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Here's one area where your payback can be especially quick and dramatic. . . very, very!

Many bearings fail because unclean containers contaminate the lube oil as it is being transferred from storage drums to equipment bearing housings. With lube oil contamination clearly being one of the major causes of bearing failures, it is incumbent upon machinery reliability professionals to seek out and implement cost-effective steps to avoid such contamination.

That said, reliability-focused equipment maintenance and operating technicians will use only properly designed plastic containers (such as the ones shown in Fig. 1) for their lube replenishing and oil transfer tasks. They will no longer permit rusty cans, zinc-plated (galvanized) buckets and discarded or unclean plastic bottles to be used in any area where lube oil contamination risks costly failures. It should be noted that each of the various approved and carefully manufactured containers in Fig. 1 will cost a mere fraction of the expense of a single bearing failure. If shown in a brief overview calculation, this is one product for which the payback is often measured in days.

Special attention might be directed at Ref. 1, where General Motors' Linden, New Jersey plant employed highly rigorous accounting steps. This plant reached the conclusion that investing in lube program upgrades by using properly designed, color-coded plastic transfer containers of suitable size and configuration made real economic sense. No wonder. The facility had achieved a two-month payback and remarkable 738% return on the money and effort invested.

In a similar case history, a paper mill estimated that an expenditure of $6,000 for 100 transfer containers had resulted in $240,000 worth of downtime avoidance within three years of program initiation. This mill's three-year payback had reached 40:1.

Editor's Note:
This article's suggestion for developing a comprehensive "Machinery Reliability Library" at your facility deserves serious consideration. There are countless titles available to you, from any number of publishing houses. To help get you started, though, we've provided a partial listing on the next page as to some you might want to stock, including a number that were authored or co-authored by Heinz Bloch himself.

Many reliability enhancement opportunities exist for pumps and compressors in process plants

There are many other reliability improvements that are cost-justified (Ref. 2). As an example, and dealing only with compressors and pumps, advances in high performance polymer materials and synthetic lubricant technology can lead to significant extensions in equipment run times, or mean-times-between-repairs (MTBR), where improved lubricant application is available and urgently needed (Ref. 3), and so on.

If a reliability professional is wrestling with a population of centrifugal pumps, he/she might want to consider several of the enhancements described below *(as well as elsewhere in this and other issues of this publication*). For instance, it would be appropriate to look into:

• Hermetically sealing bearing housings with modern non-contacting and, in many instances, dual-faced magnetic bearing housing seals

• Using a high-film-strength synthesized hydrocarbon lubricant of appropriate viscosity, i.e. ISO Grade 32 for pumps
• Applying diester-base synthesized hydrocarbon lubes on reciprocating compressor cylinders
• Applying certain mechanical seals with highly efficient bi-directional internal pumping devices
• Upgrading ASME 73/ANSI/ISO pumps to double-row angular contact bearings with dual inner rings
• Installing pre-grouted (pre-filled with epoxy) pump baseplates
• Using only balanced constant level lubricators
• Replacing vulnerable oil rings with flexible flinger discs
• Selective upgrading of certain medium size pump lube application methods to an inductive pump jet-oil application
• Removal of cooling water from bearing housings equipped with rolling element bearings
• Using proprietary PTA, high-temperature capability, ultra-low thermal expansion performance polymers as a wear ring and throat bushing material

There surely are other "things" that can be done to decrease pump and compressor failures, but the aforementioned are among the simplest and most cost-effective. Needless to say, reliability-focused plants and users will follow up with the speedy implementation of these and other cost-justified enhancement measures (Ref. 4).We plan to assist you in "filling in the gaps" by dealing with many of these opportunities in this publication.

Meanwhile, consider encouraging your reliability technical work force to read. In fact, they might benefit from having access to a "Machinery Reliability Library." Reading one book per year could add real value to everyone's knowledge and competence. The only thing that will cost a plant more than having such books available, is to not have them available. **LMT**

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