

Questionnaire Green Walls for the Interior

Results

Date: 21-4-2011

Question no.	1	2	3	4	5
Item no.	Company name	Product name	Dimensions	Material	Insulating effect
1	ANS Group Europe	ANS Living Wall System	Each module is 250mm wide x 500mm tall	Plastic	Yes
2	(Saint Gobain Cultiène) Wallflore	Wallflore	Yes, several dimensions in both systems but also special dimensions are possible	A special kind of aluminum	Can be made by using additional isolation materials (Isover)
3	Universal Greenfields BV	Universal GreenWalls	61,8*81,0 cm, 21,0*81,0cm	Hoogwaardig kunststof. Kan UV werend geleverd worden (voor buiten, binnen niet nodig)	Ja / nee, zal wel isoleren, zit ook luchtlaag tussen wand en system, echter er kan geen waarde aan gehangen worden.
4	Green Fortune	Plantwall	Each of our projects is custom built to project specific size and shape.	A combination of materials, that can be adapted per project. The plants are planted in a textile construction.	As we have only made indoor Plantwalls, we have not thought too much about the insulation effect.
5	McCaren Designs	Greenwalls Vertical Planting Systems	3' x 3' We also have a portable model that is 4'wx6'ht.	Powder Coated Metal frame	Yes. Aproximately R value of 9
6	GreenWaveSystems	Greenwave 4.0	Yes, 60 cm wide, 50 cm high	Plastic	Yes, and temperature regulation
7	Mobilane BV /Hevorma bv	LivePanel	No its available in every size.	Metal	Yes
8	Hydro Huisman bv	PLANTWALL for indoors only.	No, our basic dimension is L=110 x W56 x H220cm but we deliver on request every dimension!	Metal , aluminium and plastic planters.	No
9	Hydroplant AG	Verticalis ® (Plant Picture)	Standard dimension: 120/55/7,6 cm	Frame: Acryl Glass / Install Frame: Metal	Yes
10	LA PLANTE SARL	CASAVARDE	We can make alls dimensions. For that we assemble panels. Each panel as 60 cm X 120 cm dimension	We manufacture each panel with natural material: peat, barks,...	The thickness of the substrate gives a insulating and we have a space of 7 cm between the wall and the vegetal wall
11	QUIZCAMP SA	MINIGARDEN	YES. 640(L) x 180(H) x 110(D)	PLASTIC, COPOLYMERE POLIPROPYLENE	YES
12	WALLFLOWER	WALLFLOWER	Yes, 5 standard living plant compositions Wallflower renews 2 of its standard selection of plant compositions every 6 months 14 standard colours 5 in quality natural wood and 9 colours in hammered or smooth metal finishes 3 standard sizes small 31X31 cm, medium 37X58 cm and large 37X92 cm	Metal (hammered and smooth finishes), wood (pine, bamboe, antique wood etc) and soon, plastic	No, it is more like a living artwork
13	Zuidkoop B.V.	Natural Wall	Standard 100 cm wide and 155 cm high. With mounting units of 35 cm you can raise or lower the wall to any height. To create a wider wall you can link several units together. Any other measurements are possible on request.	Betonplex and aluminium	No
14	Art Aqua GmbH & Co	Art Aqua	Geen antwoorden		
15	Vertical Green Company	90 Green / Fytowall	System is based on standard modules: 50 x 45 x 16 cm (wxhxd)	Stainless steel	Yes, since the substrate we use is a special foam substrate called FytoCell. Substrate is based on a special recipe of an animoplast polymer which is used already for years in the professional insulation industry. Quantification is difficult at this moment a) the delft university recently did insulation tests for vertical garden walls and our system was tested as well. Results will follow soon we expect. b) The amount of water inside the substrate has an effect on the insulation values. The big advantage of FytoCell is that plants will grow well event at a water percentage of only 10%. This means lots of air pockets inside the FytoCell, and therefore high insulation values. (temperature as well as noise).
16	Verde Outdoor B.V.	VertiVerde	VertiVerde is a modular built system with a patent. The modules have standard dimensions: 150cm X 75cm (including columns)	Carbonised iron	Cultivation has a natural insulating quality; the cultivation gives a cooling effect in the summer.

