EVERLITE CONCEPT
Light Architecture

LIGHT ARCHI TECTURE

number 1830

EDITO

Danpachameleon

What do a sparkling false ceiling, illuminated cladding, a cosy balcony and a curtain wall in Mediterranean colours have in common?

What can withstand the mountain peaks, the cyclones and hurricanes of the Indian Ocean and the Caribbean, and the storms of the Irish Sea?

What is the magical material that softens natural light and magnifies artificial light?

DANPALON®, with its unique characteristics, supports creative designers in an almost infinite range of applications, and never stops reinventing itself at the whims of project managers' imaginations.

This edition of Light Architecture features a rich and varied selection of innovations, new functionalities and technical challenges.

We thank their creators for sharing them with us.

Enjoy the read,
The Editorial team

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CONTENTS

NEWS

ON BRAND. IN HARMONY

T-Station Platinum ■ Gwanggyo (South Korea)

As one of the world's leading tyre companies, Hankook is committed to providing customers with sustainable solutions and the ultimate in driving satisfaction. Its slogan, 'Driving Emotion', embodies everything the company is about and makes the driver the top priority. The Danpalon® based design of its T-Station Platinum sales centre in Gwanggyo, South Korea, follows the brand ethos.

In creating a vibrant new space for Hankook to meet customers and introduce its innovative range of tyres, architect Leslie Jones identified 'harmony' as the core design concept. Harmony between manufacturer and customer, between driver and tyre, between the building and its local environment.

Standing in an open space, with clear and uninterrupted sight-lines from all approaching roads, the Gwanggyo T-Station presented the architects with the opportunity to produce a bold light-box design that was in-keeping with both the Hankook brand and the surrounding urban landscape.

An expansive Danpalon® façade was specified in two highly complementary colours, with orange being a primary colour of the Hankook global brand identity, and a bright silver grey being representative of the company's valued customer base and drivers around the world.

Reflecting the ambient light during the day and back-lit during the night, the translucent polycarbonate façade requires no external lighting. Viewed from all angles, this simple, minimalistic building, with its bold two-colour design, delivers a strong, positive and inviting message.

Behind Hankook's Driving Emotion is an immense spirit of technology and innovation, the Danpalon® façade has captured it well. ■

The PROJECT

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Architect-builders love to take risks and design truly unique buildings. To achieve the desired result, they sometimes push the products and materials they use to their limits in striving for completely new forms of expression. By doing so, architecture advances and progresses. However, the architect-contractor is also constrained by external elements (the layout of the building, climatic conditions, client decisions) which often force a project to be reappraised. In both cases, original technical solutions need to be found, capable of being adapted to meet new requirements and new constraints. Customised solutions, which enable the architect to realise their design plans and overcome the technical challenges ensure a successful conclusion.

technical CHALLENGE

LAND, SEA AND SKY

Welsh National Sailing Academy ■ Pwllheli (Wales), UK

© Hufton+Crow

An iconic building with a multitude of roles, the Welsh National Sailing Academy is truly unique. Designed by Ellis Williams Architects, it is an excellent example of form following function. Danpalon® played its part.

technical CHALLENGE

LAND, SEA AND SKY

Welsh National Sailing Academy ■ Pwllheli (Wales), UK

© Hufton+Crow

Situated on an exposed North Wales peninsula between the Irish Sea and the Afon Erch river estuary, the stunning Welsh National Sailing Academy building is both an international centre of excellence for sailing and a multi-purpose event space for the local community.

Working with the Sailing Academy and the Gwynydd County Council, Ellis Williams Architects of Liverpool based the building's unique design on the classic principle of 'form following function'.

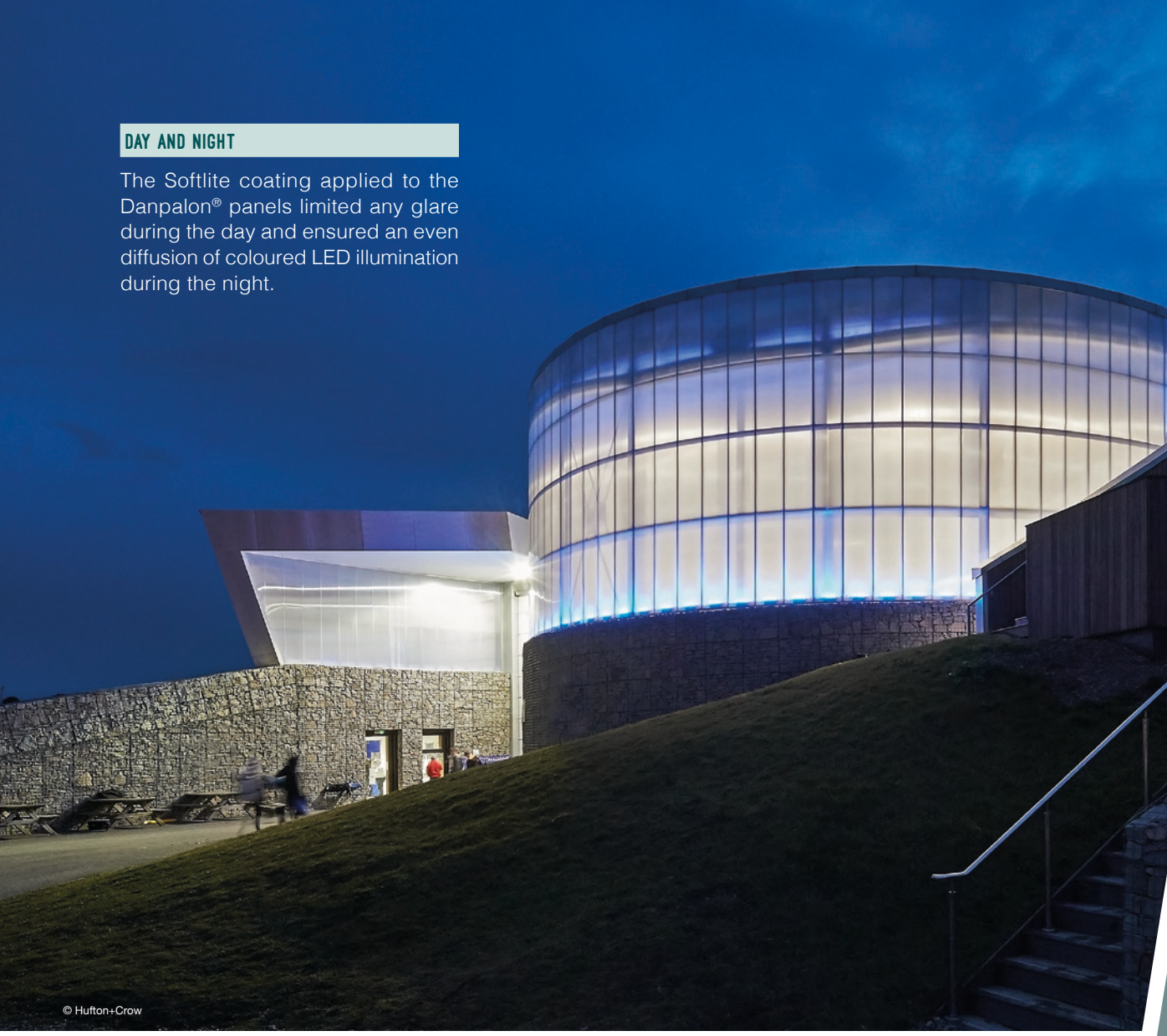
A unique spiral building design is centred on a large circular main hall, enabling fully rigged boats to be towed in and out with ease while being protected from the location's strong coastal winds. Curved public terraces overlooking sailing competitions in the bay are situated to the more sheltered north western side, with a glazed café area offering stunning panoramic views of both the bay and the Snowdonia National Park beyond. On the opposite side, a bar and terrace looks out towards the marina and estuary. A critical design criteria for the project was to maximise the amount of natural daylight entering the circular hall to assist in the preparation of sailing boats and their close scrutinising by competition judges. To meet this requirement, Ellis Williams specified Danpalon® translucent polycarbonate panel cladding system for both the curved hall façade and the round hall roof.

