

Lubrication
Systems Company



Lubrication Systems Company
1740 Stebbins Drive
Houston, Texas 77043 USA

Tel: (713) 464-6226
Fax: (713) 464-7375
www.colfaxcorp.com

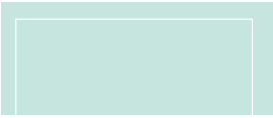


LSC THERMOJet[®]
Oil Purifier



Colfax at a Glance

A New Concept



Colfax Corporation

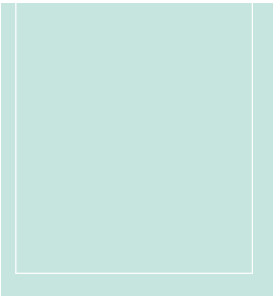
Colfax Corporation is a world leader in the development, engineering, manufacturing, distribution, service and support of pumping and fluid-handling systems. Specializing in positive displacement and centrifugal technologies, our products support a wide range of industries, from Power Generation and Oil & Gas to Commercial and Navy Marine to a broad range of industrial applications. For over 10 years, Colfax has remained at the forefront of fluid-handling management by focusing on customers needs for reliable performance around the world.

Colfax Corporation has built the company on strong legacy brands, those that lead the industry with cutting edge pump technologies and fluid handling solutions. While Allweiler, Houttuin, IMO, Portland Valve, Tushaco, Warren and Zenith represent a full-spectrum of diverse pump products and extensive expertise in critical and demanding applications, they share a single-minded focus on commitment to customers.

Lubrication Systems Company

Lubrication Systems Company (LSC), a Colfax Business Unit, is a worldwide leader in lubrication-related solutions that improve equipment reliability and reduce operating costs. LSC designs, manufactures and installs centralized lubrication and oil purification systems for oil and gas refineries, petrochemical, chemical plants as well as gas processing plants.

At the core of LSC solutions are two proprietary and patented technologies. LubriMist® Oil Mist, a centralized lubrication system, supplies a lean mixture of low-pressure, atomized lubricating oil to individual pieces of equipment, lengthening mean time between failures and extending equipment life. ThermoJet® Oil Purifier, an on-line oil purification system, removes free and dissolved water and light hydrocarbons from industrial lubricants and hydraulic oils, returning the viscosity of lube oil and restoring the oil flash point to like-new levels.



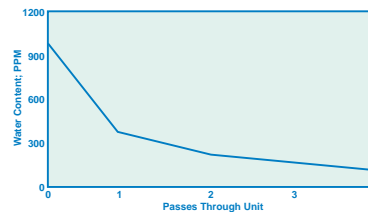
THERMOJet® Oil Purifier

The THERMOJet® oil purifier is an advanced, effective and reliable product which purifies industrial lubricants, hydraulic oils and other similar fluids. The THERMOJet® utilizes the principal of air/gas stripping making it technically sound and mechanically simple. The patented design and process of the THERMOJet® delivers benefits and results not possible with other types of oil purification equipment and technology.

Principal of Operation

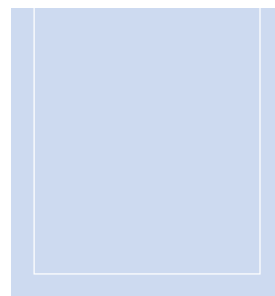
The THERMOJet® works on the principal of air stripping. The use of air or nitrogen bubbled through contaminated liquids has long been used to remove contaminants. But the use of this technique was restricted because the volume of gas required was large due to limited mixing of the gas with the liquid. The unique technology embodied by the THERMOJet® makes air/gas stripping practical and efficient because of the mixing and intimate contact of the air/gas with the fluid being cleaned. In addition, the THERMOJet® utilizes the principal that the capacity of a gas to entrain moisture increases exponentially with temperature. For example, with a 130° Fahrenheit increase in temperature, there is a 30-fold increase in the capacity of gas to hold moisture.

Water Removal



The THERMOJet® oil purifier not only removes free water it also removes emulsified and dissolved water meaning compressor, turbine lube oil and hydraulic systems can be kept water-free. This results in improved reliability of machinery and also eliminates the need for

frequent change of lube oil. The THERMOJet® will take oil which contains 1000 PPM of water down to a total water content of less than 100 PPM within five passes of the oil through the unit. The THERMOJet® out performs other equipment such as settling tanks, coalescing filters and centrifuges.





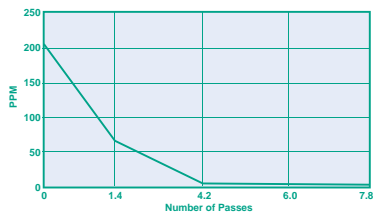
« How Does It Work »

« Environmentally Clean »



Degasification

The THERMOJet® removes dissolved light hydrocarbon gases such as propane and H₂S from industrial lubricants. In refineries and petrochemical plants an ideal application for the THERMOJet® is the removal of hydrogen sulfide from compressor seal oil. The THERMOJet® returns the viscosity of the lube oil and restores the oil flash point to like new levels. No longer is there a need to dispose of gas laden and sour lube oils; these oils can be purified and reused.



