



—
your partner
in sensor
technology.

+ Sensors for Compressed Air Monitoring



+ Measure consumption. Detect leaks. Use energy efficiently.

Compressed air is one of the most expensive forms of energy used in industry. This makes it all the more important to continuously monitor consumption, leaks and compressed air quality. Precise compressed air monitoring provides transparency across the entire network, from generation and treatment to individual consumers. It enables energy losses to be detected at an early stage, operating costs to be reduced and sound decisions to be made about investments in new compressors or system expansions.

Leaks in particular often remain undetected for long periods. They increase the base load, extend compressor running times and continuously generate avoidable energy costs. Continuous consumption measurement makes these losses visible and provides the basis for targeted savings measures.

Consumption

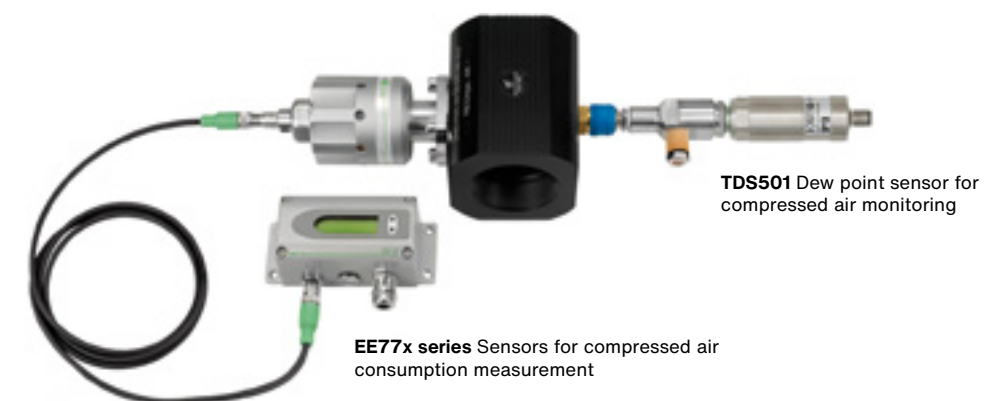
Flow measurement shows how much compressed air is actually generated, distributed and consumed.

Leaks

Continuous measurement helps reveal unnecessary base loads and compressed air losses within the network.

Compressed air quality

Dew point measurement monitors residual moisture and protects systems, processes and products from moisture damage.



Your benefits

- Transparency into consumption and load profiles
- Detection of leaks and unnecessary base loads
- Basis for energy analysis and consumption billing
- Reduced operating costs
- Support for investment decisions
- Greater security of supply within the compressed air network

Company headquarters and
production site

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+ Flow measurement



Flow measurement is the first important step towards the cost-conscious and efficient use of compressed air. It shows how much compressed air is actually consumed, where load peaks occur and whether there are unnecessary losses within the network.

Measurement independent of pressure and temperature

The thermal measuring principle enables mass flow and volumetric flow measurement independently of pressure and temperature. The sensors can therefore be used across a wide pressure and temperature range. At the heart of E+E flow meters is a proprietary hot-film anemometer sensing element designed to deliver reliable measurements with outstanding long-term stability.

Various designs and operating ranges allow E+E flow meters to accurately monitor the entire compressed air supply, from the compressor and main and branch lines to individual consumers. Even the smallest volume flows can be measured accurately. This is essential for consumption billing, leak detection and the sustainable optimisation of the compressed air system.

Accuracy under real operating conditions

E+E flow meters are calibrated under pressure in conditions that closely reflect the application. Factory calibration is performed at 7 bar, a typical pressure within a compressed air network, thereby supporting high measurement accuracy under real operating conditions.

Flow measurement at a glance

- Transparency into compressed air consumption and load profiles
- Basis for consumption billing and energy monitoring
- Detection of leaks and unnecessary base loads
- Assessment of potential savings across the entire network
- Monitoring of individual branches, machines and consumers
- Measurement of compressed air and technical gases

+ Dew point measurement



Alongside compressors and filters, dryers are among the most important components in compressed air treatment. Excessive moisture in compressed air can cause corrosion, quality problems, machine failures and increased maintenance costs.

