

Introducing high-precision XENSIV™ pressure and gas sensors with minimal footprint

restricted

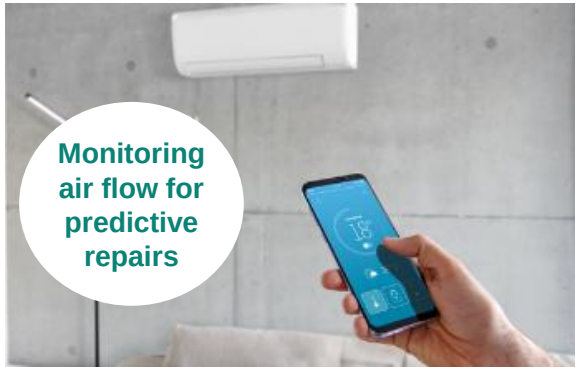


Pressure sensor

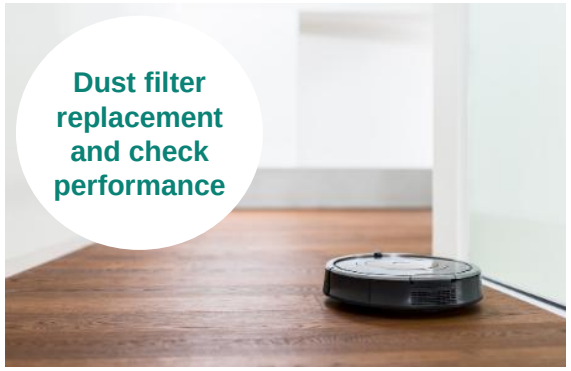
restricted

Our XENSIV™ Pressure Sensor offering supports a huge variety of applications demanding high accuracy, robustness and small size

HVAC Systems



Vacuum Cleaners



Washing Machines



Air Purifiers



Robotics



Drones



Datacenters



Wristbands



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Water level sensing and its challenges

Water level sensing and its challenges



- Optimized water level in washing machines for optimal system functionionality
- Late flood warnings could lead to safety risks
- Same measurement principle covers both applications

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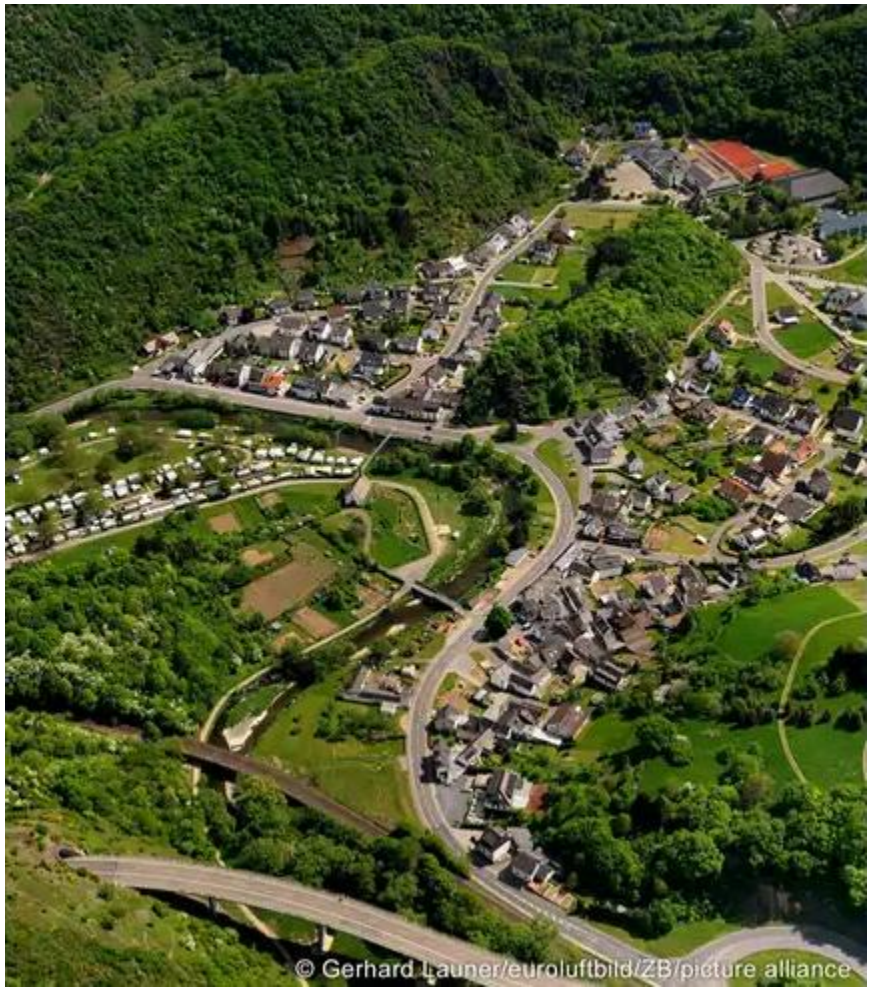
Why water level monitoring is critical for early warning systems



Ahr Valley

https://www.dw.com/de/vorher-nachher-bilder-der-flutkatastrophe/a-58296828

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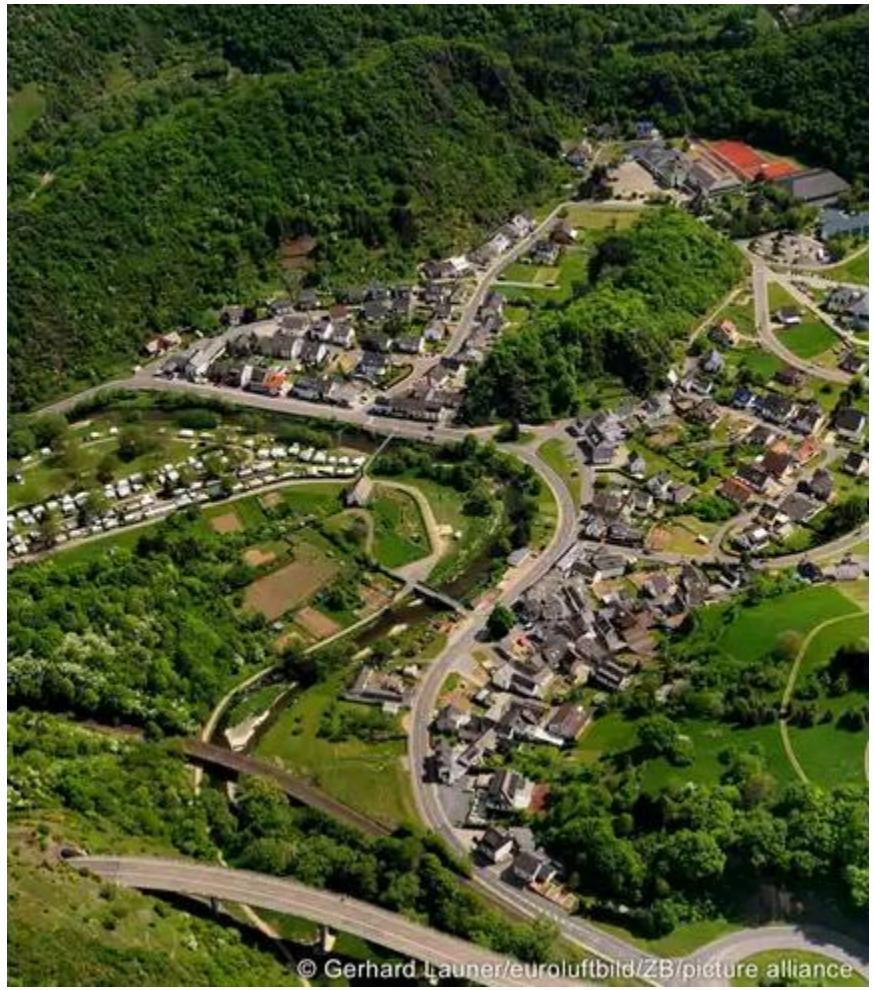
Why water level monitoring is critical for early warning systems
135 casualties only in the Ahr Valley





