SUSTAINABILITY & INNOVATION





New, double-reinforced and fully recyclable PVC

How can the performance of window frames be improved both in terms of rigidity and insulation? AMCC may have found the answer with a brand new double-reinforced PVC carpentry. Leopold Franken, marketing & products manager at Altrya's subsidiary, recently presented the new product to French magazine Batiactu.

AMCC, a branch of Altrya Group, recently unveiled a physically and thermally hardened PVC carpentry which can do without any reinforcement steel – a long time must-have which decreases thermal performances. The company's secret lies in a coextruded foam which contributes to the product's structural rigidity and insulation.

"We wanted to develop a more insulating PVC carpentry, available in white and various other colours. But our main objective was to do that while using a reinforcement system other than steel and maintaining the product's airtightness over the long term," explains Leopold Franken, marketing and products manager at AMCC.

Bringing this idea to life was a real challenge for the company. "We had to think about improvements to the profiles themselves, which could only resist use-related deformations and wind pressure when being filled in part. The injection of polyurethane foam allows for better isolation but does not solve the rigidity issue and makes the recycling process more difficult."

One solution: coextrusion

The team finally coextruded a PVC-based foam along with the profile itself. "This eliminates the recycling issue, and the

foam brings along rigidity and thermal performance," says Franken. The foam fills the entire profile, adding structural performance and greater angles for a greater welding surface. "We also added fiberglass rods in the carpentry, which make coloured carpentries more rigid. With PVC foam in the openings, we finally obtained a structurally resistant carpentry, which performs well in terms of air penetration and has a good thermal coefficient." The product, named "A80", can be recycled using standard setups discriminating crushed fibres according to their density.

The research and development phase for the foam formulation required two years of hard work at the Alphacan extruder and is currently being evaluated by the French Scientific and Technical Centre for Building (CSTB). "In the meantime, we worked on the processing and welding and invested in a complete dedicated production line. Between six and twelve months were necessary, with an investment plan of EUR 11 million between 2011 and 2014. The expansion of our buildings in Châteauroux and the new production machines already cost EUR 7 million. The remaining EUR 4 million will be used for the automation of glass laying and the hardware". This is a major change for the carpentry manufacturer which currently employs about 150 people on site and expects 25 new long term contracts by 2014. The new range of PVC carpentry, which the company



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started producing in the summer of 2012, now accounts for about 25% of sales.

A growing market

How will this product evolve over the coming years? "We will consider a larger choice of colours. Black and anthracite models work best for now and our main concern is to meet this existing demand. Taupe and rose champagne are also progressing, so the range of colours will continue to expand with increasingly resistant coatings", says Leopold Franken. The estimated extra cost, of 10 to 15% for white carpentry, would come down to 5-10% for coloured carpentry which is usually more advanced from a technical point of view.

"We are currently developing an additional central seal to make our carpentries compatible with the German label Passiv'Haus. It consists of an additional heat shield on the frame which brings the Uw down from 1.2 to 0.8 and comes with triple glazing and adapted laying," the marketing manager concludes. With all these upcoming improvements, A80 undoubtedly has a bright future ahead.

Product name: A80 Location: Châteauroux, France Company: AMCC (Altrya Group) Technical info: Coextruded PVC foam Picture credits: AMCC



ART & ARCHITECTURE









Convertible terrace: the best of both worlds

Dutch architects at Concrete Architectural Associates have developed a unique open space protecting customers from the wind and rain. The terrace's main feature is a modern roof built with sympathy to the typical style of the historical and listed building.

As the autumn days grow shorter and outdoor temperatures decrease, cocktails and terraces have now given way to the working season. However, for those who did not yet have their share of summer delight, regions such as Spain's Girona still have much to offer. The Hotel Castell D'emporda, in particular, will enchant latecomers with a signature restaurant featuring a large terrace and a stunning view of the surrounding landscape.

Dutch architects at Concrete Architectural Associates have developed, at the clients' request, a unique open space protecting customers from the wind and rain. The terrace's main feature is a modern roof built with sympathy to the typical style of the historical and listed building.

The main challenge for the designers was to create a space which provides indoor-like protection whilst granting customers with the unrivalled benefits of a terrace. To this aim, they created structures which look like parasols: Twelve circles of various diameters placed randomly across the terrace. The circles seamlessly melt together, or leave open spaces which are filled in with glass.

