

Custom Inductive Sensor - Automotive



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Standex-Meder recently designed and built an innovative inductive proximity sensor for an automotive industry customer. But more than merely supply components, we designed a circuit – and thus helped to solve their problem. Our solution not only saves the company money, but it makes the vehicle run smoother while capturing the exhaust – which makes the air cleaner for all of us.

Emissions monitoring is a big deal in the automotive industry. And this particular project had several complications that made the project all the more challenging. Namely, for the solution to be considered, it needed to:

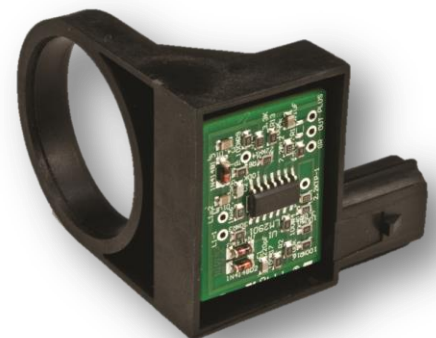
1. Physically fit within very tight space limitations,
2. Tie in to on-board computer as an added “check engine” diagnostic feature,
3. Be able to survive the harsh under-hood conditions present,
4. Be a stand-alone or “bolt on” package.

If, and only if, all of these conditions were met, would the customer consider the proposed solution, and move forward with testing and evaluation.

Switching Gears is a Good Thing

Standex-Meder was originally chosen because of our capabilities with magnetic reed switch technology. But given the very sensitive switching requirements and other difficult magnetic variables, this approach was discounted. Instead, Standex-Meder designers developed an innovative approach which resulted in a patent-applied-for inductive proximity sensor.

One integral component is a winding designed to the specific parameters of this project. We also developed a circuit board to gather and then relay information back to the on-board computer and initiate a particular fault sequence for the “check engine light” diagnostics. Finally, using our in-house molding and design capabilities, we packaged these together with a custom molding to include a connector. All to fit within the very tight space constraints and the harsh environment found under the hood. Rather than attempting to secure these components from three separate sources, this customer achieved their goals with single source responsibility. Because we designed and integrated all of the components of the circuit, this customer is assured that it will perform as specified every time.



Engaged or Not-Engaged, That is the Question

While the original inquiry was for a magnetic reed switch, for which Standex-Meder is well known, our designers proposed an inductive proximity switch. One reason is that the switch tolerances required were very tight. The unique feature of this patented sensor is that it not only looks at inductance change in the coil as the metal hose nozzle passes through the coil. The sensor also monitors the drop in coil "Q" caused by metal movement, giving us unparalleled sensitivity for a coil of this size.

When the connector is fully engaged, a plastic clip assembly locks it into position. This – along with the engagement of the metal pipe stub – completes the circuit and provides a specific electrical signal which is then relayed through the PCB to the on-board computer as "fully engaged and operational."

If, however, the piping is only partially engaged, because for example the clip is not secure because the pipe is skewed rather than straight – the sensor will still be able to detect the metal hose nozzle position within 0.5 mm.

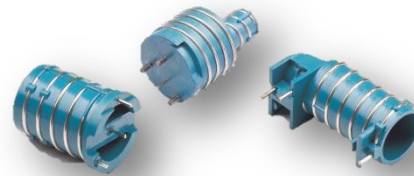
It was very important for this customer to have a "bolt on" solution because their engine design was virtually complete, and hard-piping was not an option.

In addition to design, development of molds, and launch of the project under tight timing, Standex-Meder also designed a custom tester for 100% verification of each sensor's actuation point per application.

This is another example of why manufacturers rely on Standex-Meder engineers to provide electrical components as well as ideas, engineering expertise and assistance at every stage.

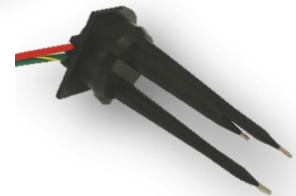
RFID/Antenna Applications

We provide antennas and components for keyless entry, security, tire pressure monitoring systems, garage door openers, and more.



Conductive Proximity Sensors & Hall Proximity Sensors

We supplied a conductive proximity sensor for use in high end laundry equipment. The fluid level sensor detects low level in laundry soap and then activates a signal to replenish the holding tank. This allows off-site storage, resulting in energy savings, better utilization of resources, and a simpler design.



Reed Switches and Liquid Level Sensors

We have plenty of experience sensing fluid level in windshield washer tanks, automotive brakes, food processing equipment, boilers, and more. Whether sensors are inside the reservoir or externally mounted (non-intrusive) the accuracy is as required – every time.

