Test rig for joint permeability, water tightness and wind loads

Test rig for windows, doors, sealing, and small facades

Type: LWW-ECO

Abb.1: LWW-ASW-ECO Test wall

Abb. 2 LWW-MSR-ECO Control unit

1 Description of the LWW-ECO module

The test rig determines the permeability of joints, water tightness and the resistance to wind load on windows, French windows and facades. Besides sealing, panels and other exterior wall parts are tested on these characteristics as well.

The included measure and supply unit is equipped with a integrated air fan to create testing pressure and measure the permeability of joints from 130 m³/h up to 800 m³/h. The governor air fan in connection with measure pipes is able to measure the air mass flow rate in m³/h according to the standard. As a result standardization to the actual air pressure and temperature is not necessary.

A long-term stability is guaranteed through fixed parts for all the measurements. The test compressed air can be regulated up to 2500 Pa. The built in differential pressure transducer can be reseted manually or through an optional feature automatically. To determine the deformation of the profile you have the possibility to add extra test probes with 50 mm

measurement accuracy. The water pressure and flow is adjusted by hand and recorded by a measure turbine.

All measures data are collected and visualised by a computer. There is also an individual manual testing. Optional software allows automated test start and analysis of all testing procedures. The transient response of the pressure and flow rate is displayed graphically.

The clamping surface is available with 2 m x 2.5 m up to 4 m x 3 m (width x height). The test rig depth is 400 or 600 mm. Spray devices with 2 l/min and 1 l/min are installed in the clamping surface. Test specimen with the range of a minimal size of 500 to 500 mm (including the surrounding panels) can be installed to the maximum size of the surface. The clamping takes place with an electric driven bar, variable plastic side elements and a fast tension system.
All parts encountered with water are made of stainless steel or plastic. To ensure an enduring use of the rear wall, we use water proofed plates made of a special material. The sealing are high-quality designed for frequently use. The built in siphon closes in case of high pressures.
The optional available fog machine checks the accurate clamping operation of the test piece and it also reveals leakages.

2 LWW-ECO durability test according to following standards

Test characters	Standards
Window test	
Air permeability	EN 1026
Water tightness	EN 1027
Resistance to wind load	EN 12211
French window test	
Windows and exterior doors standards	EN 14351-1
Facade/Curtain wall test	
Air permeability	DIN EN 12153
Water tightness (laboratory test under static pressure)	DIN EN 12155
Resistance to wind load	DIN EN 12179

3 Technical data basic version

- Air mass flow rate: approx. 130 m^3/h
- Compressed air: approx. +/- 2500 Pa
- Water flow rate: 30 l/min
  (compression – slipstream load exchange, pressure pulse)
- WPK clamping surface:
  - Many sizes available
  - Spray device: 2 l/min
- Requires supply:
  - Safety socket: CEE 16 A, 230/400 V (without RCD)
  - Compressed air: 6 bar
  - Water inflow: 3/4”, min. 3.5 bar
  - Water outlet: min. DIN 50 mm

4 Scope of delivery

Basic version:

- Supply unit: MSR-ECO-100
  WPK regulation, control, and measure unit incl. laptop (operation and visualization) and operation software ECO
- WPK clamping surface: ASW-ECO 22,5-4
  2000 x 2500 x 400 in mm (WxHxD)
  incl. gripping jaws, clamping elements, distance and raster elements, electric operated lifting device for traverse beams, air and water piping for the supply device as well as a divisible spray bar with nozzles
- **ift** calibration

5 Optional features / modifications

The following options can be offered on enquiry:

- Variant supply unit:
  - MSR ECO 150-500
    (air mass flow rate: 150 m^3/h | 500 m^3/h)
  - MSR ECO 450-1000
    (air mass flow rate: 450 m^3/h | 1000 m^3/h)
  - MSR ECO 800-3000
    (air mass flow rate: 800 m^3/h | 3000 m^3/h)
- Increased compressed air up to ± 5000 Pa
- Module: MSR ECO-PLUS
  (increased measure accuracy, additional software for customized test runs)
- WPK clamping surface variants:
  - Type: ASW-ECO 33-4:
    3000 x 3000 x 400 in mm (WxHxD)
  - Type: ASW-ECO 43-4:
    4000 x 3000 x 400 in mm (WxHxD)
  - Type: ASW-ECO 43-6:
    4000 x 3000 x 600 in mm (WxHxD)
  - More customized sizes available on enquiry
- Second water flow rate measure device:
  30 l/min (required for test specimen bigger than 2.5 m)
- Test probes incl. 5 m connection lead
- Water circulation for steady fresh water supply
  (incl. water pump 30 l/min, collection container, and control unit)
- Fog machine with external hand unit and piping
- Additional spray devices for facade testing
- Additional modification for regulation of the water flow and water flow measurement for the facade test
- Displacement transducer rail for vertical mounting of three transducers
- Temperature and cryogenic device for clamping surface and air conditioning
  (all necessary components are included; chamber temperature: - 20 °C to + 60 °C; heating/cooling capability:
  approx. 4 kW / 3 kW;
  capability of the air circulation:
  approx. 1 kW)
- Clamping dolly for vertical and 1.8 m horizontal clamping of three displacement transducer
- Additional test for safety devices (incl. measure unit with display and hand winch)

- Racking and torsion module:
  resistance against static torsion (standard EN 14609) and against loads in the door level (standard EN 14608)
- Spray pipe for 3000 mm width at facade tests
- Test rig for skylight
- Small compressor
- Mobile compact measure units for surrounding conditions
- Remote access support by **ift**

Individual features, especially for your needs, can be provided after consulting.

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