The circular parasol shapes strengthen the feeling of sitting in an outdoor environment. The protective covering appears as a separate and almost temporary element, leaving the ancient building untouched. The designers voluntarily avoided the use of a glass roof or a winter garden which would have appeared as an extension of the building. Its modern look and feel would also have clashed with the ancient architecture of the hotel.

The top and edges of the parasols are made of rusted steel, seeking harmony with the building and the natural environment. The white-painted steel columns and ceiling create an open and lightened up outdoor atmosphere under the parasols.

At times of strong and cold winds, transparent PVC curtains can be deployed to enclose the marble dining tables. The curtains hang from a top rail integrated into the perimeter of each parasol and settled into the ground. When the mistral winds awake, the whole terrace can be closed in a matter of minutes.

Project: Castell D'emporda Restaurant Location: Girona, Spain Architect: Concrete Architectural Associates Technical info: Transparent PVC curtain Picture credits: Ewout Huibers for Concrete, Wilkins.nl for Concrete

Wonderful Viny

ART & ARCHITECTURE



When architecture blends in with nature

Set up in the middle of the 1 000 ha Wormsley Park in England, the Garsington Opera Pavilion surely piques walkers' curiosity.

The 600-seat pavilion, which was designed by Snell Associates, was inspired by traditional Japanese architecture. It offers stunning views across a lake, deer park and the woods beyond, discretely paying homage to Japanese gardens while revisiting them in a very modern and occidental way.

The lightweight pavilion, which provides a high quality acoustic environment, features sliding screens, extending platforms, verandas and bridges that link it to the landscape. It comes out as another beautiful example of temporary, semioutdoor structure.

The need for both an unobtrusive and dismountable setup led designers to opt for a fabric membrane over a modular steel structure, with timbre used for verandas, terraces and stage walls. While the structure of the 30-metre wide pavilion is made from a galvanised steel frame, its walls are made from a single layer of stressed PVC, which was curved like a sail to aid the venue's acoustics.

The auditorium has been designed to provide a level of acoustical resonance and envelopment which has never been achieved before with fabric structures. Research into the fundamental acoustic properties of fabrics provided Snell Associates with the opportunity to maximize reverberation in the auditorium, while allowing for a powerful sound system that supports the singers on stage.

Transparent sail fabric and timbre panels form the enclosure. The 'foyer' is open to the adjoining lake with timbre and steel scaffolding stairs leading to the upper parts of the auditorium.

Snell Associates' construction, which was designed to be packed up and stored at the end of the annual season, has proved so successful that it has now become a permanent fixture.

Project: Garsington Opera Pavilion **Location:** Wormsley, United Kingdom **Architect:** Snell Associates **Technical info:** PCV partitions





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Futuristic roof for the "Space Center"

The Cental Bus Station in Halle (Saale) station has been completely redesigned by German architects at Temme Obermeier.

Located closed to the city's main train station, the Central Bus Station in Halle (Saale) is an important entryway to the city. But what makes it truly unique is its impressive roof construction made from PVC-PES membrane.

The station was completely redesigned by German architects at Temme Obermeier. The PVC-PES membrane roofs covering each of the nine bus stops were installed to enable ventilation, hide the steel structure and prevent birds from nesting.

The light, elliptical structure is undoubtedly the most impressive piece of architecture in the area, binding together all bus stops to form a harmonic construction. The latter applies the principles of overall architecture: forming a coherent whole while preserving the shape of each individual part.

With its roof, Temme Obermeier created a piece of architecture which appears to float in the air and stands as a definition for both lightness and elegance. The light membrane roof remains unobtrusive, thus providing expansiveness, openness and visibility. The membrane design underlines the innovative character of the station, also commonly known as the Space Center.

Project: Halle Bus Station Location: Halle (Saale), Germany Architect: Temme Obermeier Technical info: PVC-PES membrane roofs Picture credits: Gyinti







ART & ARCHITECTURE





Car in the pavilion, pavilion in the car

SDA has won the "Switch to Pure" competition with an innovative concept of pavilion for the Volvo V-60.

Los Angeles-based firm Synthesis Design + Architecture (SDA) has won the "Switch to Pure" competition. The latter consisted in designing a portable pavilion to showcase the new Swedish hybrid-electric car Volvo V60.

