

HYDRAULICS AND HYDAULIC MACHINE LAB

The laboratory is equipped with a number of equipment and experimental setups to study the fundamental and applied aspects of hydraulics and hydraulic machines. The setups are used for calibration of flow measuring devices used in channels and pipes. Measurements of critical Performance parameters like efficiency, flow rate etc of various hydraulic machines such as turbines, pumps are also measured in this lab. The equipment is operated in a closed loop system which conserves water and averts the need for large quantities of water supply

S.NO.	APPARATUS NAME	IMAGE	DISCRIPTION
1.	CENTRIFUGAL PUMP		<p>Centrifugal pumps are a sub-class of dynamic axis symmetric work-absorbing turbo machinery. Centrifugal pumps are used to transport fluids by the conversion of rotational kinetic energy to the hydrodynamic energy of the fluid flow. The rotational energy typically comes from an engine or electric motor</p>

2.

RECIPROCATING PUMP



A reciprocating pump is a class of positive-displacement pumps which includes the piston pump, plunger pump and diaphragm pump. It is often used where a relatively small quantity of liquid is to be handled and where delivery pressure is quite large

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PELTON WHEEL TURBINE



The Pelton wheel extracts energy from the impulse of moving water, as opposed to water's dead weight like the traditional overshot water wheel. Many variations of impulse turbines existed prior to Pelton's design, but they were less efficient than Pelton's design. Water leaving those wheels typically still had high speed, carrying away much of the dynamic energy brought to the wheels

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FRANCIS TURBINE



The speed range of the turbine is from 75 to 1000 rpm. Wicket gates around the outside of the turbine's rotating runner control the rate of water flow through the turbine for different power production rates. Francis turbines are almost always mounted with the shaft vertical to keep water away from the attached generator and to facilitate installation and maintenance access to it and the turbine.

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OPEN CHANNEL FLUME



Open-channel flow, a branch of hydraulics and fluid mechanics, is a type of liquid flow within a conduit with a free surface, known as a channel. The other type of flow within a conduit is pipe flow. These two types of flow are similar in many ways, but differ in one important respect: the free surface. Open-channel flow has a free surface, whereas pipe flow does not.