

Light Architecture

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Light and energy management: the solution to a paradox

We are living in a paradoxical age. Along with the desire to increasingly open up our work and living spaces to natural light, there is also a real need for improved control over energy costs.



Tremblay gymnasium, B+C Architects

Since its creation, Everlite has been on the cutting edge of innovation, allowing project owners, architects and quantity surveyors to better harness **the most natural, cleanest, most economical** and most beneficial of energy sources.

With Danpatherm +, this proactive research and development policy now enables us to offer a true thermal and acoustic insulation barrier with all of the numerous creative advantages of total translucence.

Exceeding the standards established by the new European regulations, **Danpatherm + combines a capacity for thermal insulation (more effective than 100mm of insulation) and 35% light transmission (where U = 0.5 Wm² C°)**. In both winter and summer, Danpatherm offers a new way of living in spaces filled with natural light, and optimal energy management at the same time.

This technological advance made possible by Dan Pal has only one objective: to allow design and architectural professionals to let the light shine forth in all of their creations. We wish you the best of luck with your projects and hope to see you soon.

Alain Chambron



Port of Bonneuil warehouse, Michelin Architects

We want to bring sunlight into the very heart of our buildings, but we also need solar protection in the summer and thermal insulation in the winter. **In short, one could almost say that in the field of solar gain, contemporary architecture needs a little bit of everything... and its opposite!** The problem may seem as difficult as squaring the circle!

Since its creation, Everlite has been on the cutting edge of

Danpalon is used for the Rohde store in Sautron (in the Loire Valley)

The prominent feature is neon!



Patrick Joly, architect

Combining the specific luminous creativity of Danpalon with the astonishing effects of coloured neon lighting is an original concept that makes the Rohde shoe store created by Patrick Joly a totally unique undertaking.



On many commercial buildings, the business's sign just seems to be tacked on to the storefront," the architect explains.

"I wanted the building to serve as its own sign. That is why we decided to build the façade in an imposing L-shape, constructed from Danpalon and coloured neon. This projects a strong visual identity in an environment dominated by office buildings, small craft shops and larger commercial shops."

A halo effect

Translucent Danpalon 16 is used to cover a metal framework to which blue and red neon tubing is attached (the colours of the Rohde logo), along with white neon tubes for more luminosity. Depending on their arrangement (either parallel to the Danpalon or slightly askew), these neon tubes give off a clear or hazy light, creating a feeling of depth through the irradiation of the light. In front of the store, an impressive totem bearing the Rohde logo picks up on this principle and sets off the store's sign.

A mirror effect

This bold juxtaposition of Danpalon and neon totally transforms the building, giving it a surprising aura of colours that never fails to grab the passer-by's attention. The Dan Pal system plays a crucial role in the creation of this novel visual effect: *"This material generates a phenomenon of iridescence – a mirror effect – that can't be obtained with traditional glazing. The building comes to life with the variations in light; its appearance changes throughout the day."*

re Atlantique region of France).



Coherence

The play of light continues on the inside. Used as trim for the central cash desk and for the construction of a ceiling in the children's play area, Danpalon is also found in the large lighting fixture that overhangs the shoe collections. *"The store's basic structure and furniture are in galvanized steel with a polished concrete floor. The industrial appearance of the Danpalon, which fits in perfectly with these raw materials, contributes to the overall visual harmony on the whole."*

By combining coloured lighting with Danpalon, Patrick Joly has demonstrated the high degree of creativity to which the Dan Pal system lends itself when skilfully handled by true professionals.

Project owner: Rohde France (44)

Project management: Patrick Joly, architect (85)

Structure: Serba (44)

Installation contractor: Girard Hervouet (44)

With Everlite and LEDline² from Philips Lighting, Danpalon shines brightly

Developed by Philips Lighting, LEDline² is a range of linear spotlights that open up countless possibilities for coloured lighting, including the creation of light screens, highlighting, raking light, etc. The idea of combining this technology with the Danpalon system originated with the architects, whose goal was to create new lighting effects.

This objective motivated an evening presentation of tests organized jointly by Philips Lighting and Everlite Concept S.A. in its Paris factory, attended by numerous design and architectural professionals.

Catching the light

Several models from the LEDline² range were combined with various types of Danpalon, generating a range of novel and surprising light effects. *"With a translucent finish, Danpalon does not catch enough light to create really significant effects. The translucent finish, on the other hand, makes it possible to obtain much more interesting results,"* explains Eddy Calvados from the technical requirements department of Philips Lighting, who participated in the tests.



