HM 299 Comparison of positive displacement machines and turbomachines

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The illustration shows the trainer with two centrifugal pumps connected in parallel

Driven machines

	Turbomachines	Positive displacement machines	
		Rotating	Oscillating
Liquid Incompressible working medium water	 Centrifugal pump	 Impeller pump	 Piston pump
Gaseous Compressible working medium air		 Rotary vane compressor	 Piston compressor

The HM 299 trainer is used to study and compare different positive displacement and turbomachines. It comes with two centrifugal pumps, an impeller pump, a piston pump and two different compressors. All driven machines are arranged on the compact trainer and can be placed in the measuring section easily and quickly. Guide rails enable accurate and simple installation of the devices without additional alignment of the drive. Silicone hoses are connected via quick-release couplings.

Ambient air is used as a compressible working medium, so a compressed air connection is not needed. Two generously sized stabilisation tanks for the compressed air ensure interference-free measurement.

The didactic concept of this compact trainer includes several learning units so that a comprehensive and effective course on driven machines is offered. The experiments can be carried out both by the lecturer as a demonstration in front of the students and by the students themselves in the form of practical laboratory experiments or project work. The simple conversion of the machines enables a variety of experiments in a short time in order to familiarise students with the operational behaviour of positive-displacement and turbomachines.

The experiments are supported by the GUNT data acquisition software.

The comprehensive instructional materials include a detailed introduction to the subject.

GUNT software for data acquisition

The GUNT software included in the scope of delivery displays the measurement results and assists in the evaluation of the experiments.

Learning objectives / experiments

- familiarisation with the function and distinctive features of positive displacement machines and turbomachines
- identifying characteristic data
- recording pump, compressor and system characteristics
- representing operating points