17	Mostert De Winter bv	Modulogreen® Modulogreen® Indoor	<p>Het Modulogreen systeem is uit modules welke overlappend worden gemonteerd waardoor automatische een waterdichte wand ontstaat.</p> <p>Maatvoering modules op basis van werkende breedte en hoogte maten</p> <ul style="list-style-type: none"> • 0,75 x 1,04 m1(bxh) • 0,75 x 0,25 m1 • 0,25 x 1,04 m1 • 0,25 x 0,25 m1 	<p>Het Modulogreen systeem bestaan uit de volgende onderdelen:</p> <ul style="list-style-type: none"> • Module, ABS volledig recyclebaar conform C2C • Substraat, natuurlijk mineraal, lava, bims, humus • Bevestigingsstrips, staal geschroefd. • Frame; houten regels of standaard alu. gevelbevestigingsysteem • Druppelleiding • Irrigatie automaat met bemesting, breektank of terugstroom beveiliging. <p>Op verzoek is webbased interface beschikbaar voor controle en besturing op afstand leverbaar.</p> <p>Alle onderdelen vormen samen de gevel of wand. Alle onderdelen zijn te scheiden conform C2C principes tot de basis grondstoffen c.q. materialen.</p>	<p>Ja, te weten:</p> <ul style="list-style-type: none"> • Akoestisch • Thermisch <p>o Aanvullend thermisch isoleerbaar.</p>
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6	7	8	9	10
Noise-reducing effect	Growth medium	Weight per m2	Thickness	Certification
Yes	Soil	72 kg	100 mm	No
Yes	Stone Wool	App. 30 kg m/2	Total thickness max. 145 mm	No
Ja, weet geen waarde	Terra Walls, een lichtgewicht substraat van minerale delen en organische stof	70-90 kg/m ²	14,5 cm (eventueel 5 cm extra tbv steunbalk) plus beplanting	Nee
Yes, it has. We would say that it is in line with the best sound absorbers, like inner ceiling 'Class A' elements.	This is depending on what specie, location in the wall and to some extent project specific circumstances. As a general description, soil is used inside a textile construction, in combination with different substrates.	Not more than 25 kg per m2.	Without plants, the fixed measurement is around 80 mm.	We do not have certificates for thermal or acoustic values.
Yes, but we haven't measured it yet.	Open cell Polyester Polyurethane Foam	120# per sq. M	2.5"	No
Yes, because of its weight	Plants grow in soil.	100-150 kg/ m2	22 cm.	Static. It is approved for use in outdoor situations in coastal areas until 30 mtr. high.
Yes	Special made soil.	30 KG	120 mm	Yes
Yes	Medium is hydroculture	50 kg per m2 empty 100 kg per m2 (incl. Plants and water)	Appr. 25cm without plants.	No
Yes	Rock Wool	1 Verticalis (Standard Size) 20 – 25 kg (saturated)	7,6 cm	Planned
The foliage and the substrate make a reduce noise effect	We are horticulturists since 30 years, and we have 8 000m2 of greenhouses We grow the green plants and flower in soil, and after we pre-planted and make a pre-culture in our greenhouse before installing the vegetal wall	15 Kg dry, 30 to 40 kg wet per square metre	The thickness of wall is 15 cm	No
YES	ANY, RANGING FROM BARE SOIL (NOT REALLY RECOMMENDED), TO HOUSE MADE COMPOST, INCLUDING ALL LIGHT SUBSTRATES.	APROXIMATLY 65 KG/SQM	110 MM	NO
No	The substrate pouch is filled with a special soil mix, a system of cotton wicks absorbs the water from a water reserve like an oil lamp	No weight per square meter, 1 empty carton ways +/- 800 grams 1 small wallflower ways +/- 3 kg so 1 carton +/- 9.8 kg 1 Medium ways +/- 6 kg so 1 Medium + 1 small in 1 carton +/- 9.8 kg 1 Large ways +/- 10 kg so 1 carton +/- 10.8 kg Into a carton, you can fit Either 3 small frames OR 1 medium + 1 small frame OR 1 large frame	Not applicable	Not applicable
Yes, tested at the TU Delft. Acoustic 2 – 3 times better result compared to regular acoustic screens.	We recommend Seramis but zeostrat is also possible		Single sided (for wall construction): 29 cm. Double sided (stand-alone) : 56 cm	No, but test (acoustic) results of the TU Delft are available
See comment above (5)	Plants grow in the aminoplast polymer foam substrate called Fytoceil. Fytoceil is known for it's optimal water - air ratio and known for it's interesting additional specifications such as: * inert, * non flammable (also in dry conditions!), * extreme low weicht for the pure substrate (+/- 25 kg / m3 !), *100% frost resistant due to cell structure *bio-degradable, only under composting conditions!. *re-usable als soil improver in all kinds of other substrates and soils.	The pure Fytoceil in the amount we use of the 90-Green system has a very low weight. (4 modules / m2 = 140 liter Fytoceel = +/- 4 kilo). The realistic weight is determined by the water content of the substrate, the plant weight and the hardware. All together an average total weight in practical conditions will be around 40 till 60 kilo / m2.	From installation profile at the back wall to front side of plant module = 20 cm. (excluding plants).	Till sofar no certification
