SEVERAL THOUSAND LUBRICATIONS POINTS ARE SERVICED

Central lubrication system installed at Paulaner

Machines and equipment in the food and beverage industry must meet highest requirements. Particularly with the lubrication of such plant equipment, individual system solutions are essential to meet the various requirements.

It is not just about protecting valuable machines for the long-term against a lack of lubrication and from wear, but also to extend the life span of the complete system. Particular attention is paid to:

– Occupational health & safety

– Environmental protection

– Productivity

– Profitability

Occupational health & safety is substantially increased with the use of a centralised lubrication system. Points that are hard-to-reach, or when the machine is running not even accessible, are lubricated automatically with centralised lubrication. As a result, the danger of injury is considerably reduced compared to manual lubrication methods. Lubricant is optimally metered so that over-lubrication, and as a consequence a grease and oil polluted working environment, is a thing of the past.

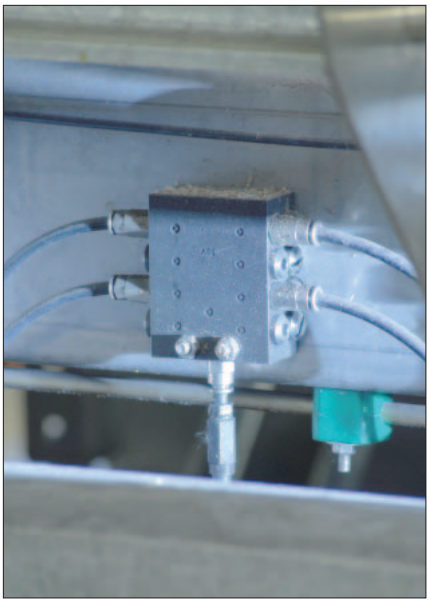

Abb. 1: Lubricant distributor

Also from an environmental protection point of view, a conscious handling of lubricants is a given in today's world. With an automated lubrication system less lubricant is used, resulting in a saving of resources and a protection of the environment.

Productivity is key for filling lines that often run in multi shifts. Unplanned downtime due unsatisfactory lubrication is not acceptable. The service life of machines and production lines is multiply increased with a properly designed lubrication system.

A profitability analysis shows that an investment in a lubrication system is quickly amortised. The annual maintenance costs are substantially lowered by

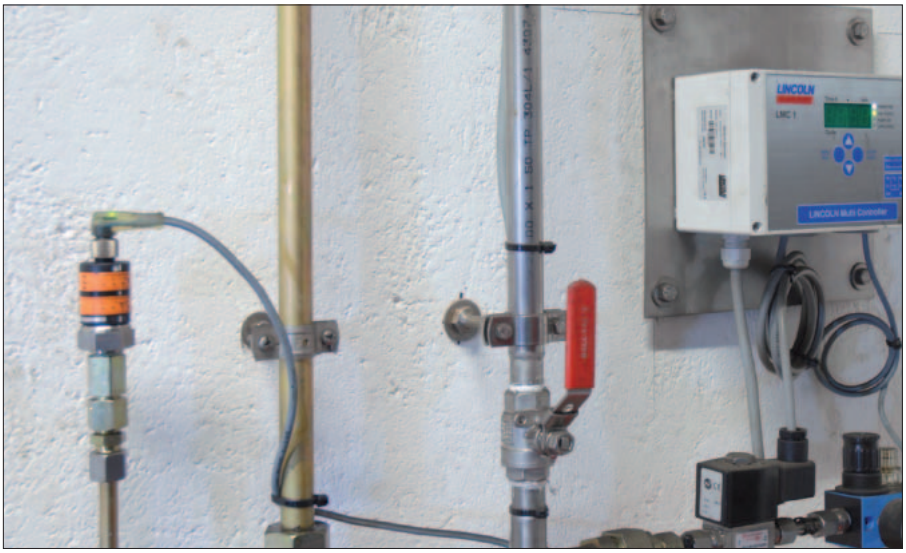

Abb. 2: Pump station with controls

Andreas Schmidt

He has been working for Lincoln since 1984; from 1993 to 2002 he was responsible for Lincoln Customer Service and Field Service. Since 2002 Schmidt is Sales Manager for Lincoln's Business Field "Lubrication Systems for General and Heavy Industry".

Abb. 3: Palletiser with central lubrication system

an evident decrease in lubricant consumption, a proven longer service life for bearings, and the costs saved for manual lubrication. Lincoln offers, with its 100 years of experience, a complete total concept of lubrication systems for all applications and machinery in the beverage industry. The product range extends from compact systems for individual machines up to fully automated, centralised lubrication systems for complete filling lines, that are able to economically supply a few thousand lubrication points.

Paulaner's advantages of the sectional lubrication system

Individual lubrication of the multi-functional plant

In modern filling lines of this dimension, the individual sections never all run simultaneously. It therefore makes sense to only lubricate the section or sections that are currently operating while the rest remains closed. With the Lincoln sectional lubrication system, only the sections that are in operation are lubricated. There is no unavoidable lubrication of still standing areas of the plant. The various sections are supplied with individually adjustable amounts of lubricant that are exactly matched to the requirements of that section.

