# Centralised Oil Lubrication- The Modern Way

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*Centralised liquid recirculation lubrication system with its attendant advantages over point to point lubrication is a well established practice in Paper Mills. The concept of centralised lubrication by conveying the oil particles with the help of compressed air, or Micro Fog System and its conversion into wet lubrication at the point of use is discussed in this article.*

**Introduction**

The Indian Paper Industry witnessed a spectacular but steady growth during the First and Second 5-Year Plan periods. But due to the various constraints this rate of growth could not be sustained in the Third Plan-rather the production in 1973 was marginally lower than in 1972. The ever increasing cost of plants and Machinery, and Capital, Galloping rise in the cost of production, unrealistic pricing policy, stringent debt-equity ratio and lately the acute shortage of Power, are some of the major impediments in the growth of Paper Industry. The fact remains that enough has not been achieved in economical Engineering of Pulp Plants & Paper M/cs. by Machinery Manufacturers because, by and large, more reliance is still being placed in adopting the proven flow sheets. One of the areas, to reduce capital and operational cost seems in lubrication. The oil crisis has certainly added to the urgency.

**Centralised Oil Lubrication**

The application of centralised oil lubrication successfully to machines is not new. No doubt such centralised systems offer many advantages and eliminated the use of point by point Lubrication and the necessity for making all points, requiring lubrication accessible for maintanance. But the conventional system of recirculating liquid lubrication involves reservoir, pumps, coolers, filters, purifuges and complicated plumbing which are all costly items and some of them are subjected to wear. It was recognised that the distribution of lubricant by means of oil particles conveyed by compressed air would overcome many of the draw backs of a recirculating liquid system since no pump and no return piping etc. would be required. This led to the development of Micro-Fog method of centralised lubrication.

**What is Micro-Fog Lubrication :**

The Micro-Fog lubrication generates a fine dry fog of oil particle, which is something like smoke in nature. This dry oil fog can be conveyed long distance through tubing with as many bends as necessary. At the point of application, a reclassifier changes fog to a wet oil fog which is applied directly to the machine element to be lubricated. Further more, the Micro-Fog Lubrication provides precise and constant metering of the oil delivery.

**How the Micro Fog Lubrication Work**

Air passing through the venturi section creates a pressure differential that causes oil to flow from the reservoir through the sight feed dome into the venturi section. An oil fog is created in the venturi and is discharged into the upper portion of the oil reservoir, only the finer particles of 2 microns (0.002 mm diameter), or less remain air borne and travel with the air to the lubrication points. The heavior particles of oil return to the oil supply. At the brg. surface, a nozzle like fitting called a 'reclassifier', causes the small dry oil particles to combine into larger wet particles. These impinge upon the bearings surfaces and cover them thoroughly and continuously with a protective film of cleaning oil. A typical arrangement how micro

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Fog Lubrication works is shown in the Figure.

It is absolutely necessary that the compressed air passing through the venturi is clean and free from contaminants and is supplied at proper pressure. Hence an Air line Filter and pressure Regulator must be used in the line immediately upstream of the Micro Fog lubrication. These can be built in the Micro Fog Lubri-control unit. All the equipment such as Automatic drain Air Filter, Air Pressure Regulator, Micro Fog Lubricator, Solenoid Valve, H.P. & L.P. Switches, liquid level control switch, Manifold gauge and secondary Air Pressure Gauge, relief valve etc. can be housed in a tamper proof cabinet. A suitable reclassifier must be used at each lubrication point. For vital lubrication, two Micro Fog System with Manifold Interlock must be provided so that if one unit becomes inoperative, the 2nd unit could be commissioned. Because the oil feed is visible and because the lubrication system can be interlocked with M/c, operation or an alaram system, the maintenance of proper lubrication can be assured.

**Application of Micro-Fog Lubrication**

It is claimed that Micro Fog method can be used on all types of machines, Textile Mills, Rolling Mills, Glass Factories, M/c. Tools and Rubber Factories. It has been successfully tried on lubricating dental hand pieces running at speeds upto 4,50,000 rpm. and also on 860 mm bearings turnings slower than 100 rpm. St. Regis, Gould, Bowater and Wolvercote Paper Cos. are reported to be successfully using the Micro Fog System of centralised lubrication on drying cylinder bearings both plain and antifriction type and Felt Strenth Rolls. Gears, chains, slides and ways are the other application for Micro Fog Lubrication.

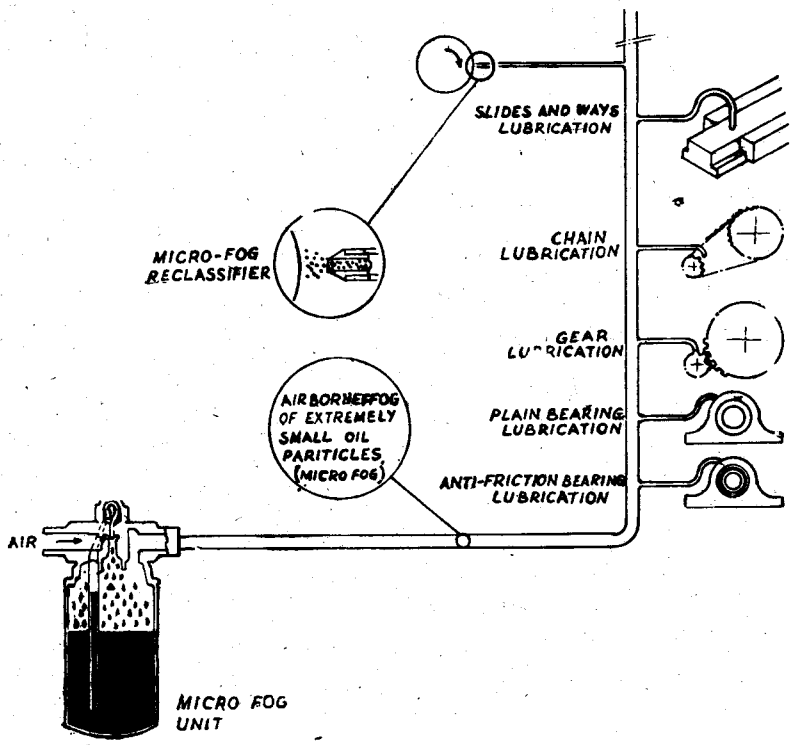
We at Tribeni Tissues Ltd., are seriously considering the installation of Micro Fog method of lubrication for our Breaker Brgs. When the system is stabilised and found successful in our Indian conditions, we might extend it to dryers of Paper M/cs.

**Advantages of Micro-Fog Machine lubrication**

With any method of lubrication, the only oil actually lubricating is the thin film that separates the brg. surfaces. Any additional lubricant is a waste and may even be harmful, causing overheating through fluid friction. Micro Fog Lubrication supplies just the amount of lubricant required with no Waste or overflow. This makes housekeeping easier and avoids product contamination. Since every particle of oil is efficiently used, the daily consumption of oil by a M/c. can often be reduced from litres to a few conti-litres compared to other system.

Proper lubrication means longer brg. life, reduced down time, less maintenance & lower replacement costs. Lower brg. temperatures are maintained and the

**HOW MICRO-FOG LUBRICATION WORKS**



compressed air carrying the lubricant passes through the brg. housing, preventing brg. contamination.

In addition, the cost of hand lubrication is eliminated and equipment such as pumps, elaborate filtering system and return lines are eliminated.

The use of Micro Fog Lubrication allows the M/c. designer greater flexibility since it is not necessary to provide ready access to the points requiring lubrication. This also enables the designer to give more consideration to appearance and less to accessibility.

**Acknowledgement**

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