As stated in the answer to question 5; cultivation has an insulating quality which means that in a full grown system noise will be reduced. However, there is no general scientific report that states how much decibel will be reduced.	For VertiVerde we use the most suitable substrate for this system; Seramis. Seramis is a clay pellet which is able to absorb and store great amounts of water: 1gram Seramis can hold ±1ml of water.	Because VertiVerde is a modular built system, the weight depends on the modules that are chosen. I.e.; if you would chose to apply VertiVerde with a majority of VertiCases the system will be heavier then when you chose for a the VertiVerde system with a lot of climbing plants and a lot open modules. One of the great aspects of VertiVerde is that it is very flexible so the vertical garden can be composed to the wishes and needs of the situation and/or customer.	Depending on what modules will be applied for the system but the thickness will be approximately 15 cm.	No

<p>Ja, vanuit de massa, de beplanting en de specifieke vorm van de module. Het totale systeem voldoet als een massa veersysteem waardoor de geluiddempende werking optimaal is zowel in de ruimte als naar de ruimte achter de wand / gevel.</p>	<ul style="list-style-type: none">• Grondmengsel, Substraat, natuurlijk mineraal, lava, bims, humus	<p>Maximum gewicht per m2 bedraagt 75 kg/m2</p>	<p>Netto inbouwdiepte is afhankelijk van de achterconstructie. Inbouw diepte module is 15 cm excl. draagconstructie. De draagconstructie heeft een minimale inbouwdiepte van 4 cm. Bij toepassing van aanvullende isolatie wordt de totale inbouwdiepte hoger.</p>	<p>Certificatie is in ontwikkeling</p>
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11	12	12	13	14
No. of plant varieties	Pot size	Plants per m2	Avg. price per m2	Max. height
Hundreds	9 cm	112	£ 440.00	No maximum
Depends on the type of Wall, but we have a wide variety	Depends on the system	Per ext app 20 m2, Per int app 20 m2 Soft app 8 m2	This is something that strongly depends on the total m2 and the situation. Due to our irrigation system a small wall (app 5 m2) will be expensive due to this IR station. A wall of 100 m2 will be much cheaper per m2. Also basic or web-based makes a lot of difference. But generally we can say for the SOFT system app. 450,- euro m2. For the PER system app 750,- euro m2.	No max. height
Alles is mogelijk, vaste planten, heesters, interieur, etc	P9, P12	24 plantgaten per m² (= 2 plantmodules), 24 - 48 st per m²	€ 400,00-600,00 / m² geleverd en geplaatst	Maakt niet uit
10 - 15 species are the most common ones. Usages of species is connected to what kind of light situation one can create.	Pot size from 2" to 4"	Depending on Plantwall design, selection of species, chosen sizes and availability	As we make projects from very small to very large Plantwalls, each project is offered individually.	No limitation. Instead, it is depending on what kind of maintenance solution that can be arranged.
96+	We recommend using 3" starter plants	Planting 80-120 / m2	\$1200.00 USD	The tallest to date is 7 M but the system can go much higher
80 species	Recommended pot size is P11	12-25 plants per m2 Every plant has 9 ltr of soil volume to develop.	€ 400-550	30 mtr.
Endless.		30 depending on the plant specie.	Depends on the project €300 €900.	Endless
25-30 pcs.	Potsize 15/19 or 18/19cm	10-15 plants per m2	Eur. 450,00	Max. we made at this moment is 6M high
About 20 plants	No potted plants - we use cuttings approx 800 per square metre.	No potted plants - we use cuttings approx 800 per square metre.	€ 3'200.- (excl. Installation)	1 meter
I am the most important producer of ferns in France with 20 variety, we used also many other green plants marantha, ficus, pilea, peperomia...about 50 variety is used in the wall and few flower like Anthurium, spatiphyllum..		We planted 30 plants in a square metre	That depends of the biggest, height and accessibility of the wall It is about 700 to 950 Euro H.T. per m2, for a wall with plant developed, automatic watering, and with the installation included	With our process, we haven't constraints
MANY, DEPENDING ON APLICATION (INDOOR, OUTDOOR, REGION CLIME CONDITIONS, ETC), BUT RAGING FROM VEGETEABLES TO ORNAMENTALS AND STRWBERRYES.	WE RECOMDN 10 TO 12 CM NURSERY POTS	WE INSTALL 24 PLANTS PER SQM.	PRICE RANGES FROM 170 EUR TO 500 EUR PER SQM, DEPENDING ON THE GREEN WALL SACLE.	WE CAN BUIL ALMOST ANY HIGH, CONSIDERAING WALL SECTIONS WITH HIGH OF 3 to 4 M.
