

## LIVING WALLS

Architekten arbeiten zunehmend kreativer mit Botanikern zusammen, um vertikale Gärten und lebende, grüne Fassaden zu gestalten. Obwohl die Pflanzen dort ganz ohne Erde auskommen, lassen sie doch Architektur und Umwelt gleichermaßen „erblühen“. Eine kurze Einführung ins vertikale Gärtnern.

# VERTICAL GARDENING

Architects are collaborating more and more creatively with botanists to create vertical gardens and true living walls in which plants can thrive without soil – enhancing the architecture and the environment. A short introduction to vertical gardening.

There was a time, not too long ago, when the sight of plants climbing up walls or *emerging* from building facades would be taken as a sign of a building's age, *neglect*, or status as an architectural ruin. But today, such an *occurrence* is often the result of *conscious* architectural *decision* making. The relationship between the natural and the man-made environment is becoming more carefully calibrated along with the rise of *sustainability* and *environmental* design thinking. *Increasingly*, architects *embrace* the *advantages* of introducing living systems into their designs. One concept stands out as perhaps the clearest and most *literal* representation of a sensitive architectural response to living harmoniously with nature: the “*green wall*.”

A green wall, as the name *implies*, is quite simply a building wall that is partially or completely covered with vegetation growing either from the ground or in vertically *supported* soil or inorganic growing medium. The concept of the architectural green wall *dates back* at least to the 1930s, when an American professor of landscape architecture

named Stanley Hart White developed what he called “*botanical bricks*,” which he later expanded into a patented “*vegetation-bearing* architectonic structure.” However, White's particular *invention* was somewhat impractical and wasn't *implemented* on any significant *scale*.

### LESS SOIL, MORE VERTICAL

The idea of a “living wall” was fully realized in 1986, when botanist Patrick Blanc, working alongside architect Adrien Fainsilber and engineer Peter Rice, completed the first large-scale indoor living wall at the Cité des Sciences et de l'Industrie science museum in Paris. Blanc's interpretation of the green wall concept *arrived* as an elegantly simplified, easily adaptable system that *required* no soil, and which could be *applied* to walls of varying sizes to *stunning* effect. As Blanc said:

“Plants don't need soil because it is *merely* the mechanical *support*. Only water and the minerals *dissolved* in it are essential to plants, together with light and carbon dioxide to *conduct* photosynthesis. Wherever water is available all year

<i>adorn, to</i>	<i>schmücken, verzieren</i>
<i>advantage</i>	<i>Vorteil, Nutzen</i>
<i>apply, to</i>	<i>einsetzen, anwenden</i>
<i>arrive, to</i>	<i>ankommen, einfinden</i>
<i>assembly</i>	<i>Baugruppe, Einbau</i>
<i>bear, to (bore, borne) // beə</i>	<i>tragen, stützen</i>
<i>bearing // 'beəriŋ</i>	<i>Auflagerung, Lagerung</i>
<i>benefit</i>	<i>Vorteil, Nutzen</i>
<i>brick</i>	<i>Ziegel, Backstein, Baustein</i>
<i>collaborate, to // kə'læbəreɪt</i>	<i>zusammenarbeiten</i>
<i>conduct, to</i>	<i>betreiben, durchführen</i>
<i>conscious // 'kɒŋʃəs</i>	<i>bewusst, wissentlich</i>
<i>contemporary</i>	<i>modern, aktuell, heutig</i>
<i>date back to, to</i>	<i>stammen aus, zurückgehen</i>
<i>decision</i>	<i>Entscheidung, Wahl</i>
<i>descriptor</i>	<i>Schlagwort, Indexierung</i>
<i>dissolve, to</i>	<i>auflösen</i>
<i>embrace, to // ɪm'breɪs</i>	<i>(begeistert) annehmen</i>
<i>emerge, to // ɪ'mɜːdʒ</i>	<i>hervorkommen, auftauchen</i>
<i>enhance, to // ɪn'hɑːns</i>	<i>verbessern, bereichern</i>
<i>environment // ɪn'vaɪrənmənt</i>	<i>Umwelt, Umgebung</i>
<i>environmental // ɪn,vaɪrən'mentl</i>	<i>Umwelt-, ökologisch</i>
<i>for instance</i>	<i>zum Beispiel</i>
<i>green wall</i>	<i>Fassadenbegrünung</i>
<i>implement, to</i>	<i>umsetzen, realisieren</i>
<i>imply, to</i>	<i>andeuten, unterstellen</i>
<i>incorporate, to</i>	<i>einschließen, einbeziehen</i>
<i>increasingly</i>	<i>in zunehmenden Maße</i>
<i>invention</i>	<i>Erfindung</i>

