

# Volumetric flow meter

## KDDM-2

**KNOCKS**

Production expertise

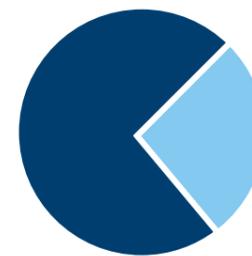
[www.knocks.de](http://www.knocks.de)

**KNOCKS KDDM-2** – the innovative, maintenance-free differential pressure measuring system for pneumatic automation not only measures the air volume throughput, but also minimises costs.

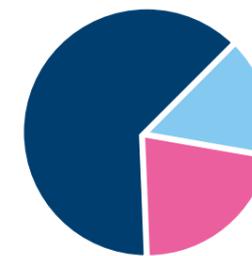
**The problem:**  
performance losses in  
compressed air systems  
lead to much higher  
energy costs.

## Undiscovered performance losses in the compressed air system can cost you this much

When energy costs rise, precisely calibrated flow rates and exact consumption measurements in industrial plants become crucial factors in cost optimisation and energy efficiency. With the KDDM-2, KNOCKS presents a new maintenance-free flow sensor for compressed air and neutral gases, which captivates first and foremost through its practical precision as well as its undemanding nature in terms of installation, flow medium and maintenance.



Without performance loss

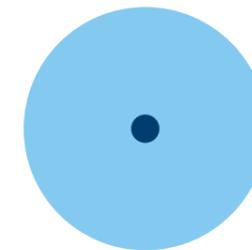


With performance loss

Example: total energy costs  
**+ 38%**  
additional costs for the company



Leakage size 0.5 mm



Leakage size 1.0 mm

Example: effect of the size of a leakage  
**+ 400%**  
higher energy consumption in a change  
of leakage size from 0.5 to 1.0 mm

### RISKS FOR YOUR COMPANY:

- Much higher energy costs
- Performance decreases in implemented machines
- Creeping loss of production means due to pressure loss
- Supply bottlenecks or failures due to production downtime
- Non-detected leakages increase the risk of accidents

## The solution:

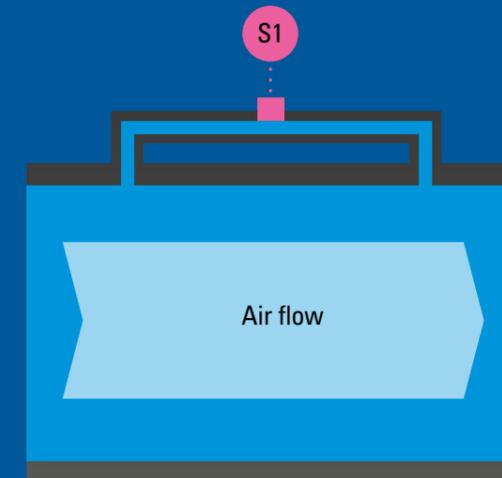
KNOCKS KDDM-2. The differential pressure gauge that quickly pays off.

- › Quicker measurement: given a metered flow, the differential pressure is detected immediately by the sensor
- › Modular compatibility
- › No flow-calming section necessary
- › Less contamination susceptible
- › No complex bypass structure
- › Maintenance-free construction
- › Compact design

The intelligent system  
for cost control  
The differential pressure gauge  
KDDM-2

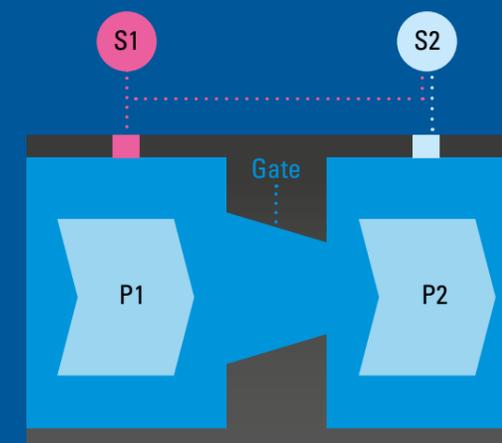


## Conventional method: calorimetric measurement



- The air flow must be directed through a separate channel
- The sensor S1, which heats a thin wire made of tungsten through a heating element, measures the extracted heat in regard to the flow velocity
- The resulting flow is then computed using a formula
- The sensor and channel must be cleaned at regular intervals

## Now for something new and intelligent: the KNOCKS differential pressure system



- The sensor S1 calculates the inlet pressure P1 and forwards the result to sensor S2
- A gate ensures that lower pressure P2 is produced
- The sensor S2 calculates the outlet pressure P2 and compares this with P1
- The flow is determined on the basis of the differential pressure and the inlet pressure

