



Semiconductor Industry

# ULTRASONIC SENSORS

MADE IN GERMANY

Non-Invasive Fluid Monitoring



# SEMIFLOW® CO.65 | Non-Contact Flow Meter

For Highly Accurate Flow Measurement on Rigid Plastic Tubes & Pipes

Reliable liquid flow measurement plays an important role in semiconductor process management. SEMIFLOW CO.65 flow meters can effectively monitor wet processes to ensure a constant flow of the liquid or manage volume dispensing at the points of use. By implementing an accurate and reliable flow measurement, fabs can significantly improve their process quality.



The SEMIFLOW sensors are industry-proven cutting-edge flow meters that combine the need for a robust design with an innovative clamp-on technology eliminating risks of contamination and leakages, thus increasing system uptime. Due to their compact housing with integrated electronics board and analysis unit, the flow meters are as small as a single transducer and can easily be integrated into existing process chains and architectures.

## Unique Product Benefits

### Contactless Flow Measurement

- Ultrasonic measurement through the wall of the tube
- Non-contact sensor design eliminating risks of contamination and leakages
- Clamp-on lid and flexible inlay for optimal coupling between tube and transducer

### Compact Sensor Design

- Integrated electronics board and analysis unit
- Easy integration into existing PLC or pump systems
- Different sensor sizes for a wide range of tube sizes

### Highest Chemical Resistance

- Plastic housing (PP-H) and plastic connector (PA)
- Non-contact sensor design for wear and tear free measurement
- Applicable in hazardous environments

### Highest Accuracy & Repeatability

- Accuracy of up to +/- 1% (of reading)
- Real-time flow measurement and volume totalizing of up to 400 L/min
- SONOTEC Software for sensor operation and adjustment (optional)

# SEMIFLOW® CO.66 | Flow Meter for Hazardous Areas

For Use in Zone 1 Areas According to ATEX / IECEx

Specifically developed for the use in hazardous environments, the SEMIFLOW Ex1 Set opens a new product category for non-contact liquid flow measurement on rigid plastic tubing. It consists of the intrinsically safe SEMIFLOW CO.66 PI Ex1 flow sensor and the control gear Barrier Box ST Ex1.

## ATEX / IECEx Certifications

- Protected against explosion hazard by gas, vapors, or fogs acc. to gas group IIB
- Device protection level (EPL) "Gb" for use in Zone 1 acc. to ATEX/IECEx



# SONOFLOW® IL.52 | Ultra-Low Flow Inline Flow Meter

The highly accurate inline sensors SONOFLOW IL.52 perfectly meet the requirements to measure ultra-low flow rates in liquid filled tubes and pipes. Constructed as a built-in component for machines and apparatus, the sensors are resistant to high temperatures and are particularly suitable for demanding applications.

## Unique Product Benefits

- Highly accurate measurement of ultra-low flow rates
- Instantaneous response time
- Chemical resistant sensor material
- Easy data evaluation and process integration



## Measurement Principle

### Flow Measurement | Ultrasonic Transit-Time

SEMIFLOW and SONOFLOW flow sensors use ultrasound transit-time technology to accurately determine flow rates. The sensors measure the time of flight of the ultrasonic wave with and against the flow direction of the liquid. The time difference between both signals is a size for the velocity of the flowing liquid. The flow volume is calculated from the fluid velocity and the cross-sectional area of the tubing.

### Bubble Detection | Ultrasonic Transmission

SONOCHECK ABD06 non-contact bubble sensors detect air bubbles and obstructions by means of dynamic amplitude monitoring. Depending on the sound impedance of the adjacent media, reflection and transmission take place at the interface. When an air bubble passes the sensor channel, the signal level of the transmitted sound wave drops. The higher the drop of the signal level, the larger the bubble size.

## SONOCHECK® ABD06 | Non-Contact Air Bubble Detector

The non-contact air bubble detectors SONOCHECK ABD06 can spot bubbles down to 1 µl and can also be used as full/empty detectors. In critical processes of wafer manufacturing the presence of air bubbles or empty lines can lead to extensive consequences. Thus, their timely detection is crucial to save resources and increase yield.



### Unique Product Benefits

- High grade sensors for air bubble monitoring and full/empty detection
- Compact design with integrated electronics for data processing
- Clamp-on mechanism for measurement directly through the tubing wall
- ATEX certified (optional)

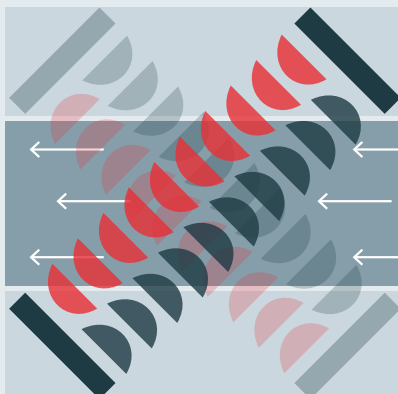
## SONOCONTROL 15 | Full/Empty Detector for Pipes

The compact non-contact level switch SONOCONTROL 15 measures through the wall of rigid plastic tubes and metal pipes with small and medium sized diameters. The ultrasonic sensor is suited for low level control, protection against dry running of tanks and lines, and overflow indication.

