

Beverage Plant – Process Segment

Fillers

Filler Lift Cylinder Oil Spray System

Application History

Certain liquid fillers require external oil lubrication to insure operation of the lift cylinders. These cylinders use compressed air to lift the cylinder that presents the container to the filling nozzle. Some fillers use springs to return the cylinders, others use a mechanical force supplied by a “pulldown cam” mechanism. The lift cylinders rotate 360 degrees with the main filler turret. The product handled by the filler, and sanitizers applied to meet government requirements, can produce a sticking effect resulting in containers not completely presented for filling. The external oil application reduces wear on the cylinder thus extending the rebuild schedule. The past practice employed a system consisting of a Centro-Matic ram pump or a small barrel pump operated by a timer and periodically sprayed the oil at the moving cylinders with an airless spray nozzle. In order to achieve an effective and consistent spray pattern, the spray system was operated very frequently and used the full pump volume during each lubrication event with no possible adjustment. Some systems were operated by the filler PLC and turned on after a programmed number of turret rotations.

In plant audits and surveys it was noted that this method was messy, costly and ineffective. The spray nozzles were normally supported only by the supply tubing (1/4 “ O.D.) and needed considerable adjustment to spray the target area. It was determined that a better method was required and that the Orsco system offered many advantages. Lincoln discussed the application with major users, machine producers and filler rebuilders and eventually developed the state of the art spray system designed specifically for the application.

The purpose of this report is to communicate the application details, cost saving benefits and a list of potential sales targets to the Lincoln Field Sales Force and realize incremental sales from the marketplace.

Orsco lift cylinder systems have been installed at the following customer facilities to date.

Anheuser-Busch
Pepsi Americas
PepsiCo PBG
Coors
Coca Cola

Details are available on request from Andy Kromer.

Application Details

The Orsco spray system produces an extremely high return on investment by offering the following benefits.

Reduced oil use	75% annual savings or more
Reduced labor to fill reservoir	Current method requires filling every shift
Increased production	Downtime to correct sticking reduced
Improved housekeeping	No excess oil on floor
Reduced waste water treatment	Less oil in sewer
Reduced ownership cost	Less repair / Increased life cycle

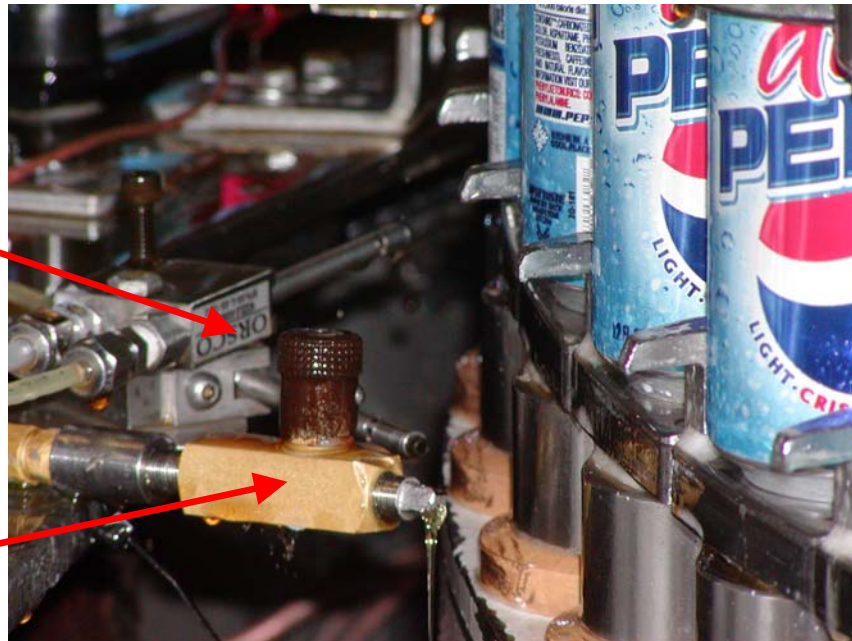
The Orsco design includes a VSR injector stack and standard reservoir to meter the lubrication volumes to the lift cylinders. The standard Orsco control or the customer PLC may be used to control the operation and schedule the VSR cycle rate. Stainless steel nozzles are recommended at the spray points. A customized design is required based on the filler design and customer preference. One nozzle for the lift cylinder application is usually sufficient although two nozzles offer better coverage when mounted at the high and low travel points. Some fillers require oil application to the “pulldown” cam mechanism. This is to reduce mechanical wear. The cam area is under the turret and very difficult to observe, impossible during operation.

The model 170-S-A-1-T-S-02-0000-T-M-NC-C-X (with SS enclosure) is available from Orsco as a complete package. It includes three two-drop injectors and may be supplied with more or less injectors. 120 volt AC power is required with an interlock contact that is switched when the filler operates in a production mode. In most cases a Nema 4X enclosure is required due to the wash down performed in the operating area. See photo below.

Stainless steel nozzles are required based on the filler operating environment. Size and configuration are to be determined by the application criteria. See lift cylinder application photos below.

New Design Orsco spray nozzles (2)

Old Design spray nozzle and flow control



The old style airless spray nozzle is pictured in the foreground in the above photo. Two Orsco spray nozzles are pictured behind the old design flow control valve.

Customized Solution

The Orsco spray system offers the following features:

- Adjustable oil volume by selecting injector time cycle
- Low oil volume application
- Low-pressure air spray
- Consistent, positive oil metering
- Controlled oil application to target area
- Reservoir low-level alarm
- Low air pressure alarm

An application profile may be used as a selling aid and to support enhanced proposals that justify a purchase based on financial payback data. The document is included here in the Application Profile Data Base that is updated and distributed periodically to the Lincoln District Managers.