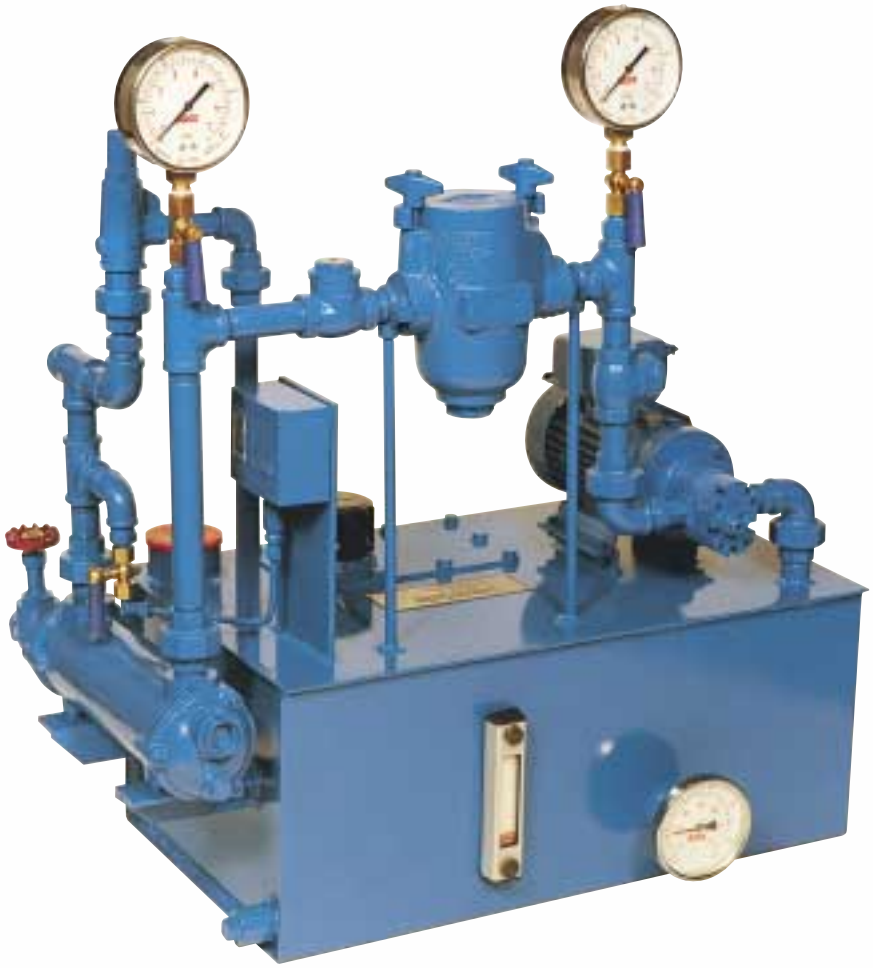
Re-circ oil systems



Oil re-circulating systems are not only used to pump oil to bearings or gears to lubricate them but also to purge them of wear debris and, if necessary, to remove heat introduced into the oil by power losses due to friction.

DELIMON Cooling have a multipurpose range of small oil systems as shown. However, the majority of re-circulating oil systems are nearly always custom designed to suit the application.

Reservoirs, pumps, filters, oil coolers, reservoir heating, pressure control and instrumentation are selected depending on the duty and the viscosity of the lubricant required to be pumped.

These can be fitted in our works on top of the oil reservoir or on a separate skid to form a compact unit but also, for larger systems, as individual items of equipment which are mounted on site and piped up to the plant being served.

DELIMON Cooling has many years experience in the design of oil re-circulating systems having supplied systems with flows from less than 5 litres per minute to over 1000 litres per minute.

Only high quality proven components are used as the system normally has to operate continuously 24 hours per day throughout the year.

The system will be continuously monitored allowing attendant free operation.

DELIMON Cooling's design department produces high quality drawings using AutoCAD. These can be e-mailed, reducing the communication times for drawing approval etc., between design departments.

Using a DELIMON Cooling designed oil re-circulating system extends the life of the bearings or gears, reduces the number of plant shutdowns for maintenance and increases the time between oil changes.

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DELIMON Cooling

Re-circulating oil systems

Technical data

The DELIMON Cooling oil re-circulating system will include a selection of the following equipment:

Reservoirs

Most oil system reservoirs are of rectangular construction often forming the base onto which other items are mounted. The size of the reservoir depends on several factors. If the returning oil is likely to contain water or dirt contamination or entrapped air, the reservoir needs to have up to 40 minutes dwell period to allow time for these to separate from the oil. However, if the system is relatively clean, the dwell time could be less than 10 minutes. Another factor would be the need to dissipate heat. Having a larger reservoir could avoid having to fit an oil cooler and its associated control equipment.

Reservoir heating

Unless low viscosity oil is being used, it is likely that some form of heating is required in the reservoir. The main reason for this is that most flow control devices in a lubrication system are simple needle valves or orifice plates and for a correct balance of the system, it is necessary to deliver oil at a constant viscosity. It is easier to control this at a temperature slightly higher than ambient. Other reasons for fitting heating are to be able to start pumping under cold start-up conditions and to assist air release from the returning oil.
This heating would normally be electric but steam heating can be fitted. Either method will require thermostatic and level control.

Pumps

Positive displacement pumps (gear or screw) are generally used although centrifugal pumps are used on some low viscosity applications (such as turbine oil systems) and piston pumps on high pressure applications (jacking systems).
Normally two pumps (main and standby) are fitted to give automatic changeover to continue the operation should a fault occur.
Pumps are usually driven by an electric motor but on some systems, the main pump is driven directly by the plant being served.

Filters

The type of filter fitted depends on the acceptable degree of filtration of the equipment being served. If considerable contamination is expected and the bearings etc., are reasonably tolerant, duplex re-cleanable filters are used. The lowest limit of filtration of this type of filter is 25 micron. If the oil returning is relatively clean, disposable element filters with much lower filtration levels are used, considerably extending the life of the oil and the bearings etc.

Cooling

This is only required when heat is introduced into the oil from the process due to friction power losses etc. and this cannot be removed by natural convection hence raising the oil temperature above its desired control level.
Oil/water coolers (shell and tube or plate) or air blast coolers are used.

Control and instrumentation

All the above operations require a full range of pressure, temperature and flow control valves and instrumentation to operate the lubrication system at its design constant pressure and flow parameters. These are selected to control and monitor the system providing interlocks with the plant so that, providing routine maintenance such as filter cleaning or oil changes are carried out, the lubrication system can operate totally automatic as a servant to plant.

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