> USING CLEAR DANPALON® PANELS IN A UNIFIED FAÇADE AND ROOF DESIGN WE COULD MAXIMISE THE AMOUNT OF NATURAL LIGHT ENTERING THE HALL WHATEVER THE WEATHER
>
> MARK ANSTEY
> ELLIS WILLIAMS ARCHITECTS

© M7 Digital Ltd

DAY AND NIGHT

The Softlite coating applied to the Danpalon® panels limited any glare during the day and ensured an even diffusion of coloured LED illumination during the night.



© Hufton+Crow

To harmonise with the project's extensive use of natural stone gabions, sea grass banking and treated softwood building materials clear (uncoloured) Danpalon® panels were selected and pre-treated with Softlite coating to limit light glare and achieve a subtle matt finish.

The translucent panels also enabled a variety of attractive night time building illumination effects to be achieved using energy-efficient coloured LED lighting, while its excellent thermal properties mean the central hall is able to function as an unheated event space.

With its unique and stunning aesthetic appearance, the Welsh National Sailing Academy has won a series of national architecture prizes including the RIBA Regional, LABC, ICE and CEW awards. ■

The PROJECT

OWNER

PWLLHELI WELSH
NATIONAL SAILING ACADEMY

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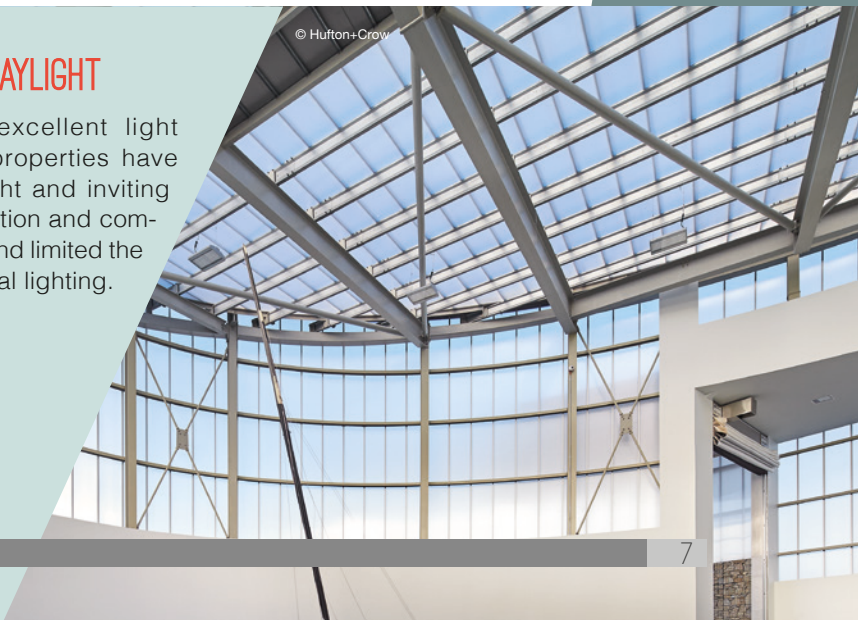
MAXIMISING DAYLIGHT

Danpalon®'s excellent light transmission properties have created a bright and inviting sailing competition and community space and limited the need for artificial lighting.



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technical CHALLENGE

EXTREME CONDITIONS

Ski-lifts ■ Val Thorens (France)

Storm-force winds, sub-zero temperatures and heavy snowfalls. Extreme climatic conditions, common at ski-lift sites. At Val Thorens, the operating company, SETAM chose to renovate three of its ski-lifts.

Autumn 2015. In order to provide greater comfort to skiers queuing for the ski-lifts, the ski resort undertook major construction work to cover three of its lifts (situated at heights of between 2800-3000 metres) with a protective envelope. The project aimed to improve appearance but also to optimise the ski-lifts' use. «After each snowfall, the snow funnelled into the wide open stations and piled up in the wells below the embarkation points. The staff then had to interrupt the ski-lift operation in order to clear the snow. It was an operational loss for the resort», said Hervé Vieille, from the engineering consultancy HV Conseil. To alleviate the problem, the resort commissioned an architect to propose a solution. «Usually, ski-lift coverings are made from basic materials, which are cheap and opaque. But here, the architect wanted to bring transparency and light to allow the skiers to see the landscape outside», added Hervé Vieille. Convinced by the idea, the project manager accepted the bold plan: to install a new transparent material hitherto untried in the resort: Danpalite.

Customised Danpalite

Before choosing the solution, the architect and project manager did however study other possibilities. A covering in EFTE? Too complex and fragile for the climatic conditions. A solution in glass? Expensive because it would require a very strong and curved glass, because of the curvature of the roof. «The strength and simplicity of the product was a prerequisite. At this altitude, the winds are so violent that they can lift up stones and hurl them against the facade walls of the ski-lifts», Hervé Vieille commented. Lastly, in addition to the intrinsic qualities of the product, it also had to be easy to install and capable of being carried by hand. The requirements were met thanks to the ingenuity of the design department at Everlite Concept. The recorded installation and configuration specifications of Danpalite didn't actually cover the load and wind conditions that the product would need to withstand. To remedy this, the design department of Everlite Concept performed tests at the facilities of Laboratoire Ginger CEBTP at Elancourt to confirm the product's effective resistance to the climatic conditions», Hervé Vieille added. It was an essential precaution that convinced the project stakeholders. During the construction phase, the design department of Everlite Concept also made developments to its cladding system to further simplify installation. «For example, we had a customised aluminium connector made, which was thicker and tougher», Hervé Vieille remembered.

A successful installation despite the conditions.

Although specialised in high-altitude construction sites, Joly & Philippe of Albertville had to work in some very extreme conditions to install the three new structures, particularly when erecting the roofs, with their large wind-exposed surface areas. When the works commenced, in September, the snow had already started to fall. The first difficulty lay in the transportation of the Danpalite panels. "Because of their length, we had to install a wooden undercarriage at the back of the lorries to bring them to site without damaging them and to ensure they stayed flat», Philippe Molliet said. As for storing the panels, that also required some special adjustments, because of the violent winds that swept across the site. «The panels were light, and some flew away during the night. We therefore refashioned the packaging and the transport schedules to avoid it happening», the MD of the company commented. Installation of the structure was straight-forward, mainly thanks to the ease with which the Danpalite panels could be installed (for both full height facades and complete roof lengths). «The main challenge lay in the engineering design which was done at the same time as construction and product orders progressed», Philippe Molliet added. As construction came to an end, the temperature reached -15°C, with 80cm of snow. ■

The PROJET

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WE ARE VERY SATISFIED WITH THE FINISHED LOOK OF THE PROJECT. IT BRINGS BOTH LIGHT AND TRANSPARENCY. ALTHOUGH WE HAVE ONLY HAD ONE WINTER TO LOOK BACK ON, SO FAR WE HAVE NOT FOUND ANY SIGNS OF DEGRADATION OF THE MATERIAL.