The gas stripping technology and process design embodied in the THERMOJet® is mechanically simpler and a more reliable approach than that used in more complex vacuum systems.

Models

Two different models and capacities are available:

Series

H

G

Application

Dehydrating of lube oils in Hydrocarbon Processing Industry

Degassing of seal oils.

"H" series models are available in two capacities called the "2000" and "4000." The "2000" has a flow rate through it of 180 gallons per hour; it removes approximately 1 gallon of water per hour from contaminated lube oil (20 gallons per day) depending on how wet the oil is. The larger "4000" has a flow rate of 550 gallons per hour and removes approximately 3 gallons of water per hour from contaminated lube oil.

Environmental Cleanliness

THERMOJet® Oil Purifiers remove water and gaseous contaminants from industrial lubricating oil without contaminating the environment in which they operate. All THERMOJet® oil purifiers are equipped with the condensate purifier assembly which absorbs oil from the water condensate before it exhausts from the unit. Documented tests show that the water discharged can be put into a sanitary sewer since the contained hydrocarbon is below 8 parts per million. (EPA limit is 15 PPM) In addition, on all units that do not exhaust to a flare system, a practice which is strongly recommended when degassing, an oil mist eliminator rated at 99.985% efficient eliminates oil mist in the vapor exhaust meaning the unit can be used in indoor industrial applications.

Simplicity of Design

The THERMOJet® is technically sophisticated while also being mechanically simple with few moving parts. The only rotating elements are an electric motor and two close coupled gear pumps. The rugged and unique design means the units are themselves extremely reliable and require little maintenance beyond the change of the oil filter element. The materials of construction are 300 series stainless steel.

Power Supply Options

- 460 volt, 60 Hz, 3 phase.
- 575 volt, 60 Hz, 3 phase.
- 380/415 volt, 50 Hz, 3 phase.

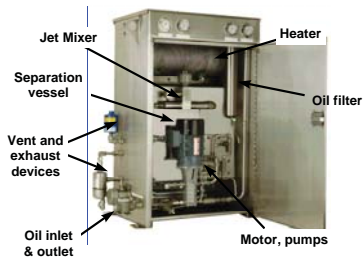
Internal tubing and fittings, the jet mixer and filter housing are also made from stainless steel. Utility requirements are minimal. Only electrical power is required for water removal, and a nitrogen supply when degassing. There is no need for other utilities such as water lines, compressed air or drains to oily water sewers or collection tanks.





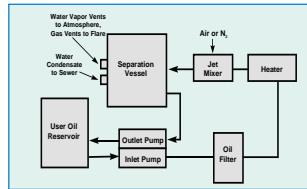
Equipment Examples

ThermoJet® Oil Purifier



Flow through the Unit

The suction pump of the THERMOJet® draws contaminated oil from the user lube, seal or hydraulic system. Flexible hose or hard piping can be used to connect the THERMOJet® to the system reservoir. A one and one half horsepower motor drives the suction pump. The suction pump is protected by a "Y" strainer. From the pump the oil passes through a filter with a beta ratio 7[c] at 1000. This cartridge filter can be easily replaced. It is recommended replacement be made when the pressure differential across it, as monitored by two easily read gages which are externally mounted on the panel above the access door, reaches 30 psi. From the filter the oil passes through the heater that elevates the oil to 160° F to 180° F.



The electric heater temperature is set and controlled with a solid-state device whose operation is viewed through a window on the electrical control box. After the heater, the oil passes through the heart of the THERMOJet® which is the dual stage jet mixer.

The Jet Mixer; Advanced Technology for Water and Hydrocarbon Gas Removal

This proprietary and uniquely designed device is the heart of the system. Without the aid of secondary pressure, it continuously and automatically draws ambient air or inert gas such as nitrogen into the heated oil stream as delivered to it by the inlet pump. The ambient air/gas becomes intimately mixed with the oil and assumes the temperature of the oil. The oil leaves the Jet Mixer and is directed to the separation vessel that operates at atmospheric pressure. Here the moisture laden air, or gas saturated nitrogen, expands and leaves the oil thus cleansing the oil of water or dissolved hydrocarbon gases.

Return of Clean Oil

In the separation vessel the oil from the jet mixer cascades down trays to promote the release of the saturated air/gas. A volume of oil is maintained in the lower portion of the separation vessel to allow any entrained air to leave the oil so that none is contained in the return oil stream. The second close coupled pump driven by the electric motor returns oil to the user reservoir. Water vapor vents from the separation vessel and travels through a filter and oil absorbing media to insure that discharge from the unit is oil free. The water condensate discharged from the THERMOJet® can be piped to a sanitary sewer.

