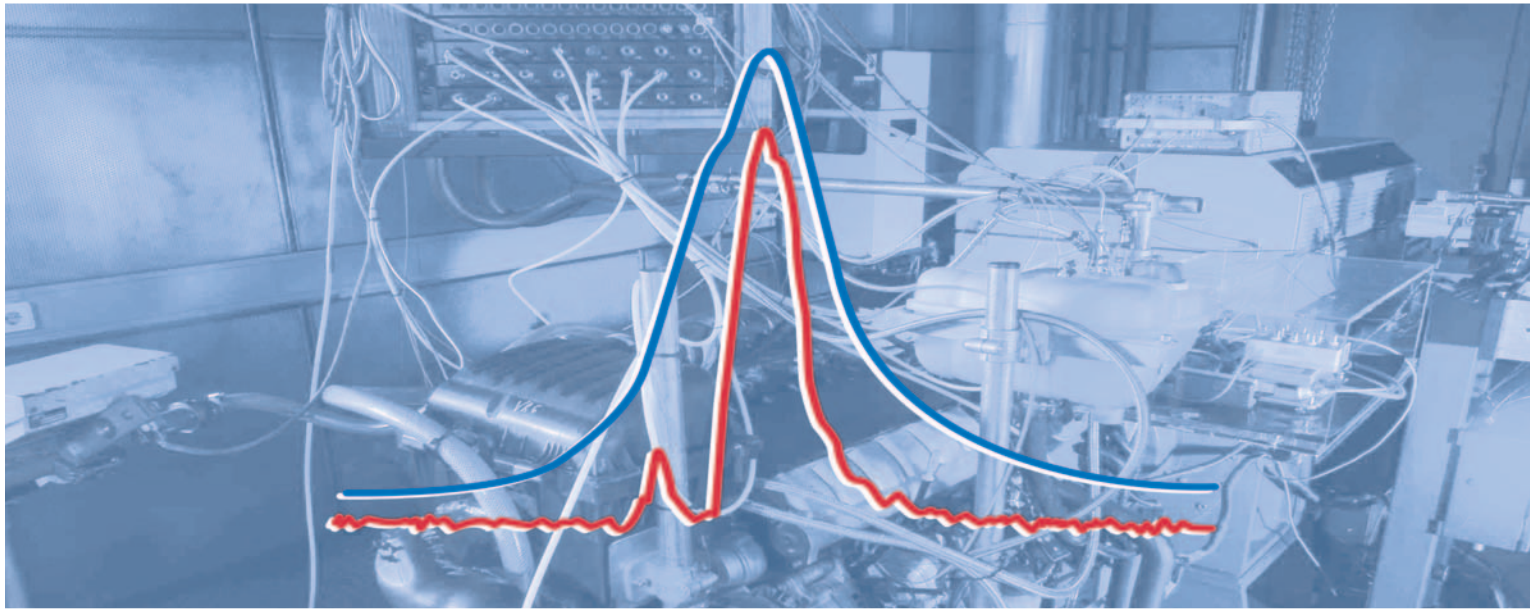


THEMOS® DVA

Full-Cycle Thermodynamic Analysis - an Efficient Tool for Engine Process Development

