

ARO[®]

An Ingersoll Rand Business

EVO SERIES™
ELECTRIC DIAPHRAGM PUMP

EVO Series™ Electric Diaphragm Pump

STARCH GLUE INDUSTRY

Choose a top efficiency pump for heavy-duty application

- Cardboard manufacturing is a high energy-consuming industry, due to the large volumes required and the characteristic of the raw material used, some manufactures are forced to work 24/7 at a heavy duty industrial rate.

Starch glue feeding and recirculating line is one of those rigorous manufacturing processes. Starch Glue is used to bond different paper layers in the corrugated cardboard production, the quality of glue is crucial for producing high quality cardboard.



APPLICATION OVERVIEW

EVO SERIES™

ELECTRIC DIAPHRAGM PUMP

Starch glue has to flow continuously to avoid filming, it is highly sensitive to overheating and high shear. For those reasons, diaphragm pumps have always been the “pump of choice” for this application. However, with energy prices increasing and the environmental impact of energy usage itself, more focus has been directed towards reducing energy processing costs. Air production in manufacturing plants is one of if not the most expensive energies to use in production.

In these particular success stories, customers were intrigued about an electric style pump for their particular applications and the EVO Series Electric Diaphragm was the perfect answer!

Customer Type

Both of these stories come from large companies producing corrugated cardboard all the way to producing cardboard boxes for various industries.

They produce boxes by starting from paper rolls and producing their own corrugated cardboard.

Both customers have multiple corrugating machines running simultaneously at variable duty according to production needs.

The Application

Customer 1: Two different types of starch glue, single-faced and double-faced layers, both lines are feeding simultaneously 3 corrugating machines that run at different duties according to production needs.

Customer 2: One type of starch glue is used to feed 4 corrugating machines running simultaneously at different load according to production needs

Both customers were looking for an electric solution able to meet the following criteria:

- High efficiency to reduce energy consumption
- Handle variable viscous fluids, Starch glue viscosity could vary between 1500 and 3000 cPs
- Gentle pumping, to avoid damaging the quality of the glue and consequently damage to the finished product
- Self-regulating, to adapt to demand variation
- Pump to be easily integrated in the system for remote monitoring and control.
- Easy maintenance, to avoid long downtime and production loss

Single face



Single wall corrugated



Double wall corrugated



Triple wall corrugated



The Solution

Customer 1

Model: 2" EVO Series™ Cast Iron/Santoprene – EP20-CFAAA-CSV-ACA

Quantity: 2 pumps in total, one for Single-faced glue and one for Double-faced glue

Duty: 24h/7d @ 4,5 bar (65 psi) and average 100 l/min (26 gpm) for each pump

Running time after start-up: ~2000 h for each pump (~4000 h in total) considering the two pumps.

Customer 2

Model: 2" EVO Series™ Cast Iron/Santoprene – EP20-CFAAA-CSV-ACA

Quantity: 2 pumps in total, one running and one stand-by

Duty: 16h/5d @ 4 bar (58 psi) and average 320 l/min (84 gpm) for each pump

Running time after start-up: ~450 h in total for both pump (roughly 50% each)

Technical Observations

In addition to the advantages already described, customers experienced:

- **Low noise operations:** reduced noise compared to other positive displacement pumps
- **Smoother flowrate to corrugating machines:** thanks to its special three chamber design and precise torque control, the pump is able to provide a constant flowrate with little pulsation
- **Incredible reduction of energy consumption:** after a few weeks of operation, one of the customers calculated their ROI of less than 14 months

Customer's Testimonial

"When we installed the pump, we tested it by simulating a sudden increase of required flowrate at corrugating machines and we have been impressed on how the pumps react promptly without any loss of flowrate...the pumps are perfectly self regulating. There is no longer a need to change the pump set up when moving from full production load to recirculating load!"

Glue Kitchen Manager at Customer 1

"Moving to the EVO Series pump was a wonderful choice! One pump can actually do the job that two pumps were doing in the past! This allows us to run only one pump at a time, while having a stand-by pump ready to run if needed! With EVO Series™, we are not only reducing our energy consumption but also increase our productivity rate by reducing at minimum our downtime and increasing maintenance intervals!"

Maintenance Manager at Customer 2



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

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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.

We are committed to using environmentally conscious print practices

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