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## P R E S S   R E L E A S E

MTEc 6-7 April 2011, NEC, Birmingham, Booth 1223

### **Innovative Liquid Level Sensor Technology**

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Intelligent sensor development specialist, Product Innovation Limited, will be showcasing the latest technology in liquid level sensors at this year's MTEc show at the NEC. Both the Optical Level Sensor (OLS) and Hall Effect Level Sensor will be demonstrated allowing visitors to see the voltage output on a display screen as liquid is pumped from one tank and enters into another.

The Hall Effect sensor was designed and developed by PIL after a customer requested a sensor that would work at high temperatures, very low power and have good resolution. The result was the Hall sensor which is a traditional float and reed switch type level sensor with a twist:



*PIL Hall Effect Sensor*



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The sensor works on the principle of a spherical float and a series of Hall Effect transistors (instead of reed switches which can be unreliable) assembled on a long very narrow PCB (5mm wide by 300mm long). Using both software and hardware the innovative controller in the top of the unit avoids the inherent problems of Hall Effect devices in this kind of application. An additional benefit is that the PCBs can be joined together to form any length, and the electronics will measure the entire length and work in proportion to it, making it very flexible in terms of customer requirement. The device is low power and can even operate from a battery.

As a result, the sensor is high resolution, narrow gauge and capable of operating at elevated temperatures and pressures. A measurement is made every ½ second and the output updated. The output is either 0 – 5V or 4 – 20mA. A low power option is available suitable for battery powered operation.

The patented OLS (Optical Level Sensor), measures liquid level directly rather than calculating it from secondary effects as in capacitance and ultrasonic devices. It accurately measures the liquid level regardless of dielectric constant, conductivity or temperature.



*PIL Optical Level Sensor*

The sensor uses the optical principle of Total Internal Reflection in a novel way that allows it to work in a continuous probe. A long narrow PCB



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incorporating a ladder of IR LEDs and sensors is encapsulated into a smooth clear rod, typically made from epoxy resin. The Infra Red components are arranged so that they can be powered in pairs (one transmitter and one sensor). The electronics scan these pairs until the point at which the Total Internal Reflection does not occur. This point is then interpreted as the liquid level. This level is of course independent of the type of liquid being measured. Unlike capacitance methods it does not depend on the dielectric of the liquid, nor does any conductivity affect the result.

The technology is designed in a modular form allowing customers to specify the length of probe and resolution required for their application. If appropriate the LED/Sensor pairs can be concentrated in regions of particular concern to the customer. This gives high accuracy in these regions at very attractive costs.

High pressure applications work equally well because the probe is fully encapsulated in a hard resin. And because the probe is smooth and solid it is ideal for use where no moving parts or ease of cleaning are important factors.

The OLS has been tested and selected by a large UK supermarket chain for use in monitoring the level of liquid refrigerant. Other applications for both sensors are in the chemical, heating and ventilating, food and drink, oil, process and water industries

For more information visit [www.productinnovation.com](http://www.productinnovation.com)





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## **ABOUT PRODUCT INNOVATION**

Product Innovation Ltd is an established new product development consultancy specialising in inventing and developing new products for manufacturing companies. The company has been in business for more than 25 years and in that time has been involved in a wide range of new products many of which have worldwide patents. Product Innovation Ltd also has a proven track record in inventing new products that will fit a client's existing marketing and manufacturing strengths. In addition the Company has 'consulted itself' and produced several products of its own.

*For further press information please contact:*

Debby Freeman on: +44 (0)1487 843366 or +44 (0) 7778 923331

e-mail: [debby.freeman@communicator-marketing.co.uk](mailto:debby.freeman@communicator-marketing.co.uk)

