Evidence of Performance

Resistance to wind load
Watertightness
Air permeability

Test report 10-000274-PB01-A01-02-en-01

Client	MEGAPLAST Bulevar Oslobodjenja 5 21000 Novi Sad Serbia
Product	Single tilt and turn window
System	Rehau Euro 70
Overall dimensions (W x H)	1,230 mm x 1,480 mm
Frame material	PVC-U / white
Special features	-/-

Resistance to wind load – EN 12210

Class C4

Watertightness – EN 12208

Class 6A

Air permeability – EN 12207

Class 4

ift Rosenheim
17. Januar 2011

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Basis

EN 14351-1 : 2006-03+A1:2010

Test standards:
EN 1026 : 2000-06
EN 1027 : 2000-06
EN 12211 : 2000-06
EN 12046-1 : 2003-11
EN 14609 : 2004-03

Corresponds to the national standard. (DIN EN)

Representation

Instruction for use

The present test report serves to demonstrate the above characteristics of windows according to EN 14351-1 : 2006-03+A1:2010. The results obtained can be used by the manufacturer as the basis for the manufacturer ITT test report summary. The conditions and requirements set out by EN 14351-1 : 2006-03+A1:2010 shall be observed.

Validity

The data and results refer solely to the tested and described specimen.

The test results can be extrapolated as per EN 14351-1, under observance of Annex E 1., under the manufacturer's own responsibility.

The test does not allow any statement to be made on further characteristics of the present structure and quality, in particular the effects of weathering and ageing.

Notes on publication

The **ift**-Guidance Sheet "Conditions and Guidance for the Use of **ift** Test Documents" applies.

The cover sheet can be used as an abstract.

Contents

The report contains a total of 11 pages.

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Anerkannte PÜZ-Stelle: BAY 18
DAP-PL-0808.99
DAP-ZE-2288.00
TGA-ZM-16-93-00
TGA-ZM-16-93-60

1 Object

1.1 Description of test specimen

Product	Tilt and turn window
Manufacturer	Megaplast d.o.o.
Date of manufacture	11.10.2010
System	Rehau Euro 70
Type of opening / Opening directions	Tilt and turn, DIN right inward opening
Frame material	PVC/U white
Overall frame dimensions (W x H)	1,230 mm x 1,480 mm
Overall casement dimensions (W x H)	1,150 mm x 1,400 mm
Casement weight	41.3 kg
Frame member	Rehau 550713-601 with reinforcement profile Rehau 244506-001, further details are given in drawings
Frame joint	mitred and welded
Casement member	Rehau 550460-601 with reinforcement profile Rehau 244506-001, further details are given in drawings
Frame joint	mitred and welded
Rebate design	
Rebate drainage	2 slots of 5 mm x 25 mm inside rebate, to outside front 2 slots 5 mm x 25 mm, with cover caps Rehau 261582-012
Rebate seal	
External	
Material	Sealing material – EPDM
Manufacturer	Rehau AG + Co.
Item No.	Rehau 864952-010
Corner configuration	continuous, at top centre butt-jointed
Internal	
Material	Sealing material – EPDM
Manufacturer	Rehau AG + Co.
Item No.	Rehau 864952-010
Corner configuration	continuous, at top centre butt-jointed
Pressure equalisation	External rebate seal, 100 mm notched at top centre
Infill	Insulating glass unit, configuration 4 / 16 / 4
Installation of infills	
Glazing gasket	
External	
Material	Sealing material – EPDM
Manufacturer	Rehau AG + Co.
Item No.	Rehau 865002-010

Corner configuration	continuous, at top centre butt-jointed
Internal	
Material	Sealing material – TPE
Manufacturer	Rehau AG + Co.
Corner configuration	mitred with glazing bead Rehau 550110-601
Vapour pressure equalization	at bottom and at top 2 slots 5 mm 25 mm
Hardware	
Type / Manufacturer	tilt and turn hardware, UNIJET, Gretsch Unitas
Hinges / Bearings	1 tilt mechanism pivot 1 corner pivot
Number of locks	at bottom 2, at top 1, on hinge side 2, on lock side 3
Maximum locking distance	660 mm
Position of locks	neutral

1.2 Representation of test specimen

The constructional details were checked solely for the characteristics to be classified. The drawings are based on unchanged documentation provided by the client.