We work with various plant species which have been tested for compatibility, robustness and durability (please see our website and catalogue for more details)	Not applicable, the plants are planted at a pot size of about 5cm in our factory in France, the plants then develop in the substrate bags for about 3-4 weeks in our greenhouse, before being prepared to be transported out for an order	Not applicable, the plants are planted at a pot size of about 5cm in our factory in France, the plants then develop in the substrate bags for about 3-4 weeks in our greenhouse, before being prepared to be transported out for an order	The Wallflowers sell from 49.95 for a small frame, from 99 for a medium and from 150 for a large	Please see the 3 standard sizes
We can use a very wide range of plants	8-15 cm pot	15 - 25 plants per square meter, depends on the habitus and on the size of the pant at the moment of planting	The price will be influenced by the measurements, the type of plantation and various options. But a average price is € 500,00 - 900,00 per square meter.	There is not a maximum height we supply. Only when the height becomes more than 3 meter there are some technical adjustments nessecary.
10 to 15 indoor - as well as a similar number for outdoor walls. Still additional species in testing.	Maximum pot size for our system is depending on the size of the root ball but no bigger than P12.	The smaller the pot, the more Fytoceel substrate will be available for the plants in de module. We plant 6 to 8 plans in each module, so therefore 24 to 32 plants / m2	Depending on total size of the wall, plant species, sophistication of irrigation- and nutrition controle unit, the average prices will be around 550 to 800 euro / m2.	Theoretically no limits other than constructional limitations of the back wall structure. For big and high walls a fully automatic web-based irrigation- and nutrition system is needed to control he different segements in the wall.
There are no limitations to the amount of plant species that can be used for VertiVerde. However, the choices of plant species are dependant of the location of the wall; how much sunlight the wall receives daily and what the wishes of the custumor/architect are.	Depending on the situation and the wishes and demands of the customer.	Depending on the situation and the wishes and demands of the customer.	Depending on what modules to apply for the system, the situation and the kind of cultivation but approximately € 350,- per square metre.	30 metres, but when the situation asks for a higher construction, it can be made possible.

In principe is de keuze van de soorten onbeperkt.	Potmaat is p9.	Aantal planten per m2: ca 25 stuks.	Afhankelijk van uitvoering, montage , omvang en type irrigatiesysteem. Excl. b.t.w. € 400,- tot 800,- /m2.	Onbeperkt.
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15	16	17	18
Flammability	Lifespan	Wall positioning	Leakage prevention
Very inflammable	15 years	It is normally fixed to an existing wall, but we do also offer it as free standing	Because all the modules interlock there is no leakage at all
M2	We guarantee 10 years	Can be all (free-standing, suspended, integrated in the interior wall)	Install in a good way
Nee	10-20 jaar afhankelijk omstandigheden	Kan allemaal (free-standing, suspended or integrated in the interior wall)	Er hangt een goot aan de onderzijde. Waarom lekkages?
We have made a work together with SP Swedish test institute, and it was considered as having very little risk for flame spread. Material adoptions can be made in project with high resistance against flammability, such as airports and similar.	Our oldest Plantwalls are 5 years old, and we can see no sign of aging on the textile material. We expect that we can guarantee an 'eternal' Plantwall to the customer, as long as we are given the work to maintain it.	Integrated / connected to the interior wall.	Professional installations in all parts that has to do with water and drainage.
Can be ordered flame retardant, product is flammable without retardant	Oldest wall was installed in 1993 at the Cleveland MetroZoo, Cleveland Ohio. Here is a current picture of that 18 year old wall. (planted into a foam substrate)	We have a system that is attached to the wall and we have a freestanding model.	The water path through the wall is basically vertical, however there will be some dripping from the plantings themselves that cannot be avoided. Therefore, we recommend the greenwall plantings are only planted directly over a larger planting or catchment area, plantings over walkway, stairways and passageways should be avoided.
