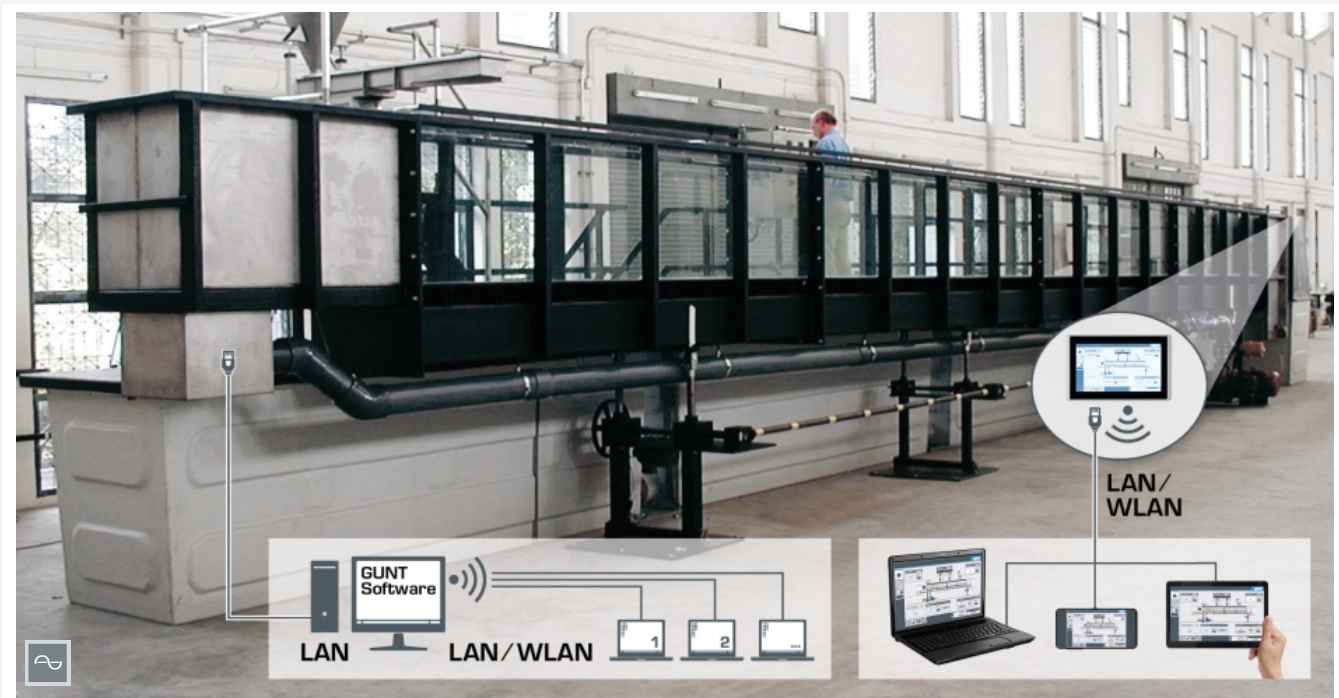


HM 161

Experimental flume 600x800mm



The illustration shows HM 161 together with the sediment feeder HM 161.73, screen mirroring is possible on different end devices

Description

- experimental section with transparent side walls, length 16m
- homogeneous flow through carefully designed inlet element
- plant control with PLC via two touch panels
- models from all fields of hydraulic engineering available as accessories

The experimental flume HM 161 is the largest within the GUNT product range. The flow velocities that can be achieved in the experimental flume, and the long length of the experimental section, are the perfect conditions for designing your own projects. These projects can be very close approximations of reality.

The experimental section is 16m long and has a cross-section of 600x800mm. The side walls of the experimental section are made of tempered glass, which allows excellent observation of the experiments. All components that come into contact with water are made of corrosion-resistant materials (stainless steel, glass reinforced plastic). The inlet element is designed so that the flow enters the experimental section with very little turbulence. The closed water circuit consists of a series of water tanks and two powerful pumps. The tanks are included in the system in such a way that they also serve as a gallery which you can stand on. The user can thus comfortably reach any

part of the experimental section.

The experimental flume has a motorised inclination adjustment to allow simulation of slope and to create a uniform flow at a constant discharge depth. A wide selection of models, such as weirs, piers, flow-measuring flumes or a wave generator are available as accessories and ensure a comprehensive programme of experiments. Most models are quickly and safely bolted to the bottom of the experimental section.

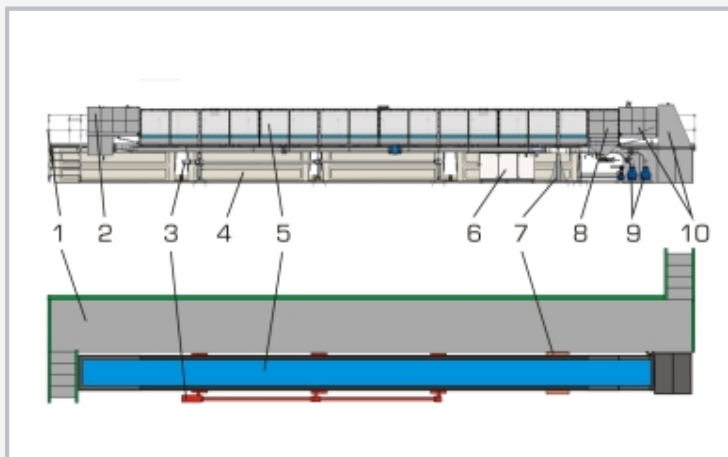
The experimental flume is equipped with a comprehensive range of functions for measurement, control and operation that are controlled by a PLC. Two freely positionable touch panels display the measured values and operating states and can be used to control the system. At the same time, the measured values can be transmitted directly to a 32" monitor for distant reading. Via the PLC, the measured values can be stored internally. Access to stored measured values is possible from end devices via WLAN with integrated router/LAN connection to the customer's own network. Via direct LAN connection the measured values can also be transmitted to a PC where they can be analysed using the GUNT software.