# The technology: full performance under pressure. KNOCKS KDDM-2.

**Cover made from die-cast aluminium**

Splash-proof casing in accordance with IP 65



**Standard interface**

With 5-pole connector M12x1

**Front cover**

Made of impact-resistant plastic

**LCD display**

With large, easily visible display and background illumination

**3-key operation**

For simple, individual programming

**Simple integration**

Problem-free integration – as modular element in the complete Futura model range or as an individual unit

**Any mounting position possible!**

**THE KNOCKS INNOVATION: COMPACT, ROBUST AND MAINTENANCE-FREE:**

- Differential pressure system version 01: for measuring ranges up to 2,000 l/min
- Differential pressure system version 02: for measuring ranges up to 5,000 l/min
- Operating pressure: max. 16 bar
- Accuracy at P1 = 7 bar: +/- 3% FS
- Operating voltage: 24V DC
- Switching output 2 x PNP or 2 x NPN; analogue output 0–10 V or 4–20 mA
- Compact design

# The KNOCKS innovation: compact, robust and maintenance-free



**Inlet filter**  
For filtering larger impurities



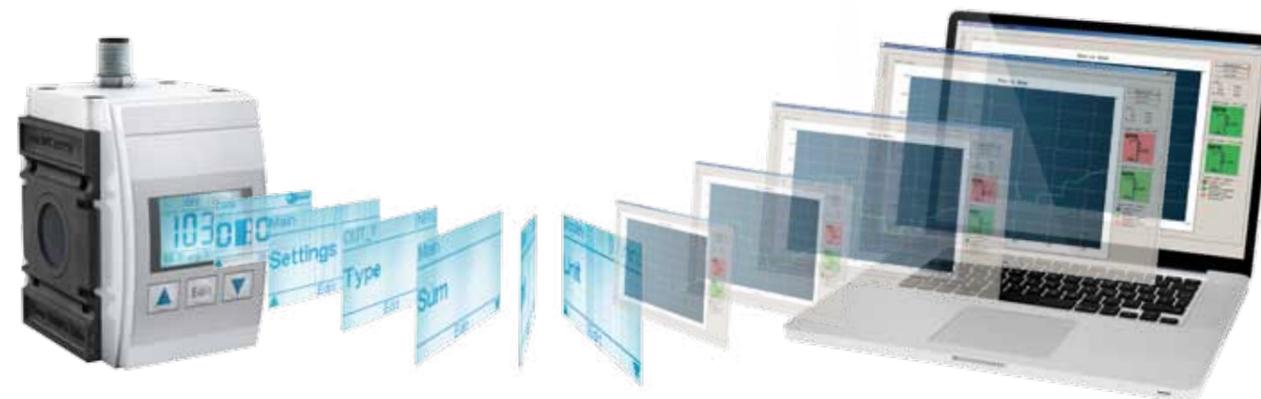
**Defined differential pressure screen**  
With absolute pressure measuring point



**Outlet cross-section**  
With differential pressure measuring point

# The software: well thought-out in every detail.

The KDDM-2 adjusts itself to your performance profiles. The evaluation software of the measuring system allows a perfect alignment with any existing system. With the simple programming and intuitive operation of the KDDM-2 measuring device, you maintain full control over consumption within your compressed air system.



## So easy to program:



**ENTER ACCESS CODE:**  
Playing it safe: the measured values are secured via a personal PIN code



**OUTPUT 1:**  
Via this menu you can freely select the programming of digital outlets for flow, pressure and volumes



**SELECT SETTING:**  
User-friendly: the intuitive menu navigation makes it easy for you to find the suitable setting



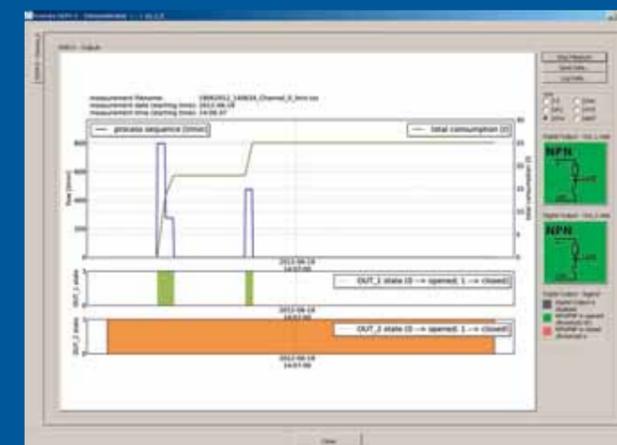
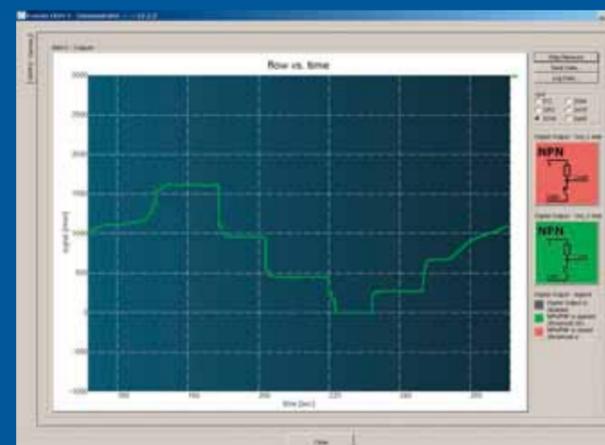
**SUMMARY:**  
Quickly summarised: compressed air consumption analysis with the help of cumulated air consumption measurements