Extremely low risk	25 -30 years	All three types (free-standing, suspended or integrated in the interior wall) are possible. Standard situation is integrated in the interior wall.	Leaking is impossible, because every module is supported by a U-profile, which keeps every drop that comes out of the module. The U-profile brings it to a sewer point. In the normal situation there is no overflow; the system is based on adding not more water than is consumed by the plants.
Non flammability.	A lifetime.	Its all possible (free-standing, suspended or integrated in the interior wall)	It's a fully closed system no water leakage possible.
Very Low	Min. 20 years for the hardware	It's free-standing.	The containers are very soled and no leakage.
It's not flammable	Frame 10 years / Plants 3 years	All (free-standing, suspended or integrated in the interior wall)	Physical not possible
No flammability the wall is wet.	The first wall was installed 4 years ago in Genève, it is always beautiful	The big wall are fixed on the interior wall with metal rails The small wall, 3m height, can be free standing	It is the particularity of our system. Each panel is independent and we can remove one or more panels to intervene.
IT'S NOT FLAME RESISTENT	IN OUTDOOR WE EXPECT TO HAVE 10 YEARS.	THE SYSTEM WE DESIGN SUPPORTED AND FIXED AGAINST BACK STRUCTURE. IT CAN BE FREE STADING WITH LIMITATION IN LENGTH AND HIGH (2 m length x 1,5 m high), IF INSTALLED AS TWIN GREEN WALL.	THERE IS A BOTTOM TRAY TO COLLECT ANY EVENTUAL LEAKAGE, BOTH FROM DRAINING OR SYSTEM IRRIGATION FAILURE.
	The plants in the frame are very durable and have the same lifespan as a regular potplant if given enough water and light	Suspended	The water container consists of one entity and cannot leak, moist spots on the wall are prevented by leaving space between the wall and plastic container both on the outside and inside of the specially designed container. Water is given directly into the inside of the sealed, watertight container
Answer will follow asap	When located in normal conditions 6 years at least.	All three are possible (free-standing, suspended or integrated in the interior wall)	The complete wall has a waterproof coating at the inside.
The hardware plus substrate is totally non - flammable	Life span expectations are directly linked tot maintenance activities. Vertical garden walls require regular checks and maintenance. (pruning, replacement dead plants, check on diseases and insects pest). Since the system is based on a modular concept, essention components such as plants and substrate can be replaced when necessary. So, a lifespan of ten tot 15 years must be realistic but directly related tot regular maintainance (contract).	The basic modules plus the specific installation bars for these modules can be mounted on any kind of construction. Freestanding requires a special support frame.	Each wall will be foreseen with a drainage tray under the lowest row of plant modules. This tray can be emptied manually or can ben connected tot a drain water container and/or sewer systems. For indoor systems we can install a dripping plate attached to the drainage channel, or a big enough drainage channel to 'catch' water dripping from leaves also.
VertiVerde makes no use of any product that is flammable. VertiVerde is constructed out of carbonised iron, cultivation and a feeding system which are also not flammable.	Depending on the use and the location: 20 - 50 years.	VertiVerde is placed a few cm. in front of the wall. However, the system is fixed to the wall with certain fixing areas.	VertiVerde is equipped with a drainage system for the VertiCases and VertiBoxes , which will regulate the overflow or possible leaks in the system.

Sterk brandwerend.	Meer dan 30 jaar.	Opstelling is mogelijk als: <ul style="list-style-type: none">• vrijstaand, enkelvoudig en tweezijdig• als scheidingswand• opgehangen aan de muur• geïntegreerd in de muur	Aan de onderzijde van de wand is een lekgoot gemonteerd welke eventueel lekwater opvangt.
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19	20	21
Watering system	Plant Maintenance	System maintenance
Programmable irrigation system	Two horticultural visits per year, with more frequent visual inspections	Pruning and dead heading, and also checking on the irrigation system
Classified	Depends on the type of plants but app. 4 times a year	App. 2 times a year
Computer gestuurd	Regulier, 2- 4 keer per jaar	Aleen controle ophangstelsysteem
A watering system of our own design, based on a combination of standard components that are all certified.	Depends on your taste, but Green Fortunes business model includes a regular maintenance in order to keep all our references in top-of-the-line condition.	Maintenance focuses on keeping the plants in great condition (cutting, polishing leaves, pest control)
Drip irrigation over each 3' panel	Dependant on the plantings.	Irrigation system need to be cleaned/flushed 2 x per year.