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https://www.sueddeutsche.de/politik/flutkatastrophe-ahr-expertenanhoerung-1.5507930

https://nhess.copernicus.org/articles/25/1501/2025/nhess-25-1501-2025-discussion.html

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Why water level monitoring is critical for early warning systems
135 casualties only in the Ahr Valley





Potential life loss reduction of up to 80 % with timely warning

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https://www.sueddeutsche.de/politik/flutkatastrophe-ahr-expertenanhoerung-1.5507930
https://nhess.copernicus.org/articles/25/1501/2025/nhess-25-1501-2025-discussion.html

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Monitoring system can easily be installed in cities on poles or streets and runs on solar powered battery

Module with pressure sensor, battery, antenna etc.





Tack

https://www.tackevo.com/floodfinder
https://youtu.be/2riNGukh6RA

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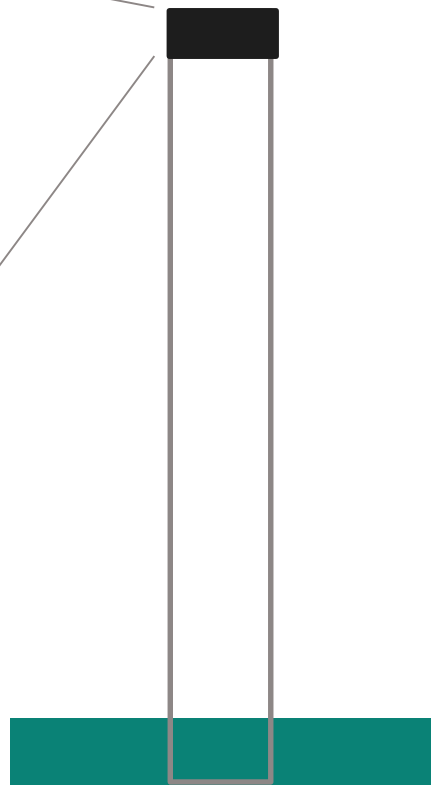
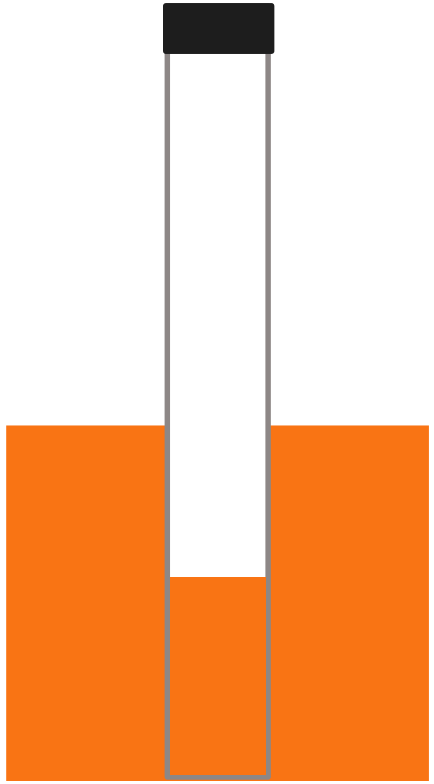
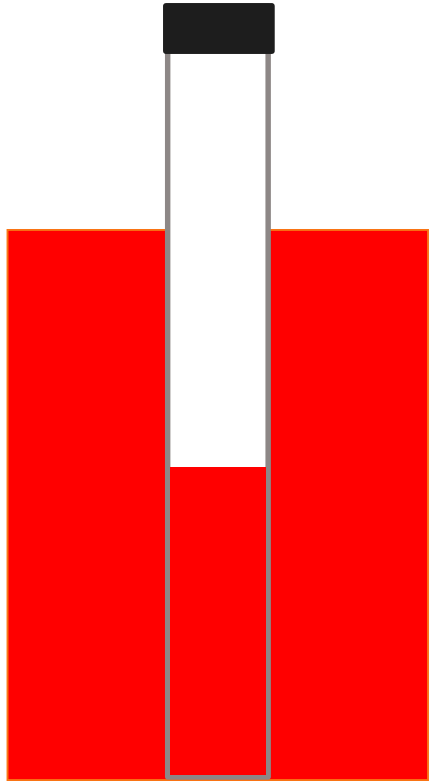
Flood Monitoring System