<i>irrigation // ɪrɪ'geɪʃn</i>	<i>Bewässerung</i>
<i>latter</i>	<i>letztere/r/s</i>
<i>literal</i>	<i>wörtlich, buchstäblich</i>
<i>merely // 'mɛəli</i>	<i>nur, lediglich</i>
<i>neglect</i>	<i>Verwahrlosung, Vernachlässigung</i>
<i>occurrence // ə'kɒrəns</i>	<i>Erscheinung, Vorhandensein</i>
<i>pave the way, to</i>	<i>den Weg bereiten</i>
<i>peak</i>	<i>Spitze, Höchstwert</i>
<i>prevent, to</i>	<i>verhindern, vermeiden</i>
<i>provide, to</i>	<i>bieten, liefern</i>
<i>re-engineer, to</i>	<i>überarbeiten, umarbeiten</i>
<i>re-imagine, to</i>	<i>neu denken</i>
<i>refer to, to // rɪ'fɜː</i>	<i>sprechen von, bezeichnen als</i>
<i>require, to</i>	<i>verlangen, erfordern</i>
<i>root, to</i>	<i>wurzeln, Wurzeln schlagen</i>
<i>scale</i>	<i>Maßstab, Umfang</i>
<i>slope</i>	<i>Gefälle, Böschung</i>
<i>soil</i>	<i>Erde, Boden</i>
<i>sophisticated // sə'fɪstɪkətɪd</i>	<i>ausgefeilt, komplex, hochentwickelt</i>
<i>stunning</i>	<i>atemberaubend, beeindruckend</i>
<i>support</i>	<i>Unterstützung, Halterung</i>
<i>support, to</i>	<i>stützen, unterbauen, abstützen</i>
<i>surface // 'sɜːfɪs</i>	<i>Oberfläche</i>
<i>surge // sɜːdʒ</i>	<i>Anstieg, Schub</i>
<i>sustainability // sə'stemə'bɪləti</i>	<i>Nachhaltigkeit</i>
<i>thrive, to // θraɪv</i>	<i>gedeihen, florieren</i>
<i>tree trunk</i>	<i>Baumstamm</i>
<i>trellis // 'treɪlɪs</i>	<i>Spalier, Rankgitter, Flechtwerk</i>
<i>unique // ju'niːk</i>	<i>einzigartig, einmalig</i>

long, as in tropical forests or in temperate mountain forests, plants can grow on rocks, *tree trunks*, and *slopes* free of the ground. *For instance*, in Malaysia, 2,500 species grow without any soil."

It was Blanc's *re-imagining* and *re-engineering* of the living wall that *paved the way* for further innovations in this area and a *surge* in the number of architects *incorporating* green walls into their buildings.

*Contemporary* green walls fall into two main categories: traditional walls *adorned* with climbing plants that are *rooted* in the ground, *referred to* as "green facades," and true "living walls," which are specially constructed to *provide* a vertical growing *surface* for plants using various growing mediums, supports and integrated *irrigation* systems. The *latter* can have *sophisticated* *assemblies* and controls capable of regulating *peak* performance with a measurable effect on such things as indoor air quality, giving them the further *descriptor* of "active" green walls.

## GREEN FACADES AND LIVING WALLS

Both of these basic types offer *unique* *benefits*. The climbing plant system can only be installed on building exteriors, often incorporating a specifically designed *trellis*, cable, or other external support to protect the building and *prevent* structural damage. These external green walls have no *bearing* on the building walls and can easily be replaced or removed, >>>



*Living walls literally bring life to what otherwise would be rather grey architecture – indoors (above: Capitaland office, Singapore) as well as outdoors (left: Central Park One, Sydney).*

< PHOTO: PATRICK BLANC >



< PHOTO: PATRICK BLANC >

The master and his work: Patrick Blanc's (left) vertical gardens can be found all over the world – be it in Hong Kong at the Icon Hotel (left), in Madrid at the Caixa Forum (above) or in London at the Athenaeum Hotel (right).

yet can reduce the *amount* of energy required to cool a building by lowering the *ambient* temperature of its exterior surface – essentially *shading* the building – provide *protection* from UV *radiation*, and *divert* water away from walls during heavy rain. In some cases, they can even *serve* as acoustical *insulation* to reduce the transmission of noise.

