# WonderfulVinyl



PVC in architecture and design



ISSUE

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# FROM BUILDING WASTE TO BUILDING GARDENS



In recent years, urbanisation has highlighted a major challenge: how can we sustainably provide food to constantly growing cities? The answer lies in urban agriculture. The Food and Agriculture **Organisation of the United** Nations (FAO) encourages this practice, which can provide fresh food, generate employment, recycle urban waste, create green belts, and strengthen cities' resilience to climate change.

#### HOW THE RE-USE OF PVC WASTE HELPS TO CREATE CITY GARDENS

VinylPlus®, the European PVC industry's commitment to sustainable development, supports various urban agriculture projects in Denmark.



The concept is to transform PVC building waste into flourishing gardens: dismissed PVC pipes and gutters have a key role in urban agriculture, as they can be upcycled by undergoing a few simple actions, such as cleaning and redimensioning, to become plant containers. This new function extends the lifetime of the materials. In comparison to traditional terracotta pots, the PVC pipe plant containers offer great climate savings. Reusing the pipe pieces means waste is avoided and the need for new products is reduced which in turn, limits CO<sub>2</sub> emissions.

Urban gardening projects can rely on PVC for several more reasons.



As an easily accessible material (the most used plastic material in the building and construction sector), it is easy to collect and use for recycling. Another fundamental characteristic is its durability: a PVC pipe can last for more than 100 years, and when it becomes waste, it can be recycled up to 10 times. Moreover, PVC building products are highly suitable for growing plants and vegetables since they are designed to come into contact with water. Compared to wood, PVC has a much longer lifespan, as it does not rot and can therefore last longer. The material is also light in weight, which makes it easy to be transported, positioned, and rearranged.



Further, urban agriculture projects can have a significant social and economic impact. Instead of spending a fortune on fancy planter boxes made from terracotta or wood, vegetables can grow just as well in building waste made from dismissed pipes, which is free! Green city gardens already contribute to local food production and to the growth of new communities, using PVC pipes allows these spaces to be even more sustainable.



The claims of PVC pipes' sustainable benefits have been proven by a scientific study. Aarhus University's Department of Environmental Science conducted an analysis to find out whether growing crops in PVC building waste was environmentally and economically sustainable. The results were very positive: by growing crops in disposed PVC rather than new material, greenhouse gases were reduced by up to 70%, and the yield from growing plants and vegetables in PVC was also high.



From Building Waste to Building Gardens is a project supported by VinylPlus<sup>®</sup>. The project develops and tests urban agriculture systems with reused PVC building waste.

This project is made possible through architect and Project Manager Maja Sønderskov and Assistant Marianne Mikkelsen.



Find more about the project: vinylplus.eu





#### **TECHNICAL** – **INFO** PVC Curtains

#### ARCHITECTS

Herzog & de Meuron, Basel, Switzerland herzogdemeuron.com

#### LOCATION

Milano, Italy The masterplan for Porta Volta creates a positive impact on the surrounding area, due to its important urban dimension. As part of the redefinition of the area of Porta Volta, Fondazione Giangiacomo Feltrinelli relocated its seat to the northern centre of Milan, which is considered as an ideal environment for the foundation's multiple activities.



The building is inspired by the simplicity and generous scale of the historic Milanese architecture like Ospedale Maggiore, Rotonda della Besana, Lazaretto and Castello Sforzesco.

The construction plan of the vertical and inclined awnings



for the Feltrinelli Foundation provided for an in-depth study of the fastening guides to the window frame and details regarding the preparation of the electrical system for the use of shields. 384 PVC and fiberglass roller screens were installed on the facade of





PICTURE CREDITS Filippo Romano, Resstende





#### **TECHNICAL INFO** PVC Curtains

#### ARCHITECTS

Sher Maker, Chiang Mai, Thailand <u>shermaker.com</u>

#### LOCATION

Chiang Mai, Thailand

Boonma Studio is a renovation programme for a café located on a hill land surrounded by trees. Local architects of Sher Maker wanted to create a wall or boundary between the existing buildings and landscapes.

The Studio therefore created a 6-metre-high exterior curtain which is as large as the original building. PVC curtains disguise the building from the viewpoint of the entrance.