JEAN-FRANCOIS PIARD, SETAM

© Cyril Cattin

ART & FASHION

With a colour palette that's unrivalled, a striking simplicity and the textures and finishes to suit any new style, Danpalon® is a catalyst for cutting-edge building design. It's where the worlds of contemporary art, fashion and architecture come together, creating the ideas of today that become the trends of tomorrow.

A LANTERN FOR THE ARTS

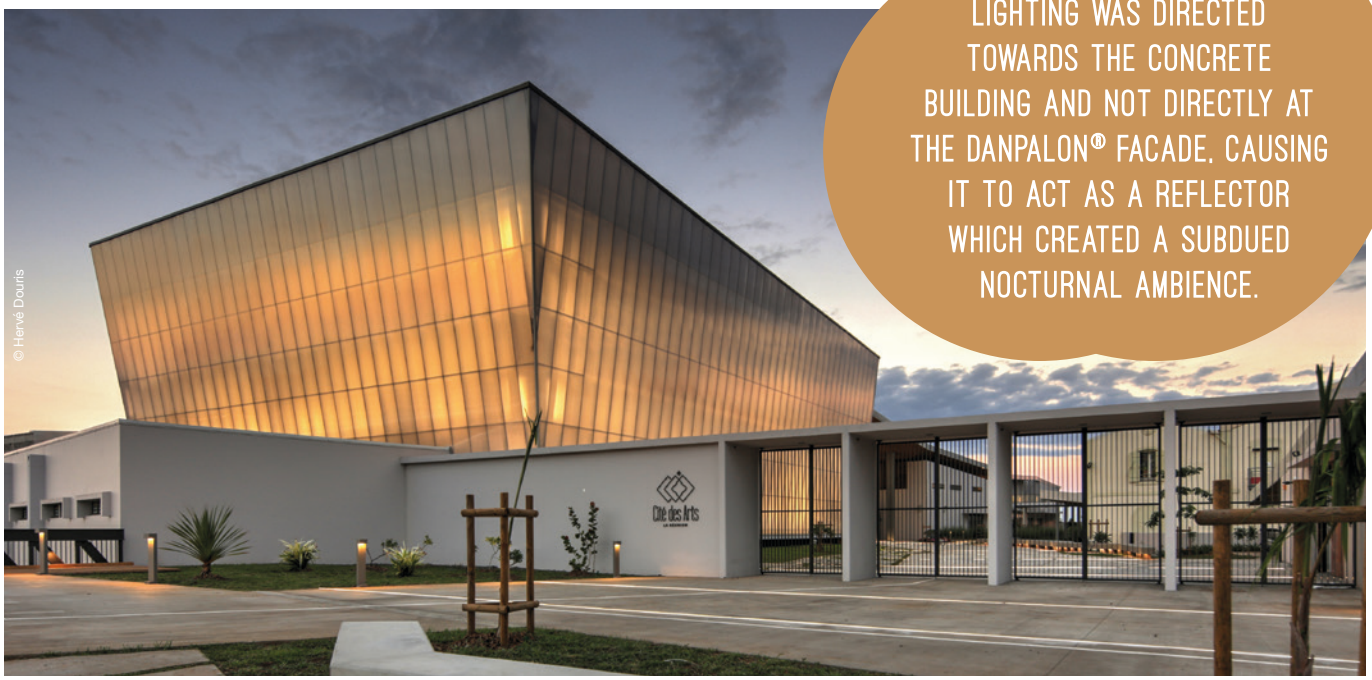
City of Arts ■ Saint-Denis, Reunion Island (French Overseas Territory)

The City of Arts is a vast complex dedicated to culture and art, and is open to the public seven days of the week. The high point of the building? A concrete cube rising to a height of more than 13 metres, entirely covered with a skin of clear Danpalon®. A naturally opalescent facade that comes to life both in the day and at night.

© Hervé Douris

A FACADE OF 2,200M²

The erection of the facade (metal framework and Danpalon® panels) was entrusted to B&M Structure who appointed a sub-contractor for the installation of the Danpalon® panels: 2,200m² of façade in total. Fitting of the one-piece panels needed to take into account the slight tilt of the metal framework due to the parallelepiped shape of the concrete building (2 faces inclined at 20 degrees). «Despite the challenge, the Danpalon® was easy to install and enabled us to deliver on time. The main benefit of the material is its ability to be installed in greater lengths, up to 12 metres as standard, which greatly simplifies the fitting on site», explains Vincent Pelcener, sub-contractor for B&M Structure.



© Hervé Douris

> LIGHTING WAS DIRECTED TOWARDS THE CONCRETE BUILDING AND NOT DIRECTLY AT THE DANPALON® FACADE, CAUSING IT TO ACT AS A REFLECTOR WHICH CREATED A SUBDUED NOCTURNAL AMBIENCE.

We have named the building «The Lantern», explains Elisabeth Pacot, architect with Atelier Architectes and project leader at the site renamed Le Fanal by the City of Arts team. Indeed, the building, built on an old industrial site at the heart of a popular district, comes alive at night illuminated by fluorescent lamps integrated into the facade. The focus of this vast complex is the main building, constructed from concrete in the form of a parallelepiped, and entirely covered with a facade of clear Danpalon® with a softlite anti-glare co-extrusion.

«We chose this product because we were looking to create a building with a unique and original aesthetic. Thanks to the design, we have broken up the rigorous and angular aspect of the concrete building and achieved a facade which gives multiple visual impressions depending on the time of day. During the day, the Clear Danpalon® creates a crystalline surface effect, while at night, it is sufficiently opalescent to diffuse the light perfectly, making the metallic support structure virtually invisible», concluded the architect.

Specified for the French Overseas Territories.

The Danpalon® system has an installation specification allowing it to be employed in the French Overseas Territories for the following applications: cladding, roofing, façades and skylighting. The main constraints for use in these areas are the very strong sunlight (ultra-violet rays), cyclone winds (zone 5), tropical rains and the marine atmosphere.

The PROJET

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PROJECT COST
23 million euros incl tax

REDEFINING LUXURY SHOPPING

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The PROJECT

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INSTALLER
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Recognised as one of the UK's leading luxury fashion retailers, Harvey Nichols undertook a complete interior refurbishment of its Birmingham store. Danpalon® has helped redefine the ultimate fashion shopping experience.

For a complete interior refurbishment that would breathe new levels of excitement and vitality into its unique brand, luxury fashion retailer Harvey Nichols appointed London agency Imagination, a leading innovator in consumer experience technology.

To meet the creative brief, Imagination created an unusual, almost subversive new design vocabulary, comprising an eclectic mix of materials, a contrast of rough and smooth surfaces and a quirky variety of furniture and fixtures. For the store's suspended ceilings and walls, Danpalon® polycarbonate panel system was specified.

With its wide choice of colours finishes and thicknesses, designers were able to create a visual effect delivering the right level of reflection, translucence and lighting. Importantly, Danpalon®'s choice of panel widths, in custom lengths of up to 12m, meant a smooth, seamless appearance could be achieved that further augmented the store's luxury look and feel.As well as introducing subtle new forms of bright, reflected imagery into the store's ground-breaking interior design, the Danpalon® panels also succeeded in accentuating the height of the store's large retail spaces.
The store refurbishment has been universally well received and is regarded as a game-changer for both the luxury brand's own development and the retail industry as a whole. ■

© Ed Reeve Edit Photo

STANDING OUT
IN A CROWD

Acne Studios, Cheongdamdong ■ Seoul (South Korea)

> DANPALON IS NOT ONLY A GREAT MATERIAL FOR EXTERNAL WALL, BUT IT IS ALSO HIGHLY EFFECTIVE FOR HEAT INSULATION, CONSIDERING THE DRASTIC CHANGE OF WEATHER (HOT SUMMER, COLD WINTER) IN SOUTH KOREA
>
> SOPHIE HICKS ARCHITECT.

