

## Airtightness Measurements of Large Buildings

### Minneapolis BlowerDoor MultipleFan

The measuring system BlowerDoor MultipleFan consists of three BlowerDoor fans and two digital DG-1000 pressure gauges and was developed for airtightness measurements of buildings with an envelope area of approx. 36,000 m<sup>2</sup> or an internal volume of up to 440,000 m<sup>3</sup>. The MultipleFan system has been designed as a modular system and thus not only allows you to measure large industrial and office buildings, but with one or two BlowerDoor fans can also be used in single-family homes or apartment buildings.



With the BlowerDoor MultipleFan system (three fans) plus the TECLOG software, you can conduct and record airtightness measurements with a flow rate of approximately 21,600 m<sup>3</sup>/h. The pressure gauges and speed controllers form a compact unit close to the measuring equipment. The fans are centrally computer-controlled from your laptop via WLAN or optionally with data cable. To measure airtightness of large residential or commercial buildings, several MultipleFan systems can easily be combined if necessary.



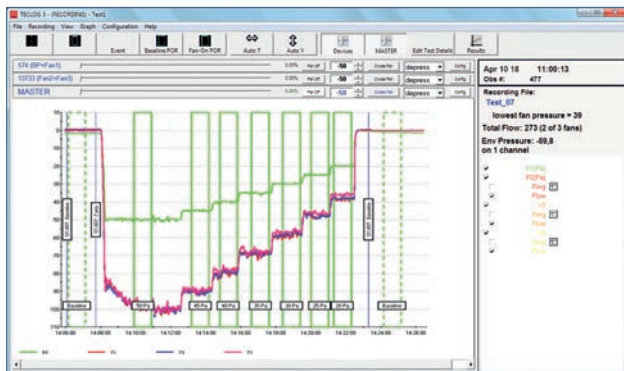
**NEW  
DG-1000**

Air change rate (50 Pa)	Verifiable Internal Volume
3.0 h <sup>-1</sup>	7,200 m <sup>3</sup>
1.5 h <sup>-1</sup>	14,400 m <sup>3</sup>
0.6 h <sup>-1</sup>	36,000 m <sup>3</sup>

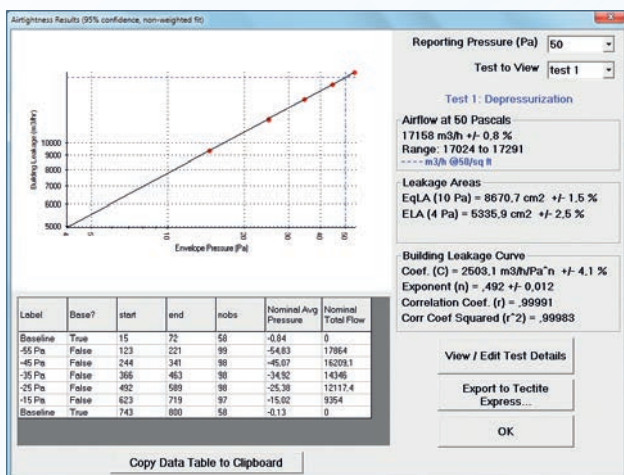
Air permeability (50 Pa)	Verifiable Envelope Area	Max. Internal Volume (based on Envelope Area)
4.5 m <sup>3</sup> /m <sup>2</sup> h	4,800 m <sup>2</sup>	22,500 m <sup>3</sup> A/V ca. 0.21 m <sup>2</sup> /m <sup>3</sup>
2.5 m <sup>3</sup> /m <sup>2</sup> h	8,640 m <sup>2</sup>	52,800 m <sup>3</sup> A/V ca. 0.16 m <sup>2</sup> /m <sup>3</sup>
0.6 m <sup>3</sup> /m <sup>2</sup> h	36,000 m <sup>2</sup>	440,000 m <sup>3</sup> A/V ca. 0.08 m <sup>2</sup> /m <sup>3</sup>

## BlowerDoor measurement according to ISO 9972 and EN 13829

Airtightness measurements of large buildings with several BlowerDoor fans are conducted using the TECLOG MultipleFan software. The Master Fan Control function controls all BlowerDoor fans simultaneously and centrally from one single laptop. A new feature is the control of the BlowerDoor fans via integrated WLAN module of the DG-1000. Your laptop can easily



