

## HM 365.32

### Turbine supply unit



#### Description

- closed water circuit for supplying turbines
- different operating modes can be selected via HM 365
- GUNT software for data acquisition and visualisation
- part of the GUNT FEMLine

Together with HM 365.31, the HM 365.32 supply unit can be used to operate a Pelton or Francis turbine, whose characteristic operating behaviour can then be investigated.

The separate turbines from HM 365.31 are placed on the working surface of the supply unit and screwed in place. The turbine is connected to the supply unit via a hose. After the water has flowed through the turbine, it flows back into the tank. Thanks to its closed water circuit, the trainer is independent from the mains water supply and can be used in mobile applications. The flow rate and/or the pressure present at the turbine can be adjusted by a flow control valve.

The supply unit is equipped with sensors for pressure and flow rate. The measured values are displayed digitally. The mechanical turbine output is measured via the HM 365 Universal Drive and Brake Unit, which is also required. The brake unit is used to adjust constant speeds or torques, allowing experiments to be carried out in different operating modes.

The measured values are read from digital displays on the supply unit and can be transmitted simultaneously via USB directly to a PC where they can be analysed using the software included.

#### Learning objectives/experiments

- in conjunction with HM 365 and a Pelton or Francis turbine from HM 365.31
  - ▶ determination of the mechanical output of the turbines
  - ▶ determination of the hydraulic output of the turbines
  - ▶ determine the efficiencies of the turbines
  - ▶ plot characteristic curves
  - ▶ influence of the guide vane position on the characteristic curve when using the Francis turbine
  - ▶ influence of the nozzle cross-section on the characteristic curve when using the Pelton turbine

# HM 365.32

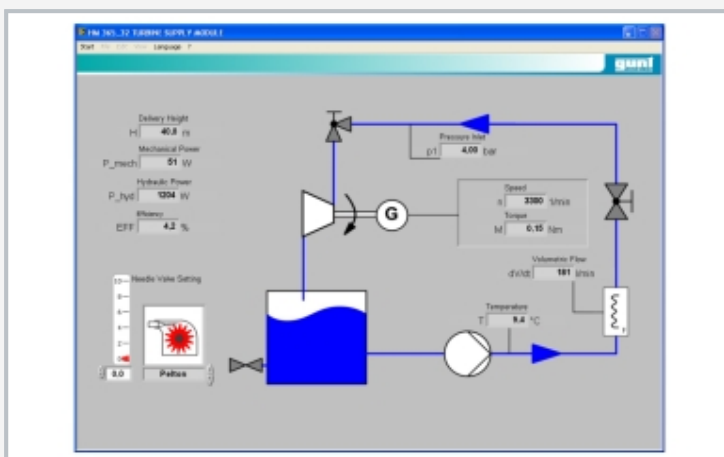
## Turbine supply unit



1 turbine water supply, 2 tank, 3 centrifugal pump, 4 pressure measuring point, 5 temperature measuring point, 6 flow control valve, 7 flowmeter



1 measuring amplifier with digital display of measured values, 2 HM 365 Universal Drive and Brake Unit, 3 HM 365.32, 4 HM 365.31 Pelton and Francis Turbine



Software screenshot: process schematic

### Specification

- [1] supply unit for turbines from HM 365.31
- [2] closed water circuit contains multistage centrifugal pump, tank, inductive flowmeter and flow control valve
- [3] connection to the turbines via flexible hose with quick-release coupling
- [4] constant torques and speeds can be adjusted via HM 365
- [5] digital display for flow rate, pressure and temperature
- [6] braking torque and speed measured in HM 365
- [7] GUNT software for data acquisition via USB under Windows 10

### Technical data

- Centrifugal pump, 3 stages
- power consumption: 3kW
  - max. flow rate: 29m<sup>3</sup>/h
  - max. head: 45m
  - speed: 2900min<sup>-1</sup>

Tank: 96L

#### Measuring ranges

- pressure (turbine inlet): -1...9bar
- pressure (Francis turbine outlet): 0...1,6bar
- temperature: 0...100°C
- flow rate: 0...600L/min

400V, 50Hz, 3 phases  
 230V, 60Hz, 3 phases  
 LxWxH: 1300x800x1200mm  
 Empty weight: approx. 120kg

### Required for operation

PC with Windows recommended

### Scope of delivery

- 1 trainer
- 1 measuring amplifier
- 1 GUNT software + USB cable
- 1 hose with quick-release couplings
- 1 set of instructional material

# HM 365.32

## Turbine supply unit

### Required accessories

HM 365.31 Pelton and Francis turbine  
HM 365 Universal drive and brake unit

### Optional accessories

for Remote Learning

GU 100 Web Access Box

with

HM 36532W Web Access Software