Written by Dr. Lube aka Ken Bannister
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**Symptom**:
*"Dear Dr. Lube: In one of your previous articles, you stated that about 70% of mechanical failures are directly, or indirectly, attributable to poor or ineffective lubrication practices. Can you explain the basis of this statement?"*

**Diagnosis:**
In the maintenance world, major equipment and component failures can be divided and tracked within two failure categories—*mechanical and electrical*. Analyzing these failures utilizing RCM (Reliability-Centered Maintenance) methods confirms that almost all electrical failures are random events requiring a run-to-fail/replacement strategy. In contrast, virtually every mechanical failure occurs over a period of time and demonstrates a wide array of potential failure symptoms, such as excessive noise, heat and vibration that alert us to intervene before actual failure occurs.

It is important to note that the primary mechanical failure culprit was, is and always will be friction. To combat friction we must engineer the moving mechanical surfaces and provide lubrication to keep them apart.

In 1966, Peter Jost submitted a remarkable report (known as the "Jost Report") to the British Government. In it, he documented the direct and indirect effect that lubrication, friction and wear

had on the British GNP (Gross National Product) in the areas of industry, natural resources and agriculture. The word "tribology," which describes the science of lubrication, friction and wear, is credited to Jost.

Following Jost's lead, Dr. Ernest Rabinowicz of the Massachusetts Institute of Technology (MIT) investigated why machines (mechanical devices) lose their usefulness. He concluded that 70% of failures are due to surface degradation, with 50% due to mechanical wear (friction) and the other 20% due to corrosion.

**Prescription:**
Both mechanical wear and corrosion are preventable through the implementation of an effective lubrication management program. Using the right lubricant, in the right amount, at the right time, in the right place, will simultaneously control friction and eliminate corrosion, thus assuring full mechanical usefulness and reduced energy requirements—*as well as significantly reduced maintenance repair and replacement costs*

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*Have lubrication questions of your own? Contact Dr. Lube, aka Ken Bannister, who specializes in helping companies throughout industry implement practical and successful lubrication management programs. The noted author of the best-selling book Lubrication for Industry and of the 28th edition* Machinery's Handbook *section on Lubrication, he also is a contributing editor to* Maintenance Technology *and* Lubrication Management & Technology *magazines. E-mail:* *doctorlube@atpnetwork.com*