

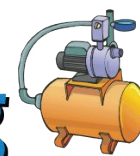
Welcome

IPP/T

readers

focus  
on

## Fluids Handling

CAPACITIVE SENSORS WITH BLUETOOTH  
SAFELY DETECT MANY MATERIALS

Bluetooth capacitive sensors of the 26 series from Rechner have a hemispherical active surface for level control of products with a dielectric constant as low as 1.1  $\epsilon_r$ . The sensors detect products such as: bulk materials, like plastic granules, powder, cereals, feedstuffs; liquids, like water, juice, wine, oil, chemicals, or pharmaceutical solutions; pastes in the food processing industry, liquid gels, resins, or glue. The Bluetooth control function provides for greater sensor sensitivity, optimal sensor adjustment, and deposits on the sensor surface. Housing material is PTFE and a special version with flange is available. Sealing can be made with a gasket or PTFE-tape. Communication is via an Android mobile app.

Rechner

www.rechner.com

MANUAL AND AUTOMATED RESILIENT  
SEATED BUTTERFLY VALVESTEMPERATURE REGULATION AND  
PROCESS MONITORING THERMOMETERS

Cameron Instruments has announced that Ebro offers a broad range of high accuracy thermometers with fixed probes or probes with cable and hand grip, available both blunt and pointed. The model TFX420/430 provides RTD accuracy up to 0.05°C (-50° to 200°C) in an impact resistant, waterproof package. The lithium battery provides a life of approximately 5 years and is customer replaceable. Units include an easy-to-read display with min./max. and hold functions for temperature, the company says. The temperature measurement range of -100° to 500°C makes them suitable tools for process monitoring, temperature regulation, and core temperature measurement.

Cameron Instruments

www.cameroninstruments.com



## VOLTAGE OUTPUT PRESSURE TRANSMITTER

The STS ATM.1ST is an electronically compensated pressure transmitter provides a 3-wire, analog voltage output. Available from SRP control systems, the transmitter offers accuracies of  $\leq 0.05\%FS$  or  $\leq 0.1\%FS$  including linearity, hysteresis, repeatability, zero and span setting errors. The transmitters utilize piezoresistive silicon sensor technology. The modular construction is said to provide manufacturing flexibility. Applications for the devices include test and measurement, industrial process monitoring and control, and test benches and calibration. Typical Total Error Band is  $\leq 0.3\%FS$ , compensated temperature -40° to 255°F, and full-scale ranges from 1 to 15,000 psi. Gauge, absolute or sealed gauge are available, as well as two output signal ranges.

SRP control systems

www.srpcontrol.com



ES series resilient seated butterfly valves from A-T Controls cover industries from general purpose to chemical, food and beverage, pulp and paper, wastewater. The product line features many choices of seat, disc, and stem materials. The butterfly valves are designed to comply with MSS-SP-67 and API-609 and are tested to comply with API-598 standards. They are compatible with ANSI 125/150 flanges. Specifications include a square stem in sizes up to 24 in., ductile iron (ESP) or stainless steel (ES) body material, and body wafer or lug style, ductile iron, or stainless steel. Other materials may be available on request. The seat is EPDM, Buna-N, Food grade EPDM, Viton, PTFE, the stem is 431 SST standard (431 SST, 17-4PH and others available), and stem bushing is FRP (brass available).

A-T Controls

www.a-tcontrols.com

Data  
Acquisition  
Supplement  
Inside

# The application possibilities of air-operated double-diaphragm pumps

By Peter Schüten

**W**hen first learning about air-operated double-diaphragm (AODD) pumps, many people are left asking how they can excel in so many diverse applications. The success in this enormous application range, and consequently the popularity of AODD pumps, lies in the pump's design characteristics. These characteristics include:

- Simple startup
- Self-priming capability
- Resistant to dry running and runs smoothly with solids
- Gentle displacement pumping
- Continuously adjustable via controllable air volumes
- Self-adjusting when the medium changes
- No drives or rotating parts in the pumped medium
- No shaft seals
- Overload-proof – if the counter-pressure equals the drive-air pressure, the pump stops and



*Air-operated double-diaphragm (AODD) pumps provide technology for rugged in-the-field applications that require the safe and efficient transfer of everything from solid-laden slurries to corrosive, abrasive and even explosive materials.*

restarts when the pressure drops – without regulation or monitoring via mean supply response time (MSRT) devices

- Easy to use in ATEX areas
- Current-less drive via compressed air

The first two characteristics —

simple startup and self-priming — help explain why AODD pumps are so flexible. Part of this flexibility includes easy installation. Since there is no need to align the pump when changing locations, installation can be performed by simply standing the pump upright and connecting the fluid lines and air supply. And unlike other types of pumps, there is no need to prime an AODD pump.

