

Sanitary Centrifugal Pump Fully Evacuates CIP Solution, Inhibiting Entrained Air

PROBLEM

The Dober Group, of Midlothian, IL, builds Clean-In-Place (CIP) systems for pharmaceutical and biotechnology companies. These applications generally require flow rates from 6 gpm to 50 gpm, with 5 psi to 50 psi head. Temperatures are typically in the range of 180°F.

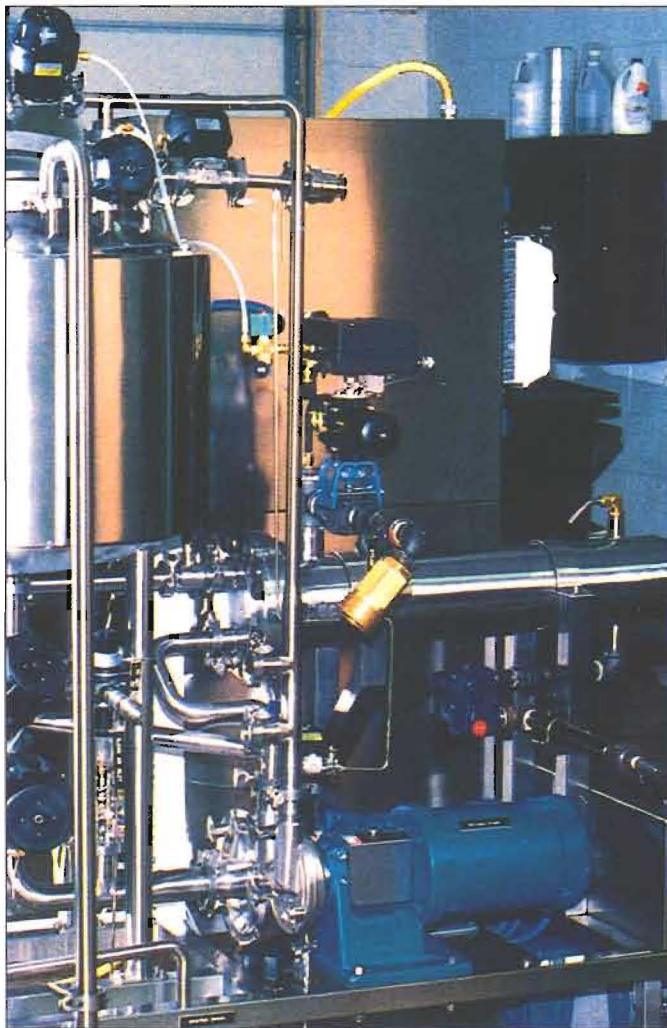
A major challenge in these applications is to maintain the return flow of CIP solution from the vessels being cleaned to the CIP return tanks. One customer of the Dober Group had a problem when emptying the CIP solution from the tanks being cleaned. After reviewing the installation, Dober engineers realized the return pump was air bound. CIP systems typically entrain air in the CIP solution. The entrained air can cause a conventional, centrifugal pump to become air bound, thus blocking the flow of solution to the pump inlet. Though Dober engineers used air eliminator valves on the suction side of the pump, they continued to have problems with completely evacuating the CIP solution. In addition, other problems resulted from the low NPSH and air binding including shortened pump seal life, more downtime for pump maintenance, and loss of CIP solution that goes to the drain instead of returning to the CIP tank.

SOLUTION

Bob Rybarski, Vice-President of Dober's Chematic Division,

searched for a solution to these problems. He knew that a self-priming pump could solve the problem; however, it would have to be sanitary and acceptable to the pharmaceutical and biotechnology industries. Rybarski found that Fristam Pumps, Inc., in Middleton, WI had a pump for this application. Fristam's FZ Series, is a "liquid ring" design with very close internal tolerances. This feature allows efficient handling of products with entrained air. The pump will

evacuate CIP solution from the vessels being cleaned. In addition, air eliminator valves are no longer needed, pump seal life has increased, pump downtime has decreased significantly, and the customer has been able to reduce the costs associated with lost CIP solution. The Dober Group reports that their customer is very satisfied with the performance and results of their CIP system. ■



Dober's CIP system

PHOTO COURTESY OF FRISTAM PUMPS, INC.

accommodate flow rates up to 120 gpm at pressures from 5 psi to 55 psi. The model is designed for sanitary applications and can be finished to the demanding specifications of the pharmaceutical and biotechnology industries. Some of the required modifications include pump casing drains, special internal polishing, and electropolishing of all contact surfaces.

RESULT

Dober Group's customer had three vessels to clean. Instead of placing a standard centrifugal pump by each vessel for CIP return, engineers were able to centrally position one self-priming pump, which returns CIP solution from all three vessels. To complete the system, another centrifugal pump is used as a CIP supply pump.

Since Dober started using these pumps,

they can completely