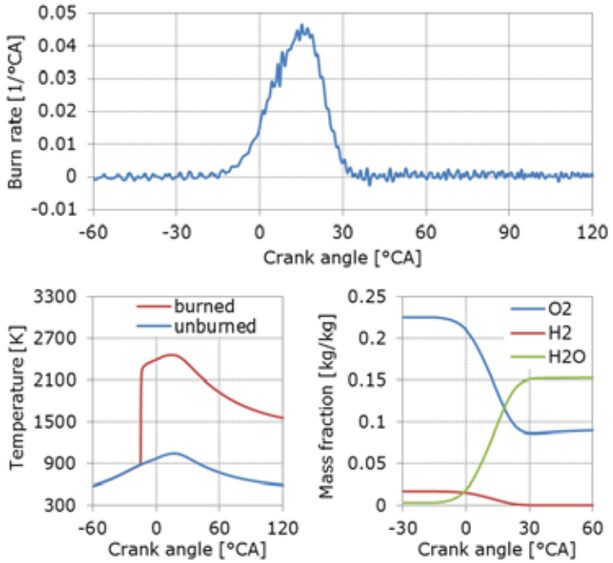
- Standardized measurement data analysis in combustion concept development as a result of automated assessment
- Easy control via other programs, thus enabling its flexible use in many areas of application (automation, optimization, etc.)
- Individual adaptation of the tool by the developer to the workflow of the customer
- Highly experienced developer competently satisfies customer requirements

LEC CORA

LEC CORA (Combustion Optimization, Research and Analysis) is an innovative software package for analyzing the working process of internal combustion engines.

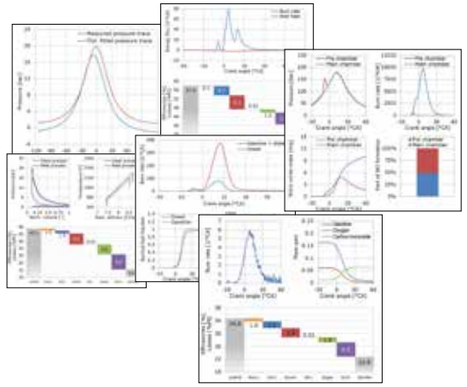
Thanks to its modular structure and highly flexible input and output, it can be automatically controlled by other programs in a variety of areas of application. The optimized program code and the use of zero-dimensional analysis methods guarantee very short calculation times.

Application example 1
Pressure trace analysis, hydrogen SI passenger car engine

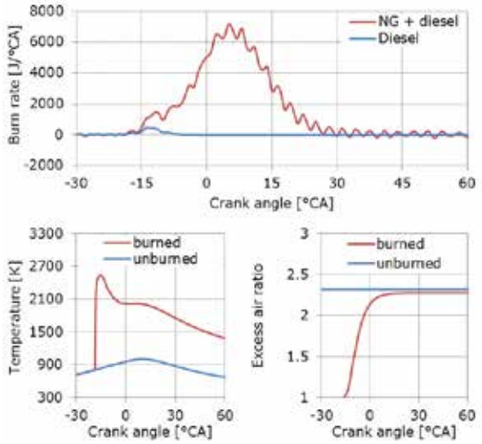


Highly flexible software for analyzing the working process of internal cumbustion engines

Broad range of applications



Application example 2
Pressure trace analysis, large-bore dual fuel engine



LEC CORA Key Features

- Zero-dimensional analysis of the high pressure cycle of the working process using one and two zone models in combination with different wall heat transfer models and fuels (gasoline, diesel, natural gas, H_2, NH_3, CH_3OH etc.) or fuel combinations (dual fuel) for analysis
- Detailed breakdown of losses using either pressure trace analysis or rate of heat release simulation
- Simulation of NO_x emissions