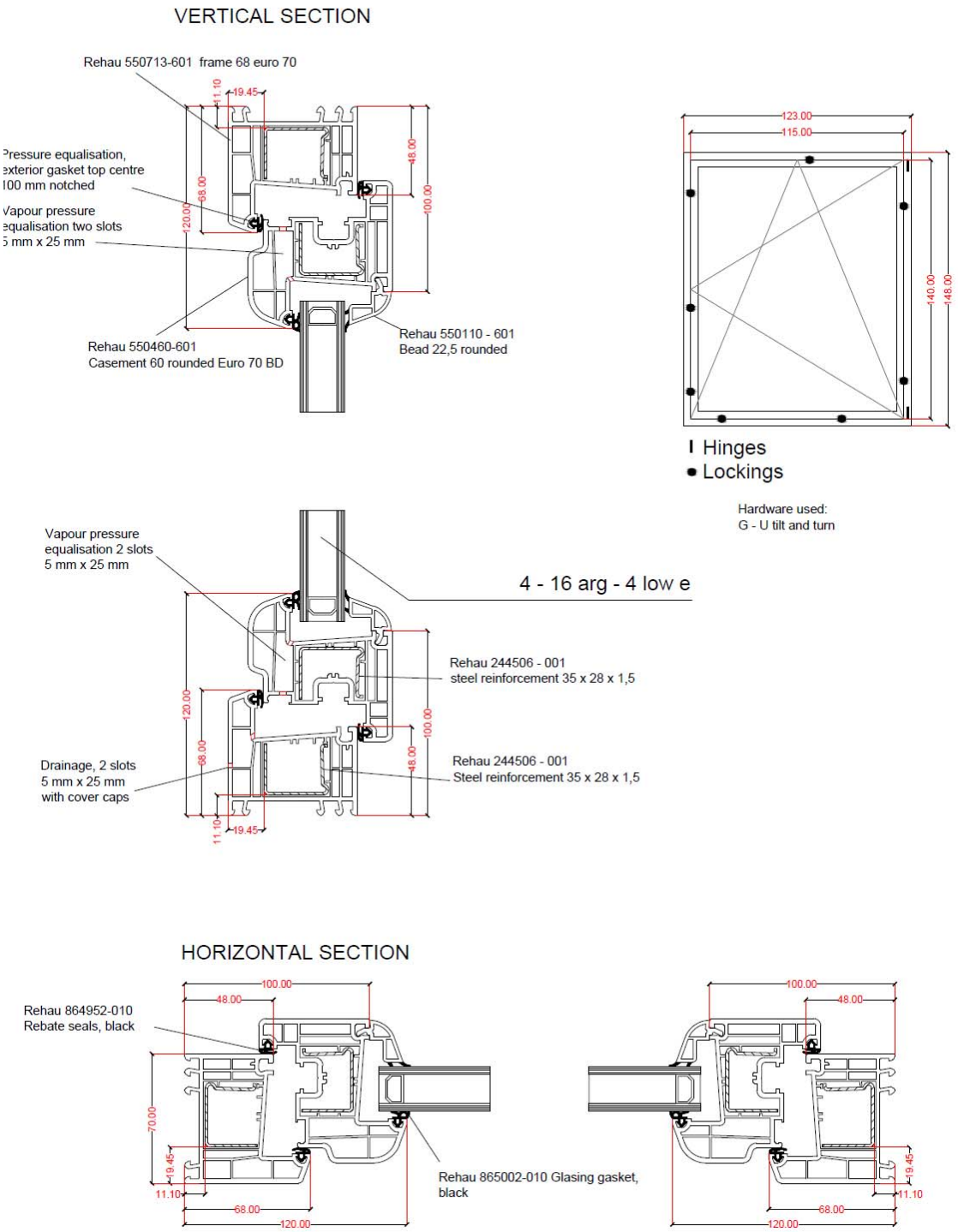

Fig. 1 Drawing of test specimen

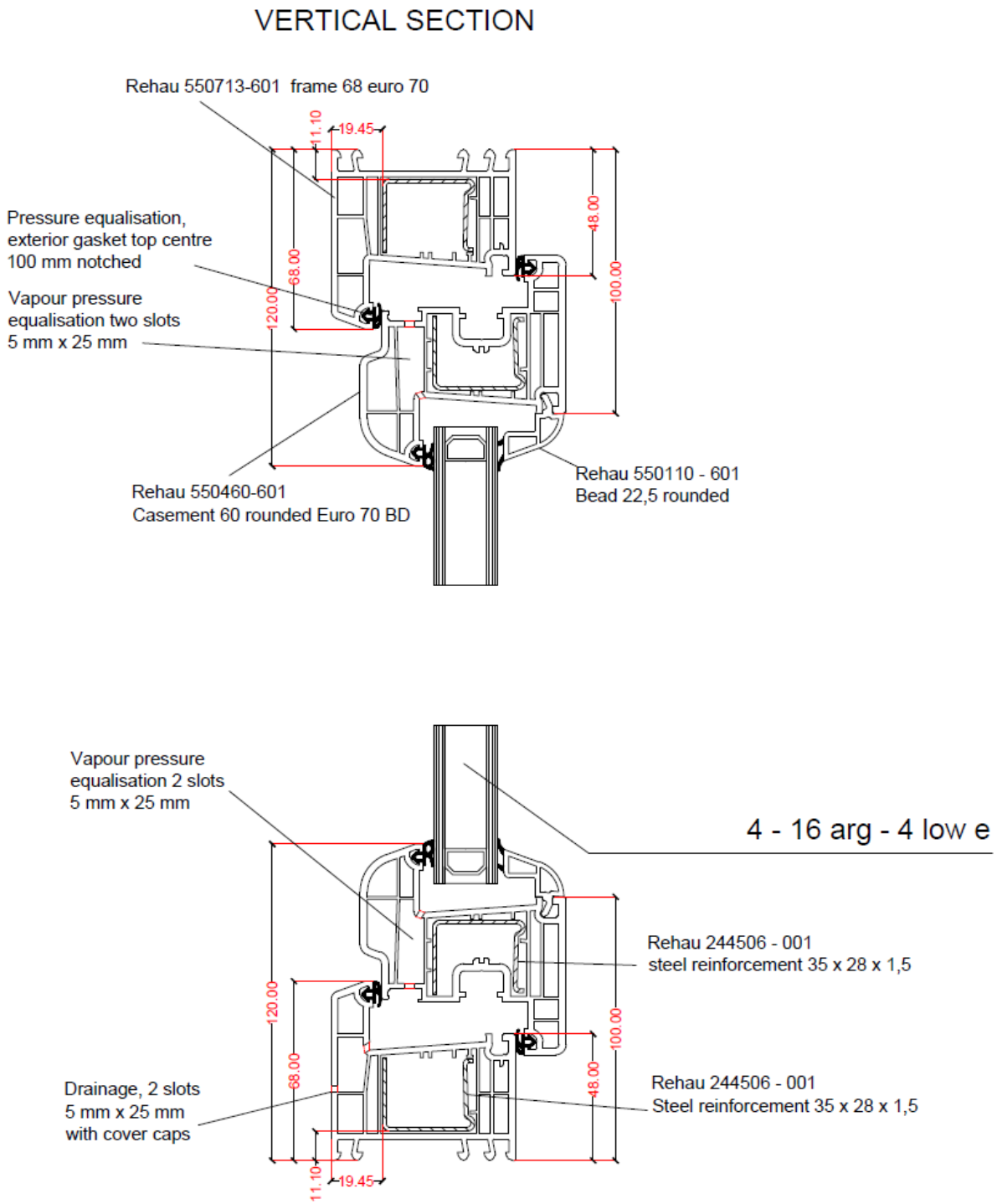

Fig. 2 Vertical section

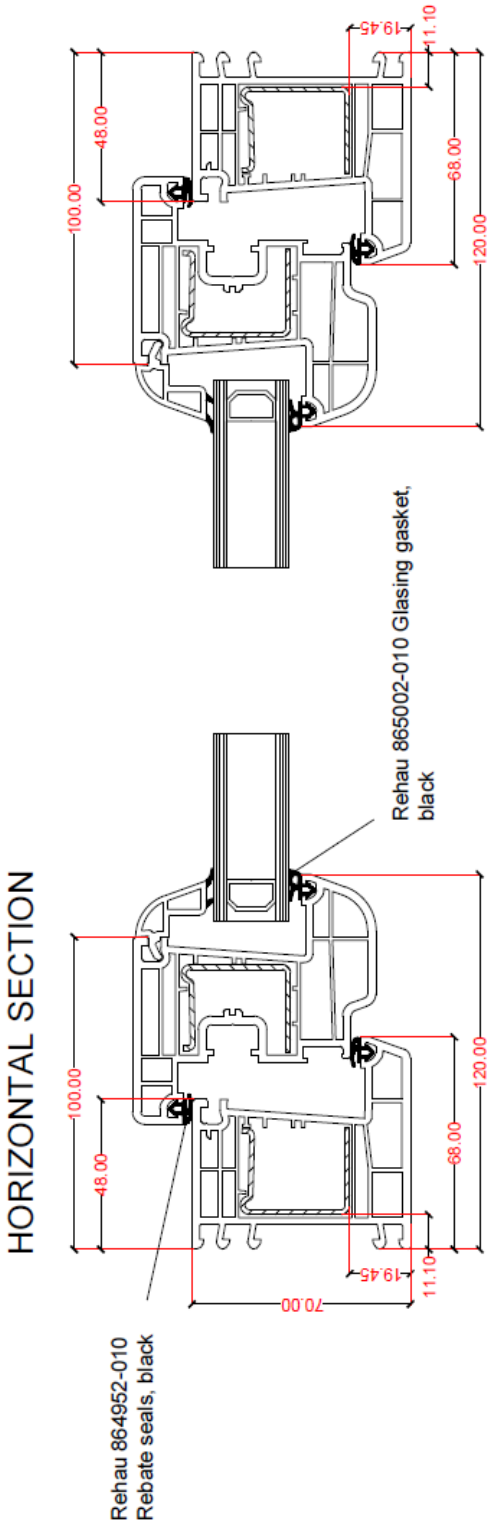

Fig. 3 Horizontal section

2 Procedure

2.1 Sampling

The test specimens were selected by the client.

The client has provided to the **ift** a sampling report dated 15 October 2010

Number	1
Delivered on	20 October 2010 by the client
Registration No.	29206/001

2.2 Methods

Basis	
EN 1026: 2000-06	Windows and Doors – Air permeability – Test method
EN 1027: 2000-06	Windows and Doors – Watertightness – Test method
EN 12211: 2000-06	Windows and Doors – Resistance to wind load – Test method
EN 12046-1: 2003-11	Operating forces – Test method – Part 1: Windows
EN 14609: 2004-06	Windows – Determination of the resistance to static torsion
Classification standards	