https://www.tackevo.com/floodfinder
https://youtu.be/2riNGukh6RA









Tack

https://www.tackevo.com/floodfinder
https://youtu.be/2riNGukh6RA

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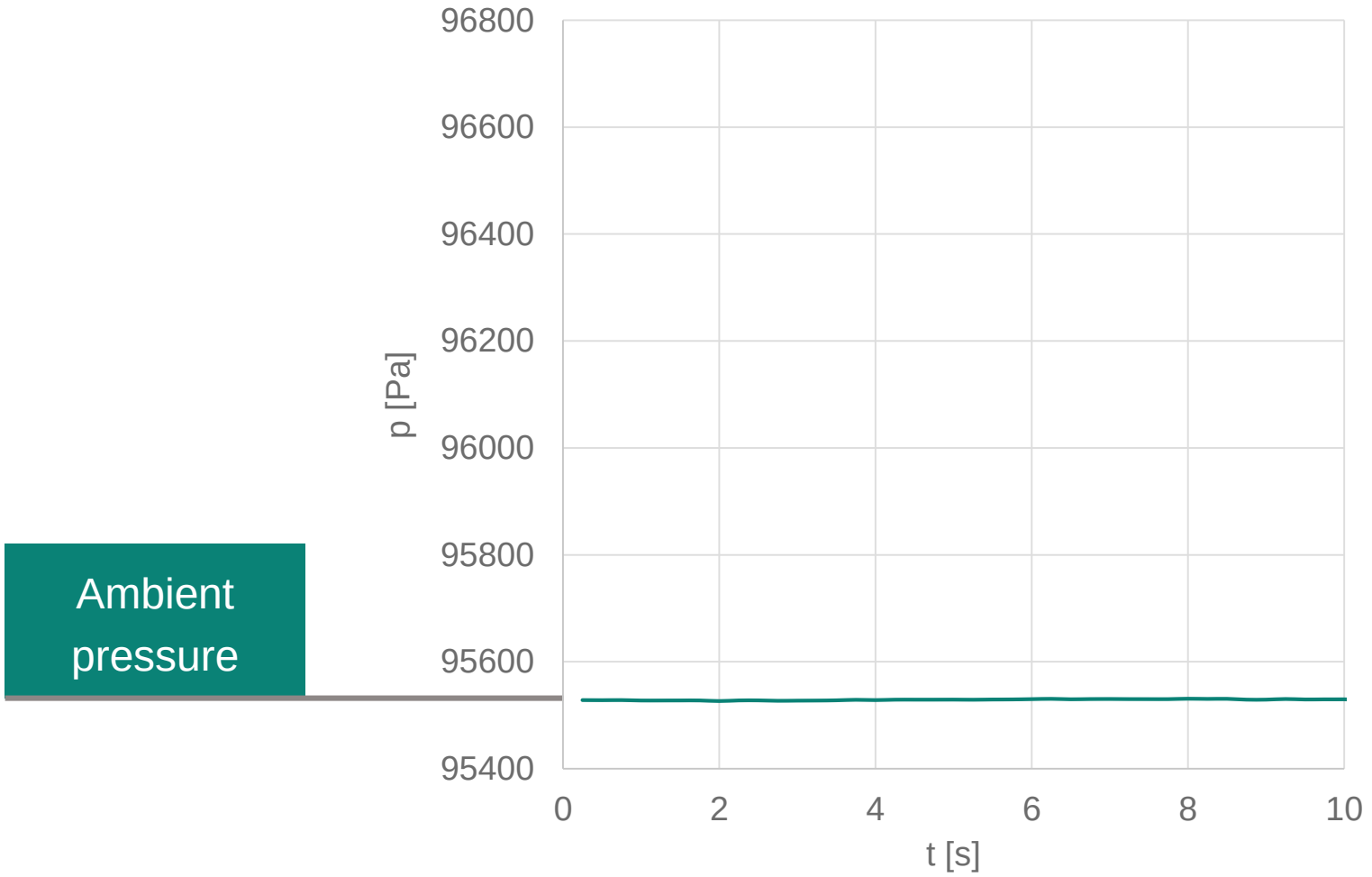
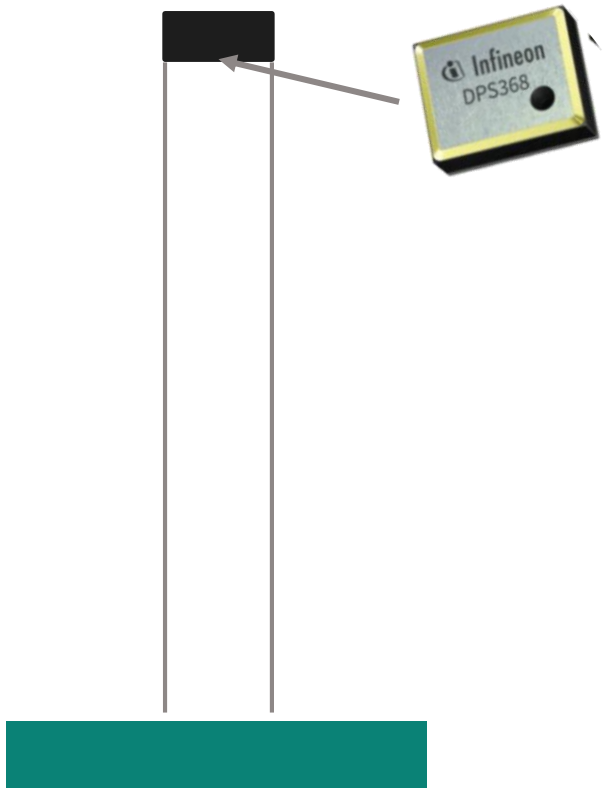
Sensor reads ambient pressure if the level is below the pipe





