

TECHNICAL BULLETIN ON MILITEC-1 LUBRICATION FOR A CONVEYOR SYSTEM

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Background:

This report comes from a parts painter for General Motors, Ford, Chrysler and other companies. Among the items painted are cylinder heads, motor blocks and underbody parts. The company has been operating this plant for about 2 years. The shop floor covers 65,000 square feet and the length of the conveyor system is about one mile. The motorized conveyor chain has hooks to which the parts are attached. The parts, hanging under the chain, pass through a number of stages. The first is for cleaning. The parts are subjected to a hot caustic spray, followed by a hot high-pressure water spray twice for rinsing. They then pass through a zinc phosphating spray for etching and are rinsed once again. The next stage is a drying oven where they are subjected to high-pressure hot air. This is followed by the paint stage where the parts are dipped into paint. The final stage is an oven at 425°F to 430°F where the parts move slowly to dry and cure the paint.

Lubrication Problem:

The conveyor system uses wheels with ball bearings to run along a metal beam above the chain. The wheels are located about 16 inches apart. The wheels are open and the ball bearings within them are visible. As such, the bearings are open to the environment and subjected to the harsh conditions of each stage. While the sprays are not aimed at the bearings, there is a mist and vapor atmosphere created by the sprays that affect the lubrication of the bearings. The bearings and chain are lubricated by a Rapid Lube system that uses a pneumatic oil spray triggered by an electric eye. As a wheel passes a spray nozzle, the electric eye triggers the spray.

The company tried every lubricant it could find that showed promise and finally settled on a 30W oil as no other lubricant provided extra benefit. The oil is very easily washed off the bearings as they travel along the beam. The plant operates 16 hours per day, 5 days per week. However, the conveyor system had to operate 24 hours per day, 7 days per week just to build up enough lubrication on the bearings and chain to keep the system operating during the 16-hour workday. Still, the lubrication was inadequate and breakdowns were frequent. A break-down at one point on the system meant stopping the entire line until repairs could be made.

Results Using Militec-1:

Militec-1 was mixed with the 30W oil at a ratio of 1 part Militec-1 to 2 parts 30W oil. After 1 week of operation, the time needed to lubricate the system was decreased from 24 hours per day to 4 hours per day and the weekend lubrication was eliminated. Ten weeks have passed since then and breakdowns have been reduced by approximately 90 percent.

The savings include: eliminating the cost of operating the conveyor system 88 hours per week; the reduced cost of maintenance and the reduced downtime during the workday.