

Perfection in fluids.

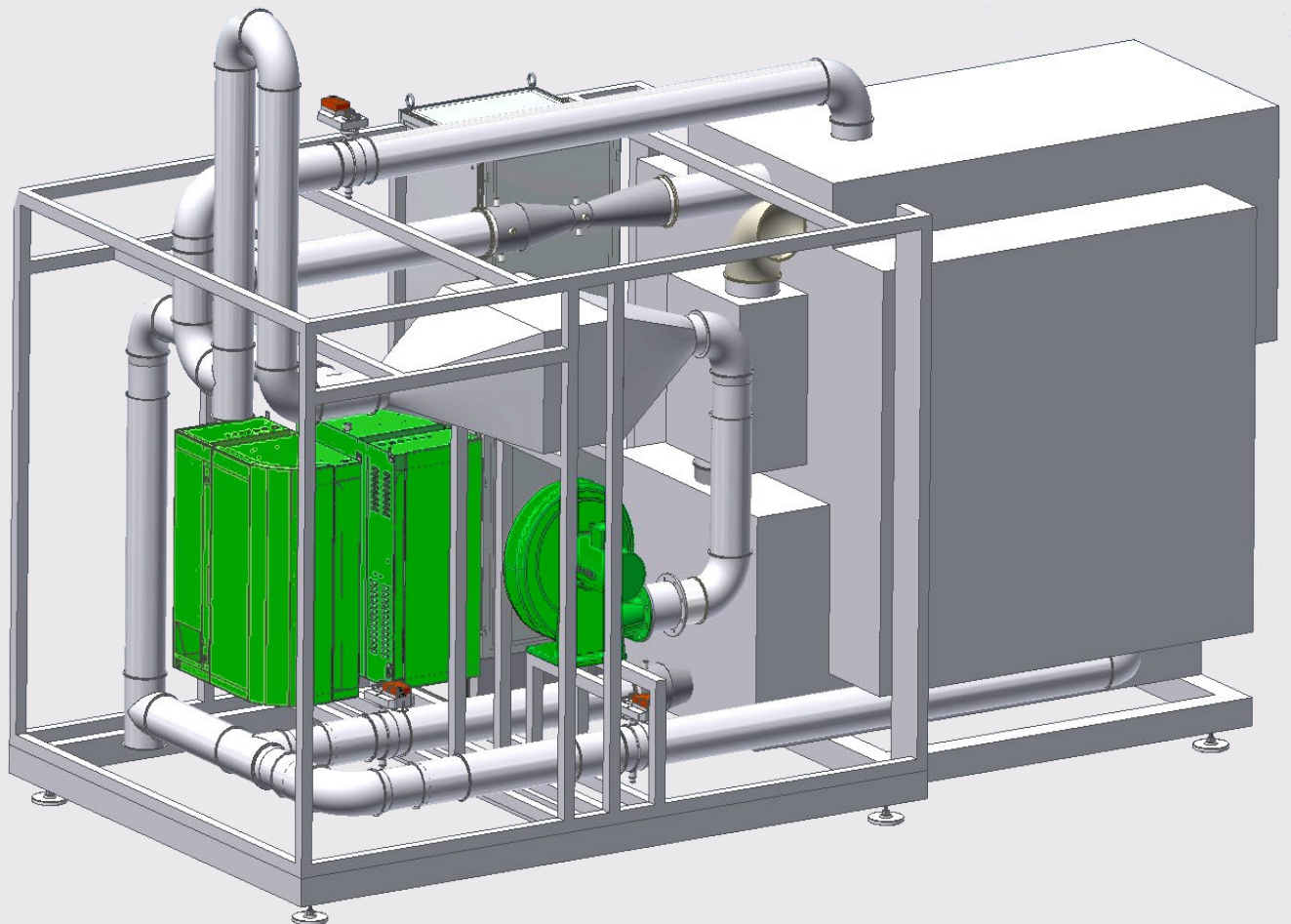
The right *flow*
by German engineering.



Purge air test bench

Testing decentralized, alternating ventilation units
according to DIN EN 13141-8

Brochure EPE-167449



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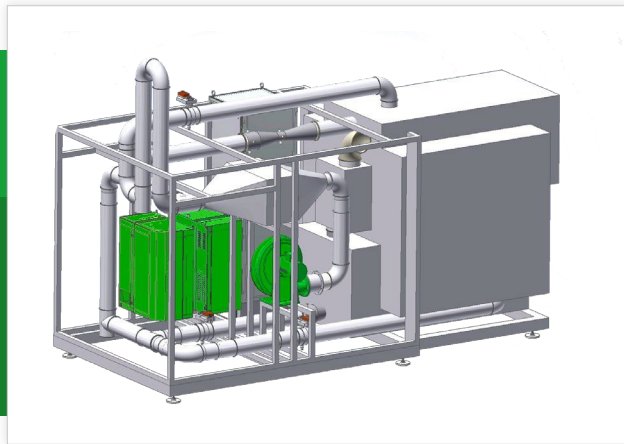


Illustration similar

Determination of heat and humidity recovery

Purge air method for decentralized ventilation units with alternating operation
Performance test according to DIN EN 13141-8
Easy installation of DUT

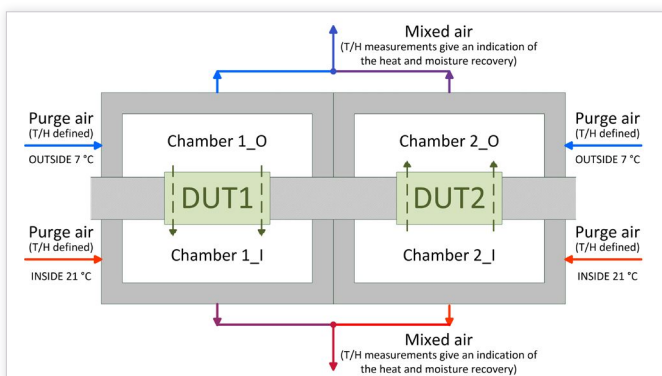
Description

With the purge air method, the heat recovery for balanced air mass flows can be determined for alternating, decentralized ventilation units. The uncertainties of the previously used 'direct method' due to inhomogeneous speed and temperature profiles at the outlet of the ventilation units are bypassed by the purging air method and the measuring accuracy is higher. In addition, with the optional humidity conditioning, the humidity recovery can be determined.