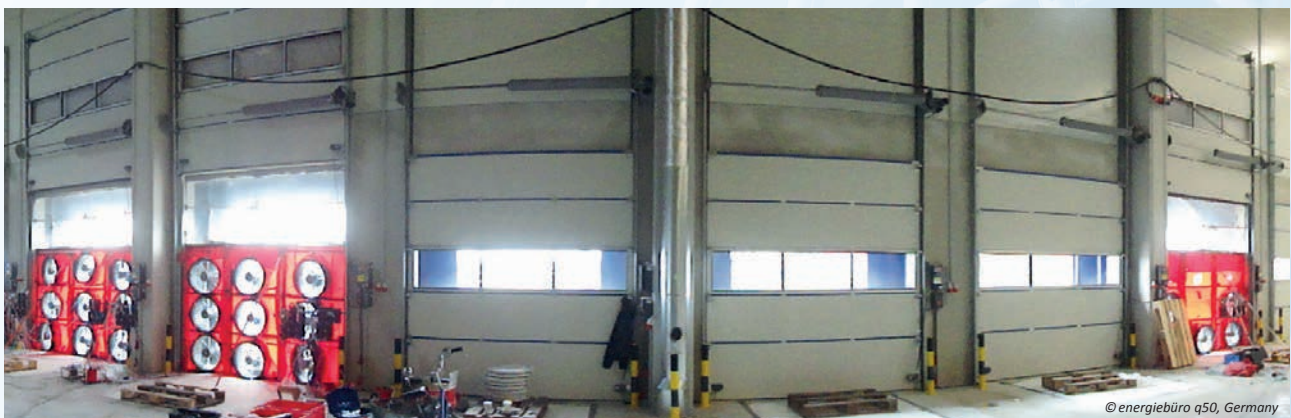
The POR function allows you to record defined measuring periods automatically



Leakage curve with air-flow results

be put at any suitable place in the building. The fan speed is computer controlled. The flow rates are displayed on the monitor in real-time. With the POR (period of record) function, the desired measuring periods are recorded at the push of a button. The user easily observes any deviations due to wind or open doors and can quickly react to disturbances in the measuring process.

The total air-flow rate is obtained automatically, and, together with the measurement graph, can be accessed at all times by one click of the mouse. The measuring results have to be analyzed quickly in order to enable on-site decisions as to whether the tests are accurate and the results meet the requirements. Following the measurement, the data is read into TECTITE Express 5.1 to create the test report. Additional features, as for example for recording several building pressure differentials of different sides of the building as well as for analyzing the pressure distribution within the building complete the new version of the TECLOG software.

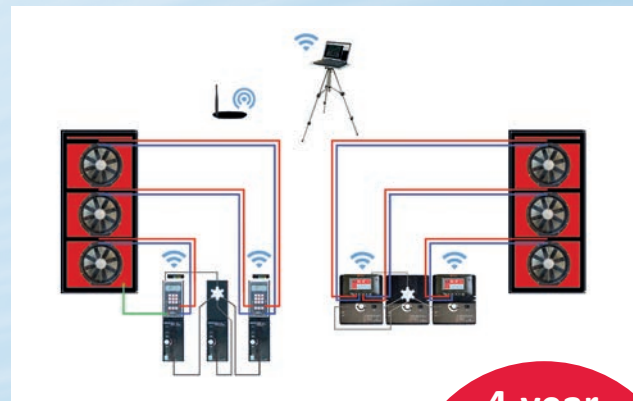




## Modular set-up for universal application

Minneapolis BlowerDoor measuring systems are modular and ideally suitable for measuring large industrial and office buildings: You may combine any number of BlowerDoor fans and pressure gauges individually according to your needs and requirements. By calibrating measuring fans and pressure gauges separately, we maintain the excellent accuracy of our BlowerDoor measuring technology even when combining several system components, e. g. a DG-700 and a DG-1000.

The BlowerDoor measuring systems are installed in one or several door openings depending on the conditions on site. In large buildings with a complex floor plan, distributing the measuring systems in the building allows for constant pressure distribution.



**4-year  
warranty**

on all  
entire Minneapolis  
BlowerDoor  
measurement  
systems!



## Overview of the most important functions

- BlowerDoor measurement according to ISO 9972 and EN 13829
- Clear and compact test set-up
- Combination of different pressure gauges possible
- Simultaneous control of all BlowerDoor fans from one single laptop
- Data communication via cable or integrated WLAN module
- Automatic recording of measuring periods
- Real-time display of the air-flow rate allows you to analyze the measuring results on site
- Recording several building pressure differentials helps with measuring very large buildings with complex floor plans
- MultipleFan with three fans allows you to distribute the fans (2 + 1) in different door openings to achieve constant pressure distribution in very large buildings
- Data and comments are recorded in one file
- Automatic shutdown when limit pressure is reached