Drastic reduction in lubricant consumption

Before centralised lubrication systems were installed, the manpower requirements to manually lubricate were not negligible. In accordance with the motto "more is better" over-lubrication was very prevalent. As a result, the lubricant consumption was much higher than today, in fact it was nearly 800 kg per year. Today, the fully automated lubrication systems consume only around 300 kg of lubricant per year.

Optimum control and monitoring of the various plant sections

The know-how of the lubrication systems lies in the control. The Lincoln lubrication systems are fully integrated into the process control system of the filling plant at Paulaner. At any given point in time, the condition of the system can be determined and logged. It is always evident when and what was lubricated – as well as where a potential fault might be. The setting of individual lubrication intervals or the lubricant amount for the individual sections can easily be performed within the process control system that controls the entire filling plant.

Paulaner Brewery lubricates the filling line with Lincoln centralised lubrication systems

Already in 1993, Paulaner installed its first complete centralised lubrication system on a filling line – at the time, a two-line lubrication system for roughly 1,100 lubrication points. This was one of the first complete centralised lubrication systems in the beverage industry.

In 2007 when Paulaner modernised one of their filling lines, a Lincoln sectional lubrication system was chosen. The main advantage of this system lies in the high degree of flexibility. Both the lubricant quantity and the lubrication interval can be individually set for each zone or section. The flexible control and monitoring concept is, in particular, a large advantage for multi-functional filling lines.

The Lincoln sectional lubrication system is a further development of the proven two-line system and is based on the same principal function. The system also operates at high pressure which ensures that bearings can be supplied with roller bearing grease over large distances.

The system offers all the advantages and operational safety of a two-line system. Because it, however, only uses one mainline, the material and installation costs are much lower. The control and metering at each independent section provides great flexibility. With a Lincoln sectional lubrication system it is possible to fully automatically supply a few thousand lubrication points from a central location.

The new filling line at Paulaner can fill deposit return goods as well as one-way bottles, cans or other containers. The new filling line is divided over 3 stories and encompasses four so-called main or guide machines, 2 fillers, a labeller and a bottle washer. The bearings of the corresponding transport conveyors are divided into a further 28 lubrication zones. The Lincoln sectional lubrication

system for this filling system was designed for a total of 1,400 lubrication points.

The supply of lubricant to the bearings originates from a centrally located pump room. A 200 kg PowerMaster drum pump supplies 32 sectional zones within the system. At each zone the lubricant is metered in predetermined intervals and supplied to a total of 175 progressive metering devices. These precisely meter and channel the lubricant through 9,300 meters of tubing to the individual bearings.

Abb. 4: Lubricated chain conveyor slides over guide rails

Even the conveyor chains in the palletising area are lubricated automatically & centrally

In the palletising area, Paulaner has over the past three years, used a mechanically driven oil lubrication system from Lincoln that has proven its worth. Also here, only the chains that are operating are lubricated. As a result, the consumption of lubricant is drastically reduced. The lubrication system is activated by the respective operating drive shaft of the chain – making it a pure mechanical operation.

The lubrication system uses patented plastic polymer guide blocks to apply the oil to the chain. In so doing, the chains receive a thorough application of lubricant that will protect against water, salt and dirt particles. A further advantage is that coarse dirt particles are scrapped off the chain, thereby making the lubrication even more effective.

The MOS 201 lubrication system allows several, independently operating chains to be lubricated. For small systems with up to 20 chains, the pump is directly mounted in a 5 liter reservoir. With larger systems it is possible to centrally supply the pumps with oil from a ring line.

The MOP 201 pump supplies all lubrication points with an exact, precise metered amount of oil. This reduces wear on chains caused by dust and dirt deposits. The oil is applied with either brushes or with the patented Lincoln guide blocks which are especially suitable for the application of oil on chains. Simultaneously, dirt and particles are removed from the chain – further enhancing the lubrication efficiency.

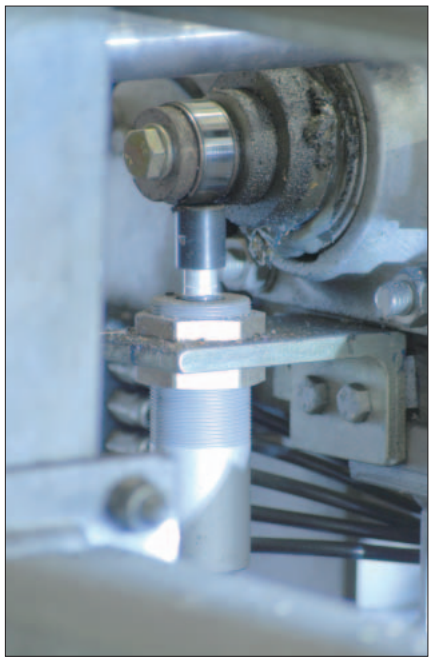

Abb. 5: Chain lubrication pumps above excenter

The drive of the MOP 201 is via an eccentric cam and probe. The rotating eccentric disk corresponds to respective chain that is operating and the lubrication points of this chain. The rotary motion of the eccentric cam is transferred via a plunger into a linear motion. A Bowden cable transfers the stroke of the plunger to the piston of the MOP 201 pump. An expansion of the system in accordance with the number of chains is possible at any time.

Paulaner has been using this system for three years now. In this time period, not one chain has been replaced. It can therefore already be said that the life span of the chains has at least doubled as a result of the lubrication system. □