Making a big statement in the ultra-stylish Cheongdam-dong retail district of Seoul isn't easy, Swedish brand Acne studios has more than succeeded though with its latest flagship store. Clad inside and out with clear translucent Danpalon® polycarbonate panels, the new building's imaginative 'floating light box' design has taken fashion retailing to new heights.

In the busy shopping streets epitomised by Psy's international hit 'Gangnam Style', any new store is competing with a wealth of global fashion labels in an area that's dense with concrete-clad skyscrapers. Standing out in such a crowd needs a radical approach to design, and true to its name (an acronym of 'Ambition to Create Novel Expressions) Acne has added a flagship store that's truly turning heads.

Created by acclaimed London architect Sophie Hicks, the freestanding 'floating lightbox' store design is both strikingly different and yet deliberately minimalist, creating an environment that's a perfect retail setting for Acne's range of bold, multicoloured women and men's clothing.

On the roof of this two-storey 230sqm building sits the store's HVAC equipment, a highly visible mix of galvanised pipes, ducts and machinery. While inside the store, interior walls, structural columns, ceiling beams and a spiral staircase are fashioned from a consistent timber mould-textured concrete.

Specified for both the external façade and the internal walling, smooth translucent Danpalon® polycarbonate panelling was not only instrumental in achieving the light box design, it also provided the perfect contrast to the stark, industrial nature of the exterior heating and ventilation equipment and the interior's rough, heavy concrete structure.

During daytime the 22mm thick Clear Danpalon® panels ensure pure natural light in the retail space is fully maximised. So much so in fact that the store doesn't require a single spotlight, with minimal fluorescent strip lighting dispersed by a pure white ceiling grid the only source of artificial lighting. The store interior is serene, beautifully light and airy.

Viewed from the outside during the day, the Danpalon® facade combines with the natural light and the smog of the city to take on an enticing almost mystical quality. While at night it achieves the stunning floating light box effect envisioned by the architect, beautifully backlit by the interior artificial lighting and removing any need for exterior store lighting.

It makes a statement day or night, the Acne Studios store stands out. ■

The PROJECT

OWNER
ACNE STUDIOS (Sweden)

ARCHITECT
SOPHIE HICKS ARCHITECT
■ London (UK)

INSTALLER
ARCHIPOLY CORPORATION (Korea)

Feature focus

100% SPORT

Maximising natural light, minimising glare and helping to optimise inside temperatures, Danpalon® is at the heart of all-year-round sports facility design. And just like sportspeople care about staying in shape, so too does Danpalon®, with a mechanical performance, range of colours, textures and lighting effects that simply can't be beaten.

A MONUMENTAL WORKS THAT BRINGS

THE BEST TOGETHER

BBVA Bancomer Monterrey stadium ■ Mexico city (Mexico)

To build a football stadium with a design with forms in the vanguard, allowing for the comfort of its occupants in a safe and sustainable manner, with the best materials, while incorporating the newest in technology for the television broadcasting of matches, is a real architectural challenge.

The PROJECT

OWNER
METCON DEL NORTE

ARCHITECT
VFO JUAN ANDRÉS VERGARA Y LUIS FERNÁNDEZ ORTEGA

INSTALLER
DANPAL Mexico

For Juan Andrés Vergara and Luis Fernández de Ortega, of the VFO Arquitectos office, experienced in this type of monumental building, the BBVA Bancomer Monterrey stadium is their latest achievement in sports architecture.

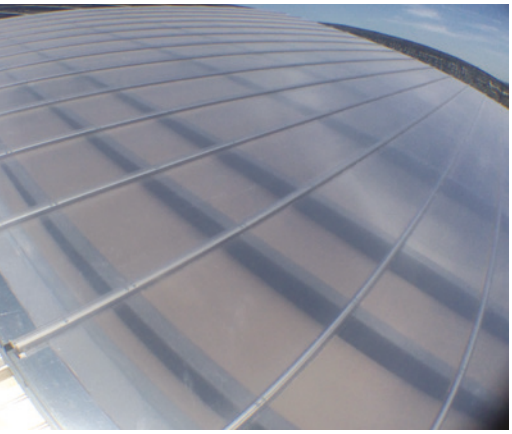
In a joint venture with the international firm Populous (formerly HOK Sports) and other companies and national and international institutions, they started the design of this project in 2007 with the idea of building a new stadium for the Rayados team and to create a landmark building for the "regiomontana" city, as Monterrey is known.

The site is right next to the slopes of the Cerro de la Silla, the most important icon of the northern region of the country. We proposed that the stadium roof have an inclination to the south and that a big window open it to the mountain. This way, you're joining the functional part with the aesthetic and thematic parts, anchoring to its site, so that for people going to a football game, the first thing they'll say is 'we are in Monterrey, we are in our stadium, this is our team and we will win' ", says Juan Andrés Vergara, CEO.

VFO uses in its projects technology that allow them to create more advanced and complex forms, representing major challenges in terms of construction.

"We wanted that this building be a very radical change in the quality of design in Mexico, so that the materials had to stand up to various situations. Due to the origins of the stadium's company owner, we thought of metal pots and pans; these curved shapes could be achieved with metallic materials while achieving a brightness that reflected the sun, the colors of the vegetation and the hill", adds Andrés.

The metal structure surrounds the sta-



dium, leaving spaces for air to enter and cool the public in a natural way, and continues over the stands with an overhang of up to 50 meters. To build it, they used Building Information Modeling, BIM, a modeling technology which allows for design the structure and allowing to know exactly the materials, locations and virtually exact amounts needed for construction.

The last twelve meters of this overhang are covered by a special polycarbonate material, called Danpalon© System, which allows a visual transition between parts in light and those in shadow. "It is an extremely important effect because this way people do not strain their vision as the transition is smooth, and the television cameras also benefit as well".

This material, in the opinion of Andrés Vergara, offers "great resistance and also the level of translucency we need to apply it with this function. It is very easy to install and contributes to protect the environment". This is the only polycarbonate in Mexico that can guarantee quality and durability over 25 years and more, which is the best choice for this kind of works that represent a large investment and that must maintain their functionality for several decades.

"When choosing materials, we always say that when an investment of 200 million dollars or more is on the line, one cannot give it to someone who is not experienced; we like to experiment, but safely, we like to bet when we're going to win. And we know we will win because we have all the tools to make things succeed, the limit is always the imagination, but that imagination has to go with a knowledge of which things are achievable and that is what we apply", asserts Vergara.

In this regard, Luis Fernandez de Ortega adds: "We seek materials that we know will have the expected performance in a particular building, not delude ourselves with the issue of cost. We rely more on an already proven track record and that is why we put our trust in products we are confident will meet those expectations. One thing I always tell our team when they are doing their job, 'keep in mind that not only you are putting your name on this, we all are, when you place your name out in front it means you're putting forward a reputation, that forces us to be very careful with the selection of materials and systems, which is why we study those things so much".

After eight years of work, the stadium was inaugurated a few weeks ago. The result is a building that "will generate a lot of history for sport in Mexico, and will be the trigger of a higher level of design that will elevate the level of dignity of the people", in the words of Andrés Vergara.