Therefore, rather than the labourious and, depending on the liquid, dangerous process of bringing the medium into the pump manually, the pump simply fills itself during operation by sucking the medium out of the receiver.

Once in operation, an AODD pump is not only easy and simple to control, it also does not require any control electronics and/or expensive frequency converters, which might cause the motor temperature to rise during slow

running without a forced cooling fan (critical for ATEX). Instead, the air volume and the pump flow rate are simply regulated with a needle valve.

In addition, if, for example, the density or viscosity changes due to the temperature, the pump will automatically run slower or faster without damage to the pump or without the loss of liquid, as is the case with internal pump slip or a magnetic coupling that can tear during operation. And if the liquid fails to flow, for example, because the tank is empty, it simply continues to run dry.

Another important design characteristic of the AODD pump is gentle displacement pumping. This characteristic stems from the fact that these pumps allow solids of considerable size to pass through them, resulting in very gentle pumping and low shear. And because AODD pumps do not

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#### FEATURES

- For measuring and monitoring of conductive fluids
- Stainless steel version
- Bi-directional measuring
- Flow and temperature measurement
- Monitoring function
- 2 configurable outputs
- Display operation is workable while wearing gloves
- Space-saving design

#### SPECIFICATIONS

- Accuracy:  $\leq \pm 0.8\%$  of reading,  $+0.5\%$  Full Scale
- P max.: 16 Bar, T max.:  $70^{\circ}\text{C}$
- Connections: 1/2", 3/4" and 1"
- Transmitter 4 – 20 mA
- Alarm outputs

#### HIGHLIGHTS

- Coloured, multi-parameter configurable TFT display, rotatable in  $90^{\circ}$  steps
- Measurement is not dependent on the process liquid
- Two outputs can be set as switch, analogue or frequency



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*The design of Almatec E-Series AODD pumps features an optimized flow pattern that allows them to offer increased pumping capacity while consuming less air, resulting in a more cost-effective pump.*





*Air-operated double-diaphragm plastic pumps operate in varying liquid-transfer applications. The solid-body design and thicker walls of the series help the pump meet strict operational demands.*



contain any drive parts or other rotating parts within the fluid, there is no need to worry about damaging the shaft seal.

Operational risks and the need to maintain mechanical seals (including the use of additives for flushing, etc.) are also eliminated. Instead, a purely static seal takes effect, which is "hermetically sealed" according to guidelines from the German Technical Guidelines on Air Pollution.

It's also important to mention that an AODD pump is overload-proof. This means that the pump can only build up as much pressure as you give it via the drive air pressure, which, for example, can be the maximum permissible pressure of your filter. If the outlet pressure reaches the drive air pressure, the pump simply stops, meaning that there is no danger of the pump or the line bursting if the pressure line is blocked. This results in overload protection for lines/filters and a simple on-off operation via valves in the medium.

There is not a risk of sparks from an electric drive, also self-heating is not an issue, and static charges can be dissipated via the pump's conductive materials (as well as plastic). This also makes AODD pumps ideally suited for use in hazardous areas (ATEX) and mobile applications. Light and compact, these pumps are also simple to install in hazardous areas and can even operate with stored air in the case of an emergency.

Another key characteristic of an AODD pump is its enormous range of pump materials and their possible combinations. The interior of an AODD pump can be manufactured in many elastomers and thermoplastics, from "black rubbers" such as neoprene or Buna-N to PTFE. The pump's housing can be manufactured in various metals, ranging from

cast iron and aluminum to high-grade stainless steels. The housing can also be manufactured in a variety of plastics, including high-performance plastics such as PTFE or PEEK. Therefore, depending on the mechanical/chemical properties or the temperature of the medium, the pump can almost always adapt to the application. And the

fact that the pump is constructed in a solid-block design also provides additional design advantages when it comes to safety, including high stability and rigidity, static weight, and smooth and highly chemical-resistant surfaces.

In conclusion, if you're looking for a pump that is flexible; simple to start up, control and maintain; that is overload-proof and self-adjusting without regulation; that can handle highly aggressive and/or solids-laden media without damage (even in hazardous areas); that can suck in medium

when it is dry and also run dry; and that is also comparatively cheap to purchase and maintain; then an AODD pump is the perfect choice for you.

*Peter Schüten is the Product Management Director for Almatec, a manufacturer of air-operated double-diaphragm pumps. He can be reached at [peter.schuten@psgdover.com](mailto:peter.schuten@psgdover.com). Almatec is a product brand of PSG, a Dover company.*

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