

TECHNICAL PROVISIONS AND WORK DESCRIPTION

1 CLADDING SYSTEMS

1.00 GENERAL

- Supplier: Sempergreen Vertical Systems B.V.

P.O box 11
3984 ZG Odijk
The Netherlands
0031 (0)30 30 787 90
www.sempergreenwall.com

1.1 RISK ALLOCATION AND WARRANTIES

1.1.1. Parts to be guaranteed

A warranty is required for the following parts, which must be valid from the date of delivery and installation of the part and thereafter for the stated period.

- Component (building system): Aluminium frames (with the exception of gutter).
- To be guaranteed by: the supplier.
- Warranty period in case of maintenance contract (years): 5 (decreasing) excluding (dis)assembly.
- Warranty period in case of no maintenance contract (year): 1 (decreasing) excluding (dis)assembly.
- Component (building system): SemperGreenwall, excluding plants
- To be guaranteed by: the supplier.
- Warranty period in case of maintenance contract (years): 10 (decreasing) excluding (dis)assembly.
- Warranty period in case of no maintenance contract (years): 2 (decreasing) excluding (dis)assembly.
- Component (technical installation): Water installation
- To be guaranteed by: the supplier.
- Warranty period in case of maintenance contract (years): 2 years, not carriage paid and excluding (dis)assembly.
- Warranty period in case of no maintenance contract (year): 1 year, not carriage paid and excluding (dis)assembly.

1.2 WORK DOCUMENTS

1.2.1. Drawings SemperGreenwall

Drawing(s) to be produced by the supplier. The drawing(s) must indicate:

- An overview of the green wall(s) with dimensions.

- The allocation of Sempergreen Flexipanel Outdoor with fasteners for each green wall, necessary for the production and assembly of the green wall.
- The location, shape, dimensions and construction method of top, gutter and edge connections, transitions, openings, tubes and drains.
- Type of planting.
- (OPTION) Custom design at extra cost.

1.2.2 STATISTICAL CALCULATION

Static calculation SemperGreenwall

2.0 Panel cladding

- Method of attachment: according to supplier's instructions.
- No irregularities or deformations as a result of fixing may be visible on the panels that remain visible.
- Total weight of the green wall and load-bearing capacity of back wall (kg/m²): 45
- The back wall must be flat and level, have sufficient bearing capacity, be water resistant (whether or not finished with a water-resistant and vapour-permeable foil), be screwable, be suitable for vertical mounting of aluminum omega and z-profiles with a center-to-center distance of (mm): 620
- System structure:
 - Top, gutter, edge, omega and z profiles (See chapter 2.1).
 - Pre-grown Sempergreen Flexipanel Outdoor.
 - Water installation: according to chapter 3.

2.1 Aluminum work

2.1.1 Top profile

- Type: top cover profile.
- Quality: Aluminum 5005 H14/H24 (AlMg1).
- Thickness material (mm): 3.
- Dimensions (mm): 120x125x70x15.
- Weight (kg/m1): 2.81.
- Surface treatment: double layer chrome-free powder coated, layer thickness (µm): minimum 90.

2.1.2 Gutter profile

- Type: bottom gutter profile.
- Quality: Aluminum 5005 H14/H24 (AlMg1).
- Thickness material (mm): 3.
- Gutter outdoor (mm): 120x180x70x15.
- Weight (kg/m1): 3.05.
- Surface treatment: double layer chrome-free powder coated, layer thickness (µm): minimum 90.

2.1.3 Edge profile

- Type: side cover profile
- Quality: Aluminum 5005 H14/H24 (AlMg1).
- Thickness material (mm): 3.
- Edge profile (mm): 120x125x70x15.
- Weight (kg/m1): 2.60.
- Surface treatment: double layer chrome-free powder coated, layer thickness (µm): minimum 90.

2.1.4 Omega profile

- Type: mounting profile Sempergreen Flexipanel Outdoor.
- Quality: Aluminum/Magnelis steel 5005 H14/H24 (AlMg1).
- Thickness material (mm): 3.
- Dimensions (mm): 31x32x50x32x31.
- Weight (kg/m1): 1.26.
- Surface treatment: brut.

2.1.5 Z-profile

- Type: mounting profile Sempergreen Flexipanel Outdoor.
- Quality: Aluminum 5005 H14/H24 (AlMg1).
- Thickness material (mm): 3.
- Z-profile (mm): 93x30x90.
- Weight (kg/m1): 1.67.
- Surface treatment: brut.