EN 12207: 2000-06	Windows and Doors – Air permeability – Classification
EN 12208: 2000-06	Windows and Doors – Watertightness – Classification
EN 12210: 2002-07	Windows and Doors – Resistance to wind load – Classification
EN 13115: 2001-07	Windows – Classification mechanical properties – Racking, torsion and operating forces
Boundary conditions	as specified by the standards requirements
Deviation	There were no deviations from the test methods and test conditions.

2.3 Test equipment

Window test bench Device No.: 26026

2.4 Testing

Date/Period 20 October 2010

Test engineer Fischbacher

2.5 Test sequence

No.	Type of test	Test standard	Classification standard
1.	Operating forces	EN 12046-1	EN 13115
2.	Air permeability	EN 1026	EN 12207
3.	Resistance to wind load 3.1 Deflection 3.2 Repeat test of positive/negative pressures	EN 12211	EN 12210
4.	Repeat test of air permeability	EN 1026	EN 12207
5.	Watertightness	EN 1027	EN 12208
6.	3.3 Resistance to wind load – Safety test	EN 12211	EN 12210
7.	Load-bearing capacity of safety devices	EN 14609	Requirements according to EN 14351-1

3 Detailed results

Test record

Specimen	Tilt and turn window					
Project No.	10-000274					
Client	MEGAPLAST d.o.o.	Size of window frame	1230	x	1480	mm
System	Rehau Euro 70	Size of active casement	1150	x	1400	mm
Frame material	PVC-U / white	Size of inactive casement				mm
Date of test	20.10.2010	Area of test specimen	1,8	m²		
Tester	Fischbacher	Length of opening joints	5,1	m		
Specimen No.	29206/001	Casement weight	41,3	kg		
Date of delivery	20.10.2010	Temperature	21,8	° C		
Date of manufacture	11.10.2010	Air humidity	66,4	%		
Attended by:	Mr. Temenugovski	Air pressure	996	hPa		

