

Oil Circulating Systems for Hydro Turbines



Oil Circulating Systems from Farval® have been supplied to the Hydro industry for many years. These systems are proven to reduce friction and wear and extend turbine life.

- + Keep your turbine cool by dissipating heat.
- + Prevent rust & corrosion.
- + Provides a seal to help keep contaminants out & flushes contaminants away from critical surfaces.



In providing the key functions of an Oil Circulating System, the system is built from primary equipment as outlined below.

RESERVOIRS OR TANKS

To allow for settlement, de-aeration and heating with the ability to facilitate a change of lubricant at the appropriate interval. Tank materials are typically carbon steel or stainless steel, and sized based on the system flow rate and application.

PUMPS

Normally gear or screw type, motor driven to ensure the correct amount of lubricant is delivered to the friction points. In some cases, standby pumps are provided as part of the integrated design. These can be electrical or shaft driven, dependent on the application.

HEATERS AND COOLERS

To ensure the lubricant reaches the points of application at the required viscosity. The heaters can be tank mounted or inline electric. The coolers can be plate type or shell and tube with the medium being water or water/glycol. Air can also be utilized for cooling using a fan and radiator.

FILTRATION & STRAINING EQUIPMENT

To maintain the system cleanliness. Typical oil filters will be either simplex or duplex type in the delivery line, suction line strainers, return line strainers, and tank breather/filters.

In addition to the main primary equipment, a number of optional system components can be included, depending on the customer specification and technical requirements.



RESERVOIR LEVEL MONITORING

Visual indicators, electrical switches and/or transmitters to alert the operator of low or high oil level, and protect the pump and tank immersion heater(s) from operating when the oil level is too low.

PRESSURE MONITORING

Visual gauges, electrical switches and/or transmitters to alert the operator of low or high pressures in the oil system delivery circuit, and similar pressure differential instruments to monitor the pressure drop across the main supply filter.

TEMPERATURE MONITORING

Visual gauges, electrical switches and/or transmitters to monitor the reservoir and delivery line oil temperatures.

FLOW MONITORING

Visual indicators, electrical switches and/or transmitters to monitor the oil flow to the friction point(s), oil return to the reservoir and cooling water supply. To support this Bijur Delimon has developed the DS405 iPM Lubrication Monitor; a highly configurable product that can be used on Oil Recirculation Systems and Total Loss Oil or Grease Systems respectively. Oil Recirculation Systems are real-time monitoring of the flow rate of oil, typically through an oval gear flowmeter. Alternative vane or spring operated flow meters are available.

CONTROL VALVES

Pump relief valves to protect the pump against excessive back pressure, system pressure control valves to control the flow and pressure of the lubricant to the friction point(s), and temperature control valve to either modulate the water flow to the water/oil cooler or by-pass the cooler when fitting in the oil supply line when the oil does not require cooling.

ISOLATION VALVES / CHECK VALVES

To isolate the oil or water supply, and prevent the oil from returning to the reservoir.

AIR PRESSURE VESSELS

Used in large systems to ensure sufficient pressure exists in the system to provide lubrication to all application points during operation and run down of the parent machine in the event of a power cut.

RUN DOWN TANKS

To provide lubrication to all application points during run down of the parent machine in the event of a power cut.

RUN DOWN PUMP

Pump operating from DC voltages can be employed during run down.

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