Drip-irrigation	Depends on the type of plants. There are four levels of maintenance possible varying from extensive till intensive.	Controlling the proper functioning
Depends on the project.	Cutting once or twice a year ,checking for insects	Nothing
Manuel or by pump	2 times a month	Only cutting long hanging plants and collecting old leaf
Manual	Cutting 4x per Year, Watering every 3 Weeks,	Not necessary for the system
	2 times per years it is necessary to control and cut the plants	Each month control the automatic watering system and fertilizer
SYSTEM DESIGNED TO RECEIVE MIDRODRIP IRRIGATION SYSTEM. IN SAMLL SCALE WALLS, IRRIGATION IS MANUAL PROCEDURE PLANT-BY-PLANT.	SUPPLY BALANCED IRRIGATION AND NUTRIENTS MIX, REMOVE ANY DEAD LEAVES OR IN LIMIT REPLACE ANY DEAD PLANT.	THE SYSTEM DOES NOT REQUIRE ANY SPECIAL ATTENTION.
Simply water with a watering can, no pumps, batteries or power source required	After one year, a very diluted, light fertiliser can be added (only water and light required) The indicator on the side of the water container show the water level	None
It is possible to water the wall by hand by pouring water in the top unit. The water will go through the wall by a overflow system until it reaches the water basin at the bottom. It is also possible to have an automatic watering system in the Natural Wall. A small pump will bring the water from the basin at the botom up to the top unit.	Watering, adding nutrients, pruning, cleaning, control on diseases.	Controlling the pump when a automatic watering system is integrated.
We cann install a system connected tot standard water tap or, if ther is no water tap connection in de direct vicinity of the wall, we can provide an independent system with a special pump and a water - & nutrition tank. Bigger walls will be equipped with a web-based irrigation - and nutrition system for 24 h monitoring water- and nutrition gifts, including control valves etc. With a web-based unit potential problems can me indicated upfront. Also when for watever reason a waterline is damaged, the web-based unit wil immediately "take action" (shut off valves and automatically phone/sms the gardener). Between each row of plant modules there will be an irrigation line installed.	General maintenance already mentioned under 16. The choise of the optimal plant species will influence the total quality of the wall and has great impact on maintenance and consequently th costs of maintenance. Essential will be, next to all kind of technical solutions to monitor the wall, al regular visual inspection.	The total hardware maintenance of the bigger walls is outsourced tot the provider of the hardware and included within the general maintenance contract. Important will bee regular check on drippers, dripping lines, valves, nutrition dosage equipment etc.. Due to possible residues of lime or nutrition depots, drippers can be blocked in time. This needs to be checked also and cleaned. Other hardware such as plant baskets an construction parts are made of stainless steel, and will be checked on mechanical damage due to possible molest if located in public areas.
VertiVerde uses an automatic watering system for watering the cultivation in the Verticasas and VertiBoxes, which is regulated by a computer. Also, VertiVerde offers the option for connecting the watering system to the grey water facility.	When VertiVerde is placed, we will sign a maintaining contract with the customer. This way the dealer as well as the customer will be ensured of a vertical garden which is in top condition throughout the year.	The cultivation needs to be trimmed, the feeding system needs to be checked and weeds need to be removed.

Druppelleiding gecombineerd met bemestingspomp aangevuld met opties zoals: breektank met en zonder drukverhoging, webbased besturing, temperatuur en CO2 meting etc.

Onderhoud van de beplanting loopt conform het normale onderhoud van de gekozen beplanting.

Controle watergeefstelsel, druppelleidingen, computer, sensoren, bijvullen bemesting.

22	23	24	25	26	27
Watering method	Feeding method	Guarantee	Product introduction	Planting method	Manufacturing role
Automatically on a programme	Via a 'Dostron'	15 year guarantee	2006	Pre-planted at our nurseries	Yes
Classified	Classified	10 years	6 years ago	Both (in-situ or is the wall pre-planted at a different location) is possible but we prefer pre-grown	Wallflore the manufacturer. I work for both companies
Bevoeiingssysteem, wordt afgesteld, (paar keer per dag aantal seconde)	Kleine projecten met onderhoud, 100% organische meststoffen Grote projecten volledig automatisch	10 jaar bij onderhoud	2010	Liefst ter plaatse	Ontwerper, producent en verdeler.