Dew point measurement monitors residual moisture in compressed air systems and provides the basis for reliable dryer control. This ensures that compressed air quality meets the requirements of the process, product and system.

Continuous monitoring down to low dew points

For demanding drying and compressed air applications, the TDS501 provides continuous dew point data down to -70 °C Td . Its advanced auto-calibration avoids signal freezing and supports stable 24/7 process control. The sensor offers an accuracy of $\pm 2\text{ °C Td}$ and is rated for pressures up to 80 bar.

Why dew point measurement matters

- Protection against condensation and corrosion
- Ensuring pneumatic components operate within their specified range
- Monitoring dryer performance
- Safeguarding compressed air quality
- Reducing moisture-related downtime
- Stable process conditions in industrial drying
- Early detection of moisture breakthrough
- Ideal in combination with flow measurement

Flow measurement shows where and how much compressed air is consumed. Dew point measurement shows whether the compressed air quality meets the required standard. Together, they provide comprehensive compressed air monitoring that supports both energy efficiency and process reliability.

+ Solutions from E+E Elektronik

EE771



Flow sensor for compressed air and gases

- DN15 to DN50
- Pressure range up to 16 bar
- Measuring range up to 1,400 m³/h
- Quick sensor installation and removal
- Modbus RTU or M-Bus optional

EE741



Modular flow meter for DN15 to DN50

- Modular design
- Integrated consumption meter
- Analogue, pulse and switching output
- Modbus RTU, M-Bus and IO-Link

EE776



Insertion flow sensor for large pipe diameters

- DN50 to DN700
- Pressure range up to 16 bar
- Patented non-return protection
- Installation and removal under pressure
- Modbus RTU or M-Bus optional

TDS501



Dew point sensor down to -70 °C Td (-94 °F Td)

- Fast response time
- High repeatability
- Pressure rating up to 80 bar
- Continuous measurement without signal freezing

+ Savings potential

How much do leaks cost?

Leaks are among the most common and costly efficiency problems in compressed air systems. They increase the base load, extend compressor running times and continuously generate avoidable energy costs.

Recent studies and practical data show that many compressed air systems offer considerable savings potential. The German Environment Agency reports leaks in around 80% of compressed air systems and losses of up to 30% within the central compressed air network. Depending on the facility, Fraunhofer IPA estimates that 15 to 60% of compressed air can escape unnoticed.

Example calculation

Assumptions:

Parameter	Value
Compressor power	100kW
Operating time	260 days/year × 24 h = 6,240 h/year
Electricity price	0.1837 € / kWh
Leakage rate	30 %

Annual electricity costs for compressed air generation
 $100 \text{ kW} \times 6,240 \text{ h} \times € 0.1837/\text{kWh} = \text{approx. } € 114,600/\text{year}$

Savings potential from reducing leaks
 $€ 114,600 / \text{year} \times 30\% = \text{approx. } € 34,400/\text{year}$

For a 100 kW compressor alone, leaks can cause around € 34,000 in avoidable energy costs per year. Precise flow measurement makes these losses visible and provides the basis for targeted action, from leak detection and consumption billing to optimisation of the entire compressed air system.

Savings potential from reducing leaks

Basis of calculation: 30% leakage rate, electricity price € 0.1837 / kWh. All values are approximate.

Operating time	10 kW	50 kW	100 kW	500 kW	1000 kW
8 h/d, 260 d/a	€ 1,150	€ 5,730	€ 11,460	€ 57,310	€ 114,630
16 h/d, 260 d/a	€ 2,290	€ 11,460	€ 22,930	€ 114,630	€ 229,260
24 h/d, 260 d/a	€ 3,440	€ 17,190	€ 34,390	€ 171,940	€ 343,890
24/7 operation, 365 d/a	€ 4,830	€ 24,140	€ 48,280	€ 241,380	€ 482,760