**CREATE SETTINGS:**  
In just a few clicks, you can reset the standard settings on the measuring device



**DISPLAY:**  
So easy: converting the measuring unit to l/sec, l/min, gal/h



Intuitive operation:  
3 keys for maximum ease of use

**DIRECT PROGRAMMING WITH 3 KEYS:**  
User-friendly, intuitive programming and system start-up via the 3-key control pad

### THE INTELLIGENT KDDM-2 SOFTWARE:

The clear evaluation software enables an exact presentation of the flow characteristic. Displaying in different formats is just as natural as the presentation of digital outputs.

With the help of the analysis tools, the evaluations are documented and easily archived.



**KDDM-2 COMPLETELY NETWORKED:**  
networking of several KDDM-2s to monitor complex facilities and systems

# The integration: one for every case. The KNOCKS KDDM-2 always fits in.

Are you planning a new compressed air system or would you like to integrate a measuring sensor into an existing facility? With its outstanding integration capability, the differential pressure measuring system KDDM-2 is always suitable for all conventional applications in pneumatic automation.



### POSSIBLE APPLICATION A:

INSTALLATION INTO AN EXISTING PNEUMATIC SYSTEM.



**Simple to integrate**  
The KDDM-2 as part of a service unit of the Futura series.

### POSSIBLE APPLICATION B:

USE AS A COMPONENT OF THE "FUTURA" SERIES FOR MACHINES AND PLANTS.

# The technical overview: the KNOCKS KDDM-2 performance profile.

### TECHNICAL FEATURES

- Measuring system for differential pressure process
- Medium: compressed air, neutral gases
- Can be integrated into service units or used as a single device
- Pressure range 0–16 bar
- Flow ranges 150–2000 l/min or 200–5000 l/min
- Automatic compensation for temperatures and pressure fluctuations
- Display of the flow values via analogue interface in 0–10 V or 4–20 mA

### ADVANTAGES OF THE DIFFERENTIAL PRESSURE SYSTEM KDDM-2

- Compatible with the Futura series
- Modern design
- Compact/light construction
- Robust
- Quick response times
- No inlet zone necessary
- Measurement completed without movable parts
- Maintenance-free
- Easy operation

### EQUIPMENT FEATURES

- Pressure display programmable in bar or MPA
- Safeguarded by PIN code against unintentional adjustment
- Two freely programmable digital outputs for volumes, flow or pressure
- Display unit programmable in l/min, l/sec, m<sup>3</sup>/h or gal/h
- Display with background illumination
- Menu navigation via 3-key control pad
- Low contamination sensitivity
- Constructed in accordance with IP 65

### APPLICATIONS:

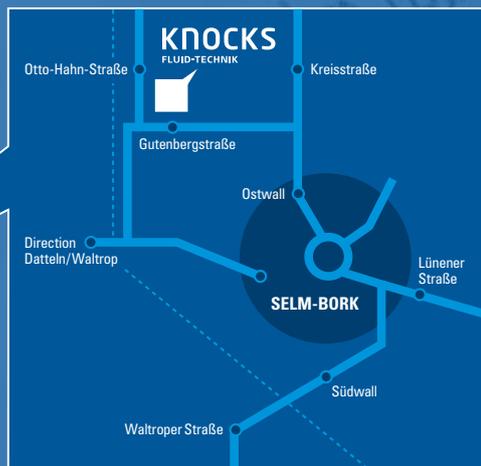
- System monitoring of flow and consumption changes
- Leakage measurements
- Energy efficiency measurement

### INDUSTRIES:

- Machine building in general
- Plant engineering
- Special purpose machinery manufacture
- Automotive industry
- Beverage industry



# Always one idea ahead.



KNOCKS Fluid-Technik GmbH  
Otto-Hahn-Straße 4  
59379 Selm | Germany

Tel. +49 (0) 2592 966 - 0  
Fax +49 (0) 2592 966 - 600  
E-mail [info@knocks.de](mailto:info@knocks.de)

[www.knocks.de](http://www.knocks.de)