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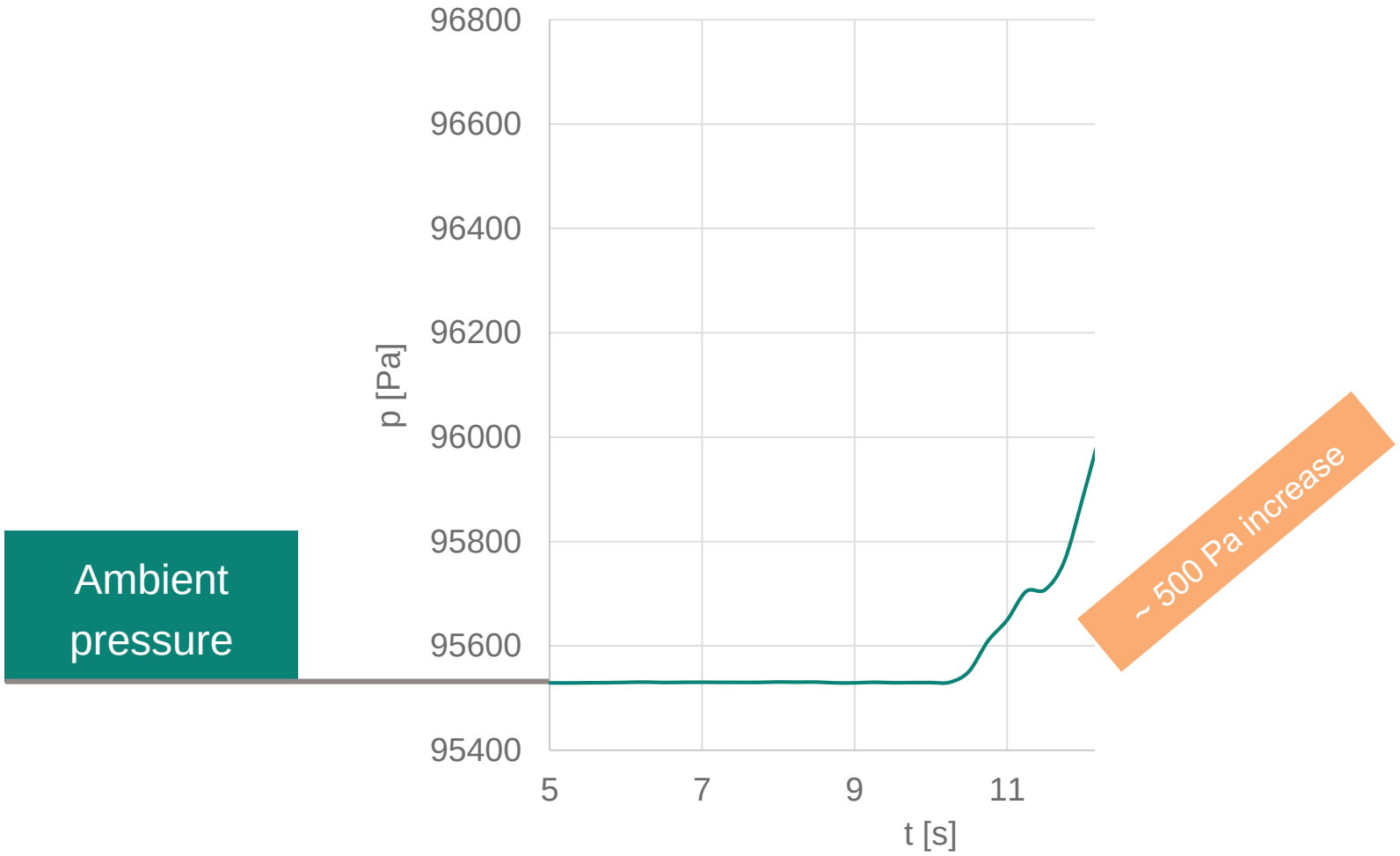
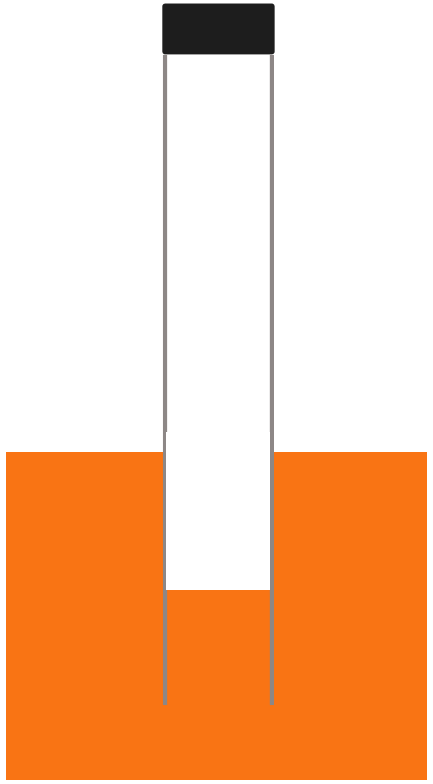
DPS detects increasing water level





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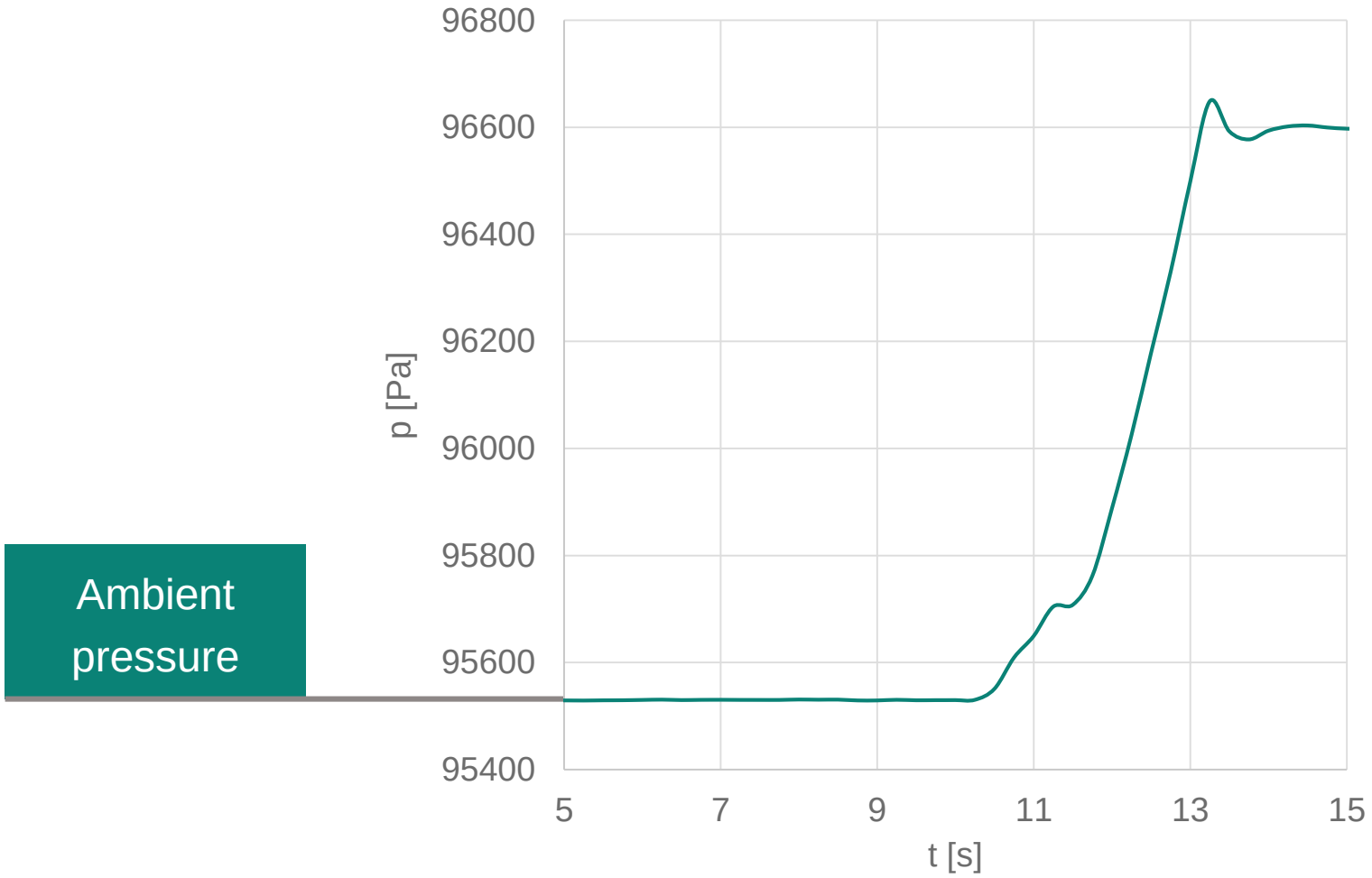
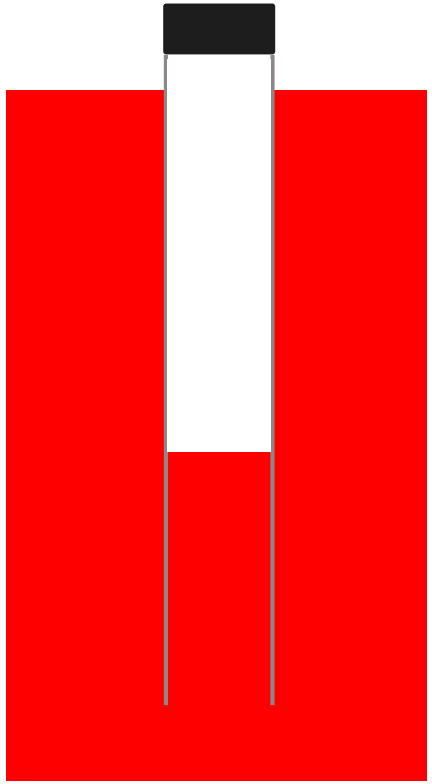
1000 Pa increase at maximum level of 6 cm