A living wall system – also referred to as a bio-wall, eco-wall or vertical garden – differs from green facade in that it can be installed almost anywhere in or upon a building and may be freestanding or *attached* to an existing wall. It is typically more permanent and *is composed of* a structural *framework* supporting a *layered* assembly or modular panels that contain a growing medium – such as packed soil,

fibre mats, or some other substrate – and an integrated irrigation system that cycles water through the panels as needed. Living walls can be further categorized *according to* the type of growth medium (loose media, mat media, and structural media) and support system (panel/modular systems, *tray* systems and freestanding walls) they use.

In addition to more effectively providing many of the same benefits of the climbing plant system, living wall systems provide other benefits that enhance the sustainability of a building and the well-being of its *occupants* or users. Interior living walls can help create healthier and more relaxing environments not only by releasing oxygen in exchange for carbon dioxide, but also by attracting *dust*

according to	gemäß, entsprechend, je nach
ambient	Umgebungs-, umgebend
amount	Menge, Umfang
appeal	Attraktivität, Anziehungskraft
appreciate, to // ə'pri:ʃiət	schätzen, anerkennen
appropriate	passend, geeignet, entsprechend
arid	trocken, dürr
attach, to // ə'tætʃ	befestigen, montieren
be composed of, to	bestehen aus, zus.gesetzt sein aus
bland // blænd	unscheinbar, öde, reizlos
consider, to	erachten, berücksichtigen
consideration	Berücksichtigung
content // 'kɒntent	Inhalt, Gehalt
counteract, to	entgegenwirken
degree	Grad, Maß
detach, to // di'tætʃ	abtrennen, loslösen
divert, to // daɪ'vɜ:t	umlenken, ableiten
dust	Staub
framework	Rahmen, Gerüst, Gestell
horticulture // 'hɔ:tɪkʌltʃə	Gartenbaukunst
humanize, to	menschlich machen

humidify, to // hju:'mɪdɪfaɪ	befeuchten
increase, to	zunehmen, steigern
inexpensive	günstig, preiswert, billig
insulation // ,ɪnsju'leɪʃn	Isolierung
invite, to	einladen
layered	geschichtet, stufig
maintain, to	erhalten, pflegen, betreiben
maintenance // 'meɪntənəns	Wartung, Instandhaltung
mist, to	umnebeln, benebeln
moisture // 'mɔɪstʃə	Feuchtigkeit
occupant	Bewohner/in
protection	Schutz, Deckung
provision //	Regelung, Vorkehrung, Vorsorge
radiation	Strahlung
serve, to	diene
shade, to	abschatten, beschatten
toxin	Schadstoff, Gift
tray	Schale, Tablett
uninviting	wenig einladend, nicht verlockend
wallscape	Wandlandschaft
worthwhile	lohnenswert, sinnvoll

particles, absorbing and processing *toxins* in the air, and by naturally *humidifying* dry air.

### VERTICAL GARDENING

However, a complex living wall system will always require a certain *degree* of professional knowledge and *maintenance* to keep healthy. The use of climate-*appropriate* flora, highly efficient irrigation systems, and a *provision* for the right air *moisture content* should always be *considered*, and are practical concerns for living walls in our own *arid* desert climate. Even carefully designed living walls installed within controlled interior environments may require special *considerations*, such as *misting* devices to *counteract* the dryness of conditioned air.

