



SAKARYA
UNIVERSITY



SAKARYA
UNIVERSITY

**Sakarya University Faculty of Engineering Department of Civil Engineering
Hydraulic Laboratory Equipment Catalog**





SAKARYA
UNIVERSITY



SAKARYA
UNIVERSITY

Hydraulic Laboratory

UNIT RESPONSIBLE: Prof. Dr. Emrah Dođan





OPEN CHANNEL TEST SYSTEM

Hardware / Device Information

It is a 60 cm wide, 11 m long, base inclination adjustable, flow rate between 5 lt / sec and 50 lt / sec, continuous water circulation and longitudinal inclination in the channel. Rectangular, rectangular and triangular sluices with lateral contraction, which are also included in the inventory, can be installed in the channel.



Referans:Plint & Partners Ltd (http://www.yes01.co.kr/resite/yes01/a_flow.htm)

Technical Specifications:

Current on Spillway in Open Channel:

Determination of the swell curve behind the spillway at different flow rates, measurement of water depths before and after hydraulic splashes in river and flood regimes and examination in the light of theoretical information.

Cross-Section Changes in Open Channel: Threshold and threshold at different flow rates and different downstream conditions Experimental investigation of the effect of cross - sectional changes formed by contraction on water surface profile. Investigation of depth and other flow parameters measured in different cross-sections, hydraulic jump conjugate depths and energy loss in the light of theoretical information



Ultrasonic Moline

The flow rate of the water is calculated from the flow rate according to the number of revolutions to be obtained as a result of the rotation of the propellers. Although it is simple to measure, it is generally used in pressure pipes. In parallel to the tube to be measured, the unilateral / bilateral reciprocal ultrasonic receptor binds. The connected receptor transfers the data to the reading computer and the measurement is read.



Mechanical Moline

Mechanical muline does not differ much from ultrasonic muline. The difference between them is the reading method. In mechanical muli, the measurement is calculated by using the formula calculated between the mulinen calibration values “n” of the number of “n” obtained from the ratio of the propeller rotation time to the reference reading time.





Pitot Tube

It is used to measure the flow rate.



Hardware / Device Information and Technical Specifications

It is designed to measure, inspect and train losses of pipe and plumbing components. There are both fixed and changeable horizontal lines on the test set. The pressures are measured in mBar with a high-precision digital differential meter. All data obtained on the experiment set can be taken into computer environment and numerical and graphical analyzes can be performed.



Reference: OGEN (<http://www.ogen.com.tr>)



SEDIMENT MEASURING DEVICE

Hardware / Device Information and Technical Specifications

The device is designed to study the movement of solids in open channels. The studies that can be done;

- Examination of the initiation of solids movement
- Investigation of the effect of swab material transport, movement and material size
- Examining the effects of bridge legs and covers
- Investigation of the effect of suspension material transport and material size



Reference: Armfield (www.armfield.co.uk)

WATER IMPACT TESTER

Hardware / Device Information and Technical Specifications

A valve is closed quickly and causes the forces acting on the surfaces due to the waves to emerge.



Hydraulic Bench

Hardware / Device Information

It is used for the calculation and control of balance chimneys and water impacts.



Reference: Armfield (www.armfield.co.uk)

HYDROLOGY DEVICE

Hardware / Device Information and Technical Specifications

2400x1080x250 mm in dimensions, 450 kg weight can be given longitudinal slope, rainfall and groundwater is used to model the relationship.



Reference: TecQuipment (<http://www.tecquip.com>)

Hardware /Technical Specifications:

Basin: Stainless steel tank 2m x 1m Normal depth 180 mm

Nozzles: 8 pieces with adjustable spray direction

Reservoir tank: 220 liters capacity

Recommended helper: Semi permeable (H313a) – washed, Sand graded from 0.5 mm to 1.5 mm

The studies that can be done;

- Precipitation Investigation of flow relationship on various slopes of dry, saturated and impermeable basin (surface runoff only).
- Simulation of multiple and moving storms
- Reconstruction of excavations using wells
- Flow from aquifer to well
- Simulated island representation in watersheds with torrents and well flows
- Sediment transport and meandering in simulated rivers
- Scouring works around bridge legs



REYNOLDS EXPERIMENT TOOL

Hardware / Device Information and Technical Specifications

Two Reynolds test instruments are available. The observation of laminar and turbulent currents in the first test instrument provides control of the theoretical information given by the application of Reynolds number value. In the second, only laminar, transition regime and turbulent flow are observed in the pipe.



Reference: Plint & Partners Ltd (http://www.yes01.co.kr/resite/yes01/a_flow.htm)

Reference: TecQuipment Ltd.

Cavitation Apparatus

Hardware / Device Information and Technical Specifications

It is used to observe the cavitation in a liquid by reducing the pressure of the liquid to vapor pressure and to compare the theoretical and actual pressures under cavitation conditions.



Reference: dotek (<http://dotek.com.tr/tr/>)

Volumetric Hydraulic Bench

Hardware / Device Information and Technical Specifications

Provides and regulates water for experiments. It acts as a water cistern.



By using Differential Scanning Calorimetry (DSC) analysis, the energy required for endothermic and exothermic reactions in the material can be calculated. The device gives DSC-TG curves against increasing temperature in an air or nitrogen atmosphere between 25 ° C and 1500 ° C.

Reference: Plint & Partners Ltd (http://www.yes01.co.kr/resite/yes01/a_flow.htm)



WATER JET DEVICE

Hardware / Device Information and Technical Specifications

With the experimental setup, a pelton turbine can be examined how the impeller works and how the impulse force varies with the effect of momentum speed. It can also be interpreted in empirical formulas for the relationship of the thrust force of the water jet with the outlet cross-section diameter of the water.

