



VinylPlus walks the talk

Companies have to re-think and re-design their products and processes to reduce raw materials and energy consumption, extend their life-cycle, and re-use and recycle as much as possible. The PVC industry is no exception.

According to the principles of a circular economy described in the European Union's roadmap to a Resource Efficient Europe and the Sustainable Consumption and Production Action Plan, companies have to re-think and re-design their products and processes to reduce raw materials and energy consumption, extend their life-cycle, and re-use and recycle as much as possible.

The PVC industry is no exception and programmes like VinylPlus are perfectly aligned to the "do-more-with-less" school of thought.

VinylPlus' latest brochure 'Closing the loop with PVC' is a non-exhaustive selection of best practice examples developed within the framework of the VinylPlus programme showing that we don't just talk the talk, we also walk the talk.

CLOSING THE LOOP WITH PVC

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The brochure can be downloaded at:
http://www.vinylplus.eu/en_GB/resources/publications/other-publications





Ark Nova Mobile Pavilion

Two years after a major earthquake and tsunami hit Japan, architect Arata Isozaki and artist Anish Kapoor have completed an inflatable mobile concert hall that tour the affected regions.

Ark Nova, the concert hall, is an air-inflated and easily transportable structure which is equipped with the necessary stage and sound equipment. The membrane can be folded up and the equipment dismantled and loaded on a truck, so they can be transported to each site. It is designed to seat about 500 during an orchestral performance and is planned to have a width of 30m, length of 36m and a maximum height of 18m.

The shell consists of a PVC-coated polyester membrane and the toroidal shape of the building turns in on itself, creating a diagonal tube across the interior. From the outside this gives a view of the sky through the building. The tensile fabric was developed to the artist's specification, with a bespoke colour.

The final result appears opaque-purple from the outside and translucent-red from the inside, providing concert goers with a surprising visual experience. The skin's translucence allows for an organic change in light levels. The internal tube is visually arresting and helps modulate acoustics.

Creating this toroidal shape for Ark Nova has most definitely pushed the limits of inflatables' design.

Project: Ark Nova Mobile Pavilion

Location: Matsushima, Japan

Architect: Arata Isozaki, Japan

Artist: Anish Kapoor, India

Technical info: PVC-coated polyester membrane

Picture credits: Lucerne Festival



Info Point City Station

The glowing pavilion in Ulm, designed by German Hochstrasser Architekten, provides visitors with information about the inter-city rail system.

The idea of situating and relating a series of objects in the landscape, as Info Point and City Station, gave the project a dual significance: in addition to the close relationship between landscape, objects and itinerary, between space and objects, each item had to provide a different response with different emphasis: from the most symbolic to the most silent or private. The unifying thread was to be the concept of the fold: the fold as a hidden generator of different volumes and spaces.

The proposed fold in the box gives rise to a single material: a PVC translucent membrane that captures all the nuances demanded of the volume, from the trapped direct light that bursts in like an additional plane in the spatial composition, to the transmission of the unstable, coloured smell of dawn.

The entire body is rested on four steel feet and appears to float on glass. The void between the PVC membrane is illuminated with long-life fluorescent lighting.

Project: Info Point City Station

Location: Ulm, Germany

Architect: Hochstrasser Architekten, Germany

Technical info: PVC membrane

Picture credits: Courtesy Hochstrasser Architekten





Shellstar Pavilion

Shellstar is a lightweight temporary pavilion designed by American experimental architecture studio Matsys that maximises its spatial performance while minimising structure and material.

Commissioned for Detour, an art and design festival in Hong Kong, the pavilion is designed to be an iconic gathering place for the festival attendees.

Located on an empty lot within the Wan Chai district of Hong Kong, the design emerged out of a desire to create a spatial vortex whereby visitors would feel drawn into the pavilion's centre and subsequently be drawn back out into the larger festival site.

Working fully within a parametric modeling environment, the design was quickly developed and iterated within six weeks of design, fabrication, and assembly. The design process can be broken down into three distinct processes that were enabled by advanced digital modeling techniques.

The form emerged out of a digital form-finding process based on the classic techniques developed by Antonio Guadi and Frei Otto among others. Using Grasshopper and the physics engine Kangaroo, the form self-organises into the catenary-like thrust surfaces that are aligned with the structural vectors and allow for minimal structural depths.

The structure is composed of nearly 1500 individual cells made of PVC, Coroplast and nylon cables that are all slightly non-planar. In reality, the cells must bend slightly to take on the global curvature of the form. However, the cells cannot be too non-planar as this would make it difficult to cut them from flat sheet material. Using a custom Python script, each cell is optimised so as to eliminate any interior seams and make them as planar as possible, greatly simplifying fabrication.

Using more custom python scripts, each cell was unfolded flat and prepared for fabrication. The cell flanges and labels were automatically added and the cell orientation was analysed and then rotated to align the flutes of the Coroplast material with the principal bending direction of the surface.

Project: Shellstar Pavillion

Location: Wan Chai, Hong Kong

Architect: Matsys, Oakland, USA

Technical info: PCV and Coreplast cells

Picture credits: Dennis Lo



Aeropolis

Plastique Fantastique, a Berlin-based collective for temporary architecture that samples the performance possibilities of urban environments, has recently designed Aeropolis, a transparent blow-up structure that can be inflated in any location and used as an enclosed event space.

The Aeropolis pavilion has been used as an event hub for the last Metropolis Festival in Copenhagen and has been erected in 13 locations, including a green park, under a bridge and inside a church.

Events held inside the bubble have included a light installation, dance performance, a star-gazing evening and a music concert.