~ 1000 Pa with 6 cm level increase

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Airflow measurement in harsh environments

Airflow measurement for predictive maintenance







- Fast, ultralow noise read-out allows for precise measurement of air flow
- Air flow monitoring: Check fan condition constantly and locate the root cause once it appears
- Regular analysis with pressure sensor for correct and smooth operation

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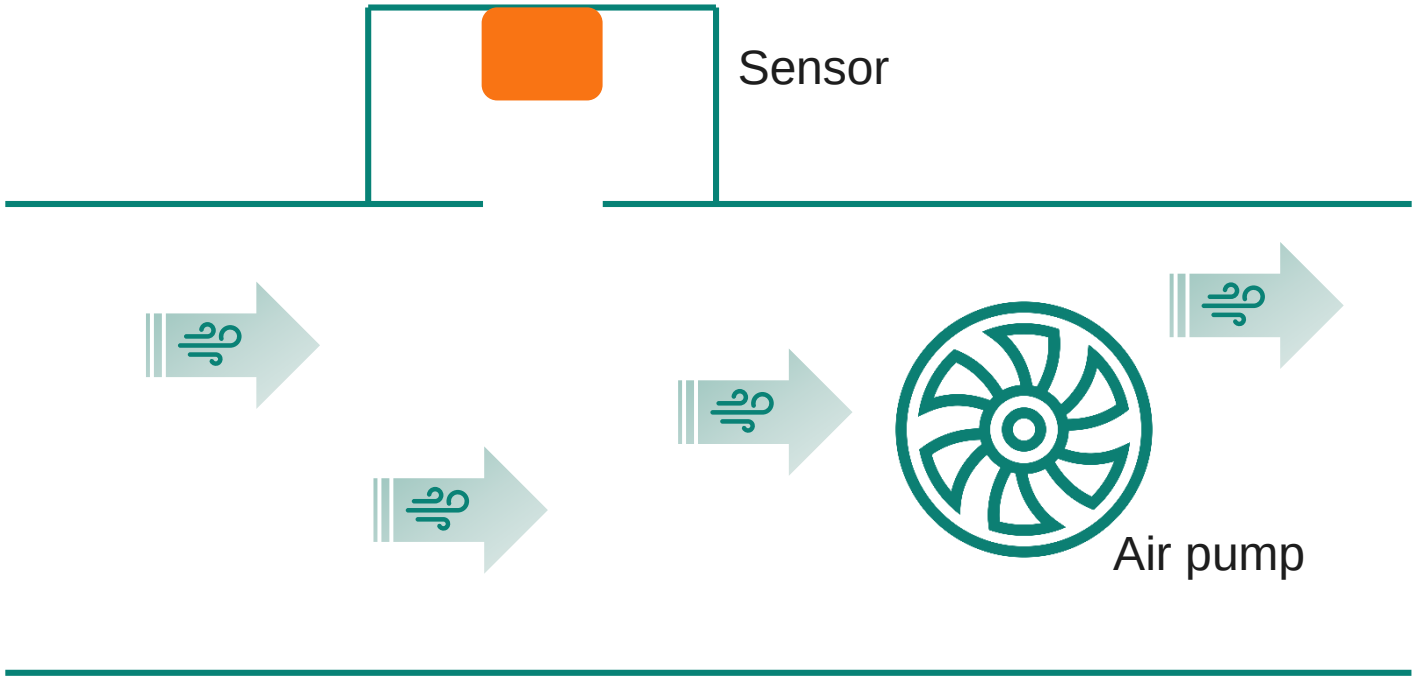
Monitoring principle & applications



⇒ **Depending on application, 1-3 pressure sensors are required**
⇒ **Potential applications:** Vacuum cleaner, Air conditioning, Cooker hood, Hair dryer, Air purifier and others

