AUTOMATIC LUBRICATION

Improve efficiencies by delivering lubricant to multiple points in the right amount.

BY MIKE DECKERT AND GABRIEL LOPEZ

Successful companies in today's ever-changing food and beverage industries are constantly seeking new solutions and advanced technology to maintain freshness, reduce spoilage, and maximize their productivity. In this perpetual move towards increased automation, proper lubrication of new high-speed advanced-technology machinery is essential. Unfortunately, food and beverage industries also have some of the toughest environmental conditions for maintaining machinery. Moisture, extreme heat, extreme cold, product spills and sanitary washdown procedures all adversely affect lubrication processes and can severely reduce bearing life or cause failure.

Fig. 1 - Automatic Lubrication System Diagram. Image courtesy of FLO Components Ltd.

Bearing failure is a major cause of equipment downtime and significant unnecessary maintenance costs including replacement bearings, labour to repair or replace bearings, lost time and its impact on productivity.

Lack of lubrication isn't the only problem – inefficient manual lubrication practices can often result in over-lubrication of key pivot points, which brings its own indirect, but very real, costs including wasted lube, environmental issues, safety or housekeeping issues and higher labour costs.

Automatic Lubrication Systems (ALS) also known as Centralized Lubrication Systems were created to minimize improper lubrication (both over- and under-lubrication) by delivering lubricant to multiple lubrication points in the right amount, at the right place and at the right time. ALS can be used on equipment in a wide range of food and beverage applications, including bottling, canning, meat & poultry processing and bakeries, as well as for different packaging machines such as palletizers, stretch wrappers, labellers, air-bubble wrapping systems, flexible packaging systems, laminated packaging systems, stackers, carton formers and more.

Regardless of the manufacturer or type of system, all ALS share five main components:

1. Controller/Timer – activates the system.
2. Pump & Reservoir – stores and provides the lubricant to the system.
3. Supply Line – the line (typically stainless steel or nylon material) through which lubricant is transferred from the pump to the metering valves.
4. Metering Valves – component that measures/dispenses the lubricant to the application points.
5. Feed Lines – lines that connect the metering valves to the application points (typically stainless steel or Nylon material).

Operation begins when the Controller/Timer sends a signal to the Pump starting the lube cycle. The Pump station automatically delivers lubricant through a Supply Line to multiple Metering Valves that then measure and dispense a predetermined amount of lubricant through Feed Lines, to the individual lubrication points.

Depending on the type of ALS, a system can service a single machine, different zones on a single machine or even several separate machines.

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The optimal time to lubricate a machine is during operation, when all the surfaces that bear the load are continuously being exposed. The ALS is programmed to dispense small, precise amounts of lubricant at frequent intervals to vital components while the machine is operating, maintaining the correct amount of lube in the bearing at all times and a consistent lubricant seal to prevent water, steam and contaminants from migrating into bearings. In addition, maintaining a flow of lubricant from inside the bearings outward, purges contaminants from the bearings.

In areas using heavy washdown or chemical sanitation methods, the system controls may be programmed to provide a pre-lubrication function that replaces lost lubricant before startup.

ALS come in electric, air or hydraulic operated versions. They are suitable for environments ranging from -25° to 70° C (-13° to 158° F) and operate with grease up to NLGI #2 or oil of at least 40 cSt. They should be able to handle high-pressure washdowns with NEMA 4 (USA) and IP6K9K (Europe) protection ratings.

The benefits of using ALS are include the following:

- Frequent, precise lubrication increases the life of critical wear points compared to the feast and famine conditions often associated with manual lubrication, where lubrication is done "when there's time."
- Reducing bearing failures increases overall productivity, machine availability and utilization, while lowering downtime costs for bearing-related failures.
- Stop product contamination often caused by over-lubrication.
- Prevent accidents that can occur when manually lubricating.
- Reduce lubricant, housekeeping and energy costs.
- Fewer replacement parts to stock.
- Reduce costly unscheduled downtime and labour costs attributed to the traditional method of point-by-point manual lubrication. ■

Mike Deckert is V.P. of FLO Components Ltd. and Gabriel Lopez is Marketing Specialist, FLO Components Ltd. Based in Mississauga, Ont., FLO Components Ltd. is a lubrication systems specialist and a leading supplier of Total Lube Solutions and supplies to major construction, road building, aggregate, trucking, mining companies and manufacturers. Contact FLO Components Ltd. by telephone at 1-800-668-5458, email at sales@flocomponents.com or visit www.flocomponents.com.