The construction process would have been impossible without the application of the most cutting-edge technologies, using the most advanced materials and the talent and work of human hands and minds. "Now that we've been at the opening of the stadium, we realized that all attendees became one. This is a phenomenon that football does: it coalesces a large group of people into one that moves in one direction, and I believe that's what a building like this really brings to a city. A building is nothing if it does not have people within it and that's the great opportunity that this stadium represents, not only for the public, for the team or for the owner, but also for us", concludes Luis Fernández de Ortega ■

GAINING HEAT IN A WINDY CITY

Alberca Universidad Politécnica Metropolitana ■ Pachuca (Mexico)

For a large swimming pool complex, high winds and cool temperatures outside make thermal efficiency targets that little bit harder to attain. Add in the need to maximise the amount of natural light poolside, and achieving required heat gains presents a challenge. Translucent Danpalon® façade systems are providing building designers with an elegant solution.

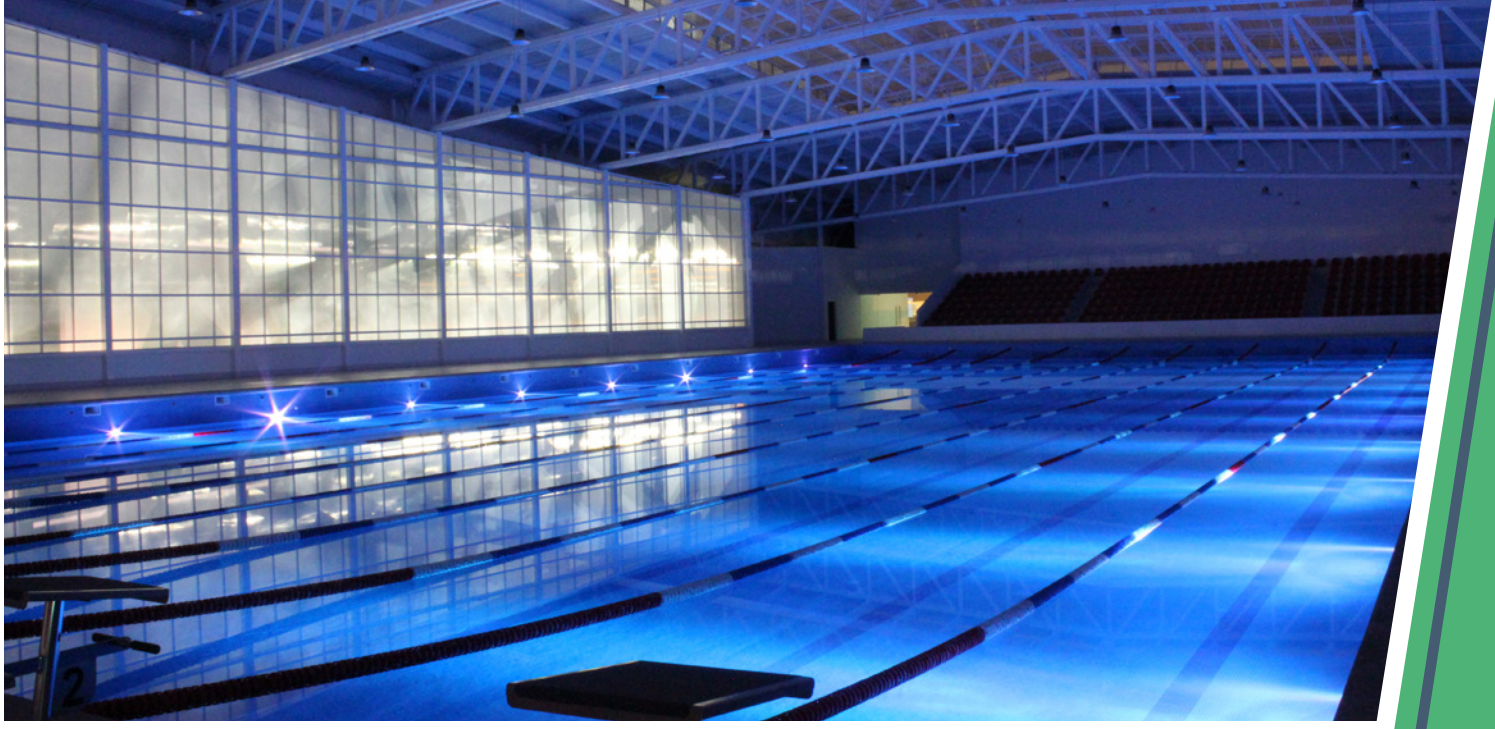
Pachuca in Central Mexico is a very windy city and by Mexican standards is also quite cold, with an average temperature of 16°C throughout the year. When Alberca Universidad Politécnica Metropolitana came to rebuild its swimming pool complex the building's thermal efficiency was a key design criteria.

At the same time, the project needed to reuse as much existing infrastructure as was possible. With the swimming pool then largely determining the building's orientation, façade design played a vital role in maximising natural light and heat gain on the inside while handling the high winds on the outside.

The architects, Instituto Hidalguense de la Infraestructura Fisica Educativa (INHIFE) also had to face the challenge of building in sandy soil conditions that offered a relatively low weight resistance. With the weight and movement of the swimming pool being a significant part of the structure's overall loading, the use of lightweight façade materials was vital.

Turning to translucent Danpalon® polycarbonate façade systems, the INHIFE architects found an aesthetically pleasing and technically robust solution capable of meeting the project's competing demands for light diffusion, thermal insulation, physical strength and low material weight.

A full-height Danpalon® façade constructed using 16mm Ice panels runs the complete length of one side of the swimming pool on a steel frame, while a further Danpalon® façade using a combi-



nation of 22mm 3D Lite metallic grey and red panels sits at one end of the pool.

INHIFE architect Edgar Baca said, “The fantastic level of light diffusion that these two complementary façades achieve creates a truly unique ambience, with high quality daylight for the interior and a wonderful luminosity for the exterior at night.”

He continued, “Danpalon® has added a huge amount of character to the building thanks to the interaction of material, light and surroundings. At no point does it ever look the same. The hue, texture and appearance depends on where it’s viewed from and the weather conditions. It has given the project real life and personality.”

The new swimming pool complex is a unique wedge-like form composed of gentle slopes, elegant curves and striking lines. A heightened façade wall to increase the natural light diffusion and enable optimisation of roof span and pitch was aided by the use of extra long Danpalon® panels, which also avoided the need for horizontal jointing. Panel installation was rapid, taking just a few days from delivery to completion.

Baca added, “Considering the enhanced thermal efficiency the new swimming pool building has attained, and the tremendous functionality it is now providing, this is a project that to date has not once caused us to think that any kind of design adjustment was merited - it really is working to perfection.” ■

The PROJECT

ARCHITECT
INSTITUTO HIDALGUENSE DE LA INFRAESTRUCTURA FISICA EDUCATIVA (INHIFE)

INSTALLER
DANPAL Mexico

WHERE PRACTICE MAKES PERFECT

L'Alqueria del basket ■ Valencia (Spain)

100% SPORT

Build a professional sports facility where literally hundreds of aspiring young basketball players can all train together to become the stars of tomorrow. A big vision for one of Spain's premier basketball clubs. What once was a dream has now become a reality, and the result is truly awe-inspiring.

Winning its first domestic league championship in 2017, and the runner up in both Copa del Rey and EuroCup competitions during the same season, Valencia Basketball Club has attracted more than 500 boys and girls to its training academy ranks. To support its long-term evolution, the club wanted to provide them with the very best training facilities.

Bringing so many players from different parts of the city together under one roof would need a training facility like no other. Sure enough, L'Alqueria del Basket is simply stunning. It's the largest basketball practice centre in Europe and houses eight indoor courts and four outdoor courts. Built next to, and connected to, the club's Fuente de San Luis Stadium, the sports complex spans a site measuring more than 15,000sqm.

