

## CASE STUDY

*Real solutions for real problems  
is what we specialize in!*



R. A. ROSS & ASSOCIATES, INC.  
2231-A Ampere Drive, Louisville, KY 40299

## Whatever it takes.

### Custom solution for a costly diaphragm failure problem

#### PROBLEM/SOLUTION:

A major chemical manufacturer in Kentucky was having an issue with premature diaphragm failures on a chemical transfer operation. They had tried several manufacturers but had not found a solution.

The diaphragms in the competitors air operated double-diaphragm (AODD) pumps were failing consistently sometimes only lasting 2 weeks. This was not an easy application. The pumps were handling various fluids with pH of 2-14 with temperatures of 40F to 150F. Nitric acid, Phosphorous acid, Sodium Hydroxide, Potassium Hydroxide, Methanol and other solvents. In this harsh application, the pumps are required to transfer from tanks to totes or drums. The operators must fill the drums quickly and change to another chemical to fill the next drum.

After visiting with the customer and seeing the operation, it was surmised that a primary issue was having to run the competitive pumps at a high cycle rate to fill the drums quickly. With the ARO pumps design of .617 gallons per cycle (compared to .37 Gallons per cycle of the existing pumps) the ARO pumps could be operated at approximately 60% the cycle rate to achieve the same flow.

*Continue on second page*



*Custom diaphragm pump package, details inside*

(Continued from page one)

Besides lowering the pump cycle rate, Aro's Long Life PTFE (TEFLON) diaphragms were chosen to extend the pump life even further. An added concern with the existing pumps was the fluid pulsation and possible water hammer when the valve to the drum was closed. A 316SS/ Teflon Blacoh AODD dampener with fully automatic air control was installed. Lastly, an ARO air line kit complete with air hose, air pressure regulator/filter with gauge was connected for a complete solution.

After two months in operation, the pumps were still (and still are) running without problems.

### ARO vs COMPETITOR BRAND PUMPS USED IN THIS CASE STUDY

A typical air motor and fluid kit repair costs about \$400 less with the ARO pump. ARO pumps far surpass the competitor, especially considering ongoing cost of operation. Combining the lower cycle rate (longer periods between service) and lower parts costs add up to a **much lower true cost of ownership with ARO.** (Note the figures on the chart below.)

Brand	Competitor	ARO
Model	NPD-40BST-NPT	PD15A-ASS-STL
Casing/Body Material	316SS	316SS
Diaphragm Material	PTFE	Long-Life PTFE
Inlet/Outlet Connections	1.5" NPT	1.5" NPT
GPM max (as fitted)	100	123
Gallons per cycle	0.37	0.617
Maximum Cycles per minute	270	199
Maximum rated air pressure	100	120
Air Motor Kit*	\$360.00	\$68.00
Fluid Repair Kit*	\$656.00	\$577.00

\* Typical price in 2018. Note the ARO std. PTFE (not long-life) comparable fluid kit was \$425.00



## LONG LIFE® PTFE (TEFLON) DIAPHRAGMS Keep your pumps flowing!



#### FEATURES AND BENEFITS:

- Proven 2 time increase in service life over standard PTFE\*
  - *Saves time and money. How much better would it be if you maintained the pump half as often?*
- Made with uniquely formulated PTFE that provides greater flex life
  - *More flexes mean longer on line operation.*
- Same great chemical resistance as conventional PTFE
  - *Confidence that your chemicals would be pumped without worries.*
- Seamless replacement for your existing PTFE diaphragms
  - *No added parts means simple conversion saving time and money.*

\* As measured by mean time between failure

The ARO engineering team is continuously evaluating advancements in material technology and apply it to our diaphragms. Over a six month side by side accelerated durability test, the Long Life PTFE diaphragm demonstrated double the life over our current convectional PTFE baseline.

ARO Long Life PTFE Diaphragms are a superior choice over conventional diaphragms



The new AODDampener is specifically designed for AODD pumps and constructed of 316L Stainless Steel with a PTFE diaphragm. This single configuration will allow the unit to handle most AODD applications and is great for off-the-shelf capabilities.

No longer will the cost of a dampener surpass the cost of an AODD pump. We are offering this product at a price lower than other manufacturers' plastic or metal units. Every Blacoh unit is manufactured in the United States to the highest standard so you can assure that your unit is maximizing performance. Utilize this unit to improve your AODD pump, reduce harmful vibrations, and save on overall energy cost of your system.

#### FEATURES AND BENEFITS:

- Reduce pulsation
- Extends pump life between rebuilds/minimize down time
- Protects in-line equipment
- Compact footprint
- Standardized for easy installation



More about the ARO Pump product line on page 4

Visit our website at [www.raross.com](http://www.raross.com) for many other case studies about how we solved problems and save downtime and money for our customers!



- ARO Pump features include:
- Remote control (*pictured at right*)
  - Electronic interface
  - Solenoid actuation diaphragms
  - Pump speed controls
  - Air line controls



**NOW AVAILABLE:**  
3" Plastic, all non-metallic pumps



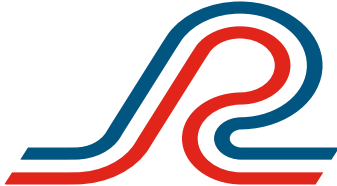
ARO offers a wide range of air operation piston and double diaphragm, sealless, sanitary, and fully automatic pumps in a variety of sizes and materials, including stainless steel, all with electronic interface.

**We are an ARO Platinum Level Dealer which means:**  
• More savings for you • Faster delivery • Better support

## CONTACT US

Call us for information on how we can help solve your problems in any of the following areas:

- ▶ Pumps
- ▶ Blowers
- ▶ Filters
- ▶ Mixers
- ▶ Tanks
- ▶ Vacuum Pumps
- ▶ Mechanical Seals
- ▶ Heat Exchangers
- ▶ Repairs



**R. A. ROSS & ASSOCIATES, INC.**  
*Keeping process flowing since 1985*

R. A. Ross & Associates, Inc.      502 267-8677  
Headquarters      Fax 502 266-7928  
2231-A Ampere Drive      1 800-489-8677  
Louisville, KY 40299      solutions@raross.com  
www.raross.com



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