

ARO[®]

An Ingersoll Rand Business

WASTE WATER TREATMENT DEWATERING APPLICATION

- ▀ The EVO Series™ Electric Diaphragm Pump was placed in a manufacturing facility producing chemicals and other equipment for the commercial cleaning industry.

Products being manufactured at the facility include: dish washing detergent, hand cleaners, sanitizers, disinfectants, floor cleaners, strippers, finishers, sealers for stone, tile, and grout, degreasers, glass cleaners, laundry detergents and other chemicals and equipment.



APPLICATION OVERVIEW

EVO SERIES™

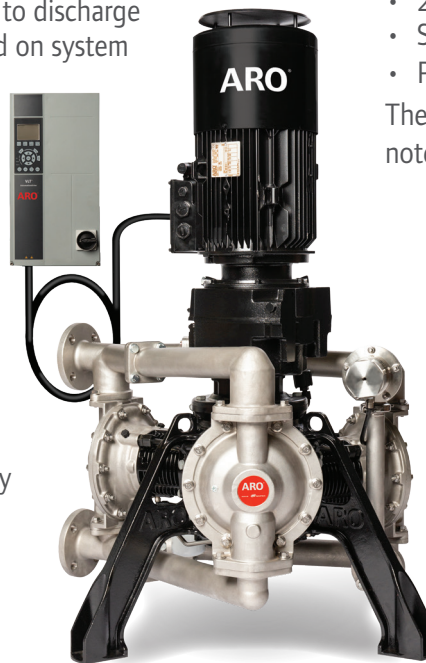
ELECTRIC DIAPHRAGM PUMP

The Application

The large commercial cleaning product manufacturer required the following features in their wastewater discharge pump:

- The ability to maintain consistent flow rates at varying head pressures
- Constant operation at multiple speeds
- Precise metering of wastewater into the municipal sewer system
- The ability to quickly increase flow to discharge a large volume of wastewater based on system requirements

The EVO Series™ Electric Diaphragm Pump was installed to push a precise amount of wastewater through a filtration system with varying pressures. The pump discharges the exact amount of treated wastewater based on the allowable flow rate dictated by the municipality. The pump provides “sprint” capability to discharge large amounts of wastewater if it is required by the treatment process.



Operating Conditions

- **Running hours:** 1,600
- **Speed:** avg 40 pump rpm/4.2 rad/s-17 Hz
- **Torque avg:** 10% achieving avg 26% max peak
- **Current flow:** avg 3.6 amps achieving max 5.4 amps
- **Pressure avg:** 16.9 psi-1.1 bar
- **Flow rate avg:** 30 gpm-113.6 l/min

The Results

Specifications of the pump installed:

- 2" EVO Series™ Electric Diaphragm Pump
- Stainless Steel
- PTFE Diaphragm and Balls

The customer highlighted the following benefits noted after 4 months of operation:

- **Low pulsation** results in significant output efficiency
- Ability to **perform consistently at different speeds** to be able to maximize the customer's output requirements
- Significant **noise reduction**
- Pump has **not required any maintenance** reducing costs and resources

The EVO Series™ Electric Diaphragm Pump **saved the customer money** by maximizing energy efficiency and minimizing maintenance costs.

Runtime and Pump Speed Monitoring Graphic



Duty Cycle Graphic



The EVO Series pump has been installed and running for over 4 months. The ARO team is monitoring the pump performance remotely. The pump is consistently meeting the customer needs and has not required any maintenance.

Source: Ingersoll Rand R&D Lab

Technical Data Specifications

- **Inlet Configuration:** 2" Hose, 6ft (1,8m) vertical, 30ft (9,1m) hose
- **Outlet Configuration:** 2" Hose, 30ft (9,1m) having part of piping flooded into a filtration unit at ground level
- **Flow:** 30 gpm /113.6 l/min during the day; 6.8 gpm /25.7 l/mi) in the evening
- **Duty Cycle:** Continuous Duty

The duty cycle rate has been 60% assuming VFD is powered meaning average working hours are between 14-16 hours.

Technical Observations

- Easy to install: Easy and fast to set up the pump due to the Smart ARO® Set Up (SAS) software
- Smooth operation under low or high load conditions
- Significant noise reduction while operating
- Good conservation of wear components (balls, seats and diaphragms); diaphragm life increased significantly
- Since installation no mechanical or electrical issues have been presented and there have been no wear component failures.
- Easy and fast daily start up with no additional modifications necessary throughout the day.

Customer's Testimonial

"This pump is quiet! We do not even notice its running except for the occasional check ball shaking. So much quieter than the positive displacement pump installed previously."

"The pump runs great - we have over 1,500 hours of runtime and have not had to touch it yet."

"I am excited to calculate the energy savings compared to our previously installed positive displacement pumps."

"One thing we noticed is that our wastewater output went down significantly due to the low pulsation compared to the previous pump. The higher pulsation caused higher readings on the meter and we are restricted in the amount of wastewater we can discharge. The minimal pulsation of the EVO Series pump saved us a lot of money!"

The EVO Series™ Electric Diaphragm Pump offers an exclusive set of proven technologies packaged into one breakthrough pump.

- ▶ Top pump efficiency
- ▶ Low pulsation
- ▶ One of the best solution for dosing applications
- ▶ High efficiency for companies that use activated carbon in WWT applications
- ▶ Suspended solids capability



Contact an authorized ARO® distributor for a product demonstration and view the variety of material configurations available to meet your compatibility requirements.

ARO®

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About Ingersoll Rand Inc.

Ingersoll Rand Inc. (NYSE:IR), driven by an entrepreneurial spirit and ownership mindset, is dedicated to helping make life better for our employees, customers and communities. Customers lean on us for our technology-driven excellence in mission-critical flow creation and industrial solutions across 40+ respected brands where our products and services excel in the most complex and harsh conditions. Our employees develop customers for life through their daily commitment to expertise, productivity and efficiency. For more information, visit www.IRco.com.

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