Built to international basketball standards, L'Alqueria del Basket provides both players and their families with all the facilities and comforts they will ever need. Inside the complex, the eight parquet floor courts surround a central axis split over two levels. On the ground level, for each court are separate changing rooms for teams and referees, a gym, physio and medical rooms. On the next level are spectating, hospitality and learning facilities.

For the architect, ERRE Arquitectura one of the most important challenges in designing L'Alqueria del Basket was ensuring a consistent level of natural lighting and the best possible playing conditions throughout the sports complex. This was achieved using a combination of full-height translucent polycarbonate façades, a skylight array and five open-air patio areas serving the main central axis.

To achieve the homogenous natural lighting required, the polycarbonate façade played a vital role in filtering direct sunlight and avoiding glare. After an extensive material search, Danpalon® was selected. As a part of ERRE's feasibility studies, separate light simulation tests were carried out to determine optimum opacity levels for each façade.

All façades were constructed using two layers of opale and white Danpalon® panels separated by an air gap. 30mm thick and 1000mm wide, the polycarbonate

panels also included a softlite (anti-glare) layer to mitigate any dazzle due to bright sunlight during the day or strong artificial lighting at night.

Importantly, as well as delivering the perfect level of soft natural illumination to the eight practice courts, the two-layer Danpalon® façade also served to help regulate interior temperatures, playing a vital role in achieving the building's A energy efficiency rating. Danpalon®'s quick and easy installation process also helped to deliver the project in record time. From the initial concept to final completion the state-of-the art L'Alqueria del Basket practice centre took just 16 months, several months earlier than originally planned. Valencia Basketball will surely prove that practice certainly can make perfect. ■

The PROJECT

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ERRE ARQUITECTURA,
VALECIA, Spain

INSTALLER
PAL PLASTIC,, Spain

100% SPORT

CREATING AN ENVIRONMENT FOR SUCCESS

Oriam, National Sports Performance Centre ■ Edinburgh (UK)

Scotland needed a world-class sports performance centre to provide an inspirational environment for coaching and training its top sportspeople. By maximising natural light, minimising glare and withstanding harsh weather conditions, Danpalon® panels have played a major role in a stunning new facility.

With a 116m x 76m indoor 3G football pitch at its heart, Oriam is by far the biggest facility of its kind in Europe. It is 28m tall at the pitch centre, 15m at the sidelines and includes a viewing gallery for 500 people.

Integrated alongside, Oriam's smaller 32m x 54m flexible indoor sports hall provides courts for basketball, volleyball, netball and badminton and optional portable seating for up to 300 spectators.

And the amazing building design had a truly unique and relevant inspiration: a spectacular free kick by Brazilian footballer Roberto Carlos against France in the 1997 Confederations Cup.

An article by French scientists in the New Journal of Physics showed that because Carlos kicked the ball hard enough, far enough and with enough spin, its trajectory followed the path of an equiangular spiral. It is this logarithmic curve that was used by the architects as the basis for designing the profile of the immense football pitch roof.

© Everlite

An elegant curved steel frame roof spanning more than 100 metres was clad in tensioned 2mm white PVC fabric and complemented by Danpalon® façade panels.

And following the trajectory of the famous kick, clear Danpalon® façade panels were also used for both north and south gable ends of the 3G pitch as well as the complete side of the adjoining sports hall.

Danpalon® BRV rainscreen panels were used on both gable ends of the sports hall, with Danpalon® roofing panels also used on its curved roof. Softlite co-extrusion was specified to manage glare.

As the architect noted in its original submissions, 'the Sports Performance Centre is a once in a lifetime, culturally important opportunity. It isn't a half chance, it's a direct free kick on the edge of the box – a moment to realise something truly amazing'. We think the goal was achieved. ” ■

The PROJECT

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100% SPORT

ZOOM

A FACTORY FOR THE FUTURE

Extension of Global Standard Technology Factory ■ Hwaesong-si (South Korea)

Driven by its passion to innovate, Global Standard Technology (GST) undertook a dramatic expansion of its headquarters in Hwaesong-si, South Korea, with the addition of a state-of-the-art factory building. Danpalon® façade system played a vital role in achieving some far-reaching aesthetic design and construction goals.

One of the world's top 3 providers of environmental and temperature control systems for the semiconductor and display markets, GST needed its new factory building to be environmentally friendly, of a simple lightweight construction and capable of optimising the use of natural light.

At the same time, the company wanted the factory building to inject a new kind of vibrancy and symbolism into the surrounding Dongtan Industrial Park environment. Existing 3 to 5 storey buildings were of a solid aluminium panel construction, which had instilled a rigidity and uniformity in the overall appearance of the park.

Producing a wide range of abatement systems, chillers and heat exchangers, the new factory building was purpose-designed over 3 levels. The ground floor and first floor supporting factory workflows, from product stocking to assembly, testing and logistics, and the second floor providing staff parking facilities. Importantly, the factory and headquarters buildings were linked via a covered pedestrian bridge for ease of communication.

To help deliver GST's bold futuristic vision for the new building design, the appointed architects specified the use of Danpalon® as external cladding for the complete factory façade.

Installed by the Archipoly Corporation, the lightweight, clip-together polycarbonate panel system ensured factory building materials and construction time were kept to a minimum and all aesthetic goals were achieved.

Beautifully translucent and with a thickness of only 22mm, the Danpalon® façade's unique 6-layer microcellular polycarbonate structure maximises the amount of natural daylight entering the factory.

By gently diffusing the outside light and protecting the GST workforce from the effects of direct sunlight, the façade has helped increase efficiency and safety in the workplace while also helping to save energy, by reducing the amount of artificial lighting required along with associated CO_2 emissions.

During daylight hours, the bright opal-coloured Danpalon® façade presents a softer and more elegant new factory profile. While at night, backlit by the factory's interior lighting, it transforms the building into a stunning light box - a true beacon for GST's core values of passion, integrity and innovation. ■

