



# Application Alley

## **SME Fluid Level, Pressure, and Flow Sensors**

*Helping Customers Win*

## Helping customers win with fluid level sensors that deliver

The desire for more information and convenience, along with worldwide water and energy conservation initiatives, has led to a flurry of new fluid level magnetic and conductive sensor designs. Appliances are the number one adopter of the technology, with HVAC (condensate level sensing) and automotive (coolant and other fluid sensors) following closely behind.

Standex Electronics developed a conductive sensor using their patented concept. The electronics sense that condition and knows liquid is clinging to the sensor. The electronics make the surface coating on the sensing probes invisible to the sensor, and the sensor only indicates a full fluid condition when the sensing probes are fully submerged. The sensor design was so successful, it was later carried over to a variety of laundry appliances utilizing similar high viscosity detergents.

Another example is a multi-level coolant sensor for large trucks. The company's earlier magnetic reed switch level sensor had issues with liquid intrusion damaging the internal components of the sensor's parts during installation and assembly. The design is a two piece sensor assembly installed in the tank composed of a switch assembly and a float containing the actuating magnet. The sensor provides feedback at both a warning level and a danger level. The design gives truck operators a window of opportunity to add coolant or plan service. Previous sensor designs would only indicate a full or empty condition, and the operator would not know a low coolant condition until the tank was almost

empty. This put the vehicle at a high risk of overheating. The Standex Electronics Electronics fluid level design and functionality in effect saves time, cost, improves safety, and efficiently provides feedback that enhances overall performance.

A magnetic switch-based level sensor for condensate measurement was designed for an HVAC company that required a basic and inexpensive overflow level sensor for a commercial air conditioning unit packaged in the ceiling or walls of buildings. The unit produced condensate that would go down the drain and be evacuated; if the condensate backed up, it could pool up in the air conditioner, potentially causing a flood condition. The customer needed to accurately measure a very small amount of fluid that built up in the drain pan (less than .0200-inch) and the sensor needed to fit in a tight area with a very small amount of physical movement of the float to close the switch. Normally this might be handled best by conductive technology, but the customer wanted a low cost but dependable solution that would not require additional electronics.

A final example is a smart conductive automotive sensor used to detect the amount of water in diesel fuel tanks, including off-road automotive, marine, trucking, buses, construction vehicles, and power generators. The new electronic solution has no moving parts inserted in the fluid, the sensor's unique design allows it to continuously sense resistance and measure different resistance levels. If too much water is collecting at the bottom of the filter ahead of the diesel fuel tank, the device alerts the vehicle control device that action needs to be taken and water drained off.



The ability to collaborate in house through the full part development eliminates discontinuity that can arise with multiple suppliers and ensures that any issues that arise as the product progresses through development are quickly addressed.

### Developing sensor designs that work

Standex Electronics has developed thousands of sensor designs, including simple reed switch magnetic sensors and conductive sensors, as well as passive devices with no electronics. With in-house capabilities for manufacturing the sensor, packaging, and electronics, the company has developed a proven process for developing designs that work. The process begins by asking a few simple questions:

- What liquid is to be measured?
- Are single or multiple measurement points required?
- Will a reed switch based, mechanical float sensor perform the operation or does the application demand a sensor without moving parts?
- Is electrolysis a concern?
- What is the desired output signal from the sensor?
- Does the customer have electronics for signal conditioning or should the sensor be integrated with a circuit?



Standex Electronics has diverse capabilities which allow for dynamic solutions in the field of fluid level, as well reed based sensors, and magnetics components. Expertise and manufacturing related to engineering, design, plastic/insert molding, in-house tooling, and more results in a completely customized package that fits the required form, function, and specifications as necessary. Specific mold compound can be selected with a TCE (thermal coefficient of expansion) that exactly matches that of the reed switch, ensuring that the molding process does not put any stress on the glass to metal (hermetic) seal. In-house dynamic contact resistance (DCR) testing is used to determine any tiny flaws in the reed switch that could result in early life failures.

Many of the newer sensor designs Standex-Meder can deliver to include onboard electronics, usually a circuit on a PC board packaged with a sensor that completes an operation based off supplied power and what the product is sensing. Electrical and mechanical engineers work hand in hand without having to worry about coordination of any issues that may arise as the product progresses through the development design and manufacturing process.

Find out more about our ability to propel your business with our capabilities and solutions by visiting [www.standelectronic.com](http://www.standelectronic.com). Give us a [hello@standelectronic.com](mailto:hello@standelectronic.com) today! One of our engineers or sales leaders will engage your team.



## About Standex Electronics

Standex Electronics is a worldwide market leader in the design, engineering, and manufacture of standard and custom electro-magnetic components, including magnetics products and reed switch-based solutions.

Our magnetics offerings include planar, current sense, and conventional low- and high-frequency transformers and inductors. Reed switch-based solutions include Meder, Kent, and KOFU brand reed switches, as well as a complete portfolio of reed relays, and a comprehensive array of fluid level, proximity, motion, water flow, HVAC condensate, hydraulic pressure differential, capacitive, conductive and inductive sensors.

We offer engineered product solutions for a broad range of product applications in the transportation, automotive, medical, test and measurement, military and aerospace, aviation, HVAC, appliance, security and safety, and general power and industrial markets.

Standex Electronics has a commitment to absolute customer satisfaction through a partner, solve, and deliver approach. With a global organization that offers sales support, engineering capabilities, and technical resources worldwide – we implement customer driven innovation that puts the customer first.

For more information on Standex Electronics, visit us on the web at [standexelectronics.com](http://standexelectronics.com).

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