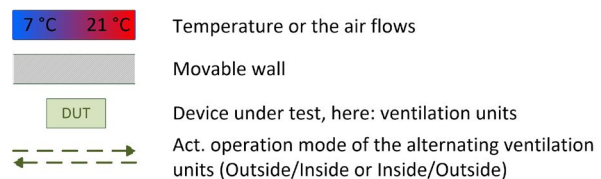
Further thermal characteristics are the air flow rate in alternating operation and the balance, which can also be determined with the test bench. The test bench is equipped with an auxiliary blower so that even continuously operating ventilation units can be measured with the direct method.

Features & benefits

- ✓ Purge air method according to DIN EN 13141-8
- ✓ Determination of thermal characteristics of alternating ventilation units:
Heat and humidity recovery, air mass flow and balance in alternating operation
- ✓ Movable wall:
For easy installation of DUTs
- ✓ Optimized humidity, CO₂ and temperature conditioning of purge air:
High measurement accuracy
- ✓ Autonomous operation without climatic chamber:
Variable installation locations
- ✓ Variable volumetric flows:
For different test items and additional test points outside the standard
- ✓ Usable as a fan test bench
e.g. for continuous working ventilation equipment
- ✓ Usable as climatic chamber:
Use of 4 climate chambers regardless of fan tests



Functionality purge air method



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The challenge - 'alternating operation'

- Direct methods inaccurate
- Heat recovery not measurable

In decentralized split ventilation units, 2 units each work in pairs in an opposite, alternating operating mode. The opposite operation ensures the balance of incoming and outgoing air flows in the room. Alternating operation allows regenerative storage in the ventilation units to be used for heat and humidity recovery.

The 'direct method' for determining the thermal characteristics cannot be used for these devices. The required auxiliary fans have settling times that are on the order of the cycle time of the ventilation units. An actual loop can therefore not be displayed by control engineering. Although alternating devices can be measured in continuous operation, but since the actual volume flow in alternating operation is smaller than in continuous operation, this is only an approximation.

Direct measuring methods for determining the temperature and speed directly at the outlet of the ventilation units are very inaccurate in the case of inhomogeneous temperature and flow conditions.

The solution - purge air method

- Conditioned purge air
- Measurement of thermal characteristics in alternating operation

The purge air test bench consists of 4 measuring chambers in which 2 alternating, counter-rotating, decentralized ventilation units can be measured as sample pairs. So, the two DUTs work during the measurement as in actual operation. Both inner and outer chambers are perfused with conditioned purge air. The air flow of the ventilation equipment mixes in the chamber with the purge air and changes their preconditioned properties. The temperature and humidity of this mixed air can then be determined with the 'direct method', giving an indication of the heat and humidity recovery.

The mixed air volume flows for the inner and outer chambers are measured with one Venturi tube each. The wall in the test stand can be moved, so that the test specimens can be easily and conveniently mounted outside the test chambers.

'Alternating operation'

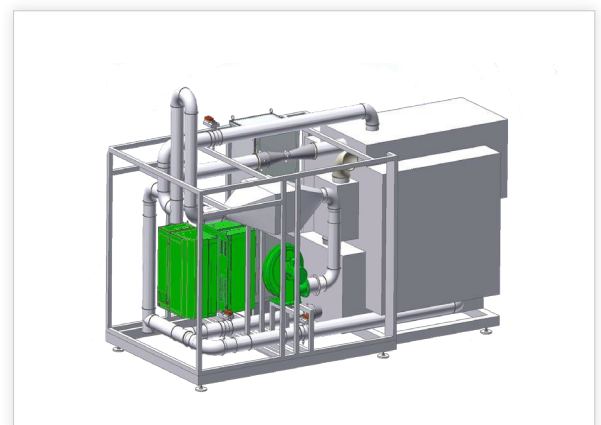


i DUT: decentralized ventilation unit



The German research project EWWALT has evaluated the weaknesses of the direct approximation method used to date for alternating ventilation units and proposed the purge air method as the test method of choice based on the results for the revised version of the standard. In the purge air test stand of EP Ehrler Prüftechnik, these results and calculations have already been considered and implemented.

Purge air method



i Purge air test bench



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Technical specifications & ordering information

Technical specifications

Air volume flow purge air:	20...200 m ³ /h (± 1.0 % EV)
Temperature purge air:	7...21 °C
Humidity purge air:	10...92 % r.h.
Measurement accuracy volume flow:	± 1 % MV
Dimensions (H x W x T):	3100 x 4620 x 2015 mm



You need a test bench that is even more tailored to your needs? We are test bench builders in the field of flow measurement technology for over 30 years! We can customize the design shown here for your application. Present us your requirements and request your individual, non-binding offer!

Ordering information

Item number	Description
169250	Purge air test bench
172400	Option: Humidity conditioning
172401	Option: CO ₂ conditioning

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