The PROJET

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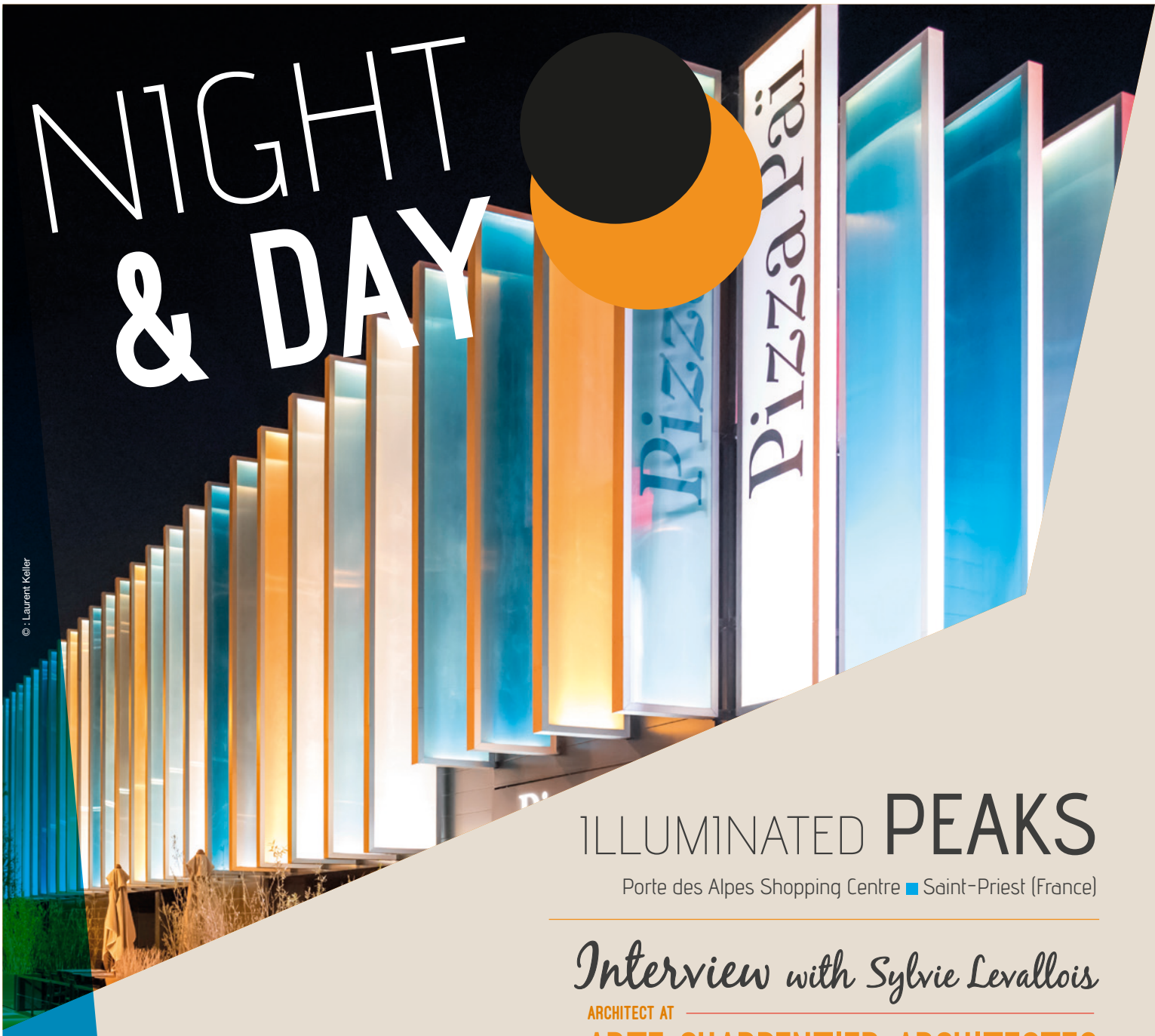
NIGHT & DAY



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ILLUMINATED PEAKS

Porte des Alpes Shopping Centre ■ Saint-Priest (France)

Interview with Sylvie Levallois

ARCHITECT AT

ARTE CHARPENTIER ARCHITECTES

Created in 1981, the «Porte des Alpes» Shopping Centre hosts a number of retail brands. With the aim of enhancing and reinvigorating the site, Immochan asked Arte Charpentier Architectes for an ambitious architectural design delivering high visibility day and night.

How did you succeed in creating a design which enhances both the shopping centre and the building's aesthetic?

Traditionally, a shopping centre stands out as a profusion of brightly shining signs with the building obscured behind them. Based on the client's wishes, we have put the architecture back at the heart of the project so that it speaks for itself. To do that, we imagined cladding the existing facades with Danpalon® comprising different arrangements, colours and applications. The main facades have been dressed with vertical blades of Danpalon® which really stand out, acting as huge light fittings 8 to 10 metres in height and 2.5 metres from the ground. The two enclosed entrances are wrapped in golden Danpalon® panels, that emphasise the entry points to the shopping centre. Between the two entrances, the facade is composed of modules of Danpalon® of different colours and heights forming a porch attached to the old structure at a height of 11 metres. At night, due to a system of back-lighting, the building comes alive and the store signage blends into the colourful nocturnal landscape.

Has the project been conceived around its nocturnal visual appearance?

The idea of these illuminated facades was the common thread of the project. The reason we chose the Danpalon® solution, was simply because of its capacity to reflect the light at nightfall. By integrating a system of adjustable LED strip lights to

© : Laurent Keller

> THE CLIENT HAS THE OPTION OF ILLUMINATING THE FACADES WITH SWATHES OF LIGHT, WITH SHADOW PLAY OR REGULAR PATTERNS. THIS COMPLEX WORK IS THE RESULT OF ADVANCE PLANNING BETWEEN EVERLITE CONCEPT AND WE-EF LUMIÈRE, AND IN PARTICULAR THROUGH FULL SCALE TESTING.
>
> SÉBASTIEN REY, WE-EF LUMIÈRE

© : Laurent Keller


© : Laurent Keller

COLOURED BOXES

In the style of the colourful exterior facades, the interior entrance porches are dressed in back-lit Danpalon® boxes arranged in relief. When the doors open, they create an immersive surprise effect. There is a strong connection between the inside and outside.


© : Laurent Keller

the interior of the cladding, we were able to work with the lighting and compose different lighting scenarios.

How did you select the palette of colours that cover this vast facade?

The client wanted neutral colours that were timeless, which did not necessarily pick up the brand colours of Immochan since all of their sites are able to have their own architectural identity. Our departure point was the name of the site «Porte des Alpes» and we worked with shades that evoke the mountains and glaciers.

With Everlite Concept, we created a new blue tone, with three variations. We also used a crystal shade and a warmer golden tone to dress the upper parts of the entrance halls. ■

The PROJECT

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NIGHT & DAY

A PICTURE-PERFECT MULTI-SCREEN

The Moor city centre cinema complex ■ Sheffield (England)

Playing a key role in The Moor regeneration programme in Sheffield city centre, The Light multi-screen cinema complex required a vibrant façade that was just as attractive and welcoming during the day as it was at night. A clever combination of coloured Danpalon® BRV rainscreen panels and LED backlighting provided a perfect solution.

© Paul White

A major pedestrianised thoroughfare and Sheffield's main post-war shopping precinct, The Moor is one of the city's most important retail locations. A multi-screen cinema was a vital component in its regeneration programme.

Not only did The Light cinema have to stand out from retail units below, it also had to sit comfortably in its modern urban environment while complementing the natural beauty of the distant Sheffield skyline.

To meet the competing aesthetic requirements, Leslie Jones Architecture created a semi-random façade design using a combination of coloured rainscreen cladding panels.

The façade was composed of 16mm thick Danpalon® BRV panels in four complementary colours: green, pearlescent green, opal and silver, in two widths: 600mm and 900mm.

Beneath the façade, Danpalon®'s integrated system of wall brackets and panel connectors creating a 250mm air cavity between the cinema wall and rainscreen.

Within the cavity, 7,000 lumen linear LED lighting modules were used to provide night-time backlighting of the 3,000 square metres of translucent rainscreen cladding.

During the day the cinema's muted green/grey colour palette sees it blend harmoniously with the Yorkshire skies, urban setting and distant landscape. While its clearly differentiated design ensures the cinema stands out from the busy retail environment below.

And at night-time the LED backlighting transforms the cinema façade into a stunning light-box, with beautifully diffused and coloured illumination. Its appearance is constantly bright and inviting, but never brash and outspoken.

The Light Cinema's use of Danpalon® BRV rainscreen panels and energy efficient LED backlighting has created a uniquely attractive façade that has made it a prominent beacon for The Moor regeneration programme. ■

The PROJECT

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> THE FINISHED APPEARANCE IS REALLY VERY CRISP AND WORKS JUST AS EFFECTIVELY AT NIGHT AS IT DOES DURING THE DAY.
>
> SIMON BROWN, LESLIE JONES ARCHITECTS

A VIBRANT SHOPPING CENTRE, BY DAY AND NIGHT

Intu Victoria Centre ■ Nottingham (England)

The Victoria shopping centre needed a dynamic new look and feel to help it attract more customers. To meet the competing demands of aesthetics, material weight and cost, a vibrant new façade was designed using Danpalon® BRV polycarbonate cladding.

