

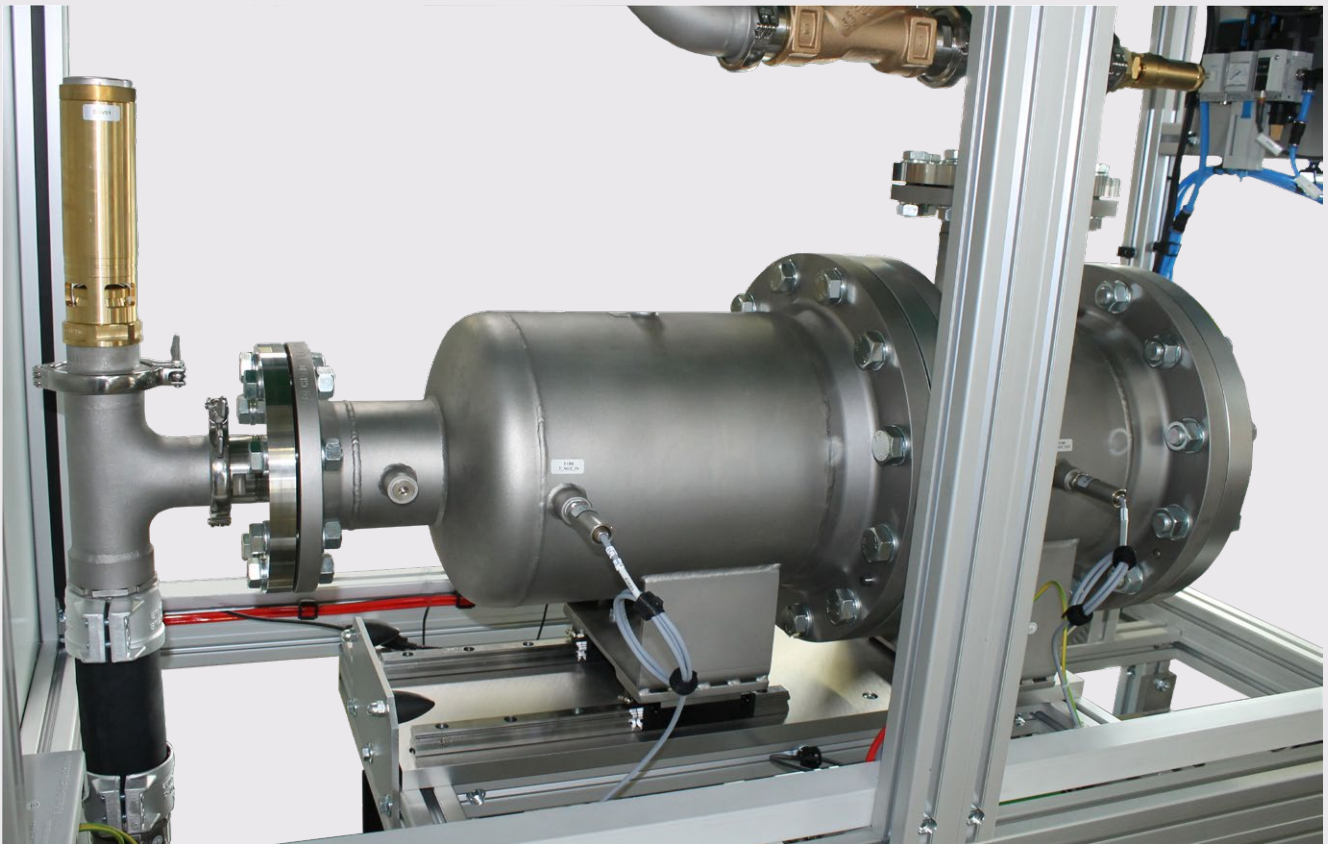
Perfection in fluids.

The right *flow*  
by German engineering.



# SMF<sup>®</sup>1000 - DD Sonic Master Flow<sup>®</sup>

Data Sheet EPE-159104



Made in  
GERMANY



# SMF1000<sup>®</sup>- DD Sonic Master Flow<sup>®</sup>

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## Calibration rig with sonic nozzles Drum Design

Calibration rig with up to 9 sonic nozzles  
Flow generation up to 2000 m<sup>3</sup>/h  
Nozzle equipment according to customer requirements

### Description

The series of SMF<sup>®</sup> nozzle test benches has been specifically designed for calibration with air. Depending on customer requirements, up to 9 sonic nozzles can be combined. The different circuits resulting therefrom allow a flow generation of 2<sup>9</sup>=512 different flow rates. A precise flow can be adjusted in a very short period of time (about 500 ms). The register is made of drum configuration and equipped with appropriate sensors (temperature, pressure and humidity) for density determination. A calibration assembly provides an atmospheric suction through the test item and the nozzle barrel. A vacuum pump, or the connection to the house vacuum power, ensures the necessary sonic pressure ratio downstream of the nozzles. Alternatively, operation can also be realised with overpressure, according to customer requirements.

The system is controlled by a PC with precise data acquisition hardware and control software in LabVIEW.

### Advantages

- ✓ Compact design
- ✓ Integrated inlet section
- ✓ Highest accuracy – up to 0.15%
- ✓ Approved by the PTB as a calibration standard
- ✓ Representation of the volume flow or mass flow
- ✓ Flexible nozzle adjustment per customer requirements
- ✓ Gas meter calibration up to G 650
- ✓ Excellent long-term stability - recalibration period up to 10 years for sonic nozzles

### Standard solutions Application examples:



**Automotive:** Testing of manufacturing tolerances of oil wells in engine casings, cylinder heads, etc. ; Adjustment level for valves, actuators, flowmeters, HFM, ...



**Automation:** Adjustment level for valves, actuators, flowmeters,



**Aviation:** Inspection of injectors for engines, testing the internal geometry of turbine blades



**Power Plant Technology:** Testing of burner sections, inspection of the internal geometry of turbine blades



**Valve technology:** Testing of valve cross sections

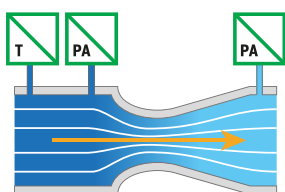


### Technical data

Volume flow	0.0025...1000 m <sup>3</sup> /h
Medium	atm. air, compressed air
Dimensions (D x W x H)	1000 x 1600 x 2000 (mm)
Weight	approx. 750 kg

### Measurement parameters

Absolute pressure – ambient	p <sub>amb</sub>
Temperature - ambient	T <sub>amb</sub>
Absolute pressure – in front of nozzles	p <sub>NOZZLE UP</sub>
Temperature – in front of nozzles	T <sub>NOZZLE</sub>
rel. humidity - in front of nozzle	rH <sub>NOZZLE</sub>
Absolute pressure – downstream from nozzle	p <sub>NOZZLE DOWN</sub>



Measurement principle



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For special requirements we are happy to advise you. Subject to change. / EPE-159104 / Last update: 01/2018 / V01  
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