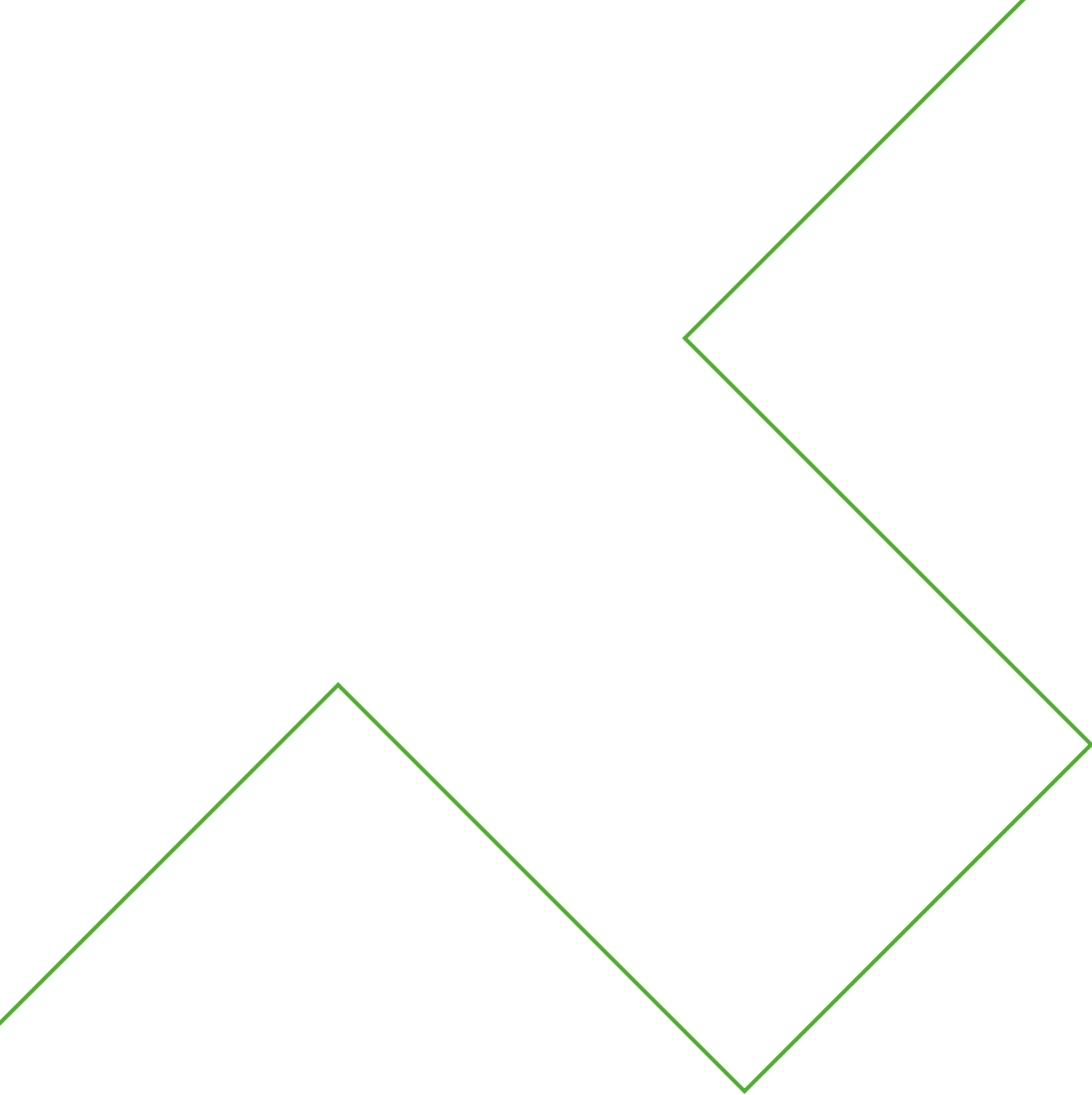
Sources: Example calculation based on an electricity price of € 0.1837/kWh for non-household consumers in the EU in the second half of 2025 and a leakage rate of 30% as a conservative reference value. Eurostat reports a price of € 18.37 per 100 kWh for non-household consumers in the EU in the second half of 2025. The German Environment Agency reports compressed air losses of up to 30% due to leaks within the central network.

+ Calibrating your Limits

Your products and services can only be as precise as the devices used to measure them. With more than 25 years of experience, the E+E Elektronik calibration team focuses on providing a reliable service without unnecessary delays or inaccuracies.

Discover the value of working with a calibration expert who prioritises accuracy, speed and reliability.





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