P6275 300 x 450 mm FLOW CHANNEL

EXPERIMENTAL CAPABILITY

Depending on the options purchased, experiments include:

- Flow related experiments in open channels
- Use and performance of weirs, dams and other hydro structures
- Sedimentation transport and settlement
- Wind and wave effects on structures
- Hull resistance tests and performance
- Tidal turbine power measurement

INTRODUCTION

Cussons medium flow channel is a flexible design to allow a range of different experiments to be conducted in different configurations. The channel can be supplied for use as a low speed circulating water channel, at flows typically up to 0.3m/s, with a sediment tank for sedimentation work, or with higher flow rates (0.6m/s or 0.8m/s) for hydrodynamic work or with wave and wind attachments for coastal engineering studies.

The channel is constructed in modular sections, to make up to 20m flow length. The cross sectional area is 300 mm width and a floor to lip depth of 500 mm allowing a normal flow area of 300 mm by 450 mm.

A series of plastic reservoir tanks allows the water level to be lowered to 200 mm without loss of water.

DESCRIPTION

Cussons 300 x 450 mm flow channel is designed in a modular way to allow different configurations to
be purchased against the current and future needs of the user.

The basic channel is manufactured in 5m sections such that a length of up to 20m can be purchased. The walls of the channel are made from plexiglass (with toughened glass options), the base of the channel is formed from aluminium (with a stainless steel option), and the frame from a coated mild steel fabrication.

The inlet chamber has been designed from Cussons experience with cavitation tunnels to provide a relatively stable flow. Flow straighteners and guide vanes are used. A choice of between one and three flow pumps can be ordered to provide maximum flow rates between 0.3 and 0.8m/s at maximum operating depths. Higher flow rates can be achieved with a smaller depth of water.

Each centrifugal pump can provide 150m^3/h at a nominal head of 2.5m. The pump speed is controlled from a variable speed drive.

Water exiting the channel passes directly into the pump inlet pipes unless the optional sediment settling tank is ordered. A drain pipe from the return line allows water to be drained down into a plastic 1000 litre storage tank supplied for each 5m of channel. An auxiliary pump is supplied to return water to the channel.

A channel tilt mechanism can be specified at the time of ordering, and is motorised for channel lengths over 7.5m. However once the tilt mechanism has been fitted additional lengths of channel can only be fitted in certain circumstances. Adjustments can be made between –1° and +2°. The dimensions of the tank allow visual sight of the viewing section at shoulder level. An optional platform can be provided to assist with placing accessories in the flow or attaching devices to the top flange of the channel. The top flange is drilled to provide a range of fixing points, or can be supplied, as an option with rails and a trolley.

The outlet tank is provided with the capability to fit a Cussons Wave generator for operation with water depths of 400 mm. A Cussons wind generator can be mounted alongside the channel.

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SPECIFICATIONS AND DIMENSIONS

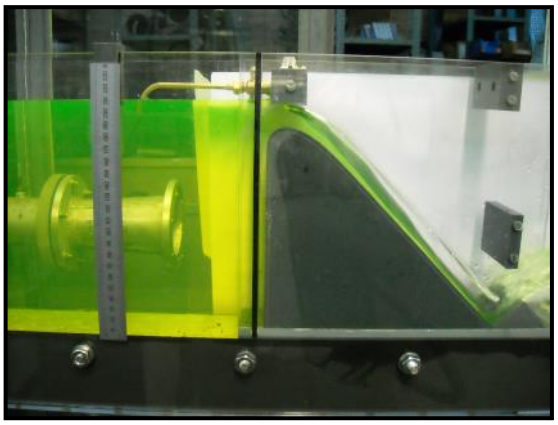
- Flow channel with flow cross section of 300 x 450 mm
- Operating length 5 to 20m in modular 5m sections
- Flow rate of 0.3m/s with variable speed drives with options of higher flow rates
- Overall dimensions 1.8m high 1.2m wide and 3m longer than operating length
- Storage tanks for 2/3 normal water depths

OPTIONAL ACCESSORIES

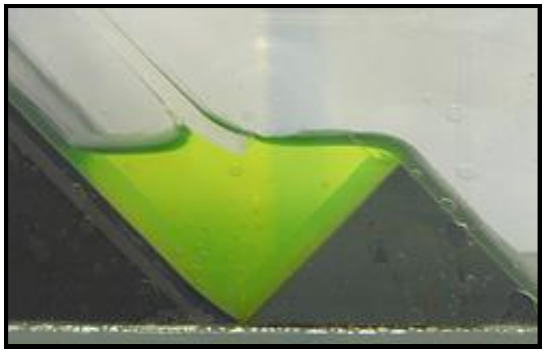
A wide range of options and accessories are available for the P6275 flume.

Outlet Gate: An outlet gate weir is available to control the level of water in the flume

Sedimentation Tank: A sedimentation settling tank is available for use with high sediment content experiments. If aggressive sediments are proposed toughened glass and stainless steel floors are recommended



Siphon weir



Siphon hood

Wave Maker: P6285 Regular wave maker is a popular choice fitting within the outlet tank.

Beach: P6286 is a tunable beach and is also available as an option to absorb the waves.

Rails: The flume can be equipped with rails and a small trolley to carry instruments, wave probes and hook gauges

Weirs: A range of weirs can be provided for controlling the flow in the channel. Weirs are located on a frame attached to the side of the flume

Flumes: A range of flume designs are available such as broad crested flumes and sharp flumes

Hook Gauges: Hook gauges are available to mount on the trolley to measure accurately the local level of the water

Pitot Tube: Pitot static tubes are available, together with either CuDaq data acquisition or manometer board

Velocity Probe: A velocity probe can be supplied to measure the water velocity locally

Wave Probe: Wave probes are available to measure the wave profile—needs CuDaq data acquisition

Wind Generator: A range of wind generators are available to provide wind simulation

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