Built in the early 70's, the Victoria Shopping Centre is a landmark building located in the heart of the busy city of Nottingham. The owners, intu engaged with Leslie Jones Architects to completely refurbish the existing building façade.

Located in a prominent city centre location and offering long views from multiple approach roads, the building required a façade treatment that would continue to allow a high level of natural light through to the centre in the daytime and present an aesthetic design that would be equally effective during the night.

To meet the multi-faceted design challenge, the architects selected the Danpalon® BRV translucent polycarbonate cladding system.

NIGHT & DAY

During the day the pure 'ice' coloured Danpalon® panels present a bright and crisp contemporary look, while at night, the use of coloured LED backlighting animates the centre, making it a vibrant and highly visible landmark.

"Aesthetically, the building is even more impressive than the study phase suggested it would be. The finished appearance is really very crisp and works just as effectively at night as it does during the day." Simon Brown, Leslie Jones Architects.

Danpalon®'s unique double-notch connector and wall bracket fixings enabled panels to be sized and oriented to achieve specific aesthetic effects. And to ensure even LED backlight distribution across the larger panels, Softlite coating was applied.

The ultra-lightweight nature of the Danpalon® cladding meant that the new façade could be installed without affecting any great change to the existing building structure, helping to optimise overall project costs.

And importantly, the product's quick and easy installation process also meant that large areas of cladding could be erected during the night, in time for the centre to be safely opened to the public in the morning, ensuring customers weren't inconvenienced

The Victoria Centre project was shortlisted in the BCSC (British Council for Shopping Centres) Awards in the best refurbishment and/or extension scheme (over £5 million) category. ■

The PROJECT

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AN INSPIRED BEGINNING

Flagship Building, Silpakorn University ■ Thailand

One of Thailand's leading art and design universities wanted to mark the launch of a new campus with a landmark building design. Danpalon® helped the architects create a building that honours the local environment, one that plays with light to become an artwork of its own.

As the first building on the Silpakorn University's new Muang Thong Thani Campus, Northern Bangkok the Flagship Building was designed to stand out. As one of Thailand's leading centres for art and design education, the university wanted an inspirational building design with a beauty that would stand the test of time.

With the surrounding urban landscape dominated by hard-edged pre-cast concrete buildings clad in aluminium and steel, the architects Geodesic Design saw the opportunity to use transparency and light as a means of differentiating the Flagship Building and breaking new ground in local architectural design.

At the same time, speed of construction was also an equally important criteria in the building design process. Building materials and construction techniques would need to be selected to achieve completion within 12 months in order to be ready for a new academic year.

Starting from an initial concept of a transparent glass box, Geodesic created a modern multi-purpose building using elegant steel framing, extensive glazing and pre-cast hollow core concrete flooring. Set on short concrete piers above an existing lake, the 4,000sqm Flagship Building appears to almost float in the air.

And as cladding for the building, the architects specified a subtle combination of plain grey and reflective grey Danpalon® polycarbonate panels. Mimicking a traditional Thai high-pitched roof, this translucent outer skin is tailored to the needs of the local tropical monsoon climate.

During the daytime the inclined translucent panelling gently reflects and filters the sunlight to achieve a comfortable level of natural lighting within the building. While at night, interior lighting transforms the Flagship Building into a bright illuminated focal point for the campus.

By using separated overlapping walls of Danpalon® the architect has also created an efficient source of natural ventilation for the building, with openings allowing fresh air to flow in and out of the building's outer walkways and rooms inside.

The Flagship Building has become an inspirational landmark for the new university campus. It has been recognised by the architectural community as a pioneering example of Thai Modernist design that has set a standard for others to follow. ■

The PROJECT

ARCHITECT
GEODESIC DESIGN
■ Somboon Sudmaksri, Karp Boonthavi, Prapakorn Kimiphan

OWNER/INSTALLER
PATHOM FURNITURE (1994) Co., Ltd.

NIGHT & DAY

ENTIRELY REMOVABLE AND RECYCLABLE

La Lainière office accommodation ■ Roubaix (France)

Interview

Olivier Jost ■ AGENCE D'ARCHITECTURE EKOA

The building is the first to be completed on the La Lainière site. It is also a part of the future park of the 21st century supported by Lille Métropole. There must have been some major challenges, what were they exactly?

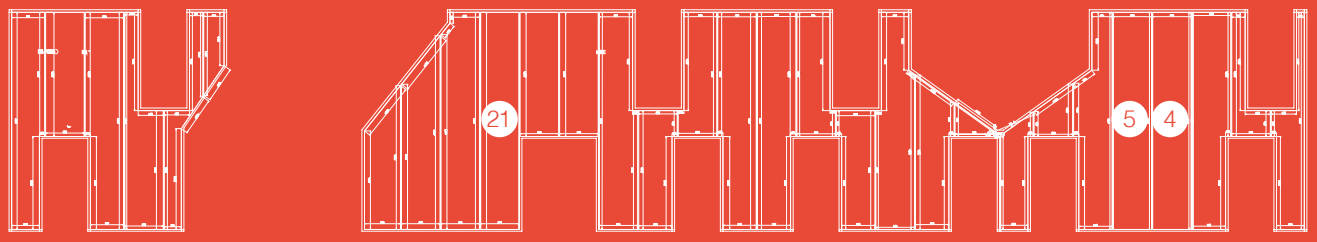
Until 2000, this former industrial site housed the spinning mill of La Lainière (Ed: it employed nearly 8000 people in the 1960s with buildings extending over 16 hectares). Today, the site is in the process of rebuilding with the construction of apartment blocks and office accommodation. The site has strong environmental ambitions based on positive sustainability. This means that the materials used must comply with the principle of adaptability-flexibility and can be dismantled, whilst also being recyclable and healthy to humans.

That creates quite a few demands! Firstly, how have you applied the notion of healthy and recyclable products?

Simply by selecting products which are non-emissive and whose life-cycle can be controlled. We have chosen untreated wood for the structure and Danpatherm K7 for the facade. These two products also enable us to construct a building which can be totally dismantled which is a key objective of the client.

Does Danpatherm K7 therefore satisfy the requirement of being removable?

Exactly. On the main facade, Danpatherm K7 is fixed to the building's wooden superstructure by a system of aluminium profiles.



CUSTOMISED LAYOUT

The concept of the main facade (a complete rectangle) was straight forward, the Everlite Concept design department then supported the building contractor in the installation of the interior partition wall facade. As shown in the build plan above, only three panels of Danpatherm K7 were complete (designated 4, 5 and 21 on the plan). All others had to be adapted to the dimensions of the doors, windows and slopes of the roof. A work of high precision. «After restoring the walls of the factory we then produced the customised interior layout. Once this was approved, our workshop took on all the cuts, angles and slots required by the panels. It was complex work, done manually», Cyril Gambin Technical Director of Everlite Concept explained. With regards to the installation, it involved working very closely with the building contractor. «You need to decide on a start point together; once the first customised panel is positioned with millimetric precision, everything else goes well», he added.

© Olivier Jost

© Hendrik Verlinden

As for the sun-shades, they are positioned in front of the Danpatherm K7. All these elements can be readily separated from each other.

Inside, there is a second Danpatherm K7 facade which is designed to create a partition wall between the office zone and a communal area. Its installation was more difficult because we included a wooden surround and added several door and window openings. The building contractor had to cut out all the apertures and assemble everything without any silicon seals. This is unusual and required the use of alternative installation techniques. ■

The PROJET

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