Powertrain
Topics

- Hybrid and adaptive Powertrain Technologies
- Alternative- and gaseous (mixed) fuels
- Exhaust after treatment
- Optimization of turbochargers and their parts

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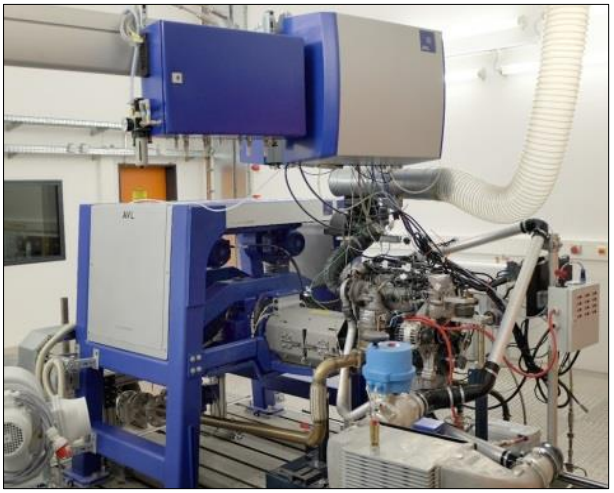
Engine Test Bench

AVL Dynospirit 370/4,5-8

Modern high dynamic engine test bench for a wide range of modern engines.

Specification:

- Torque: MD=785 Nm
- Power: P=370 kW
- Rotational Speed: n=8000 1/min
- Inertia: Θ=0,273 kg m²
- Measured Values: p,T,P,M
- Indexing: AVL Indimodul
- Exhaust Measuring: Gaseous Emissions AVL SESAM i60 FT
- Fuels: Gasoline, Diesel



Hot gas Test Benches

Hot gas test benches for turbocharger mapping, thermomechanical investigations and other several, possible investigations including components underlying a gaseous fluid flow.

Specification Test Bench 1:

- Power: P=400 kW
- Massflow: m= 1500 kg/h
- Temp-Range: T=150-1100 °C
- Special: Capable of tThermoshocks

Specification Test Bench 2:

- Power: P=200 kW
- Massflow: m=1000 kg/h
- Temp-Range: T=150-1100 °C
- Special: Capable of ClosedLoop

Measurement and Analysis Systems

Stationary Exhaust Measurement Device (AVL) SESAM i60 FT

Multi component exhaust gas measurement system for detailed determination of every single exhaust gas component.

Specification:

- Principle: Infrared spectroscopy
  After treatment over Fourier Analysis
- Sampling rate: 1Hz
- Reactional speed:
  1Sek (t_{10} to t_{90})
- Measurable gases:
  nitric oxide, alcohols, aldehyde, ammoniac, CO, CO2, CH4, SO2, formaldehyde, aromatic hydrocarbon, pentane, octane

High-dynamic DC-Voltage source VES2 (Vehicle Energy System, Kratzer Automation)

DC Source for static and dynamic loading of electric engines and DC Drain for investigating battery like component behaving.

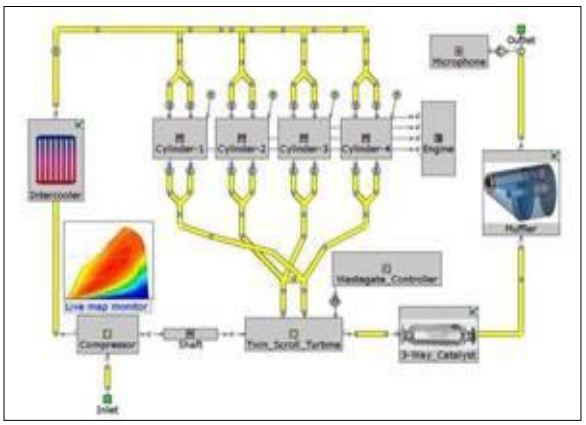
Specification:

- Power: P = 250 kW (340PS)
- Voltage Output: U = 40 - 800 V
- Current Output: I = +/- 0 – 700 A
- Voltage reactional speed: <400μs
- Current reaction speed: <400μs

Numerical Simulation

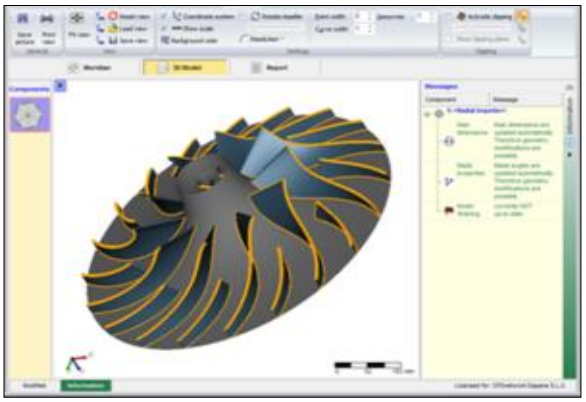
Engine Simulation

Over an1-D engine simulation tool (GT Power) for science and teaching.



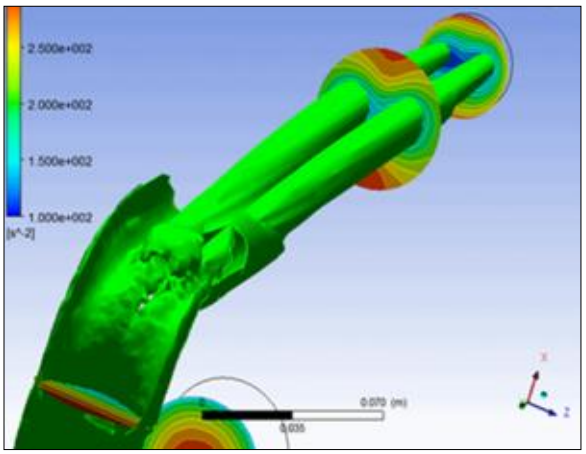
Turbocharger Dimensioning

CFTurbo is used to construct and shape turbochargers as needet for scientific investigations and also for teching students.



Computational Fluid Dynamics

With ANSYS CFX and FLUENT, our staff has the possibilities to investigate fluid streams in three dimensions.



Variable gas composition unit

- engine test bench supply with gaseous fuels
- gas mixtures generation with any composition

Specifications:

- gas components & maximum mass flow rate
  - methane (60 kg/h)
  - carbon dioxide (15 kg/h)
  - nitrogen (11 kg/h)
  - hydrogen (7 kg/h)
  - compressed natural gas (80 kg/h)
- gas pressure variable up to 16 bar
- 500 litres buffer tank for dynamic engine operation