



## Minneapolis BlowerDoor MultipleFan

# Airtightness Measurement of Large Buildings

The BlowerDoor MultipleFan System consists of three BlowerDoor fans and two digital DG-700 pressure gauges, and was developed for airtightness measurements of buildings with an envelope area of approximately 7,000 to 36,000 m<sup>2</sup> or an internal volume of up to 450,000 m<sup>3</sup>.\* As a modular system, the MultipleFan set can be used for testing larger industrial and administrative buildings, but also for single-family homes and apartment buildings using one or two BlowerDoor fans.

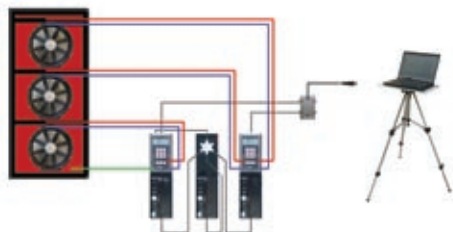
With the BlowerDoor MultipleFan System (three fans) plus the TECLOG software, you can conduct and record airtightness measurements with an air flow rate of approximately 21,600 m<sup>3</sup>/h. The pressure gauges and controls form a compact unit close to the measuring equipment. The fans are centrally computer-controlled from your laptop.

The German Energy Savings Regulation (EnEV) especially requires the building envelopes of schools, nursing homes, administrative buildings, and production facilities to be airtight. According to German Industrial and European Standard DIN EN 13829, the majority of such buildings are categorized as larger buildings with an internal volume of more than 4,000 m<sup>3</sup>, often requiring several BlowerDoor fans (MultipleFan).



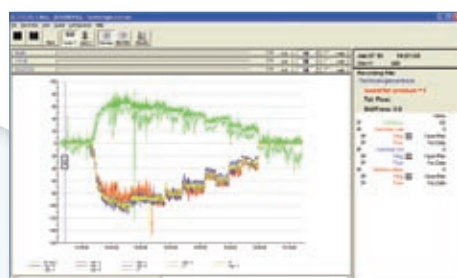
### Advantages of the BlowerDoor MultipleFan System

- Clear and compact test set-up
- Simultaneous control of all BlowerDoor fans
- Modular set-up of the measuring system for universal application

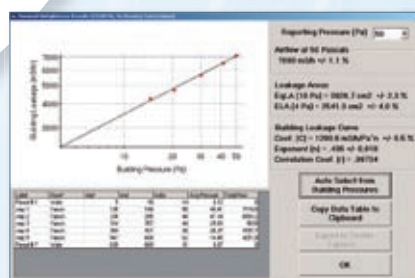


	* Verifiable Internal Volume
$n_{50} = 3.0 \text{ h}^{-1}$	7,200 m <sup>3</sup>
$n_{50} = 1.5 \text{ h}^{-1}$	14,400 m <sup>3</sup>
$n_{50} = 0.6 \text{ h}^{-1}$	36,000 m <sup>3</sup>

	Verifiable Envelope Area	max. Internal Volume (based on Envelope Area)
$q_{50} = 3.0 \text{ m}^3/\text{m}^2\text{h}$	7,200 m <sup>2</sup>	40,000 m <sup>3</sup> A/V ca. 0.18 m <sup>2</sup> /m <sup>3</sup>
$q_{50} = 1.5 \text{ m}^3/\text{m}^2\text{h}$	14,400 m <sup>2</sup>	110,000 m <sup>3</sup> A/V ca. 0.13 m <sup>2</sup> /m <sup>3</sup>
$q_{50} = 0.6 \text{ m}^3/\text{m}^2\text{h}$	36,000 m <sup>2</sup>	450,000 m <sup>3</sup> A/V ca. 0.08 m <sup>2</sup> /m <sup>3</sup>

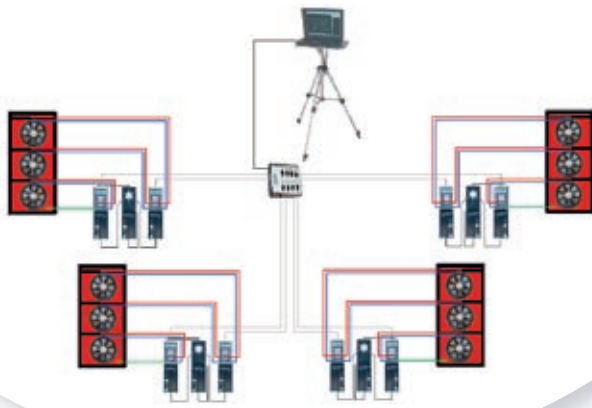


Desktop with control panel, graph and fan data



Leakage curve with air flow results





## To measure airtightness of large industrial or office buildings, for example four MultipleFan Systems can be combined, i.e. twelve BlowerDoor fans in total.

