UNITIZED MEMBRANE ENVELOPE

FOR HIGH-RISE BUILDINGS IN TROPICAL CLIMATES

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MASTER THESIS, P5 REPORT

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10.10 - Construction details
The following pages contain technical drawings of the unitized membrane envelope.

The drawings shown are facade views, sections and the details indicated below.
Front view

1:20

Dimensions:
- Width: 3200
- Height: 797
- Depth: 1556

Base dimensions:
- Width: 1820
- Height: 1380
**Detail 1**

Membranes and spacers - vertical - 1:1

- **Glass fibre reinforced plastic spacer** round 10 mm, 70 mm long
- **Glass fibre reinforced ETFE membrane** 0.3mm
- Shaped ETFE reinforcement heat welded on ETFE membrane
- **Inflatable sunshading system**

Dimensions:
- 86 mm
- 28 mm
- 15 mm
- 43 mm
Detail 2
Unit to floor connection - vertical - 1:2

A  Glass fibre reinforced plastic window frame 170x36 mm
    Insulated thermal break 46x35 mm
    Keder clamp
    Perforation for air evacuation
    Pneumatic sun shading air tube
    Anti-slip rubber strip

B  Glass fibre reinforced plastic unit frame 205x43 mm
    Insulated thermal break 102x16 mm
    Ribbed vacuum tube
    Weather and window clamp seal
    Window seal
    Glass fibre reinforced plastic window clamp click profile

C  Expanding gasket
    Sliding air gasket

D  Glass fibre reinforced plastic spacer round 10 mm, 70 mm long

E  Glass fibre reinforced ETFE membrane 0.3mm
    Shaped ETFE reinforcement heat welded on ETFE membrane

F  Inflatable sunshading system

G  Adjustable foot for setting window frame
    Hoist plate on hinge folded in, bolted to frame
    Vacuum pump 12V 20x12x80 mm
    Ribbed vacuum tube

H  Mineral wool insulation
    Glass fibre reinforced plastic plate bolted to frame

I  Steel support profile with setting bolt, bolted to side of frame
    Support plate with setting pin

J  Aluminium covering plate, sealed at edges
Detail 3

Unit infront of column - vertical - 1:2

Glass fibre reinforced ETFE membrane 0.3mm

Shaped ETFE reinforcement heat welded on ETFE membrane

Glass fibre reinforced plastic spacer round 10 mm, 70 mm long

Inflatable sunshading system

Mineral wool insulation

Glass fibre reinforced plastic plate bolted to frame
Detail 4
Panel connection to main frame - horizontal - 1:2

- Inflatable sunshading system
- Glass fibre reinforced plastic spacer round 10 mm, 70 mm long
- Glass fibre reinforced plastic unit frame 190x58 mm
- Insulated thermal break 102x16 mm
- Ribbed vacuum tube
- Weather and window clamp seal
- Window seal
- Glass fibre reinforced plastic window clamp click profile

- Glass fibre reinforced plastic window frame 170x36 mm
- Insulated thermal break 46x35 mm
- Keder clamp
- Perforation for air evacuation
- Pneumatic sun shading air tube
- Anti-slip rubber strip

- Glass fibre reinforced ETFE membrane 0.3mm
- Shaped ETFE reinforcement heat welded on ETFE membrane
Detail 5
Unit connection - horizontal - >1:2

See detail two for detail description

* please refer to detail 2 for detail text
Detail 6
Window frame - vertical top - 1:2

Glass fibre reinforced plastic unit frame 190x86 mm
Insulated thermal break 102x44 mm
Ribbed vacuum tube
Weather and window clamp seal
Window seal
Glass fibre reinforced plastic window clamp click profile

Inflatable sunshading system
Glass fibre reinforced plastic spacer round 10 mm, 70 mm long
Glass fibre reinforced plastic unit frame 190x86 mm
Insulated thermal break 102x44 mm
Ribbed vacuum tube
Weather and window clamp seal
Window seal
Glass fibre reinforced plastic window clamp click profile

Glass fibre reinforced plastic window frame 170x36 mm
Insulated thermal break 46x35 mm
Keder clamp
Perforation for air evacuation
Pneumatic sun shading air tube
Anti-slip rubber strip

Glass fibre reinforced ETFE membrane 0.3mm
Shaped ETFE reinforcement heat welded on ETFE membrane
Detail 7
Window frame - vertical bottom - 1:2

Glass fibre reinforced plastic unit frame 190x86 mm
Insulated thermal break 102x44 mm
Ribbed vacuum tube
Weather and window clamp seal
Window seal
Glass fibre reinforced plastic window clamp click profile

Glass fibre reinforced plastic spacer round 10 mm, 70 mm long

Glass fibre reinforced plastic window frame 170x36 mm
Insulated thermal break 46x35 mm
Keder clamp
Perforation for air evacuation
Pneumatic sun shading air tube
Anti-slip rubber strip

Glass fibre reinforced ETFE membrane 0.3mm
Shaped ETFE reinforcement heat welded on ETFE membrane

Inflatable sunshading system
Detail 8
Window frame - horizontal left - 1:2
Detail 9
Window frame - horizontal right - 1:2
Detail 10
Moment fixed connection piece - 1:2

Glass fibre reinforced plastic strips bolted for radially fixed connection, glued in frame