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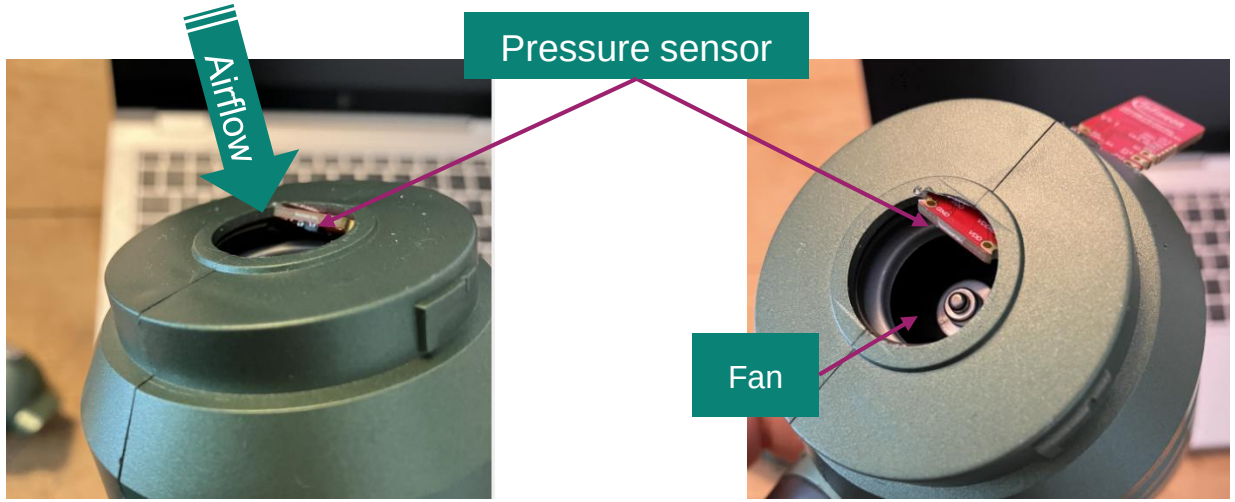
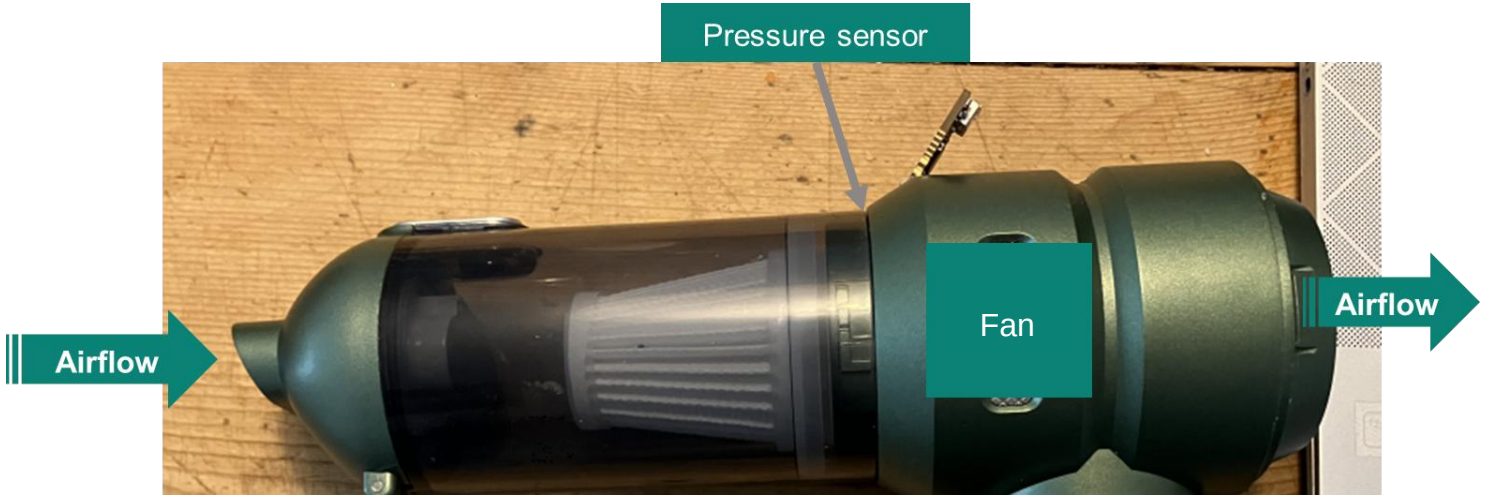
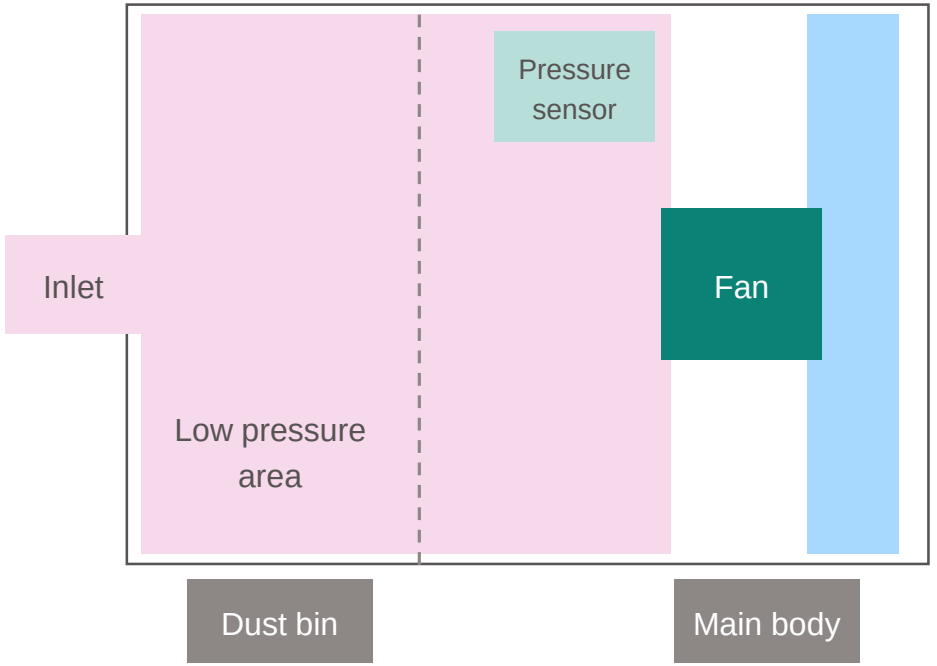
Hands on session in the lab to install DPS Kit in cheap vacuum







