Public Taipeh Concert Hall, Taiwan
Patrick Blanc's Vertical Garden

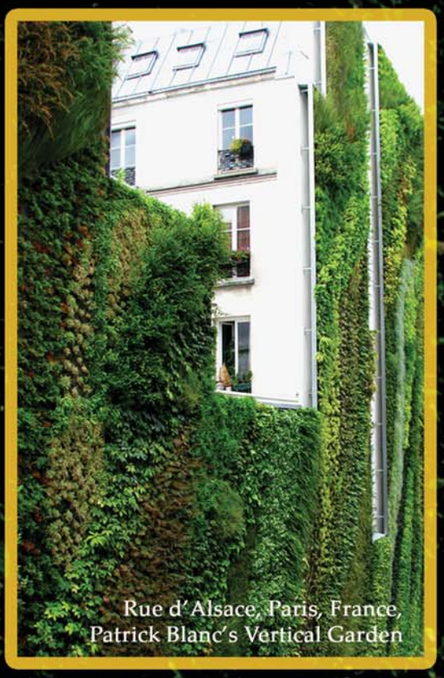
Green Living Walls

Vertical gardens, living walls, sustainable art, green walls. Another Great way to go GREEN.

Patrick Blanc the inventor of "Vertical Gardens" grows plants on the wall since 20 years. Born in Paris in 1953, Patrick is an award winning scientist. He worked on various projects with famous architects like Jean Nouvel and designed Vertical Gardens like Caixa Forum, Madrid and French Embassy in Delhi, India. He is also an author of books on Vertical Gardens

Types of Green "living" Walls

There are two different systems which will bring your wall to life: Modular panel systems and climbing plants. Around the world historic buildings are covered with vegetation, creepers like wild wine and ivy or moss. Architects didn't plan it like this, but it gives a special charm to the building. If you want to cover your building with climbing plants it may take a few years or decades... that's the reason why Green Panels are used to make walls of new buildings vegetated. The plants are pre-grown before the get installed on the wall. More than a dozen of plants are in one panel, and a lot of panels together will form a green wall, they get fixed on a metal structure and connected with a drip irrigation system. So your wall will be green on the first day itself!



Rue d'Alsace, Paris, France,
Patrick Blanc's Vertical Garden

Pont Juvenal, Aix-en-Provence, France
Patrick Blanc's Vertical Garden

How can plants grow on the wall?

Most of the times we only see plants, trees and shrubs growing on the ground, but there are a lot of plants which are growing on vertical surfaces in nature. Creepers capture old tree trunks; vertical slopes are covered from greenery and even on rocks and cliffs plants find a way to grow.

Grow plants without soil...

Vegetation does not need soil; it only needs water with dissolved minerals, light and carbon dioxide to grow – nothing else. For the purpose of a green wall the soil would make the whole construction too heavy, that's why materials like felt are used to build a surface for the plants to grow. The materials used for Green Walls are mould resistant, long lasting and have a great ability to distribute the water to the plants.

Caixa Forum, Madrid, Spain
Patrick Blanc's Vertical Garden

The technology and implementation behind the wall:

To grow plants on the wall is not as easy as it looks. The combination of different plants must be chosen carefully. Their ability to remove toxics from the air, water and lighting needs can vary. A planting medium which resistant against mould is, holds the plants in place and let air to the roots must be chosen. For the irrigation of the wall a lot of small drip irrigation systems are used. The schematic design of a green wall is illustrated below.

Irrigation on the wall

The irrigation system of a green wall is hidden behind the panels; it is made out of small pipes which supply water directly to the plants. Every company has its own system for water management. Patrick Blanc the inventor of "Vertical Gardens" says that a regularly water supply is the secret behind every long lasting Green wall. If the roots of the plants have no shortage of water they will spread on the surface of the wall, but as soon as the roots of the plants are dry, the roots will search for water, what means that they can even destroy the wall construction within a few years. Minerals and fertilizers can be added to the water to ensure the health of the plants.

1 Steel Structure
2 Irrigation System
3 Panel System
4 Growing Medium
5 Supporting Material
6 Plants

Nature is a model and inspiration for a lot of inventions. The same way low growing plants and moss protect the soil, from extreme temperatures, sun rays and erosion, the building envelope should be protected from direct solar radiation. Energy savings through thermal insulation & an attention grabbing façade are some of the many reasons to consider a green exterior wall.
Is the air you breathe polluted from combustion of cars, filtered air supplied from the air-conditioning system or is it air full of oxygen when you take a walk in a wildlife area? To build with non-toxic materials, use low-VOC paint and have a high fresh air rate is a way to keep a good air quality in the room, but there is still a way to boost the activity of the occupants and create health benefits. Just add oxygen and remove the carbon dioxide and you have improved the indoor air quality dramatically! The easiest way to increase the oxygen level is to bring more plants into the building. Green panels full with oxygen producing plants can also act as air filter for toxins.

Why you should consider a vertical garden in your design.

When used on Indoor Walls it Improves the Air Quality and acts like an air filter.The air should be ventilated through the wall construction for maximum benefit. The roots and the planting material will be a natural filter for toxics in the air. Additional to filtering of the air, the plants add oxygen to the air, which improves the health and productivity of occupants.

A Green Wall saves floor space if you just plant your grass on the wall rather than on the ground. As the prices for land go higher and higher the area of open space and vegetated spaces gets smaller and smaller. By growing plants on the wall you help to create a natural habitat and peasants will appreciate the great atmosphere.

For Aesthetics and Health Benefits. Do you remember a walk in the forest or in a nice park? The air is full of oxygen, the green colour calms you down and you feel full of energy, so bring the park to the wall of your building or even into the building with the same effect of a walk in the forest.

The Green Wall provides sound insulation. Big rooms with plain walls usually have bad acoustics. So you can install expensive acoustic panels or just get green panels.

It Reduces your Energy Consumption. Depending on what planting material is used the green wall on the exterior wall of the building will contribute to the energy efficiency of the building envelope. Not only does the material act like wall insulation, it also protects from solar radiation that would heat up your wall construction. The vegetated façade acts like a big

Astra Zeneca, Sweden
Michael Hellgren's Sustainable Art
Source: www.verticalgardendesign.com