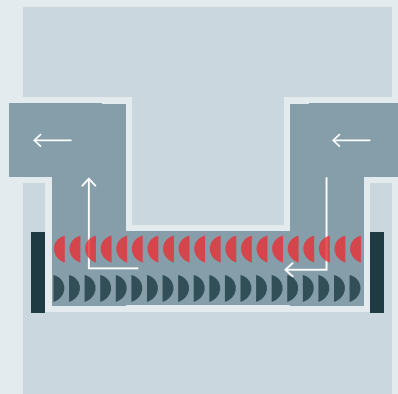


### Unique Product Benefits

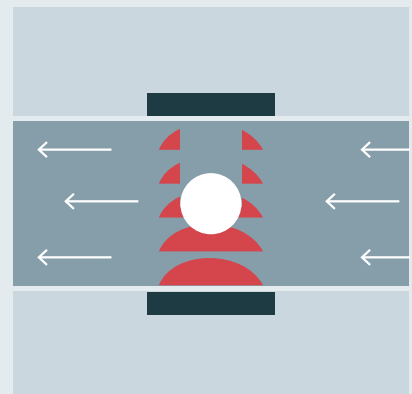
- Non-contact design for easy retrofit
- No process interruption or risk of contamination
- Easy 2-step teach-in for pump protection and monitoring of filling applications
- ATEX certified (optional)



Transit-time principle for clamp-on flow measurement

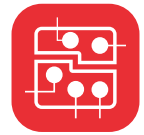


Transit-time principle for inline flow measurement

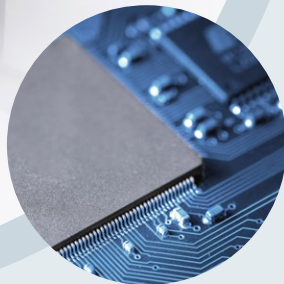
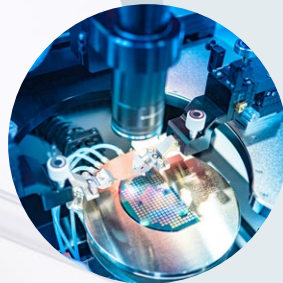
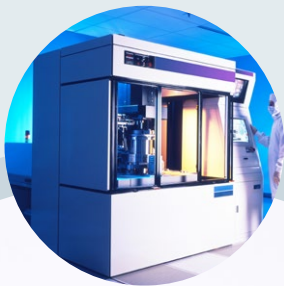


Amplitude monitoring for bubble detection

# Non-Contact Flow Meters & Bubble Detectors for the Semiconductor Industry



The semiconductor industry is characterized by a number of processes in which different abrasive, adherent, corrosive, and ultra-pure liquids are used. To assure the stability and high quality of these processes, a constant flow measurement as well as the precise and early detection of air bubbles or empty lines are of utmost importance.



## Fields of Application:

- Chemical supply / delivery (CCSS / CDS)
- Chemical mechanical planarization / polishing (CMP)
- Lithography
- Plating
- Resist coating
- Slurry blending / mixing
- Wafer / mask cleaning
- Wet etching

## Accessories

### SONOTEC Software | Configure, Control, Collect

- Configure and calibrate sensors for different applications onsite
- Control sensor performance and outputs
- Collect measurement and sensor data
- Monitor real-time flow and totalize volume



### Portable USB Data Converter

- Easy and mobile power supply of SEMIFLOW and SONOFLOW flow meters
- Direct transfer of measurement data
- Convenient connection of flow meters to a PC via USB



### Remote Display

- Easy temporary and permanent flow monitoring of SEMIFLOW and SONOFLOW sensor
- Clear visualization of sensor parameters (flow, volume, status)
- Easy remote sensor adjustments for different applications (zero calibration, volume reset)



## SONOTEC Ultrasound Is Our Strength

SONOTEC is specialized in ultrasonic sensor technology in the field of non-contact and non-invasive liquid flow measurement and air bubble detection in flexible tubes and hard plastic pipes.

As a global technology leader, we offer first-class measurement performance, excellent product quality and outstanding service to our customers in medical technology, biotechnology, and the semiconductor industry.

We are certified according to ISO 9001 as well as EN ISO 13485 and fulfill the directives for the manufacturing of products to be applied in potentially explosive atmospheres according to ATEX/IECEx.

In addition to our off-the-shelf products, we offer customized sensor solutions responding to application-specific requirements.

### Sales & Support

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ISO 9001 and EN ISO 13485

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