*) Pictures based on own project

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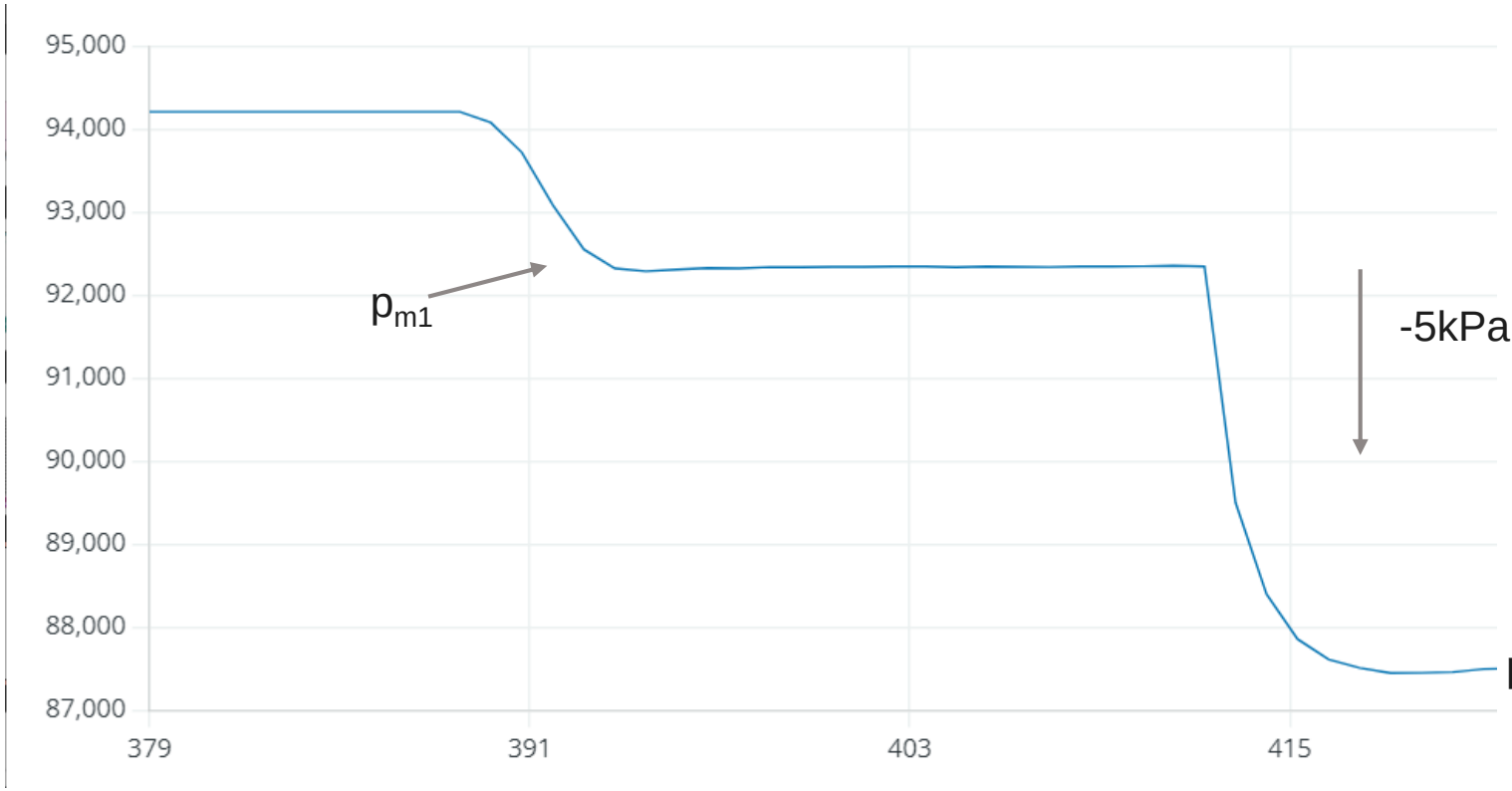
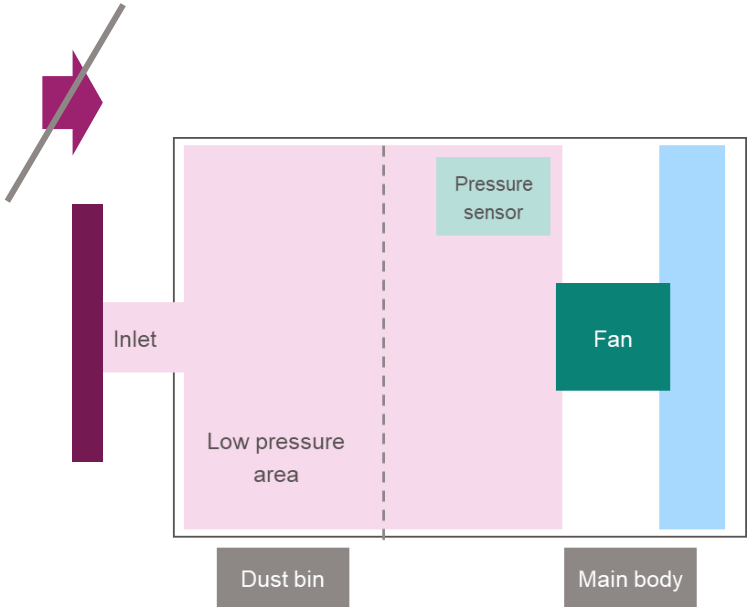
When inlet is blocked the pressure drops by 5kPa



Inlet blocked
→ e.g. sucked carpet



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How XENSIV™ DPS368 addresses the challenges in water level sensing and airflow measurement applications

Key requirements in applications	Typical challenges	Infineon solution features and benefits
➢ Small size matters	➢ Size constraints on circuit board of e.g. washing machine, vacuum cleaner, drone etc.	➢ Small Size => Space-saving integration into device
➢ Power Consumption	➢ Power Consumption influences buying decision due to worldwide energy crisis	➢ Low Energy Consumption => Increased battery lifetime
➢ Exact detection of Air volume in for e.g. Vacuum cleaners	➢ Only exact measurements help for Condition Monitoring / Predictive Maintenance	➢ High Sensitivity => Precise detection of air volume
➢ Operation of device in harsh environment	➢ In case device gets dusty or wet, it could lead to no further operation	➢ Robustness => Easy operation in harsh environment
➢ Exact measurements necessary	➢ Changing temperature does not have to impact operation	➢ Excellent temperature stability => No drift over wide temperature range

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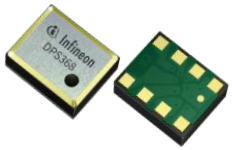
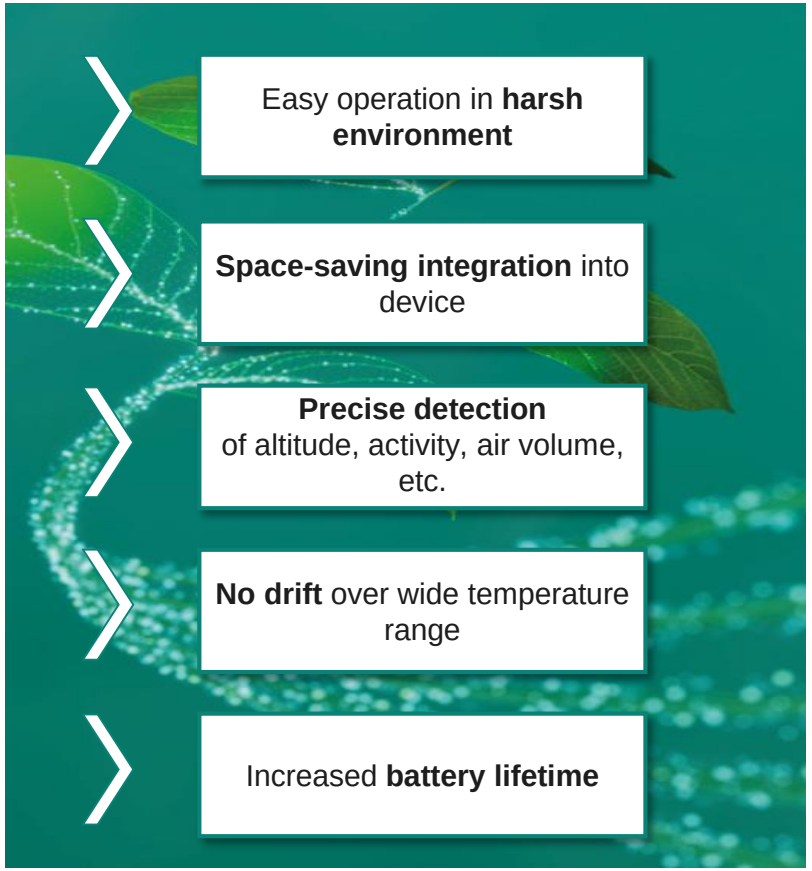
DPS368 offers robustness, high precision, low power consumption & temp stability in a small package