The exterior PVC curtain has two functions. One is to create a new boundary for the landscape in the area as an inner boundary before accessing the building. Another function is to act as an interactive wall for users who can handle and open the curtain by themselves to enter the building. It is a simple way to create interaction between people and areas. Inside the building, the architect rearranged the function of space and reduced the amount of light inside with special light filters.

PICTURE CREDITS Rungkit Charoenwat

# LEVANTE STADIUM





#### ARCHITECTS

IDOM, Sevilla, Spain idom.com

Valencia, Spain





The newly renovated Ciutat de Valencia stadium is now one of the most modern stadiums in the Spanish league. First built in 1969, the stadium can receive up to 26,354 visitors and is home to Levante UD football club.

As part of a project to renovate and upgrade the stadium, the building has been completely covered with a PVC coated polyester tensile roof structure.



PICTURE CREDITS IDOM, Taiyo



While the stadium was previously renovated, no structural changes were made to the construction. The assembly of the new roof structure was particularly challenging considering the stadium's central location. For this reason, special care went into the choice of materials, which had to be remarkably lightweight to minimise the overall weight of the structure. Additional steel columns were added around the stadium's concrete shell to support the load of the new roof structure. Once a new compression ring was built around the stadium and the cable net structure was in place, the PVC roof was installed. In the case of Levante, the design phase was the most challenging. Connection details between the main membrane and its boundaries, dewatering systems and maintenance access were the main features that required special attention to ensure the best solution possible.

# STEREO-SCOPE

TECHNICAL – INFO PVC Ceiling

#### ARCHITECTS

LAND Design Studio Wick Architecture & Design, Los Angeles, CA, USA wickarch.com

LOCATION

Newport, CA, USA

Wick Architecture & Design, in partnership with LAND Design Studio, recently unveiled the unique ambiance of Stereoscope, a branded coffee shop in Newport Beach that is turning heads with its cathedral-like opulence.

The design team was tasked with infusing excitement into a narrow, L-shaped space with a 15-foot ceiling.







The space connects to entrances at both ends of the L, including one adjacent to the building's lobby and another connecting to the exterior courtyard.

David Wick and Andrew Lindley drew inspiration from a recent trip to Italy where they had the opportunity to view Correggio's Assumption of the Virgin, a 16<sup>th</sup>-century fresco adorning the dome of the Cathedral of Parma.

The duo envisioned the possibility of a modern interpretation and adaptation of that historic Renaissance approach with a multi-dimensional aspect that would capture the essence of the word 'Stereoscope,' a precursor to modern 3D technology. With such concept in mind, the design team turned its attention to the challenge of bringing the vision to life as a body of work that would dazzle the masses.





Working in close collaboration with a Nashville-based blueprinter, Big Visual Group, the design team developed a key for cutting the art into pieces before printing the pieces onto 5-foot PVC rolls with one-inch overlaps to work with.



They also made several adjustments to the collective work's level of 3D projection, ensuring that patrons who opted not to wear 3D glasses would still have a beautiful and eclectic work of art to view. Once completed, the PVC rolls were applied to the ceiling like wallpaper during a remarkable installation process that took less than a day to complete.

PICTURE CREDITS StudioWick



# CAMP



- **TECHNICAL** INFO PVC Membrane

#### ARCHITECTS

Corinne Vezzoni & Associés, Marseille, vezzoni-associes.com

#### LOCATION

Aix-en-Provence, France <u>thecamp.fr</u>





The Camp is a place where explorers from all over the world come to live, work and inspire each other to develop solutions for a more humane and sustainable future. The Camp founder Frédéric Chevalier envisioned this campus, located at the gates of Aix-en-Provence, as the cradle of humanity's future projects. A true meeting place, The Camp's mission is to bring together entrepreneurs, researchers and artists in a creative environment to collaborate and transform the future.





PICTURE CREDITS Lisa Ricciotti, Fred Bruneau, David Huguenin

Nestled in a pine forest on the edge of Aix-en-Provence and Marseille, its organic and futuristic architecture recalls versatile nomad encampments existing in symbiosis with the environment.