If the airtightness measurement with several fans is controlled manually, time lags and fluctuating building pressure inside and outside the building can complicate the measurement.

The MASTER FAN CONTROL function in the new TECLOG version allows you to control all BlowerDoor fans simultaneously and centrally from one single laptop. The flow rates are displayed on the monitor in real-time. 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.

The fan speed can be controlled from your computer. Data and comments are recorded in a file. The user easily observes any deviations due to wind or open doors, and can define the relevant measuring periods. The new software TECLOG MultipleFan is completed by additional features that, for example, allow you to record several building pressure differentials on different sides of a building or to analyze the pressure distribution inside the building.



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## Technical Data BlowerDoor MultipleFan (three BlowerDoor fans)

### BlowerDoor fan

**Capacity:** 19 m<sup>3</sup>/h – 7,200 m<sup>3</sup>/h (total capacity of three fans is approx. 21,600 m<sup>3</sup>/h) at a pressure differential of 50 Pascal  
**Power supply:** 220–240 Volt, 50 Hz, nominal output < 600 watts per fan, max. power consumption 4.5 amperes per fan  
**Measuring accuracy:** With open fan, rings A–C (flow rate approx. 80–7,200 m<sup>3</sup>/h) ±4% of the mean. With rings D–E (flow rate approx. 19–80 m<sup>3</sup>/h) ±5% of the mean or 1.7 m<sup>3</sup>/h (the higher value is valid).

**BlowerDoor mounting frame standard:** dimensions from W 0.71 m – 1.14 m to L 1.32 m – 2.43 m, incl. lower and middle cross bars. Special dimensions available on request.

**Panel:** BlowerDoor panel standard with one opening, with two openings and with three openings

### Digital pressure gauge

with two pressure channels and cruise control function

**Measuring range:** -1,250 Pa to +1,250 Pa

**Display resolution:** 0.1 Pa

**Accuracy:** ±1% of reading or 0.15 Pa (the higher value is valid)

**Auto-zeroing:** At the start, and every 10 seconds

**Differential pressure display:** Separate display of the two differential pressure channels

**Flow rate display:** Compatible with Minneapolis BlowerDoor fan models 4 and 3

**Units:** m<sup>3</sup>/h, l/s

**Averaging:** 1 second, 5 seconds, 10 seconds, or long-term mean

**Operating temperature:** 0°C to 50°C

**LCD Display:** Split display (length × width) 80 × 30 mm, display can be illuminated

**Batteries:** 6 × AA (Power Supply optional)

**Operating time:** Approx. 100 hours

**Weight:** Approx. 470 g

**Dimensions:** (L × W × D) 195 × 102 × 32 mm

**Output:** Serial data output RS232, mini-USB

**Stand-alone functions:** Automatic speed control of BlowerDoor fan. Cruise control function for one-point test without a laptop (0/25/50 Pa).

**Computer- or laptop-controlled functions:** Central control of up to six BlowerDoor fans, data Logging to record pressure differentials

**Software:** TECLOG MultipleFan (Version TECLOG2)

**System requirements:** WIN XP or up, Excel 2000 or up

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

**Shipment includes:** Two Minneapolis BlowerDoor Standard Measurement Systems, one BlowerDoor fan with fan cover, speed controller, additional upper cross bar, mounting strut short and long, BlowerDoor panel standard with two openings, BlowerDoor panel standard with three openings, software TECLOG MultipleFan, communication jack, COM-Port-Box (four ports) incl. serial data cables (RS232/2 m each), serial data cable on cable drum (2 × RS232/50 m), tube set, two laptop racks, attachment: measurement device holder, and sealing box.

Incl. personal instruction (duration two hours, on location in Springe-Eldagsen or online).