Automatically. Intervals and quantity adopted to each project and programmed into the computer.	Depending on Plantwall size. Manually, or automatically under supervision of our maintenance crew.	Guarantee on both plants and equipment as long as we are assigned to do the maintenance.	2005, with first project finalized January 2006.	Planting is done on site by our own crew.	Yes
3-4x per day for short 3-5 minute cycles	Liquid Fertilizer either through an injector system or by mixing in the return water basin. Also, foliar application is appropriate.	1 year on the parts	First installation was in 1993, formal product introduction in 2009.	Recommend in-situ planting	Yes
1 to 3 times per week during 2 -3 minutes	Supplied with the irrigation-water	Depends on the maintenance contract and can be up to five years on plants. Ten years on the system	2009	Depends on the wishes of the customer and the budget. Both happen. We prefer pre-planting some months before installing the greenwall.	Yes
Automatically	Automatically	10 years with a maintenance contract	March 2010	Both are possible (in-situ or is the wall pre-planted at a different location)	Yes
By hand - 2 times a month	2 x a year (add on top of the substrate)	On the plants 3 months - Hardware 5 years	In the year 2010	Planting is done at the site in 1 day!	We are the grower of plants.
By Watercane / every 3 Weeks	Foliage feeding	Frame 2 years Plants growth on guarantee	2009	It is pre-planted in our nursery (3 Month)	Yes
It was tested in independent experimentation centre, like the most economic water system. It is about 3 to 5 L / m2/ week	We install a box with fertilizer, programmer, electrovanne, filter...	One year if there is a maintenance contract with a professional.	4 years ago	We pre-planted and grow the plants in wall in our greenhouses	We are the manufacturer, we make the support, growed plant and install the vegetal wall
THE IRRIGATION IS MADE MANUALLY IF WALL IS SAMLL SIZE ONE, OR VIA MICRODRIP SYSTEM. IRRIGATION CYCLES ARE SPECIFIED ACCORDING TO GREEN WALL LOCATION, TYPE OS PLANTS, CLIME CONDITIONS; ETC.	NUTRIENTS CAN BE ADDED WITH IRRIGATION SYSTEM (SEMI-HYDROPONICS) OR BY HAD, PLANT-BY-PLANT, IN CASE OF SAMLL SIZE INSTALATIONS AND SHORT BUDGETS.	3 YEARS AGAIST ANY PRODUCTION DEFECT.	SPRING 2007.	PLANTATION IS MADE IN-SITU.	No
Depending on the surrounding circumstances (temperature etc), once every 4 to 7 days, simply with a watering can from the front or side of the frame	There is a built in, slow release fertiliser, after one year additional, light and very diluted fertiliser can be added to the water container	Guarantee on all components, except the plants	In 2008 to the French market, in 2010 officially to the Dutch market	The frames are pre-planted at the factory in France, we are currently developing a do-it yourself kit, whereby individuals will be able to plant the plants themselves	Yes
Watering is done once every 2 - 4 weeks. This depends on which plants are used and on the conditions at the location where the wall is installed.	Liquid nutrients in the water	Hardware 3 years. If we also do the planting and maintenance, the guarantee on the plants ongoing during the contract.	Introduced in January 2009	Both are possible. We recommend to pre-plant the wall a few weeks before installation. This gives the plants the chance to settle and start growing.	Both
See several above mentioned remarks about the hardware. The frequency of watering depends on several factors, such as plant species and climate conditions indoor (air conditioners!!). In general we water every day, small amounts, several times for a short time. (f.e. 3 times/dag two minutes). All watering bij dripping lines in between plant modules and preferably connected tot fixed water tap. Direct connection is not allowed so there will be safety valve in between. (no open connection between systems with nutrition and the public water system.).	Nutrition bij injector (pump/Dosatron), so into the irrigation cycle in very low concentrations.	Guarantee on plants is linked to maintenance contract. For hardware (electronics/pumps etc) the normal warranty of manufactures. With a full service maintenance contract we can guarantee a wall up to 10 years tot 15 years.	The first walls made with Fotocell substrate are introduces already 6 years ago bij our joint venture partner in Autralia (Fytowall). Introduction in Europe since 2008.	Planting is done at a different location (specialized gardener). Additional planting en replacement can be done off course at customers location.	Yes
The watering is done automatically by the feeding system, every hour a few litres. We have done research about what and how is the best way of watering cultivation in this system. The results showed that when the cultivation is watered every hour a few litres, is way better than giving the cultivation a lot of water at once.	By the feeding system, see question 22.	We will sign a maintenance contract with the customer, which ensures that the vertical garden (and its cultivation) will be in top condition throughout the year. This includes restoring outfall of cultivation.	VertiVerde was introduced to the market in 2008 (2 years).	Both ways are possible, depending on the wishes of the costumor. (in-situ or is the wall pre-planted at a different location)	Yes

Via druppelleiding.	Een of twee keer per week water geven. Bemesting is vloeibaar.	10 jaar.	april-10	Beide methodes zijn mogelijk (ter plaatse en aangepland op een andere locatie).	Exclusieve verkooprechten voor Nederland waarbij gewerkt wordt met dealers.