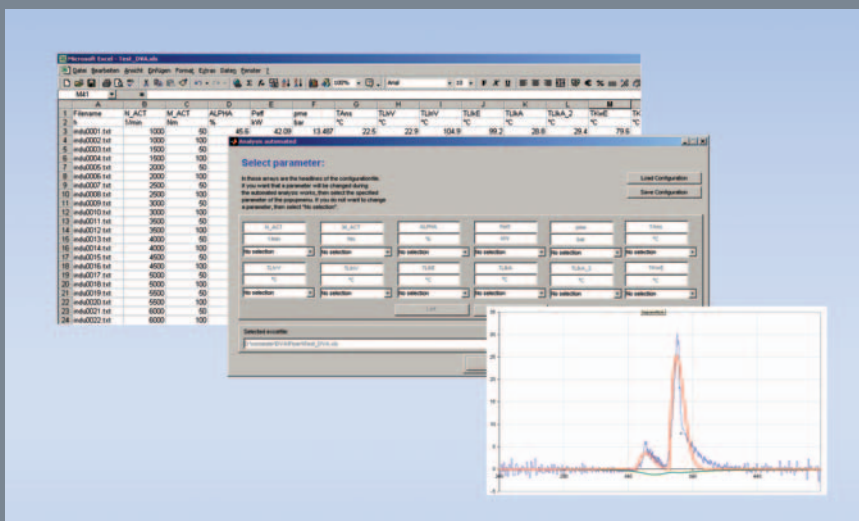


Features

- ▶ Graphical user interface
- ▶ Comfortable data import (ASCII, Excel, I-File)
- ▶ Graphical re-examination of input data
- ▶ Automatic pressure curve fitting
- ▶ Analysis of high pressure and gas exchange phase
- ▶ Free choice of fuel composition
- ▶ Automatic calculation of triple vibe parameters
- ▶ Manual fitting of vibe parameters
- ▶ Automated analysis of test series
- ▶ Calculation of thermodynamic losses
- ▶ Automatic result-preparation
- ▶ Real time analysis on testbed

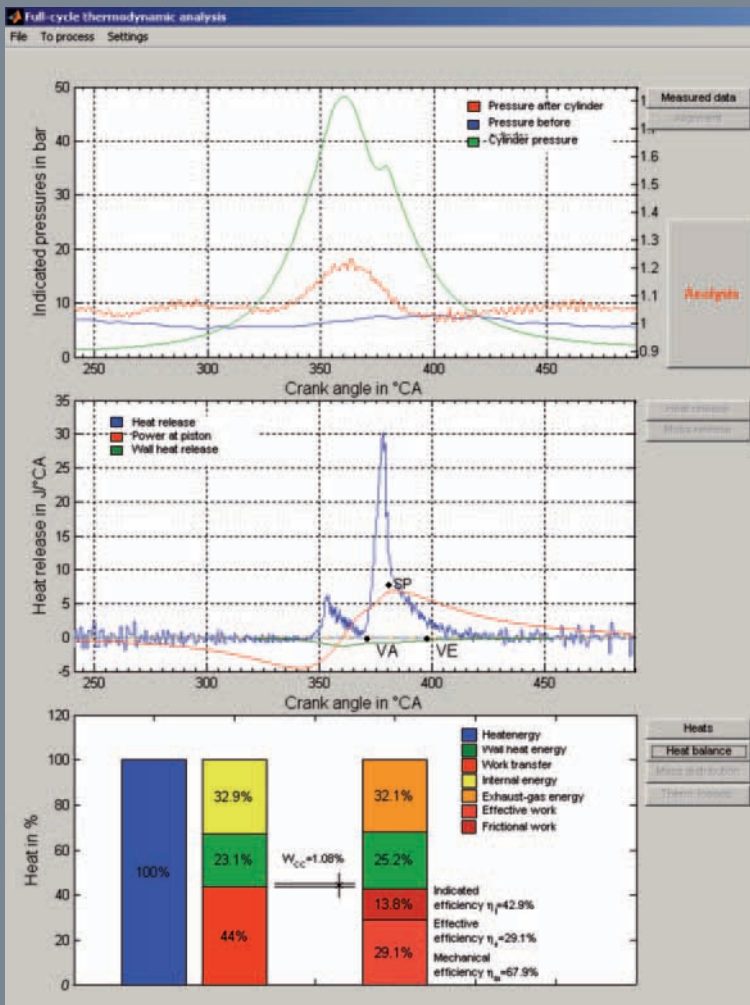
THEMOS® DVA

is a software tool designed in MATLAB®/Simulink® to analyze the thermodynamical cylinder process given by a cylinder pressure measurement. Main focus of THEMOS® DVA is the calculation of the heat release rate, furthermore the cylinder temperature, energy balance, thermodynamic losses and the residual gas fraction massflow through the cylinder will be evaluated.



THEMOS® DVA can be used just for the development of the engine combustion process and as a preprocessing tool for the calibration of the simulation model.





THEMOS® is a joint venture between Technische Universität Berlin, department of internal combustion engines, and IAV

Fields of Application of THEMOS® DVA

THEMOS® DVA provides a comprehensive cylinder-process thermodynamic analysis:

- ▶ Analysis of the heat release for all combustion processes:
 - DI-Diesel, external fuel mixture, GDI, HCCI
- ▶ Analysis of the cylinder energy and mass balance:
 - Influence of valve timing on total process
 - Residual gas for different EGR strategies
 - Calculation of gas exchange losses
 - Calculation of the efficiency chain

Hardware/Software

THEMOS® DVA based on MATLAB®/Simulink® and hence it is independent of the computer system.

- ▶ PC-Simulation
- ▶ dSPACE-Hardware for realtime measurement on testbed

In cooperation with the department of internal combustion engines of the Technische Universität Berlin

