



The TriCip Lubrication System Installed On A Separable Compressor

A BETTER WAY TO LUBRICATE RECIPROCATING COMPRESSOR CYLINDERS

BY ERIC SLOAN

Compressor cylinder lubrication has been a problem for as long as reciprocating compressors have been around. Lubricating oil is one of the most expensive yearly budget items for compressor operators, and cylinder lubricant is a big part of that. Cylinder lubricant is considered once-through, meaning it is not reused. Lubricant is delivered via pressurized divider block systems and all the lubricant injected into the cylinders passes downstream. Some is removed during cooling or by downstream filters. Some pools at low points in compressor station piping, potentially restricting flow. The lubricant that passes through the compressor station ends up in transmission pipelines as a gas stream contaminant, leading to expensive negative impacts. The cost of these impacts is difficult to calculate, but it exceeds the expense of the lubricant itself.

Sloan Lubrication Systems has developed a better way to lubricate compressor cylinders. Sloan's TriCip Lubrication System enables compressor operators to reduce cylinder lubricant by up to 90%, offering significant reliability, efficiency, and cost improvements to compressor operators. For every 55-gallon drum of oil they are putting through their compressor cylinders, they could be using a 5-gallon bucket's worth instead. With going on 200 units in the field, hundreds of thousands of hours, and several major pipeline customers, TriCip is a proven solution. Over the last 3.5 years, one pipeline has seen reductions of 85,000 gallons of lubricant, and 4106 work hours due to valve issues since upgrading to TriCip.



TriCip Fluid In A 20-Liter BIB (Bag-In-Box)

Many problems lead compressor operators to seek TriCip. Pipeline liquids contamination can contain a significant amount of compressor lube oil. Compressor lubricant is not just expensive to buy, it is also expensive to separate from gas and dispose of. Those costs are amplified by the negative impacts it creates. Liquids reduce the efficiency of pipeline operations. Lube oil that makes it into the pipeline travels to low points, creating obstructions, or to the inlet of subsequent operations where it fouls filters. Liquids contaminate metering stations, requiring expensive repair. In worst-case scenarios, compressor lube oil can contaminate pipelines supplying industrial or power generating customers and damage critical equipment like inlet scrubbers or turbines. There are cases of turbine fuel gas nozzles being damaged by cylinder lube oil, with repairs costing nearly \$1.5 million. These unfortunate situations lead to expensive repairs and a risk of liability. And they can be avoided with technology and expertise available today.

Before TriCip, all lubrication system flow rates were set manually. The monitoring system only recorded divider block cycles and calculated a flow rate. TriCip is the first lubrication system to automatically control the rate of lubricant flow, allowing for more precise delivery. It can be programmed to automatically adjust as operating conditions change, and components wear. This is critically important because at a 90% rate reduction there is less room for error than at standard OEM rates. Even within this tighter margin, TriCip reliably delivers optimum performance despite pump and divider block wear or pressure differentials and provides a high degree of failsafe protection. TriCip also improves compressor valve life with some customers seeing up to a 75% reduction in failures.

The TriCip System would not be possible without TriCip Fluid, an advanced lubricant capable of providing sufficient

lubricity at much lower volumes than standard compressor oil. The amount of TriCip Fluid required to lubricate a compressor cylinder is so low that it enabled an entirely new delivery method — a 20-liter (5.3 Gal) bag in a box (BIB). The advantage of compressor lubricant supplied in a portable box may not be immediately apparent, but most compressor station technicians know one of the main causes of divider block lubrication system failure is contamination. This contamination, in the form of water, glycol, or particulate, either comes from vented day-tanks, bulk oil storage tanks, or from compressor crank cases. By eliminating these sources of contamination, TriCip ensures a pure, clean supply of lubricant that makes the TriCip system extremely reliable. Another significant benefit is the decreased cost of new compressor station construction. Day tanks, bulk storage tanks and pressurized headers, along with their associated pumps, piping, and filtration are expensive; significantly more expensive than a TriCip System. In addition, by changing the lubricant supply chain, BIBs allow compressor lubricant to be delivered via standard shipping services, eliminating the need for tanker truck deliveries.

The TriCip Lubrication System is revolutionizing compressor lubrication. The cost savings and reliability improvements are significant and reducing lubricant consumption is a way to measurably reduce the carbon footprint of compressor operations. To spread the good news about the new industry standard, Sloan Lubrication Systems is co-authoring a paper to be presented at this year's Gas Machinery Conference, TP56 "Data analysis of gas quality improvements and operational/maintenance results from 3-1/2 years of a successful 90% reduction in compressor cylinder lubrication rates."

We look forward to seeing you there.

ABOUT THE AUTHOR

Eric Sloan is the Director of Marketing and Business Development at Sloan Lubrication Systems.

BENEFITS FROM **TRICIP**

\$789,650 – SAVINGS FROM 85,000-GALLON LUBRICANT REDUCTION

4,106 HOURS – REDUCTION IN HOURS FROM VALVE CALLOUTS

\$1.5 MILLION – APPROXIMATE COST TO REPLACE TURBINE FUEL GAS NOZZLES

SLOAN
LUBRICATION SYSTEMS