Designed as an open-air environment, The Camp is a celebration of modernism and new technologies with its decidedly futuristic look. Conveying a modern, natural image, the materials selected for The Camp had to embody this pioneering, innovative spirit. The material that was eventually chosen for this ambitious project is a durable PVC-coated polyester membrane. This lightweight solution delivers a homogeneous light flow, which creates the illusion that the canopy is suspended and blends elegantly into the surrounding natural environment. The PVC membrane integrates the latest developments in durability of flexible composite materials. It enables spaces to be naturally lit and hence ensures major energy savings. Moreover, its formulation allows it to overcome multiple climatic constraints at this location (strong sunshine, violent rain, and wind) and reduces material oxidation. This ensures conservation of its mechanical properties and better aesthetics in the long term.

# DUNDEE STATION

#### — **TECHNICAL** INFO PVC Membrane

#### ARCHITECTS

STREET,

200

ALC: NO.

Nicoll Russell Studios, Dundee, Great Britain <u>nrsarchitects.com</u>

Architen Landrell, Chepstow, Great Britain <u>architen.com</u>

LOCATION

Dundee, Great Britain



This project is a key component of Dundee City Council's redevelopment. Sitting on the edge of the waterfront in central Dundee, a five-storey building marks the gateway between Dundee and the rest of the United Kingdom's rail network.





Step inside the concourse and you will see the six-metre-high atrium lined with a crisp, clean tensile fabric ceiling membrane, designed, manufactured and installed by Architen Landrell.

By using a tensile fabric membrane to create the ceiling

cladding, the design team were able to create the gentle arched form without the need for any visible sub-structure. This results in a smooth, white aesthetic which compliments rather than distracts from the other clean lines within the building design.







Both acoustics and air flow within the space were important considerations and therefore a PVC coated polyester mesh was used to form the ceiling cladding. By using a mesh, this ensured that air could pass between the open atrium and the void behind the tensile fabric membrane and any changes in temperature or humidity would not create any problems with condensation. In addition, the use of a PVC fabric mesh provided some acoustic attenuation for the large space and counteracted the otherwise 'hard' architectural finishes.

PICTURE CREDITS Duo Photo



## GEN PARK

NEX

ARCHITECTS KOGAA Studio, Brno, Czech Republic

**TECHNICAL** 

Inflatable

Membrane

**INFO** 

**PVC** 

kogaa.eu

Brno, Czech Republic



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Strategically installed in a back alley in the city centre of Brno, Next Gen Park occupies its new urban space, generating a hybrid environment that attracts people to it. The new intervention creates a sense of care and belonging to the space.

The design combines either rented or reusable materials that are simple, economical, robust, and quick to build. The primary structure is a simple scaffolding system which was designed together with the partner company Peri. The inflatable PVC membrane is custom designed and made by local craftsmen, and was designed with holes for projectors, making it a perfect 360 degrees screen for outdoor events and fully washable and re-usable.

Next Gen Park addresses the issue of CO<sub>2</sub> production in our cities, by visually representing the amount of 1 tonne in the size of the air balloon. Through depicting the equivalent size of 1 tonne of CO<sub>2</sub>, the PVC inflatable balloon is a physical reminder to citizens on the consumption of our cities. Informed by research on urban problems related to climate change, the architects from KOGAA studio actively



challenge the functions of public spaces, transforming them into educational, interactive, and conscious catalysts.

The iconic landmark raises the environmental awareness in the public realm and becomes, throughout the day, a centre for discussions on various topics such as the use of public spaces, the implementation of nature in the city, the revitalisation

![](_page_19_Picture_6.jpeg)

![](_page_19_Picture_7.jpeg)

of brownfields, waste as a resource, and energy and water management. At night, the PVC inflatable balloon turns into a canvas projecting interactive animations leading the visitors through the indexes of CO<sub>2</sub> production and the measures to be taken to lower their footprint, giving citizens the opportunity to reflect on their current way of living.

#### **PICTURE CREDITS**

BoysPlayNice

# WonderfulVinyl

![](_page_20_Picture_1.jpeg)

THE EUROPEAN COUNCIL OF VINYL MANUFACTURERS

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![](_page_20_Picture_8.jpeg)