

EVO SERIES™ PROCESS PUMP HELPS IMPROVE CUSTOMER'S CONCRETE WASHOUT PROCESSES

The Application

Concrete washout is the process of cleaning the chutes of ready mixed concrete trucks, the hoppers of concrete pump trucks and other equipment used on construction sites after concrete has been poured. The process involves the collection, retention and recycling of all the concrete washout water and solids, which have caustic and corrosive properties, so that they do not come into contact with the soil and surface and ground waters. This process needs to be carried out in line with environmental regulations.

...continued on page 2



Several types of leak-proof containers are used by builders to collect and retain any leftover or unused concrete and other cementitious materials during and at the end of each work day. This waste is then treated and recycled/disposed on-site or off-site, with one of the

procedures involving the use of a compressed air-driven filter press to filter out the solid content from a concrete and water mixture. A pump able to hold sufficient deadhead pressure is needed for this application to properly dry out the filtered material.

The Story

- ▶ ARO®, a brand of Ingersoll Rand and a leading global provider of diaphragm pump solutions for numerous industries, has recently collaborated with an American supplier of concrete washout waste containment, disposal and recycling services, on streamlining the company's filter press processes. As a result of the cooperation, the customer, which works with some of the largest construction builders across the US, has significantly increased the capacity of their off-site concrete washout facility in Seattle, Washington.

The company provides special pans to construction sites where they are filled with washed out concrete. These pans are then picked up and transported to off-site locations where the waste can be handled in accordance with state and municipal mandates. When the company faced operational challenges at its Seattle facility resulting from issues with the existing pump being used to run their filter press, it turned to ARO experts for help.

- ▶ EVO has an easy connect/disconnect plug for the leak detection sensors
- ▶ They could validate in their operation the low pulsation of the EVO pump and its ability to hold sufficient deadhead pressure to properly dry out the filtered material
- ▶ The digital solution provided by EVO will enable the customer to control the pump from their PLC interface to avoid manual operation



Reinforcement Needed

For the filter press application, the customer was using a competitor's 1" AODD (air-operated double-diaphragm) pump. The air driven operation proposed the following limitations on the pump being used:

- ▶ **Size** – A larger pump would have significantly increased productivity
- ▶ **Flow** – The customer desired a flow three times or more, but this increase would have required a costly compressor upgrade estimated at around \$10k - \$15k
- ▶ **Freezing** – the existing pump often froze in winter months.

Operational Data

Avg flow rate: 35-45hz which corresponds to ~55 to 75 GPM (208 – 284 l/min). Initially starting with low back pressure and reaching 100% motor torque limit of max pressure 120 psi (8.3 bar).

Speed is de-rated to maintain pressure until the pump is fully deadheaded.

Inlet: 3ft (0.9m) or so above the water level.

Outlet: 30-40 ft (9 – 12m) with around 5-8 ft (1.5 – 2,5m) of vertical height to the filter press.

Duty cycle: Variable. Tends to have higher working hours during rainy seasons.

Piping: designed to allow small solid content to pass through.

VFD installation: 10ft (3 m) distance from the pump in an enclosure area.

Having analyzed the customer's concrete washout process needs, ARO recommended the EVO Series™ electric diaphragm pump as the most suitable replacement. This pump, which features the following benefits made it the ideal solution for filter press application:

- ▶ Innovative diaphragm design
- ▶ Electrically charged operating system. No air compressor needed.
- ▶ Maximum flow rate of 140 gpm (530 l/min)
- ▶ Maximum pressure of 120 psi (8.3 bar)
- ▶ Suction lift and solid passing capabilities
- ▶ Low pulsation levels
- ▶ True deadhead capability

Note: The EVO pump model recommended was a 2" pump built in cast iron with santoprene ball checks. Standard duty 5.5 Kw gear motor 400V 3phase. Standard duty VFD 7.5Kw 50/60hz 380-500V 3phase

The installation of the EVO Series™ pump at the customer's facility helped the company address its main pain points. The pump delivered the increased flow rate target. The pump's electrical capability completely obviated the need for a new compressor and thus spared the customer a significant financial outlay to purchase the equipment. What is more, the EVO Series™ electric diaphragm pump entirely eliminated the potential for freezing.



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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