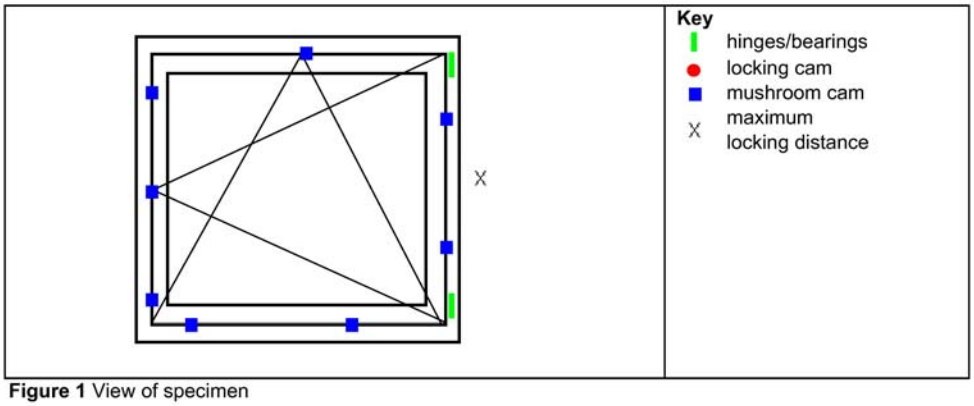

Figure 1 View of specimen

1 Operating forces - Test according to EN 12046

Table: Measurement of operating forces

Individual measured	**1**	**2**	**3**	**Average value**
in Nm	8,4	6,9	7,9	7,7

2 Air permeability - Test according to EN 1026

Table: Air permeability at positive wind pressure

Measured results at positive wind pressure	**Pressure differential in Pa**	**50**	**100**	**150**	**200**	**250**	**300**	**450**	**600**
	Flow rate (volume) m³/h	2,0	3,3	4,4	5,5	6,2	6,7	8,5	10,9
	Joint length-related m³/hm	0,39	0,65	0,86	1,08	1,22	1,31	1,67	2,14
	Overall area-related m³/hm²	1,10	1,81	2,42	3,02	3,41	3,68	4,67	5,99

Table: Air permeability at negative wind pressure

Measured results at negative wind pressure	**Pressure differential in Pa**	**50**	**100**	**150**	**200**	**250**	**300**	**450**	**600**
	Flow rate (volume) m³/h	1,4	2,7	3,8	4,8	5,6	6,1	8,1	8,9
	Joint length-related m³/hm	0,27	0,53	0,75	0,94	1,10	1,20	1,59	1,75
	Overall area-related m³/hm²	0,77	1,48	2,09	2,64	3,08	3,35	4,45	4,89

Table: Air permeability from average values from positive and negative wind pressures

Average value from positive and negative wind pressures	**Pressure differential in Pa**	**50**	**100**	**150**	**200**	**250**	**300**	**450**	**600**
	Flow rate (volume) m³/h	1,7	3,0	4,1	5,2	5,9	6,4	8,3	9,9
	Joint length-related m³/hm	0,33	0,59	0,80	1,01	1,16	1,25	1,63	1,94
	Overall area-related m³/hm²	0,93	1,65	2,25	2,83	3,24	3,52	4,56	5,44

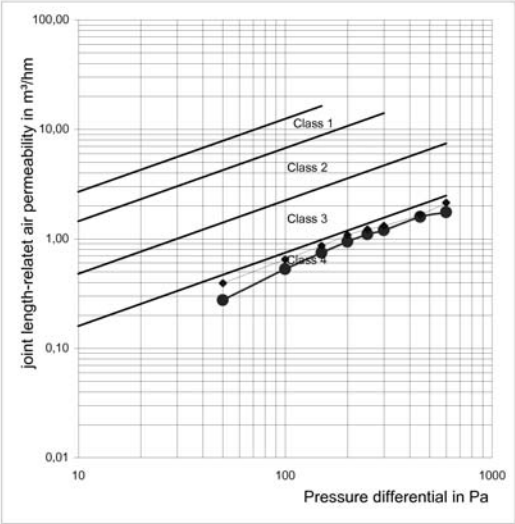

Diagram: Joint length-related air permeability (positive and negative wind pressures)