Constructing and successfully *maintaining* green walls is neither easy nor *inexpensive*, but an *increasing* number of building owners are nevertheless starting to see them as a *worthwhile* investment. Of course, it takes no special technical knowledge to *appreciate* green walls' aesthetic *appeal*. These wonders of *horticulture* and architecture have the power to transform even a *bland*, ordinary space into a wonderfully *inviting* vertical garden, giving new meaning to the word "*wallscape*." Architects are beginning to learn to use living walls not just to make a statement, but to enhance livabil-

ity, occupant quality-of-life, and energy performance – and in some cases, to *humanize* an otherwise *uninviting* environment. In our cities that too often seem *detached* from nature, green walls can play a meaningful, even poetic role in bringing us back into balance. <<< Peter Bogaczewicz >>>

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<https://omrania.com/insights/green-walls-how-technology-brings-nature-into-architecture>

[www.verticalgardenpatrickblanc.com](http://www.verticalgardenpatrickblanc.com)

Homepage des Vertical Garden Pioniers Patrick Blanc.

<https://architizer.com/blog/product-guides/product-guide/eantka-green-walls>

[www.naava.io/editorial/what-are-green-walls](http://www.naava.io/editorial/what-are-green-walls)

[www.ambius.com/green-walls/ultimate-guide-to-living-green-walls](http://www.ambius.com/green-walls/ultimate-guide-to-living-green-walls)

Eine kleine, eher zufällige Auswahl weiterer Artikel über Fassadenbegrünung.

<https://gruenstattgrau.at>

Eine deutschsprachige Webseite mit vielen Hintergrundinformationen zum Thema Bauwerksbegrünung.

[www.peterbogaczewicz.com](http://www.peterbogaczewicz.com)

Webseite des Autors Peter Bogaczewicz mit wenig Grün, dafür aber mit phantastischen Architekturaufnahmen aus Saudi-Arabien.

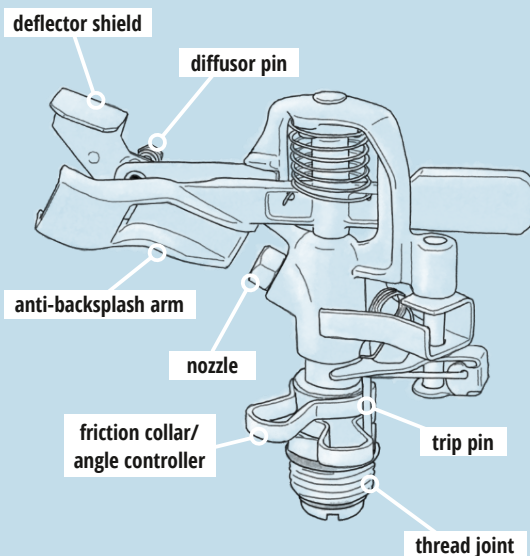


Links, Vokabeln & mehr unter

[www.inchbyinch.de/inch35/greenwall](http://www.inchbyinch.de/inch35/greenwall)

## TECH EXTRAS

### PICTORIAL IMPULSE SPRINKLER



## MINI DICTIONARY GARDEN MACHINERY

<i>brushcutter</i>	<i>Motorsense</i>
<i>chain saw</i>	<i>Kettensäge</i>
<i>chipper shredder</i>	<i>Gartenhäcksler</i>
<i>garden hose</i>	<i>Gartenschlauch</i>
<i>grass shears</i>	<i>Grasschere</i>
<i>hedge trimmer</i>	<i>Heckenschere</i>
<i>hose reel</i>	<i>Schlauchtrommel</i>
<i>impulse sprinkler</i>	<i>Impulsregner</i>
<i>lawn mower</i>	<i>Rasenmäher</i>
<i>lawn roller</i>	<i>Rasenwalze</i>
<i>lawn tractor</i>	<i>Aufsitzmäher</i>
<i>lawn trimmer</i>	<i>Rasentrimmer</i>
<i>leaf blower</i>	<i>Laubbläser</i>
<i>leaf collector</i>	<i>Laubsammler</i>
<i>loppers</i>	<i>Astschere</i>
<i>motor hoe</i>	<i>Motorhacke</i>
<i>rake</i>	<i>Rechen</i>
<i>road sweeper</i>	<i>Kehrmaschine</i>
<i>robotic lawn mower</i>	<i>Mähroboter</i>
<i>rocker saw</i>	<i>Wippkreissäge</i>
<i>scarifier</i>	<i>Vertikutierer</i>
<i>shovel</i>	<i>Schaufel</i>
<i>snow blower</i>	<i>Schneefräse</i>
<i>spade</i>	<i>Spaten</i>
<i>wood splitter</i>	<i>Holzspalter</i>