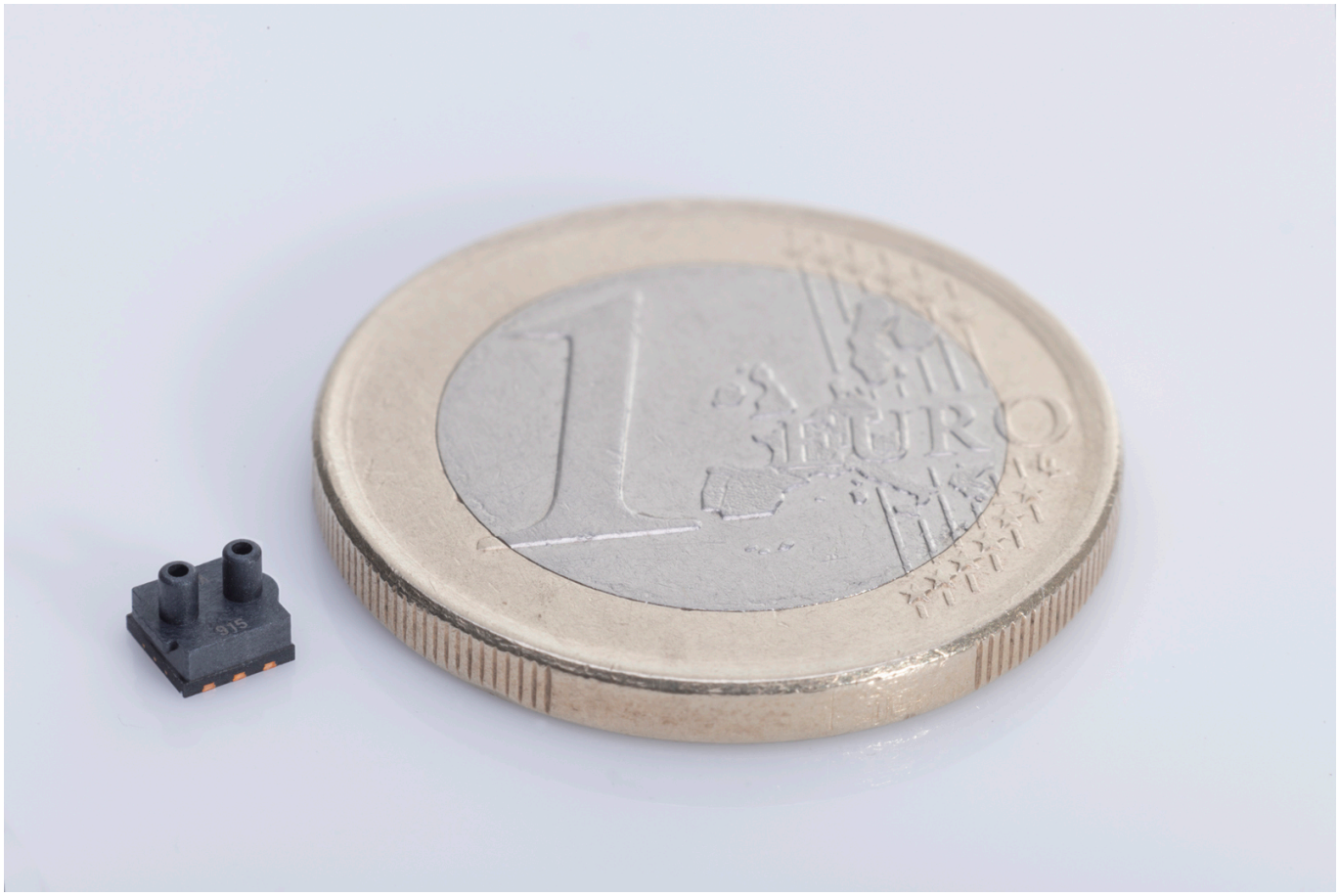
TECH OFFER

World'S Smallest Flow Sensor For Integration Into Smart Systems



KEY INFORMATION

TECHNOLOGY CATEGORY:
Electronics - Semiconductors
Electronics - Sensors & Instrumentation
Energy - Sensor, Network, Power Conversion, Power Quality & Energy Management
Green Building - Sensor, Network, Building Control & Optimisation
Electronics - Embedded Systems
Environment, Clean Air & Water - Sensor, Network, Monitoring & Quality Control Systems

TECHNOLOGY READINESS LEVEL (TRL): TRL7
COUNTRY: UNITED KINGDOM
ID NUMBER: TO148200

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OVERVIEW

A European start-up company has developed the world's smallest gas flow sensor. The tiny 3.5 mm x 3.5 mm CMOS MEMS sensor is small enough to fit into virtually any product and can be positioned where measurements matter.

Examples of use cases include: active filter monitoring in vacuum cleaners, air-conditioning units and other consumer appliances; pipe blockage detection in industrial and domestic gas-detection products and systems; air pump monitoring and control in both consumer and industrial applications; and portable healthcare equipment such as smart inhalers and fitness monitoring masks.

Collaboration is sought with developers and manufacturers of smart home devices, building systems, wearables etc. Evaluation kits with fluidics fixtures are available for fast testing and application development.

TECHNOLOGY FEATURES & SPECIFICATIONS

Flow measurement is often challenging due to its dynamic quality and also dependence on sensor location and integration method. As such, proxy measurements with expensive pumps, hall-effect sensors or drift-prone pressure measurements are often used instead.

This company's sensor is built around a patented combination of materials, processes and design, offering improved thermal interaction with a fluid for high sensing performance. It has no moving parts, is highly robust, and ideally suited for cost-effective high-volume production. The flow sensing chips use a temperature-adjustable, tungsten hotwire micro-heater, which is fully embedded within a stress-compensated membrane. A temperature sensor is integrated alongside for ambient temperature measurement. They use a DFN package, are reflow solderable and shipped in tape and reel for automated pick and place assembly.

This company’s approach is to offer not just a high performance, flow sensing component but a complete digital flow sensing solution designed for easy integration. Customers can customize it to their unique needs to deliver the ideal balance of performance versus cost. It comes with a proprietary firmware (including sensor control, sensor reading, temperature compensation and other algorithms) designed and structured for easy integration. To help customers overcome the mechanical and fluidic challenges of integrating a flow sensor into their application, the company has used its fluidics and engineering knowhow to develop a flow sensor for bypass systems to cover flow rates in excess of 500 slm.

Key Specifications:

- Small footprint: 3.5 mm x 3.5 mm
- Repeatability: 0.5 sccm +0.5% measured value
- Measures flow to 500 slm or more
- Fully temperature-compensated for a reliable flow signal
- Configurable operational modes and features

- Reflow solderable and available in tape and reel

POTENTIAL APPLICATIONS

- Detecting pipe blockages in industrial systems
    - Gas detectors
    - Personal Monitors
    - Air Pump Monitoring
- Maintaining peak performance in consumer appliances
    - Vacuum Cleaners
    - Air conditioning units
    - Air purifiers
- Smart Air management for smart buildings
    - Smart buildings
- Smarter and better home healthcare products
    - Peak flow meters
    - Smart inhalers
    - Sport performance trainers

BENEFITS

Key customer benefits:

- The sensor can be integrated where measurements matter.
- Outstanding product performance, robustness, reliability.
- 'Complete digital flow sensing solution' for fast product development.
- Fully customizable for performance and cost.
- Optimized for automated, high-speed product manufacturing processes.
- Full design support: from concepts to manufacturing.

Evaluation kits with fluidics fixtures are available for fast testing and application development. Collaboration sought include commercial agreement with technical assistance provided.