

**Features:**

- Two-dimensional, inviscid potential flow
- Visualization of streamlines
- Flow around different models: drag bodies and changes in cross-section
- Modeling the flow around bodies by overlaying the parallel flow and sources and/or sinks
- Sources and sinks, individually or in combination

Tesca Potential Flow Demonstrator is a good approximation of the flow of ideal fluids: the potential flow. All physical systems described with the Laplace equation can be demonstrated with the potential flow. This includes current and thermal flows as well as magnetic flux. The core element of the trainer is a classic Hele-Shaw cell with additional water connections for sources and sinks. The laminar, two-dimensional flow is achieved by water flowing at low velocity in a narrow gap between two parallel glass plates. The parallel flow generated in this way is nonvertical and can be regarded as a potential flow. Sources and sinks are generated via eight water connections in the bottom glass plate. The streamlines are displayed on the glass plate by injecting a contrast medium (ink).

In experiments, the flow around bodies is demonstrated by inserting models into the parallel flow. Interchangeable models such as a cylinder, guide vane profile, or nozzle contour are included. To model the flow without models, it is possible to overlay parallel flow, sources, sinks, and dipoles as required. This allows the demonstration of the formation of Rankine half-bodies.

The water flow rate and the quantity of contrast medium injected can be adjusted by using valves. The water connections are also activated by valves and can be combined as required.

Specifications:

- Demonstration of potential flow in a Hele-Shaw cell for visualizing streamlines

Note: Specifications are subject to change.

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- Flow around supplied models: cylinder, square, rectangle, guide vane profile, various models for changes in cross-section
- Modeling the flow around contours without models by overlaying parallel flow with sources or sinks
- Water as flowing medium and ink as a contrast medium
- Hele-Shaw cell made of two glass plates arranged in parallel with narrow gap
- Upper glass plate, hinged for swapping models
- Bottom glass plate with cross-shaped water connections for generating sources/sinks can be combined as required
- The grid in the bottom glass panel for optimal observation of the streamlines
- Flow velocity, water inlet, and water outlet in sources/sinks as well as the dosage of the contrast medium can be adjusted by using valves

Technical Specifications:

2 glass plates, LxW: 910x585mm

- Distance between the plates: 5mm
- Bottom glass plate with eight water connections for sources/sinks

Models

- 6 drag bodies
- 2 changes in cross-section
- Material: rubber
- Thickness: 5mm

Injection of the contrast medium (ink)

- 19 nozzles

Tank for contrast medium: 200mL

Experiments:

- Visualization of streamlines in
- Flow around drag bodies: cylinder, guide vane profile, square, rectangle
- Flow-through models: nozzle contour, sudden contraction, or enlargement
- Flow separation, flow with 90° deflection
- Modeling the flow around bodies by overlaying parallel flow and sources and/or sinks
- Formation of Rankine half-bodies
- Demonstration of a dipole
- The analogy between potential flow and other physical systems which are described by the Laplace equation

Requirements:

- Water connection 300L/h, drain

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