

HM 144

Formation of river courses



Description

- open-channel bed-load transport
- observing the formation of meanders
- inclination of the experimental flume adjustable
- movable point gauge for profile measurement in the sediment

HM 144 demonstrates important phenomena of bed-load transport in the area near the bottom at subcritical discharge. The dimensions of the experimental section enable the modelling of small river courses.

The core element of the HM 144 experimental flume is the stainless steel experimental section. A sediment layer up to 12cm high covering an area of 2x1m allows bed-load transport to be studied. The inclination of the experimental flume can be adjusted to allow simulation of slope.

The flow enters the experimental section through one of the three inlet elements. The inlet elements have different geometries and each contains a foam insert to calm the flow.

The selected inlet element can be freely positioned in the experimental section and is held in position by the sediment. A filter element is provided in the water outlet to hold the sediment in the experimental section. The closed water circuit is supplemented by a storage tank and a pump.

Profile measurement in the sediment along the bottom and the determination of the discharge depth at each point on the experimental section is done via a movable instrument carrier and a point gauge. The flow rate is measured via a rotameter.

Learning objectives/experiments

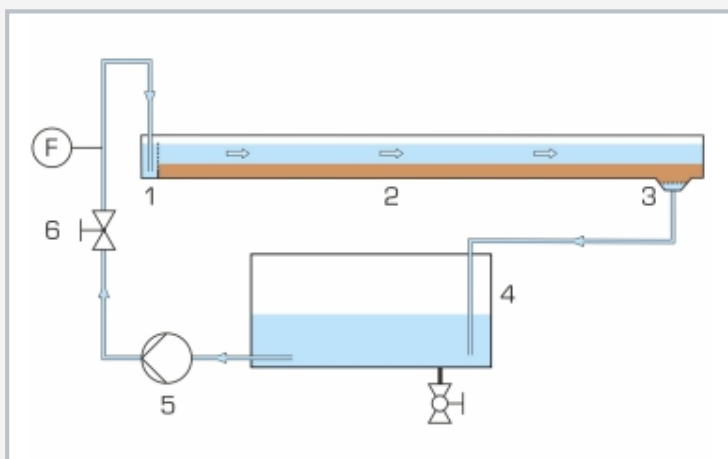
- bed-load transport in open channels
- investigate influencing variables of bed-load transport
 - ▶ flow velocity
 - ▶ inclination
- ripple formation on the river bed
- observing the formation of meanders

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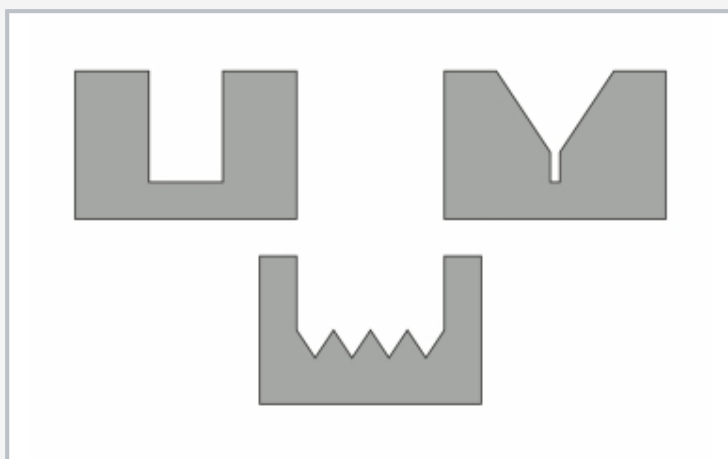
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1 inlet elements, 2 flow meter, 3 inclination adjustment, 4 valve, 5 storage tank, 6 outlet element with filter, 7 experimental section, 8 point gauge



1 inlet element, 2 experimental section, 3 outlet element with filter, 4 storage tank, 5 pump, 6 valve; F flow rate



Geometries of the inlet elements

Specification

- [1] open-channel bed-load transport
- [2] experimental flume with experimental section, inlet element, outlet element
- [3] inclination of the experimental section adjustable via handwheel
- [4] experiments with sediment layer up to 12cm high possible
- [5] measurement of profiles along the bottom with moveable instrument carrier and point gauge
- [6] 3 inlet elements with different geometries, freely positionable
- [7] filter element for sediment in the outlet element
- [8] closed water circuit with storage tank, pump and flow meter
- [9] compact design, wheels for location-independent use

Technical data

Experimental flume

- material: stainless steel
- dimensions of the experimental section: 2000x920x150mm

Outlet element filter

- aperture size: 0,315mm

Pump

- power consumption: 82W
- max. head: 3,1m
- max. flow rate: 5000L/h

Storage tank

- content: approx. 240L

Measuring ranges

- flow rate: 200...2500L/h
- inclination: 0...18%

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase

UL/CSA optional

LxWxH: 2200x1100x1400mm

Empty weight: approx. 220kg

Required for operation

sediment: sand [1...2mm grain size]

Scope of delivery

- 1 experimental flume
- 1 set of accessories