Volvo's competition, which was co-organized by international architecture magazine The Plan, called for an innovative and original design of a temporary pavilion that would express a "strong and creative identity". The aim was to showcase the car at fairs and open air presentations at Italian squares. SDA's approach consisted in using the car's flexible and sustainable design as a basis for reimagining the typical trade show pavilion.

The sinuously-designed pavilion is composed of a moirépatterned, PVC-coated polyester fabric imbedded with flexible photovoltaic panels which are themselves tensioned over CNC-bent aluminium rods. The pavilion's three sections echo the three modes of the car — hybrid, gas, and allelectric. The curved shape was not only motivated by design considerations but also comes off as practical: its torqued compression between frame and skin enables the structure to stand without any extra support. The pavilion itself is highly mobile. In SDA's proposal, it is shown arriving on site in the back of a V60, completely collapsed into a small tent bag. The bendy solar panels will power the car while it is on display, and the whole installation can be broken down into small parts for transportation. The PVC fabric gets folded up and the aluminium tubes shrink down just like tent poles.

The use of lightweight high-tech materials and photovoltaic power generation makes the pavilion extremely cost-effective for fabrication, transportation, and installation. This is another factor that weighed heavy in the jury's decision. It does not require a large crew nor the use of a truck or other additional equipment for installation.

The first stop for the fair will be Rome in September, followed by Milan. Volvo also considers using the display around the world.

Project: Switch to Pure Location: Rome and Milano, Italy Designer Synthesis Design + Architecture Technical info: PVC coated Polyester fabric Picture credits: Synthesis Design + Architecture

Wonderful Viny

ART & ARCHITECTURE



The perfect home for creative minds

Montreal-based architect Jean Verville Architecte has unveiled Prismatic Colours, a loft in downtown Montreal that houses works of contemporary art and design.

The new loft is an homage to architectural creativity. It overcomes the limits of contemporary design practices by using bright colours for the surfaces whilst taking advantage of white's relaxing virtues.

In order to please clients expecting their home life to stimulate their creativity and lead them to explore new avenues, Verville proposes an environment that distils the essence of its owner. With minimal interventions and simple materials, the architect awakens the senses and blurs our perception of space.

With five-coloured pencils in the client's favourite shades, Verville sketched on white paper what was due to be the backbone of the project. He designed an open dwelling that would host the client's large collection of artworks and created storage solutions so that the owner can rotate the pieces on display, engaging in a process of constant renewal of the space.

The interventions performed at the architectural level modify the usual domestic proportions and lead to an extraordinary experience. Whether they are white, coloured, or panelled with mirrors, the cabinets structure the space of the loft. They multiply perspectives and add to the overall reflectiveness of the shiny PVC floor to offer a multiplied space.

The all-yellow sleeping space also contains concealed storage chests and becomes a multipurpose sculptural space. The

large, small, and tiny rub shoulders accentuate contrasts of scale. The PVC floor features inserts of coloured vinyl and a glossy epoxy coating, and the palette of paint shades can be customised and applied with unique blends prepared by an artist.

Ultimately, the project is an experiment in housing that presents a fertile mixture of architecture, art, and design.

Project: Prismatic Colours Location: Montreal, Canada Architect: Jean Verville Architecte Technical info: PVC flooring Picture credits: Jean Verville Architecte





ART & ARCHITECTURE







Fusion of materials

The "Tied-Up" sculptures integrate ceramic parts with mass-coloured PVC strips linking them.

Steen Ipsen is a Danish artist whose signature lies in a decorative expression involving both form and decoration. Decoration is integrated into the form whilst the form itself is spatially decorative. His "Tied-Up" sculptures integrate ceramic parts with mass-coloured PVC strips linking them. They are unique in their use of both stoneware and long multi-coloured PVC strips.

The process is either based on clayelements moulded in shapes and then built up in terms and variations or on hand-building sculptures. The works are following certain rules, either methodical or chaotic, simple or complex. The shape is as important as the decorative element and the two fuse to become one.

The shapes are often extreme and outrageous, repetitive and accumulated. In his works, Steen Ipsen is always looking to develop an abundance of sensuality and finds a formal vocabulary that is also rooted in modernism.

Project: Tied-Up Location: Brussels, Belgium Architect: Steen Ipsen Technical info: PVC strips, ceramic Picture credits: Steen Ipsen