Learning objectives/experiments

- together with optionally available models
 - ▶ uniform and non-uniform discharge
 - ▶ flow formulae
 - ▶ flow transition (hydraulic jump)
 - ▶ energy dissipation (hydraulic jump, stilling basin)
 - ▶ flow over control structures: weirs (sharp-crested, broad-crested, ogee-crested)
 - ▶ flow over control structures: discharge under gates
 - ▶ flow-measuring flumes
 - ▶ local losses due to obstacles
 - ▶ water surface profiles
 - ▶ transient flow: waves
 - ▶ vibrating piles
 - ▶ sediment transport
- screen mirroring: mirroring of the user interface on end devices
 - ▶ menu navigation independent of the user interface shown on the touch screen
 - ▶ different user levels available on the end device: for observing the experiments or for operation and control

HM 161

Experimental flume 600x800mm



1 gallery, 2 inlet element, 3 jacking support with motorised inclination adjustment, 4 water tank, 5 experimental section, 6 switch cabinet, 7 fixed support, 8 sediment trap HM 161.72, 9 pump, 10 outlet element



Hydraulic jump



Touch panel freely positionable

Specification

- [1] basic principles of open-channel flow
- [2] experimental flume with experimental section, inlet and outlet element and closed water circuit
- [3] smoothly adjustable inclination of the exp. section
- [4] experimental section with evenly spaced threaded holes on the bottom for installing models or for pressure measurement
- [5] side walls of experimental section made of tempered glass for excellent observation of the experiments
- [6] experimental section with guide rails for the optionally available instrument carrier HM 161.59
- [7] all surfaces in contact with water are made of corrosion-resistant materials
- [8] flow-optimised inlet element for low-turbulence entry into the experimental section
- [9] closed water circuit with water tanks, pumps, electromagnetic flow sensor and flow control
- [10] gallery that can be walked on
- [11] models from all fields of hydraulic engineering available as accessories
- [12] PLC with 2 freely positionable touch panels and a 32" monitor for control of the plant
- [13] integrated router for operation and control via an end device and for screen mirroring: mirroring of the user interface on up to 5 end devices
- [14] data acquisition via PLC on internal memory, access to stored measured values via WLAN/LAN with integrated router/LAN connection to customer's own network or direct LAN connection without customer network
- [15] GUNT software for data acquisition via LAN under Windows 10

Technical data

Experimental section, length: 16m
 ■ flow cross-section WxH: 600x800mm
 ■ 3 spindle-type lifting gears
 ■ inclination adjustment: -0,75...+2,1%

Tanks: 1x 3600L, 4x 4300L

2 pumps
 ■ max. flow rate in the experimental section: 400m³/h
 ■ max. flow rate: 228m³/h, per pump
 ■ max. head: 35m, per pump

Measuring ranges
 ■ flow rate: 0...400m³/h
 ■ inclination: -0,75...2,1%

400V, 50Hz, 3 phases; 400V, 60Hz, 3 phases
 230V, 60Hz, 3 phases; UL/CSA optional
 LxWxH: 22000x4000x2700mm; Weight: approx. 13000kg

Required for operation

PC with Windows recommended

Scope of delivery

experimental flume, 2 touch panels, 1 monitor 32", GUNT software, set of accessories, set of instructional material

HM 161

Experimental flume 600x800mm

Optional accessories

Control structures

| | |
|-----------|---|
| HM 161.29 | Sluice gate |
| HM 161.40 | Radial gate |
| HM 161.30 | Set of plate weirs, four types |
| HM 161.31 | Broad-crested weir |
| HM 161.33 | Crump weir |
| HM 161.36 | Siphon weir |
| HM 161.38 | Rake |
| HM 161.34 | Ogee-crested weir with pressure measurement |
| HM 161.32 | Ogee-crested weir with two weir outlets |
| HM 161.35 | Elements for energy dissipation |

Change in cross-section

| | |
|-----------|---------------------------------|
| HM 161.44 | Sill |
| HM 161.45 | Culvert |
| HM 161.46 | Set of piers, seven profiles |
| HM 161.77 | Flume bottom with pebble stones |

Flow-measuring flumes

| | |
|-----------|-------------------|
| HM 161.51 | Venturi flume |
| HM 161.55 | Parshall flume |
| HM 161.63 | Trapezoidal flume |

Other experiments

| | |
|-----------|-------------------------|
| HM 161.41 | Wave generator |
| HM 161.80 | Set of beaches |
| HM 161.61 | Vibrating piles |
| HM 161.71 | Closed sediment circuit |
| HM 161.72 | Sediment trap |
| HM 161.73 | Sediment feeder |

Measuring instruments

| | |
|-----------|-----------------------------------|
| HM 161.52 | Level gauge |
| HM 161.91 | Digital level gauge |
| HM 161.64 | Velocity meter |
| HM 161.50 | Pitotstatic tube |
| HM 161.53 | 20 tube manometers |
| HM 161.13 | Electronic pressure measurement |
| HM 161.59 | Instrument carrier |
| HM 161.81 | PIV-System |
| HM 161.82 | Instrument carrier for PIV system |
| HM 161.83 | Glass cut-out for PIV system |