Key Features	Specifications
Robustness	DPS368 is robust against water (IPx8)[1], dust & humidity
Small size	2x2.5x1.1 mm³ → small IPx8 (50 m) certified pressure sensor
High sensitivity	Precision: ±0.002 hPa (2cm) Rel. accuracy: ± 0.06 hPa Abs. accuracy: ± 1.0 hPa Fast read-out of pressure change
Excellent temperature stability	Pressure temperature sensitivity: 0.005 hPa / K No hysteresis
Low energy consumption	Peak current: 345 µA (pressure measurement) Standby: 0.5 µA (configurable for different use cases)

1. Pressure sensor fully functional after 50 m under water for 1 hour

Value proposition



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XENSIV™ DPS368 Kits/boards overview

DPS368 Kit2Go (KIT_DPS368_2GO)

- The DPS368 Kit2Go from Infineon is a powerful and user-friendly solution for barometric pressure sensing in IoT and embedded systems. It integrates a built-in XMC1100 microcontroller unit and an XMC4200 Debugger, enhancing versatility and convenience.
- Fully compatible with the Arduino IDE, it simplifies integration into existing or new projects. Example codes available on Infineon's Github repository enable easy customization.



More information and user manual are available here.

Artificial Intelligence Evaluation Kit (CY8CKIT-062S2-AI)

- The PSOC™ 6 AI Evaluation Kit is a Hardware platform focused on Machine Learning (ML).
- It enables customers to evaluate Infineon's ML platform DEEPCRAFT™ Studio (formerly Imagimob Studio), as well as ready to deploy ML models, and other software products.
- Data collection is enabled via PSOC™ 6 MCU, radar, acoustic, pressure & IMU sensors.



More information and user manual are available here.

XENSIV™ Sensor Shield (SHIELD_XENSIV_A)

- Elevate your IoT development with the XENSIV™ Sensor Shield, offering a robust array of sensors for precise data collection. This shield is a powerhouse of sensor technology, featuring a 60GHz radar, a 5V CO2 sensor based on photoacoustic spectroscopy, temperature, humidity, pressure, motion, and geomagnetic sensors.
- Additionally, it includes MEMS microphones and a high-contrast TFT display, connecting to PSOC™ MCUs via the Arduino UNO header.



More information and user manual are available here.

KIT_PSE84_AI

- The PSOC™ Edge E84 AI Evaluation Kit is a hardware platform focused on Machine Learning (ML) and Edge AI. It enables customers to evaluate Infineon's ML platform DEEPCRAFT™ Studio, as well as ready to deploy ML models, and other software products.
- This evaluation kit is optimized for rapid prototyping and development of embedded systems, leveraging the versatile PSOC™ Edge E84 MCU.



More information and user manual are available here.

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Gas sensor

restricted

Thermal Conductivity (TCI) Gas sensors
A broad range of applications for automotive and industrial segments

Automotive



- H2 detection in FCEV
- Refrigerant leakage in ATV HVAC: CO2 (R744)

Industrial



- Hydrogen plant safety
- Energy Storage Systems
- Refrigerant leakage in IND HVAC systems (A2L & A3)

Consumer



- CO2 detection for air quality monitoring
- CO2 detection for medical devices

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XENSIV™ TCI, TCI-B Hydrogen sensors spec sheet (webpage)

Device Feature set	TCI, TCI-B (ASIL-B)
Measurement range	0 – 16% vol H2
Operating Range	Tamb:-40°C – 105°C rH: 0% to 100% (no condensation)
Voltage	3.3 V
Accuracy	±0.12% vol H2
Average Power Consumption	112 µA
Response time	100 ms
Sampling rate	On-Demand: 10 readout / sec
Lifetime	15 years
Interface	I^2C
Size & package	5.4 x 5.7 x 3.4 mm^3; DSOP-14 SMD
Functional	Self-test and fault detection

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XENSIV™ TCI-R A2L refrigerants leakage sensor spec sheet (webpage)

Device Feature set	TCI-R (A2L refrigerants)
Measurement range	0 – 25% LFL
Operating Range	Temp:-40°C – 105°C rH: 0% to 100% (no condensation)
Voltage	3.3 V
Accuracy	±2.5%LFL (normal conditions) ±5%LFL (extreme conditions)
Average Current Consumption	2.2 mA
Response time	< 5s
Sampling rate	On-Demand, max:10 readout / sec
Lifetime	15 years
Interface	I^2C
Size & package	5.4 x 5.7 x 3.4 mm^3; DSOP-14 SMD
Functional	Self-test and fault detection

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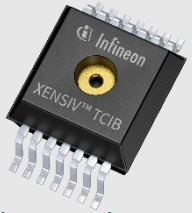
Infineon XENSIV™ TCIx Gas sensors – Quick links

XENSIV™ TCIx Gas sensors

Know our product offering

TCI	TCI-B	TCI-R
		
Product Webpage	Product Webpage	Product Webpage

Trainings

- Introducing XENSIV™ TCIx for hydrogen safety critical applications
- Comparing XENSIV™ pressure sensors with gas sensors for thermal runaway detection

Technical documents

- TCI Datasheet
- TCI-B Datasheet
- TCI-R Datasheet

Hardware

Reference designs & boards

- On-going

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Support / Information



Kyle Jeon
AP Regional Application Marketing (Vacuum cleaner, Hair care, Air purifier, Power tools, etc)
Email: kyle.jeon@infineon.com

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