The scenography changes with the specific environment: there's meditation and yoga by the lake, it opens up towards the sky above us in a cemetery, it invites us to a soundless discotheque at one of the noisiest intersections in the city, it provides performance at Islands Brygge, martial arts at Superkilen and Karom competitions in Versterbro, it blows up inside a church and shows a future cultural centre in Valby.

The structure is made from fire-proof PVC and when inflated industrial ventilators are used to retain the air pressure required to keep the bubble's shape.

Plastique Fantastique's synthetic structures affect surrounding spaces like a soap bubble does: similar to a foreign body, it occupies and mutates urban space. Their interventions change the way we perceive and interact in urban environments. By mixing different landscape types, an osmotic passage between private and public space generates new hybrid environments.

Project: Aeropolis

Location: Copenhagen, Denmark

Designer Plastique Fantastique, Berlin, Germany

Technical info: PVC membrane

Picture credits: Plastique Fantastique





Floatastic

American design studio Qastic has created an inflatable pavilion with a floating PVC roof held down by fabric veils.

This deployable structure, called Floatastic, aims to create a floated shelter which avoids imposing any loads on the ground, which traditional structures require. Instead it proposes a well-fabricated balloon, which is filled with Helium to raise the imposed loads of fabric veils and any possible dynamic environmental loads toward the sky.

The idea is explored through the pavilion's possible functions and effects, by which an abstracted mass can impose both relaxation and tension on fabric surfaces. It is within this dialogue of the helium container and the loads that architects can test possible architectural and spatial effects, with articulation between balloon edges and fabric veils exploring the possibilities in which the complex surface veils are relaxed, or in tension, in double curvature configurations.

Making use of the method of reversing load bearing systems, the form of the pavilion is defined by geometrically precise formwork that is then fabricated with randomly varying edges both for the horizontal balloon and the PVC pipes on the ground to allow for varied functions at different heights, climates and locations.

Since the surrounding environment and microclimate fluctuate in a 24-hour cycle, our studies found that the floating

pavilion will experience many buoyant conditions which are unique, but steady.

Metaphorically, Floatastic was envisioned to be a surrealistic and breathtaking imitation of the Jellyfish that appears alive and tries to swim against the external forces in the water. However, rather than being in the water, Floatastic questions its audiences to unconsciously know if they are floating in the sea or on the ground.

Project: Floatastic

Location: New Haven, Connecticut, USA

Architect: Qastic Studio, New York, USA

Technical info: PVC membrane and pipes

Picture credits: Qastic Studio





Believe + Doubt

Few artists have succeeded in treating the ambivalent effects of mass media, and their powers of persuasion in impressive works of art, so cogently and variously as Barbara Kruger has done for more than four decades now.

So it is no surprise that she is represented in major museum collections worldwide and enjoys broad public attention through exhibitions at renowned institutions.

The exhibition at Kunsthau Bregenz cover three floors with multi-coloured vinyl wall coverings and floorings.

The new solo exhibition especially designed by the artist for the Kunsthau gives visitors a chance to explore the wide range of her artistic practice in different media. Through emphasising different architectural elements in turn (façade, wall, floor, ceiling) and deliberate changes of media, she creates a varied trajectory that sensitises the viewer to the specific details of the building no less than to the fundamental importance that Barbara Kruger attaches to art's presentational context.

Ultimately Barbara Kruger's works are characterised by a high level of social commitment, advocating women's rights, freedom of opinion, a critical awareness of the seductions of consumer culture and, of how, power, or the lack of it, determines the feel of our days and nights. These striking works, in the best sense of the word, are captivating for their

immediacy, their directness of address involving the viewer by means of questions or clear-cut statements. Depending on their message, her text-image designs provoke the viewer to contradict, endorse, laugh, or ponder. No one is left cold.

Messages that Barbara Kruger has used in various contexts are already legendary, for instance: "I shop, therefore I am," "Your body is a battleground," or "We don't need another hero."

The images she combines with these and other sentences have been fished out of the pool of visual social memory, and for her words and statements she also normally draws on what is already there. In both cases, she deliberately shuns any hierarchy of high and low to create the works that are to an equal extent political, iconic, and poetic, for which she is widely known.

Project: Believe + Doubt

Location: Kunsthau Bregenz, Bregenz, Austria

Architect: Barbara Kruger, Newark, NJ, USA

Technical info: Vinyl wallcoverings and floorings

Picture credits: Christian Hinz and Markus Tretter



In orbit

Visionary artist, Tomás Saraceno has created an interactive installation using steel wire and inflated PVC spheres at the K21 museum in Düsseldorf, Germany.

The impressive structure, entitled In Orbit, is suspended more than 24 metres in the air above the atrium of the Kunstsammlung Nordrhein-Westfalen in Dusseldorf.

Viewers who enter one of the half-dozen spheres of In Orbit find themselves in an unpredictable landscape where each climber's movements emanate out to the others. Saraceno's quavering structures, connected by a vast net, allude to spiderwebs, the curve of gravity, the social fabric of cities, and pretty much anything else involving bodies caught up in the same force field.

Visitors can traverse between six PVC spheres dotted along an expansive net structure.

The delicate appearance of the net is deceiving: the construction weighs three tons and the spheres have diameters up to 8.5 metres and weigh up to 300 kilos each.

The installation takes inspiration from new forms of communication and the strength and beauty of spiders' webs, enabling visitors to sense other people's movements on the net.

"To describe the work means to describe the people who use it – and their emotions," explains Tomás Saraceno concerning his largest installation to date, planned over the past three years in collaboration with engineers, architects and arachnologists – experts on spiders and spider webs.

Project: In Orbit

Location: Dusseldorf, Germany

Architect: Tomás Saraceno, Berlin, Germany

Technical info: Inflated PVC

Picture credits: Studio Saraceno

