The Anatomy Of A Centralized Lubrication System

A child of the Industrial Revolution, this type of system is still working hard in a range of applications.

Fig. 1. Two different styles of Multipoint Lubricators, *Inc.*) (Courtesy: Fogg Technologies, Inc.) in a museum installation of a worki

Multipoint, or Pump-to-Point, systems owe their pedigree to an event that occurred back during the Industrial Revolution: A camshaft set in an oil reservoir was connected for the first time, via a pitman arm, to a rotary or rocking-motion shaft, as part of a steam engine's bearing-lubrication system. A cam, attached to a series of inline rocker arms, in turn was attached to a series of individual pistons that would draw oil from the reservoir to lubricate the camshaft and rockers and pump oil to individual bearing points on the machine via copper lines. The end result of all this connecting and attaching was that the lubrication technician needed only to watch and fill one reservoir feeding 6-8 lubrication points. (Figure 1 shows two different styles of cambox multipoint lubricators employed on a 19th-century Victorian textile-mill steam engine.)

Though simple in concept, cambox lubricators were expensive to manufacture, limited to oil and could only accommodate a small number of bearing points. The next evolution of the Pump-to-Point design provided an independent air-driven pump with a reservoir mounted atop the pump, with the ability to dispense oil or grease through a series of ported outlets mounted around the periphery of the pump chamber.

How the System Works

In a Multipoint, Pump-to-Point system, as the pump piston is actuated—*usually from an electronic timer or counter*
—it passes by each "metered by restriction" outlet, positively displacing lubricant into each line piped to the individual bearing points. The air valve turns off and the spring-loaded pump returns, drawing lubricant into the firing chamber as it resets for the next lubrication cycle. (Figure 2 shows a modern Pump-to-Point Lubricator.)

Inexpensive to purchase and install, these systems are most popular for small- to medium-size machinery with less than 40 points. They are also well-suited as chassis-lubrication systems for trucks and tractors with onboard compressors, where they are used to lubricate the fifth wheel, shackles and steering components while the vehicle is in motion.

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