

Bringing walls to life

London's first vertical gardens were unveiled last month, prompting a flurry of press interest, and making **Ella Taylor** wonder just how much do they do to benefit our environment.

The greenery on the front of The Driver is certainly eye catching, unusual as it is on the front of a London bar. Flowers and neatly trimmed evergreen shrubs intermingle as they climb up the exterior wall.

Creator of "les murs végétal", or vertical gardens, the French artist and botanist **Patrick Blanc**, claims that they aid a building's energy efficiency, as a layer of air is created between the structure that the plants sit on and the building's façade. This keeps the building cool in summer and warm in winter, reducing the need for artificial heating and cooling systems.

Vertical gardens, as designed by Mr Blanc, are made up of three parts: a metal frame, a PVC layer and a felt layer. The metal frame can either be hung on a wall or stand alone, to which a 1cm-thick PVC sheet is attached. This sheet keeps the structure rigid and waterproof, and creates a pocket of air between it and the building's surface. Finally felt, made of polyamide, is stapled on the PVC. This is rotproof and allows water to be distributed evenly across its entire surface, feeding the plants which grow on it at a density of around 30 plants per square metre.

But is this method more efficient than, say, cavity wall insulation? It is hard to say, although research by **Nigel Dunnett** and **Noël Kingsbury** suggests that they reduce the daily temperature fluctuation in buildings by as much as 50%. A book by the university lecturer and the botanical writer, respectively, entitled *Planting Green Roofs and Living Walls*, explains that evergreen climbers on buildings also provide insulation by reducing wind chill on the surface of the wall, which they say causes one third of a house's central heating demand in winter.

Furthermore **Matthew Hoddinott**, business manager for **Cityroofs**, which create their own living walls (another name for vertical gardens) on reusable and 100% recycled mixed polymer boards on a stainless steel screen, says that: "Independent research has indicated that 20sqm of Aquadyne [the boards] can reduce 1t of CO₂ from being generated." He also added that the system, which has been used for over five years, is "designed for longevity and minimal maintenance."

Plants' natural uptake of CO₂ in



A Patrick Blanc original comes to London and, right, close up

photosynthesis of course also makes them useful in urban environments, and here the roots and micro-organisms related to them provide a wider surface for air cleaning than with typical gardens. Particles of pollutants are also captured on the felt beneath the plants, where they slowly decompose and mineralise, turning into fertiliser. The amount of CO₂ captured varies with the species and densities of plants, but could make it a low carbon form of insulation.

Other companies and designers are coming up with their own take on Mr Blanc's work. Some systems, such as one by **Mobilane**, grow plants up a wall, rather than outwards from the surface of the wall. This system involves attaching metal screens of Ivy, already grown upwards from biodegradable pots, to buildings. Mobilane also makes free standing screens, and in both cases the substrate for the plants is recycled and peat-free, so that carbon stores found in



peat in the ground are not disturbed.

A similar system is offered by ELT **Living Walls**, which also makes green roofs. Over in Sweden, landscape architect **Michael Hellgren** is also getting in on the act, designing installations inside buildings as well as outside, like Mr Blanc. "As ornamental objects, I think human fascination with plants comes from the fact that they are alive," Mr Hellgren says on his website, which also suggests vertical gardens could be installed in underground transport stations.

In most systems, plants are fed by an automated system that distributes water fed with nutrients around the plants. It is important that plants are watered regularly, to stop roots from growing into the wall in search of water, which would damage the structure. While it is logical that they

would need watering frequently, this seems to make them high maintenance and relatively energy intensive ways of adding extra insulation to a building, especially when compared to green roofs which, in the UK climate at least, take a lot of the moisture they need from rainwater held in a waterproof membrane between the plants and the roof itself.

However these systems do provide more than mere insulation: the aesthetic appeal of a green wall seems to be universal, with Patrick Blanc's work, and that of others, spanning Seoul, Thailand, Paris, Madrid, Japan, LA and other cities. Designer **Stella McCartney** is one high profile fan, using a vertical garden in a 2007 catwalk show.

Mr Hoddinott says: "Of course, living walls also have a fundamental impact on building design as well as sustainability and

are inspiring architects around the world. So, in our view, they are not just a fashion but a tangible solution to issues facing designers, building owners and operators."

"In any city, all over the world, a naked wall can be turned into a vertical garden and thus be a valuable shelter for biodiversity. It's also a way to add nature to the daily life of city inhabitants," Mr Blanc says on his website. This is an important point: at a time when urban planners are struggling to reconcile the desire for green space with high quotas for new homes, bringing green space into a public area without having to clear large areas of land will become increasingly desirable. This is one area at least where they may be more valuable to green roofs, which are typically, though not always, private spaces.

Visiting *The Driver*, a bar in London's Kings Cross that recently received a Patrick Blanc makeover, the wall of green instantly had an uplifting yet relaxing effect, complimenting the willows and other trees surrounding the canal a few metres up the road. There were gaps on the side wall where the foliage was sparser, perhaps because plants were still being established, but the hot pinks against the dark greens were exciting and somehow comforting after a long day of work and public transport delays.

Rowan Moore of *The Evening Standard* recently wrote: "At worst the vertical garden updates **Frank Lloyd Wright's** saying that 'surgeons can bury their mistakes; architects can only grow vines'. Sometimes Blanc's creations are parked amid banal and sterile architecture, for which they function as inadequate toupees or fig leaves. At best they can create whole lush environments and generate a new kind of architecture made of green stuff."

► <http://www.verticalgardenpatrickblanc.com/>



Two alternative living wall systems on show at the BRE innovation park in Watford: a six week-old display by Mobilane, left and one by Citiroofs, right