The Promise of Specialty Lubricants

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From the user's perspective there is a fair amount of intrigue associated with specialty, or 'advanced performance' lubricants. Often one is prone to grab one's wallet on the front end of a discussion about specialty lubricant applications, since specialties are almost always priced higher than that of broad based products. I would argue that, while this may well be a fact, the price of the lubricant is a completely irrelevant factor on plant performance.

Cumulative lubricant purchase dollars represent approximately 1% to 3% of maintenance dollars spent per year. It may be a big number by itself, but viewed within the plant performance context, it is only important as a politically divisive line item in the maintenance budget. However, the impact of the dollar spent can be enormous. A carefully designed application of a high performance lubricant may produce dividends to the operation many times higher than the price differential between the two product options.

So, how does one determine when it is time to switch to a high performance 'specialty' lubricant? For the organization that is intent on improving profitably, the answer need be no more complex than whenever the product may be used to make money.

A couple questions should be asked along the way. Starting with, "What exactly is a 'specialty lubricant'? Webster would characterize the word 'specialty' as denoting unique or unusual or specifically defined properties. A turbine oil has special properties, but is that considered a specialty product? EP gear oils are designed especially for gearing applications. Is an EP oil considered a specialty or performance lubricant? Not unless its properties are appreciably different than the performance criteria average for industrial EP gear oils.

Specialty lubricants provide some unique benefit to the mechanical application, and this class of materials typically cost more than the product engineered to meet 'average' performance criteria. For the fun of it, let's call the price differential five times the market average price for a class of lubricant.

To be sure, that differential creates consternation on behalf of those responsible for making sure that actual cash expenditures remain in control, with no real outliers from year to year. A decision to select a performance option, however, should be based on the effect or derived from a carefully engineered change, with the expected results quantified and boiled down into commonly accepted financial terms.

The obligation that the performance supplier must fulfill is to quantify, apply, verify and tabulate the effect of the change, and be available to work in-plant with the material to assure that the end result is maintained.

There is a multitude of ways to measure 'success' for a given application. Consider a high pressure CO_2 reciprocating compressor cylinder lubrication application for a chemical processing operation. It is not uncommon to select a high viscosity corrosion inhibited type lubricant to provide cylinder lubrication. What factors could be considered in measuring the effect of a switch from a three dollar per gallon mineral oil versus a $25 dollar per gallon glycol synthetic?

Clearly in a once through application there will be a major premium to be paid for making the switch. What could make that cash commitment worthwhile? What needs to be measured to justify the change?

The broad categories of measure would be maintenance and production cost effect. Either could be easy or difficult to measure, depending on the degree of documentation the plant maintains on asset care and production throughput.

The maintenance costs could be:

- Lubricant cost differential per year.
- Cost of labor to relubricate per year.
- Cost of lubricated machine components consumed over a period of time, preferably a multi-year period.
- Cost of lubricated components replace through collateral damage from events.
- Cost of labor to replace components during the same time period.

These factors are generally noteworthy, and could be used to provide nominal return on a properly engineered application of a performance product.

The production costs could be:

- Cost of lost production opportunity.
- Cost of energy
- Cost of lost quality (measured through poor quality losses for processes associated with the selected machine)
- For a process gas application, cost effect of catalyst bed lifecycle loss due to contamination degradation.

Any one of these factors could represent a major cost reduction opportunity in itself, delivering a discounted cash value estimate (ROI) number many times the actual cost of the change.

Once the ‘current condition’ cost factors are determined the engineer projects improvement based on his/her experience, comparison to similar equipment improvement analysis, statistical improvement projection or simple best guess. The same factors are estimated for the improved condition and the difference is then discounted over a multi-year period to arrive at the expected economic value that may be derived from the exercise.

Clearly, one benefit that the supplier derives from supplying higher margin product is the extra revenue that may be allocated to babysitting the high performance application to assure expected results. It never hurts to spend some extra time to solidify customer relationships and collect cost based information for future comparisons either.

The modern reliability manager views his/her lubrication needs differently than the old school master mechanic. The current view is broader and deeper, viewing enterprise wide implication of improvement, than has been the case in many years for the reliability centric production plan. But, measuring the productivity gain is key. Performance lubricants can support the cause.

A carefully measured maintenance improvement analysis should reveal enough to cover objectionable cost differences, but real leverage is to be found in process improvement.