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27	28	29	30
Distribution role	Production countries	Cradle to Cradle certificate	Other
No	Europe	Not sure what this means?	Our wall at the Westfield Shopping Centre in London is the largest in Europe at 1600 square metres
Saint Gobain cultilene is a distributor. I work for both companies	All over the world	No	See flyer, we are very strong in advising the architect, making ACAD drawings etc.
Ontwerper, producent en verdeler.	Momenteel in NL en Eng.	Nee	Zie bijlagen
No	So far Sweden, Denmark, Finland, the Netherlands, Poland, Germany, Japan, China, Russia, Latvia, Norway and UK. Hungary is next candidate country.	No	Green Fortune has realized approximately 100 Plantwalls with the current system; all are working well and are stable. Green Fortune developed a system that is as simple as possible in order to minimize the materials necessary. This is done to make our system sustainable and fool proof (to increase reliability)
No	USA but have exported to other countries.	No	See attached document.
No	EU and UK	No	1.The system is suitable to replace the outer part of the wall (stone, bricks, steel, timber) of the facade and is tested by TU Delft for that function. 2.It is a ventilated system; any moisture from outside can't reach the building. It functions as a 'hollow wall' and mutes all the climatic fluctuations. 3.The type of soil can be adapted to every species 4.Every module is simply exchangeable 5.The system is very suitable to grow vegetables and fruits as a 'vertical garden' for schools and senior-citizens
Yes	Europe	Not yet	The green wall system can be used outside and inside.
We are the grower of plants.	The Netherlands	No	Our Power Point presentation!
Yes	Switzerland, Germany, Austria (other Countries on request)	?	- The Verticalis is sustainable – no pump, no electric is needed - The thickness is unique with 7,6cm (very thin) - Multifunctional use: Acoustic panel on a work place, Mobile plant wall, picture on the wall, Room separator
We are the manufacturer, we make the support, growed plant and install the vegetal wall	All in Europe, since we have realise wall in Deutschland, Suisse, Austria, France of course.		We have developed with the same process a "Module vegetal". It completely autonomous. It is vegetal wall: 70 cm large, 2.20 m Height, and 30 cm deep with water reserve and pump. All the structure is in aluminium and you can choice the colour. We deliver direct to the customer, the wall developed and complete, just to place in the house. For example we have sent 2 "module vegetal" in Emirate Arab without difficult.
WE ARE THE INVENTERS AND WORLDWIDE DISTRIBUTORS.	WE SALE OUR PRODUCT IN MORE THAN 25 COUNTRIES	NO	OUR PRODUCT IS PATENTED. IT WAS DESIGNED TO BE BOTH USED BY PRIVATE USERS AND HIGH SKILLED PROFESSIONALS, IN SMALL SCALE INSTALATIONS, LIKE PRIVATE KITCHEN GARDEN, OR BIGGER ONES, LIKE HOTEL LOBBYS OR COMPANY FACADES, INDOOR AND OUTDOOR, ETC.
No	France, Holland, Switzerland, Austria, Germany...	??	Please see our website for more info...
Both. Distribution is also done at Nieuwkoop Europe	Europe	No	
No	We already sell for years FytoCell all over the world based on franchise contracts. Several partners worldwide added the vertical garden concept to their franchise.	No	Our marketing of FytoCell and all the different applications such as vertical walls is done by internet. See our own website and the website of our Australian partner will give lots of additional information and pictures of several projects which are free use an publication (http://fytoWall.com/defaults.htm)
No	At the moment only the Netherlands, Germany and Belgium but we are open to applications from other countries.	No	We will send the brochure of VertiVerde along with this survey.

		Nog niet.	Waterbehoefte is zeer beperkt. Ongeveer 140 l/m ² per jaar! Systeem wordt zowel binnen als buiten gemonteerd. In de buiten opstelling is het bijzonder geschikt in combinatie met houtsketelbouw en renovatieprojecten waarbij de buitenspouwblad wordt vervangen door het waterdichte Modulogreen gevelsysteem. In de binnen opstellingen is dit ook zo te realiseren.
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