



AIR PERMEABILITY
MEASUREMENT SYSTEM



Pulse is a portable compressed air based system which is used to measure the air leakage of a building or enclosure at an ambient pressure level (4Pa).

By measuring at a lower pressure, the system provides an air change rate measurement that is representative of normal inhabited conditions, helping to improve understanding of energy performance and true building ventilation needs.

The full Pulse system comprises of an air receiver, an air compressor and a touch screen control module.



Key Features



Quick & simple to operate

Setup, test and pack down in as little as 10 minutes. The Pulse unit is simply placed into the centre of a building and can be operated using single button operation.



Practical

Pulse is a self-contained device, able to test the whole building envelope or enclosure, including all doorways. It can also be used to test individual rooms.



Low pressure

The test process does not overly stress the building fabric during testing and does not force leakage paths which would not otherwise be there under normal conditions.



Low disruption

Occupants or trades people may remain in the building for the duration of testing. The test does not penetrate the envelope and will not change the temperature of the building.



Accurate and repeatable

Pulse provides highly repeatable results at low pressures whilst the system also minimises the impact of changes in background pressure due to wind.



Flexible modular system

Multiple standard Pulse air receivers can be linked together to test larger buildings, delivering a precise and uniform pressure distribution.

Why measure at low pressure?

A 4Pa reference pressure is generally considered the typical pressure differential across a building envelope over the course of the seasons (i.e. representative whole year average). It is the pressure used as an infiltration reference in the ASHRAE Handbook of Fundamentals, ASTM E741 and within the building codes used in France, Switzerland and the US.

It is this low pressure differential field of measurement where Pulse is most truly unique and innovative. Whilst the blower door fan method is a useful stress test of the fabric and able to be used for leakage path diagnostics, the Pulse method provides a direct measurement of air permeability characteristics under ambient conditions. This is useful in improving the accuracy of energy performance assessments and in assessing the level of background infiltration as well as also natural ventilation if required.



Applications



New Build

Simple, quick and accurate testing can provide effective quality assurance throughout the construction, commissioning and compliance testing process. Adopt the [BTS Leak Checker](#) as a tool to diagnose air leakage issues during the build phase, increasing pass rates and cost efficiencies when it comes to a final Pulse compliance testing.



Existing Homes and Retrofit

Low impact, low pressure testing of occupied homes can determine the root cause of mould, condensation and indoor air quality issues. Testing can also be used to determine retrofit strategies and to validate the quality and performance of delivered works.



Non-residential

Link multiple Pulse air receivers to cost effectively carry out air permeability testing on large non-residential buildings or in multi-residential blocks; new build or existing occupied.



Specialist

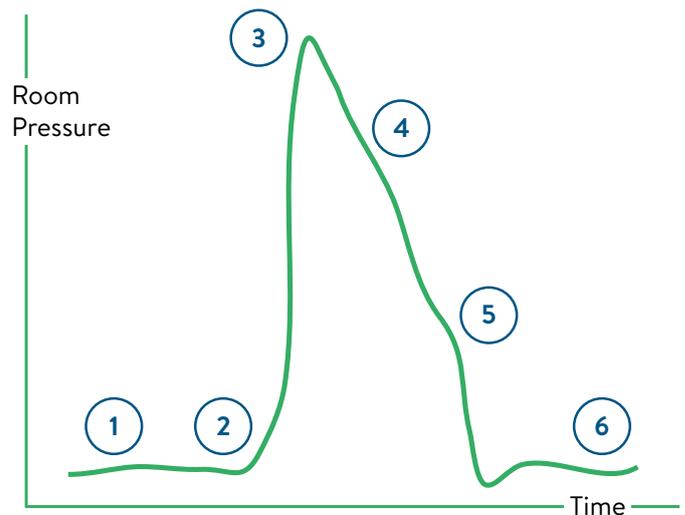
Pulse can be used in a range of other specialist conditioned environments such as cleanrooms, laboratories, refrigeration chambers, data centres and server rooms where quick, safe, non-disruptive testing of enclosure integrity is required.

Complimentary to Pulse, we offer Leak Checker, a tool for air leakage diagnostics. Visit buildtestsolutions.com/leak-checker to find out more.



