

CT 300 SERIES: ENGINE TEST STAND FOR POWER OUTPUT OF UP TO 11 KW



The CT 300 test stand can be used for a wide range of experiments on four-stroke internal combustion engines with a power output of up to 11 kW.

There is a choice of 3 different engines, which can be installed in the test bed.

- Water-cooled single cylinder engine with variable compression, operated as a diesel or petrol engine
- Air-cooled 2-cylinder petrol engine
- Water-cooled 2-cylinder diesel engine

Because of the weight of the engine, lifting gear is required for installation. A load is applied to the engines by an air-cooled asynchronous motor, which is actuated by a frequency converter.

The engines can be investigated under full and partial load. A variable load and speed is used to determine the characteristic diagram for the engine. The interaction of the brake and the engine can also be investigated.

The test stand is ideal for both demonstrations and for independent experiments by students. The powerful software provides excellent support for the learning process. The comprehensive and well structured instructional material sets out the basic technological principles and provides a step-by-step guide to the experiments.

The test stand can be operated in normal laboratory facilities. Noise emissions are within an acceptable range. The exhaust gases are vented externally via a hose.

Learning content/Exercises

- Familiarisation with a 2-cylinder petrol engine
- Familiarisation with a 2-cylinder diesel engine
- Familiarisation with an engine with variable compression, which can be operated using diesel and petrol.
- Characteristic curves at full and partial load
 - ▶ Plotting of torque and power curves
 - ▶ Specific fuel consumption
 - ▶ Volumetric efficiency
 - ▶ Excess air factor
- Determination of engine friction loss (passive mode with asynchronous motor)
- Comparison of diesel and petrol engines

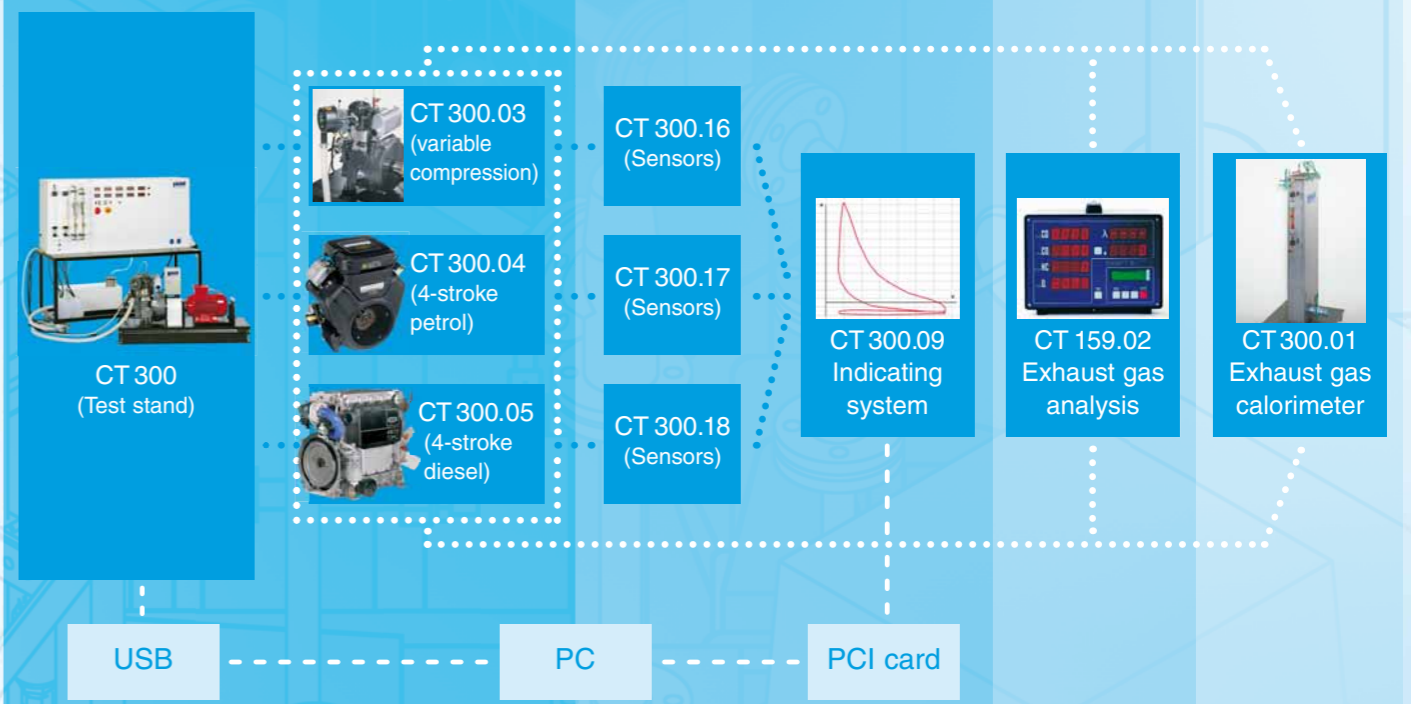
In conjunction with CT 300.03 research engine

- Influence of compression, ignition point and mixture composition on power output, fuel consumption, efficiency and exhaust gas composition (with CT 159.02)
- Direct comparison of petrol and diesel processes

In conjunction with other accessories

- Exhaust gas analysis with CT 159.02 and CT 300.01
- Electronic indication (CT 300.09) with appropriate set of sensors for engine (CT 300.16/.17/.18)
 - ▶ p-V diagram
 - ▶ p-t diagram
 - ▶ Pressure curve for gas cycle
 - ▶ Determination of indicated power
 - ▶ Determination of mechanical efficiency

CONFIGURATIONS



Minimum configuration	Extending the range of experiments for all engines with		
CT 300 + test engine (CT 300.03 - CT 300.05) including PC data acquisition	Electronic indication including PC data acquisition with CT300.09 and engine-specific pressure transducer with TDC sensor (CT 300.16/.17/.18)	Exhaust gas analysis with CT 159.02	Exhaust gas calorimeter (amount of heat in exhaust gas) with CT300.01

SOFTWARE FOR CT 300

Modern LabVIEW software under Windows with comprehensive visualisation functions

- Process diagrams for exhaust gas calorimeter and all engines with real time display of all measured and calculated variables
- Calculated variables
 - ▶ Specific fuel consumption
 - ▶ Intake air volumetric flow
 - ▶ Mechanical power
 - ▶ Efficiency
 - ▶ Volumetric efficiency
 - ▶ Excess air factor
- Representation of up to four characteristic curves simultaneously
- Characteristic curve representation: freely selectable assignment of axes
- Storage of measured data
- Four preselectable languages
- Simple connection to PC via USB

