



Demonstration of Kaplan Turbine Apparatus (SMT-FM-15)

The Kaplan turbine is a type of propeller turbine. Such type turbines convert the flow rate energy of water into kinetic energy entirely in the distributor. The turbine has adjustable guide vanes that control the water flow in the turbine. They also direct the water at an angle to the back of the propeller. Students learn how the guide vane setting affects how the turbine works. The turbine has a clear viewing window around the guide vanes and a clear draft tube so that students can see the turbine working. A transparent PMMA front panel allows students to see the turbine working.

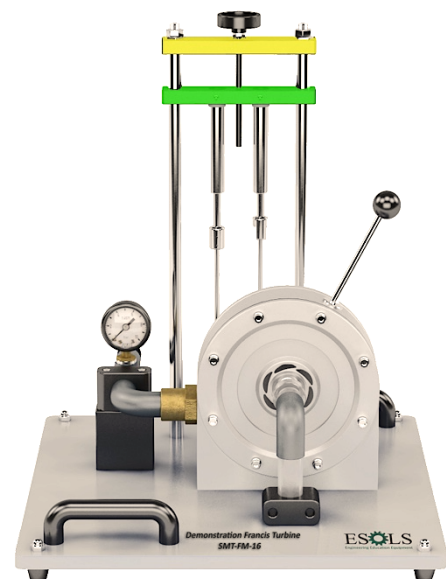
A simple mechanical brake and spring balance assembly attached to the shaft of the Kaplan blades applies a variable mechanical load (torque). Students use this with the speed (from the optional tachometer) to find power absorbed by the turbine. A gauge measures inlet pressure.

This unit can be operated by Laboratory supply of with any Hydraulic Bench.

TECHNICAL SPECIFICATIONS

Specifications:

- Study of functionality of Kaplan Turbine
- Transparent PMMA window so students can see the Kaplan Turbine working
- Includes band brake and spring balance to measure turbine torque
- Includes pressure gauge to measure inlet pressure
- Screw-controlled spear valve for precise inlet flow control
- Water supply using SMT-FM-100 base module.
- Supplied with a comprehensive user guide.
- PVC Pipe Fittings.



Technical Data:

- Kaplan turbine:
 - output: 3.5 to 5W at 500min-1,
 - approx. 30L/min, H=2m
- Turbine wheel:
 - 4 blades
 - Guide Vanes: 6
 - Vane Adjustment: -15° to +45°
- Measuring ranges:
 - force: 2x 0 to 10N
 - pressure: 0 to 1bar
- LxWxH: 400x400x600mm.
- Weight: approx. 15kg.
- Accessories (Included)
 - All necessary Flexible pipes and fittings.
 - Instruction Manual
- Operating Conditions
 - Laboratory Temperature: 5°C to 40°C

- **Note:**

This product may produce small splashes of water in use, so you must use it at a safe distance from electrical supplies. ESOLS recommends approximately 2.0 m.

Experimental Data:

- Performance of a Kaplan turbine at different flow rates
- Study of Torque, Power and Efficiency of a Kaplan turbine
- Study of the influence of the vane position on power output and efficiency.
- The graphical representation of characteristic curves for torque, power and efficiency