2.2 Greening panel mineral wool

2.2.1 Sempergreen Flexipanel Outdoor

- Type: Sempergreen Flexipanel Outdoor.
- Dimensions (mm): 620x520x60 (WxHxD).
- Total thickness (mm): 100 (excluding edge, top and gutter finish)
- Weight Sempergreen Flexipanel Outdoor damp (kg/m²): approx. 45
- Fire class and standard: B-s2-d0, EN 13501-1
- Durability class and standard: Cradle to Cradle, Bronze, version 3.1 of the Cradle to Cradle Certified™ Product Standard.

2.2.2 Components

- TPO foil, size: 720x620mm, with mounting holes.
- Water absorbing and distributing cloth.
- Substrate plate type 96135.
 - Density (kg/m³): 80.
 - Dry weight (kg/m²): 2.
 - Maximum saturated weight (kg/m²): 45.
 - Non-combustible, free of toxic gases during incineration and recyclable.
- UV-resistant fleece, sewn to the TPO.
- If necessary, make Sempergreen Flexipanel Outdoor fitting for connection to structural dimensions.
 - Planting (pcs/panel): 25.
 - Plant mix Indoor application.
Customized plant mix at extra cost

2.2.3 Accessories

- Plant Care system (see chapter 3)

3 WATER INSTALLATIONS

3.1 General

- Supplier: Sempergreen Vertical Systems B.V.

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3.2 FUNCTIONAL DESCRIPTIONS

3.2.1 COLD WATER INSTALLATION

Versions:

- Basic module: according to the NEN standards: NEN-EN 1717 and 12729 and provided with approvals: Kiwa, WRAR, DVGW, NF, Belgaqua, UNI, Sitac SVGW, SINTEF and ETA.
- Pressure booster pump: according to NEN standard: NEN-EN 1717 and VEWIN worksheets.

3.3 WORK DOCUMENTS

3.3.1 DRAWINGS

3.3.1.1 Water installation drawings

Drawing(s) to be produced by the supplier. The drawing(s) of the technical room must indicate:

- Location of the facilities to be provided by the client:
 - Water supply.
 - Water drainage.
 - Power connection.
 - CAT6 UTP connection.
- The pipe course with diameters: of the irrigation system.
- In case of the Basic module.
 - The location of the control unit.
- In the case of the Pressure Booster Pump.
 - The location of the pressure booster installation: of the irrigation system.
 - The location of the break tank.
 - The location of the nutrient tank.
 - The dimensions: of the irrigation system.

3.1.1.2 Documents to be provided

Number of copies to be provided by the supplier.

- For approval (pc): 1.
- Approved (pc): 1.
- Form of delivery: pdf to the client.

3.2.2 PUMPS AND DEVICES

3.2.2.1 *Basic module*

- Type: computer-controlled Plant Care System for SemperGreenwall.
- Version (working pressure/pump head/number of groups)
 - I-250 (water pressure depending on water pressure / 2 groups)
- Medium: tap water.
- Pump head (height difference at the installation location of the Plant Care Unit to the top of the highest group): project specific.
- Number of irrigation groups: 2 – 8 groups.

3.2.2.2 Pressure booster pumps

- Type: computer-controlled Plant Care System for SemperGreenwall.
Versions (working pressure/pump head/number of groups)
 - I-1500(Q) - 4,2 bar/10 m/6 groups.
 - I-2500 - 4,8 bar/15 m/10 groups.
 - I-5000(Q) - 5,5 of 6,2 bar/30 m/16 groups.
- Medium: tap water and (OPTIONAL) rainwater. The latter at extra cost.
- Pump head (height difference at the installation location of the Plant Care Unit to the top of the highest group):
 - I-1500(Q) Maximum 10 meters
 - I-2500 Maximum 15 meters
 - I-500(Q) Maximum 30 meters.
- Number of irrigation groups: 2 – 16 groups, optional to create additional groups.

3.2.2.3 Basic module accessories

- Direct and permanent connection to the supply line to existing facilities.
- Prepared construction on a concrete plywood plate.
- Fine filter with transparent sight glass.
- The pressure pipe construction and couplings are from Wavin Tigris.
- Equipped with two solenoid valves.
- Locally controlled irrigation machine.
- Dosing pump, 0.69ml per pulse/1 pulse per litre, adjustable amount (percentage), with email notification via iMC Box V2 when the tank is empty. Type Etatron PKX FT0505.
- Nutrient tank, 5, 30 or 75 ltr., according to supplier's calculation.
- Fine filter.
- Operation per second by means of 8056 AC6 computer.
- (OPTIONAL) frost protection by means of sensor, cable length maximum 15m.
- (OPTIONAL) frost protection by means of sensor and compressor.
 - Type HBM 20 ltr compressor.
 - Dimensions (mm): 500x500x500
 - Sound level dB(A): 53-60.
 - Motor power (watt): 750.
 - Maximum working pressure (bar): 8.

