

HM 450C

Characteristic variables of hydraulic turbomachines

Hydraulic turbomachines are a type of fluid energy machine. They work continuously and feature a steady pressure difference between inlet and outlet. HM 450C is a modular trainer for basic experiments in the field of hydraulic turbomachines. HM 450C forms the base unit with a centrifugal pump. Due to a closed water circuit, the trainer can be used anywhere.

Optionally available accessories are the Pelton turbine HM 450.01, the Francis turbine HM 450.02, the propeller type turbine HM 450.03 and the Kaplan turbine HM 450.04.

The turbines are easy to install on the trainer. They are connected with handles on the delivery side of the centrifugal pump.

A special feature of HM 450C is the ability to operate pump and turbine at the same time. Relevant measured values are recorded contemporaneously at both turbomachines.

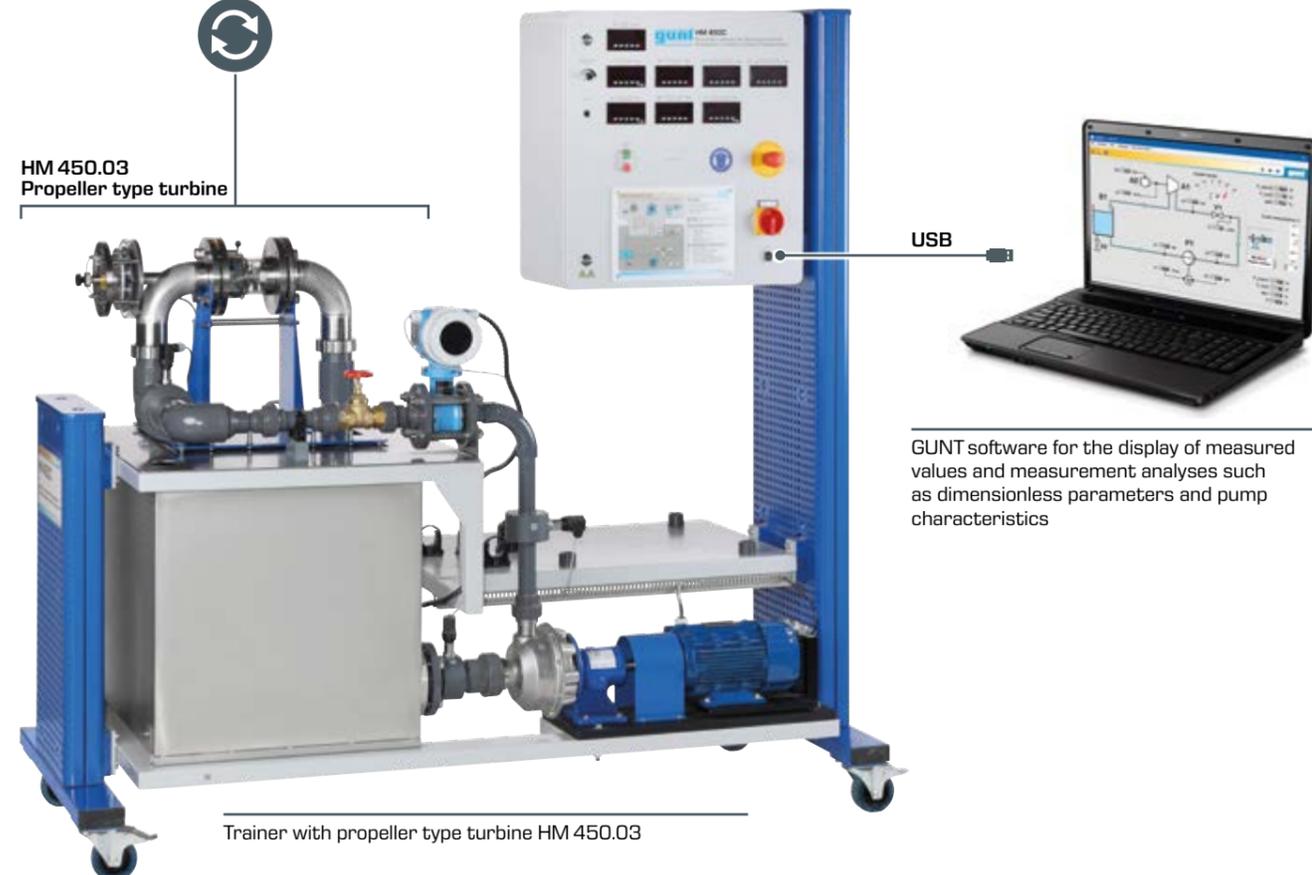


HM 450.01
Pelton turbine

HM 450.02
Francis turbine

HM 450.04
Kaplan turbine

HM 450.03
Propeller type turbine

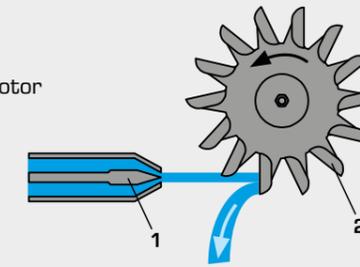


Trainer with propeller type turbine HM 450.03

GUNT software for the display of measured values and measurement analyses such as dimensionless parameters and pump characteristics

HM 450.01
Pelton turbine

- **action turbine**
- adjustment of the turbine power via needle nozzle
- direct view of needle nozzle and rotor during operation
- band brake for loading the turbine



1 needle nozzle, 2 blades Pelton wheel

Needle nozzle and rotor

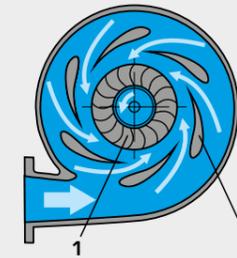


Adjusting knob for the needle nozzle



HM 450.02
Francis turbine

- **reaction turbine with a radial through flow**
- adjustment of the turbine power via guide vane position
- direct view of guide vanes and rotor during operation
- band brake for loading the turbine



1 rotor, 2 guide vanes, adjustable

Distributor and rotor

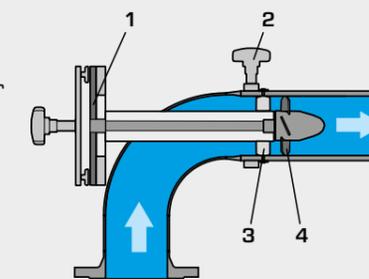


Guide vane adjustment



HM 450.03
Propeller type turbine

- **reaction turbine with an axial through flow**
- adjustment of the turbine power via guide vane position
- direct view of guide vanes and rotor during operation
- eddy current brake for loading the turbine



1 eddy current brake, 2 adjustment of the guide vanes, 3 guide vanes, adjustable, 4 blades

Distributor and rotor

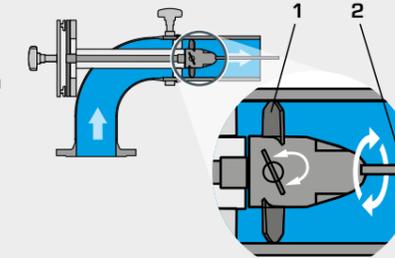


Guide vane adjustment



HM 450.04
Kaplan turbine

- **reaction turbine with an axial through flow**
- adjustment of the turbine power via guide vane and blade position
- direct view of guide vanes and blades, with adjustment, and rotor during operation
- eddy current brake for loading the turbine



1 blades, adjustable, 2 rod for adjusting the blades

Distributor and adjustable blades



Guide vane adjustment