How Pulse Works

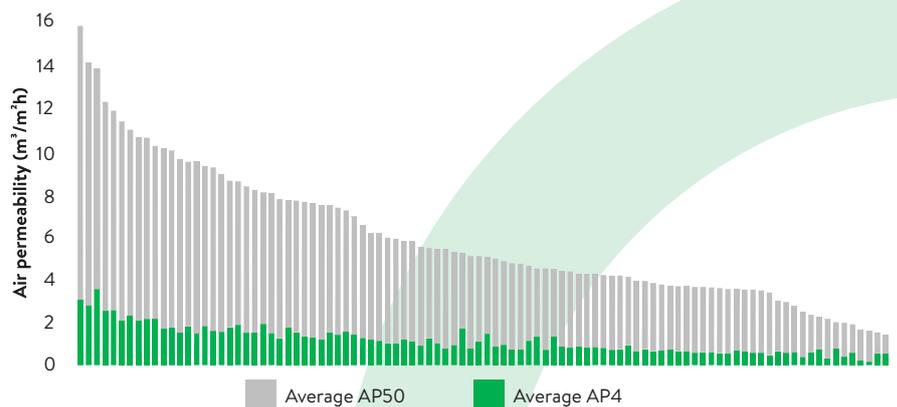
- 1. Pre-test:** Background pressure is measured. This is used as a baseline and for wind adjustment.
- 2. Valve opens:** The air receiver begins releasing air. The rate of release is measured.
- 3. Pressure peak:** The pressure increases quickly and typically peaks at 10Pa.
- 4. Quasi-steady flow:** Quasi-steady flow: The air flow through the fabric is greater than the air flow from the tank. The pressure drops in a constant, 'steady' manner. This 'quasi-steady' period is used to calculate the air leakage through the fabric. The calculation compares the amount of air released by Pulse with the pressure in the room during the 'quasi-steady' period to calculate air permeability.
- 5. Valve closes:** Pressure returns to normal through leakage.
- 6. Post-test:** Background pressure is measured again for a baseline and wind adjustment.



Field trial

A large, representative sample comprising 108 homes was tested with Pulse and the blower door fan technique in 2018. The graph illustrates the difference in recorded air permeability levels when measured with a blower door fan at 50Pa (AP50) and with Pulse at 4Pa (AP4).

A series of third-party studies have also been carried out by the BRE and NPL and independently confirm the accuracy and validity of the Pulse technique.



Pricing



Complete Pulse 2.0 System

£6,500

Comprising:
1x air receiver, 1x controller,
1x compressor and all required
ancillaries and software



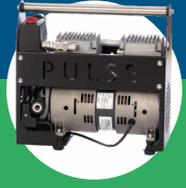
Additional Air Receiver

£3,500



Additional Controller

£2,500



Compressor

£850



To start using Pulse, contact us today by emailing enquiries@buildtestsolutions.com or call 01455 555 218

Technical Specification

PULSE 2.0

Maximum Operating Pressure	10 Bar (1,000kPa)
Operating Voltage	220-240V 50Hz (110v available on request)
Max Power Consumption	569W, 2.63A (compressor)
Min Operating Temperature	4°C (frost free)
Max Operating Temperature	40°C
Outlet Filtration	5µm (particulate)
Communications	2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE
Storage	8GB (up to 20,000 test files)
External Dimensions	Air receiver: Ø 386 x 900 (H) mm Controller: 305 (L) x 270 (W) x 144 (H) mm Compressor: 350 (L) x 150 (W) x 370 (H) mm
Weight	Air receiver: 14.0kg Controller: 3.0kg Compressor: 14.5kg
Ancillaries Supplied	1x 3m IEC to mains plug cable; 1x 2m IEC compressor power cable; 4m coiled air delivery hose; 1x 5m Controller CAT5e data cable
System Outputs	Air Leakage rate (m ³ /h) Air Leakage per hour, Q (m ³ /h) Air changes per hour Q (h ⁻¹) Effective Leakage area (m ²) Air Permeability (m ³ /m ² h) Achieved Pressure Range (Pa)

Contact

For more information about Pulse please contact Build Test Solutions using the details provided:

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www.buildtestsolutions.com