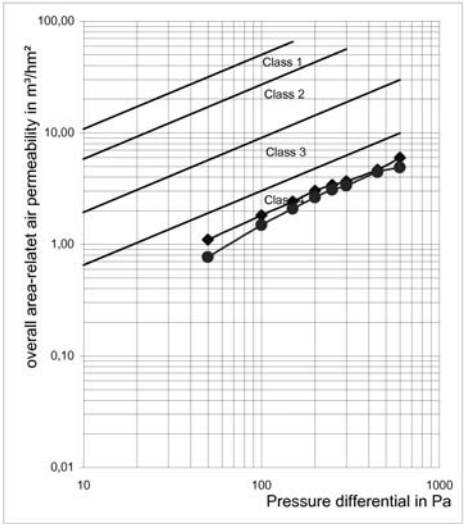

Diagram: Overall area-related air permeability (positive and negative wind pressures)

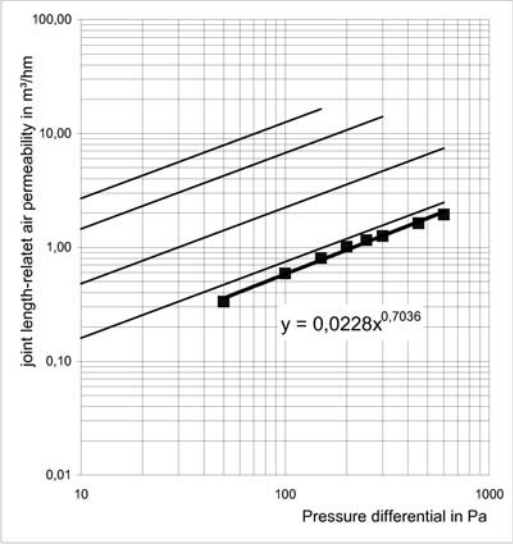

Diagram: Joint length-related air permeability (average value from positive and negative wind pressures)

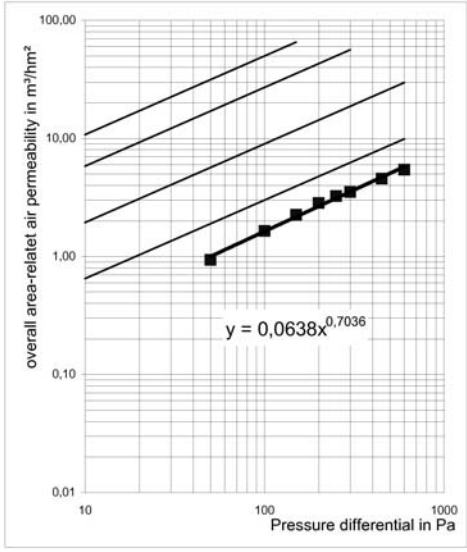

Diagram: Overall area-related air permeability (average value from positive and negative wind pressures)

Table: Measured results

Reference air permeability related to joint length	Q100 =	0,58	m³/hm
Reference air permeability related to overall area	Q100 =	1,63	m³/hm²

3 Resistance to wind load - Test according to EN 12211
3.1 Deflection under wind load

Maximum test pressure: ± 1600 Pa 3 pressure pulses of 1760 Pa

Deflection was not measured because due to the perimeter locking and the existing locking distance no deformation of the frame members > l/300 is likely to occur at the specified wind loads.
The test specimen was exposed to a load ± 1600 Pa as specified by EN 12211.

3.2 Dynamic wind loads (negative / positive pressures)

Table: Pressure steps

p_2	Pa	200	400	600	800	1000
passed					✓	

50 cycles at p_2 ± 800 Pa
No malfunctions were detected.

4 Repeat test of air permeability - Test according to EN 1026

Subsequent to the test of resistance to wind load by application of test pressures p_1 and p_2, the upper limit of the achieved air permeability class must not be exceeded by more than 20% as set out by EN 12207 (Clause 2 of this test record).
The requirements were **fulfilled.**

5 Watertightness - Test according to EN 1027

Number of spray nozzles 3
Water amount 360 l/h
0,36 m³/h

Lower nozzle line
Water amount l/h
m³/h

No water penetration at up to 250 Pa detected.

3.3 Resistance to wind load - Test according to EN 12211 - Safety test

		positive wind pressure					negative wind pressure				
p_2	Pa	600	1200	1800	2400	3000	-600	-1200	-1800	-2400	-3000
passed					✓					✓	

Safety test passed at up to p_3 ± 2400 Pa passed.

6 Load-bearing capacity of safety devices

The testing of the safety device is carried out with a load of 350N for 60s.
No malfunctions were detected at the test specimen.

ift Rosenheim
20.10.2010