H P In Reliability

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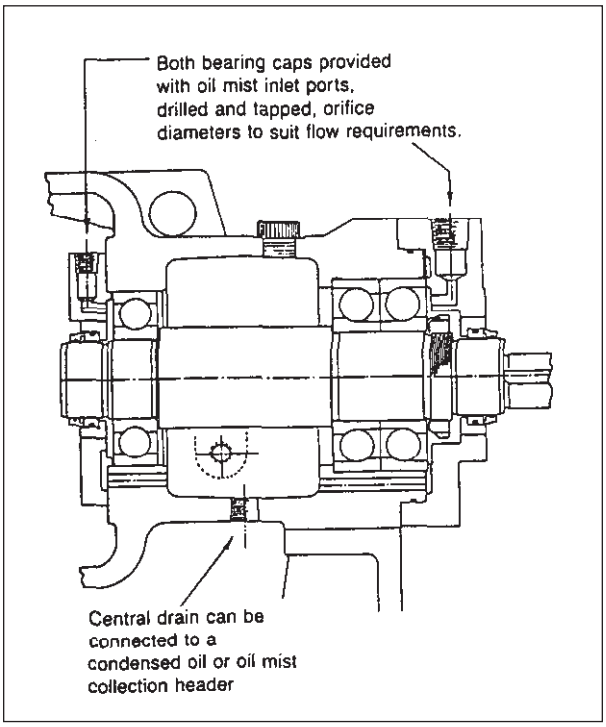
Oil mist lubrication: is it justified and how should it be executed in the 90s? The lubrication requirements of approximately 90 percent of the general purpose machinery in petrochemical plants can be met by pure oil mist application methods. The merits of this advanced lubrication concept are based on less frictional heat input into antifriction bearings, higher permissible operating temperatures, once-through application of uncontaminated oil and exclusion of airborne solid contaminants and water vapor from bearing housings.

These þndings are as valid today as they were when we þrst published them ten years ago. However, there have been important developments since then which should be considered before proceeding with the implementation of plant-wide oil mist systems.

First, it should be realized that the overwhelming majority of rolling element bearing failures in general purpose machinery occur because lube oil is being contaminated from external sources such as airborne dust and/or moisture condensation. A good set of face-type bearing housing seals and replacement of the breather vent with an expansion chamber can hermetically close the bearing housing. Together with an appropriate amount of a suitable state-of-the-art synthetic lubricant, this low cost retroþt may extend bearing life to the point where oil mist lubrication is no longer economically attractive. We also have evidence that as simple a procedure as changing the mineral-type lube oil in conventional bearing housings two to three times each year has, in some cases, accomplished the same thing.

If your economic calculations still favor oil mist lube over the above measures, or if it just doesn't seem possible to convince people to implement either of these approaches, then oil mist lubrication may well be the right choice for you. But...

Oil mist systems can and should be installed in a manner which will greatly reduce the emission of stray mist to the atmosphere. Closed systems are entirely feasible and have been used for many years at textile mills in the U.S. and overseas. All it takes to implement environmentally friendly systems is a return header operating at a slight vacuum. This vacuum could be produced by using the motive air stream in conjunction with a small jet ejector, or by applying a fractional horsepower vacuum pump.



Optimized oil-mist path shows mist application through bearing housing end caps (directed oil mist and venting and drainage at the bottom of bearing housing.[1] Note face-type bearing housing seals.

Of course, the implementation of closed systems in the HPI would be facilitated by thoughtful positioning of oil mist nozzles or application þttings. The best placement of these devices is well known to the major turnkey contractors involved in the oil mist business and has been documented in the literature. A stronger advocacy of optimal placement of mist entry and environmentally acceptable recovery methods by the major contractors, pump users and pump manufacturers is needed if oil mist is ever expected to reach its true potential as a means of improving the reliability of general purpose equipment in the HPI.

LITERATURE CITED

[1] Bloch, H.P., *Oil Mist Lubrication Handbook*, Gulf Publishing Company, Houston, Texas, 1987.

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