**Modular set-up enables the combination of  
different measuring components!**

## Technical Data

### Minneapolis

#### BlowerDoor MultipleFan

<b>Capacity:</b>	19 m³/h – 7,200 m³/h (total capacity of three fans is approx. 21,600 m³/h) at a pressure differential of 50 Pa
<b>Power supply:</b>	220–240 V, 50 Hz, nominal output <600 W per fan, max. power consumption 3.7 A per fan
<b>Measuring accuracy:</b>	With open fan, rings A–C (flow rate approx. 80–7,200 m³/h) ±4 % of the mean. With rings D–E (flow rate approx. 19–80 m³/h) ±5 % of the mean or ±1.7 m³/h (the higher value is valid)
<b>Dimensions and weight</b>	
<b>Fan:</b>	Ø approx. 610 mm, approx. 15 kg
<b>Speed controller:</b>	103 × 207 × 62 mm (h × w × d), approx. 1.7 kg
<b>Gauge board:</b>	260 × 224 × 6 mm (h × w × d), approx. 0.5 kg
<b>Mounting frame standard size:</b>	Dimensions from width 0.71–1.14 m to length 1.32–2.43 m, incl. lower and middle cross bars, weight approx. 7 kg, special dimensions on request
<b>Panel standard size:</b>	BlowerDoor panel with one, two and three openings

#### DG-1000 Digital Pressure Gauge

**No. of independent pressure channels:** Two  
**Pressure range:** -2,500 to +2,500 Pa  
**Display resolution:** 0.1 Pa for readings 0–999.9 Pa, 1 Pa for readings 1000 Pa and larger  
**Accuracy at typical use conditions\*:** ±0.9% of pressure reading or ±0.12 Pa (whichever is greater) according to EN ISO 9972:2015, EN 13829:2000, FD P50-784:2016-07  
**Units of measure:** Airflow @ 25, 50, 75 Pa: m³/h, l/s, cfm. Air change rate: 1/h. Air permeability: (m³/h)/m²  
**Auto-zero:** On start up and then once every 10 seconds  
**Time averaging:** 1, 5, 10 seconds and long-term (continuous update)  
**Operating temperature range:** 5.5 °C to 46 °C  
**Storage temperature range:** -20 °C to 60 °C  
**Display:** 480 × 272 pixels, 95 × 53 mm, capacitive touch screen  
**Display backlight:** User adjustable (default 40%)  
**Power:** Two 18650 Lithium Ion batteries (replaceable) with AC charger/power adapter included  
**Battery life:** Over 15 hours of continuous use with default settings, 13 hours of continuous use with default settings and WLAN active  
**Auto-off:** Individually adjustable  
**Dimensions:** 107 × 177 × 36 mm (h × w × d)  
**Weight:** approx. 445 g  
**Calibration:** Meets ISO 9972, EN 13829, FD P50-784, ASTM Standard E779-03, E1554-07, CGSB-149.10-M86, ATTMA Technical TStandard 1 and NFPA 2001, RESNET and US ACE  
**Recommended calibration interval:** Two years

#### Software TECLOG MultipleFan

(Version TECLOG 4 in EN, reference guide available in EN/DE/FR)  
 BlowerDoor measurement with multiple fans  
**System requirements:** WIN 7 or up

#### Software TECTITE Express

(Version 5.1 and reference guide in english)  
 Automated/semi-automated/manual according to EN 13829 and ISO 9972, incl. BlowerDoor test report  
**System requirements:** WIN 7 or up

#### Shipment includes

**Minneapolis BlowerDoor MultipleFan:** 2 measurement systems Minneapolis BlowerDoor Standard / 1 BlowerDoor fan / accessory bag with fan cover, speed controller incl. gauge board, BlowerDoor panel (standard size) with 2 openings, BlowerDoor panel (standard size) with 3 openings, software TECLOG MultipleFan, communication jack, 1 WLAN-N-Router (4 ports, 300 MBit/s, 2T2R), 2 premium patch cables (red, 2 m), 1 premium patch cable (yellow, 10 m), tube set, reference guide / additional upper cross bar / mounting strut short and long / 2 laptop racks / attachment: measurement device holder / sealing box for building preparation  
 All BlowerDoor measuring systems come with their calibration certificate.

**Guarantee period:** 4 years from purchase date

\* Typical conditions are a temperature range of 12 °C to 32 °C, and a two year calibration interval.



**BlowerDoor GmbH**  
 MessSysteme für Luftdichtheit

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**Do you intend to up-  
 grade your Minneapolis  
 BlowerDoor Standard  
 or to combine several  
 MultipleFan systems?**

**Contact us to compile the  
 optimal configuration!**