- Including: stainless steel pressure hose.
- Control via iMC Box V2.
- iMC Box V2 for web-based monitoring and control.
- Humidity and temperature sensors for web-based monitoring.
- 4G router, for web-based monitoring.
- External antenna, maximum 10m cable length.
- Fasteners: according to supplier's instructions.
- Ready to use and fully tested in supplier's workshop incl. test report

3.2.2.4 Pressure booster pump accessories

- Including: stainless steel connection hose(s) with cable gland $\frac{3}{4}$ ", straight/angled version.
- Speed control: with frequency control (Q series) or hydrophore controlled (without Q).
- Dry-running protection.
- Operating system, locally controllable.
- Pump system
 - I-1500(Q): type Pedrollo MT2, with Wavin Tigris superstructure pressure pipe and couplings, cooling fan, anti-vibration floors.
 - I-2500: type Leader Divertron 1000m with Wavin Tigris superstructure pressure pipe and couplings, cooling fan, anti-vibration floors.
 - I-5000(Q): type DAB E.sybox, with Wavin Tigris superstructure pressure pipe and couplings, cooling fan, anti-vibration floors.
- Solenoid valves, type RPE $\frac{3}{4}$ " male thread.
- Dosing pump, 0.69ml per pulse/1 pulse per litre, quantity adjustable (percentage), provided with email notification via iMC Box V2 at empty tank. Type Etatron PKX F T0505.
- Nutrient tank, 5, 30, 50, 75 or 100 ltr., according to supplier's calculation.
- Fine filter.
- Operation per second by means of 8056 AC6 computer.
- (OPTIONAL) frost protection by means of sensor, cable length maximum 15m.
- (OPTIONAL) frost protection by means of sensor and compressor.
 - Type HBM 20ltr compressor.
 - Dimensions (mm): 500x500x500
 - Sound level dB(A): 53-60.
 - Motor power (watts): 750.
 - Maximum working pressure (bar): 8.
 - Including: stainless steel pressure hose.
 - Control via iMC Box V2.
- iMC Box V2 for web-based monitoring and control.
- Humidity and temperature sensors for web-based monitoring.
- 4G router, for web-based monitoring.
- External antenna, maximum 10m cable length.
- Fasteners: according to supplier's instructions.
- Ready to use and fully tested in supplier's workshop incl. test report

3.3 Mounting base module and booster pump

3.3.1 Basic module

- Mounting method: According to supplier's instructions
- Minimum space for technical room (mm): length x width x height.
 - Basic module I-250: 600x200x800
- Connections to be provided by the client:
 - Water supply: Non-return valve type Watts BA BM DN20 or equivalent by diameter (mm): Hand tap with 25 ¾" male thread.
 - Water outlet diameter (mm): 50.
 - Water pipes from the technical room to SemperGreenwall: to be provided by the client in accordance with the supplier's instructions, including fitting connections, rosettes, tap valve in the technical room and any fire collars diameter (mm): 20/25.
 - Pipework in the technical room equipped with a tap valve with ¾" male thread and at the green wall with ¾" female thread.
 - Power connection, minimum 2 WCD, (V): 230, 16A.
 - CAT6 UTP connection: open port with fixed IP address.
 - Signal cables type cable with Lapp Ölflex® Classic 110 CY. Up to 75m1 with a diameter of 1mm² per vein. When used in public areas, type Lapp Ölflex Classic 135 CH.

3.3.2 Pressure booster pump

- Mounting method: according to supplier's instructions.
- Minimum space for technical room (mm): length x width x height.
 - I-1500(Q): 900x900x1500
 - I-2500: 1000x800x1500
 - I-5000(Q): 1000x800x1700
- Connections to be provided by the client:
 - Water supply, 1.5 to 2.5m³/h and 2.5 bar (min. 2.0 and max. 6.0 bar), fitted with shut-off valve (hand tap or non-return valve), diameter (mm): 25 ¾" male thread.
 - Water discharge diameter (mm): 50.
 - Water pipes from the technical room to SemperGreenwall: to be provided by the client in accordance with the supplier's instructions, including fitting connections, rosettes, tap valves in the technical room and any fire collars diameter (mm): 25.
 - Pipework in the technical room fitted with a valve with a ¾" male thread and at the green wall fitted with a ¾" female thread.
 - Power connection, minimum 2 WCD, (V): 230, 16A.
 - CAT6 UTP connection: DHCP protocol.
 - Signal cables type cable with Lapp Ölflex® Classic 110 CY. Up to 75m1 with a diameter of 1mm² per vein. When used in public areas, type Lapp Ölflex Classic 135 CH.

3.4 Break Tank

- Type: Break tank.
- Content (ltr):
 - I-1500(Q): 50.

- I-2500: 100.
- I-5000(Q): 100.
- Including mechanical level control and overflow protection.
- Accessories: fasteners.