The art of illumination

The way the LEDline² technology is combined with Danpalon (profiling or offset) also has an impact on the quality of lighting effects obtained. *"When installed in front of or behind a Danpalon system with a specific design, LEDline² acts as a developer, by highlighting the design with light."*



Another way to use the product to its best advantage is to install the LEDline² system between Danpalon and a reflecting white background, thus transforming it into a support surface for colour at night. This takes us way beyond the field of functional lighting into the domain of the art of illumination," Calvados concludes.

This evening of tests proved quite conclusive for the architects – perhaps marking the start of a new trend in the use of light in architecture!

Health and Safety Executive - Car Park, Liverpool

As Danpalon steps up its campaign to continue increasing its presence in the United Kingdom,

2005 is already proving to be a year rich in projects for Dan Pal UK.

To prove our point, just consider these achievements that have already been completed this year.

Light in all the right places with Danpalon

A private car park in Liverpool features Danpalon, drawing on the full potential of light as an architectural element. The result is unlimited parking with all the benefits of natural lighting!

The Bootle facility is one of the most recent projects in the UK to have chosen Danpalon. In the new building housing the Health and Safety Executive Office, the Dan Pal system is incorporated into the façade of the car park facilities reserved for the occupants of the head office.



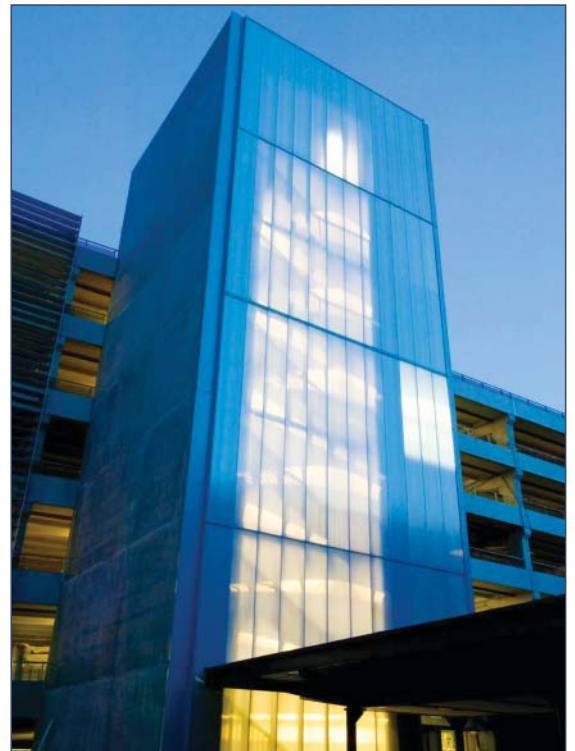
Visibility

The 16mm Danpalon ice components were installed vertically. Since the panels were installed in the 'reverse position', all of the structural elements are hidden by the Danpalon, which consequently is the only material visible from the outside. During the day, Danpalon ice diffuses a pleasant natural light in the stairwell and provides excellent thermal performance ($K = 1.53W/m^2C$). At night, artificial lighting is used to illuminate the stairway from the inside, giving the project a truly different appearance.

A splendid year

Colt International Ltd was selected as the general contractor for the polycarbonate elements as well as for the skylights and sun-shades.

The Danpalon was installed by Bonam and Berry Ltd of



Stapleford, Nottingham. Many other projects incorporating these luminous, light-weight polycarbonate systems into their architecture have already been scheduled. This success is most likely explained by the flexibility offered by these products: as solutions for both the roof and the façade, they offer architects a wide choice of materials, finishes and installation methods, allowing them to decrease the weight (and cost) of the structures, while simultaneously increasing the amount of natural light in their buildings

Project owner: Health & Safety Executive

Project management: Duncan Miller,
Cartwright Pickard, Architects

General contractor: Kajima

Installation contractor: Bonam and Berry Ltd

Household waste treatment centre in Portsmouth

From the material to the subtle a process comes to the fore



J.R. Mazaud,
architect

From the gross to the subtle, from the opaque to the immaterial – this is the basic principle of a waste treatment plant – perfectly illustrated in the building designed by the S'PACE architectural firm for Onyx UK in Portsmouth.

When a waste treatment plant must be constructed on a non-industrial urban site, with mixed and varied occupancies, it is important to help the population forget the heaviness and size of this massive structure that never sleeps. Our fundamental objective was to propose an architecture that surprises and soothes, by day as well as by night, thanks to its almost immaterial grace. We accomplished this by playing with construction details and unusual combinations of materials, and by introducing a geometrical dimension, which works on a variety of scales and perspectives, by giving the

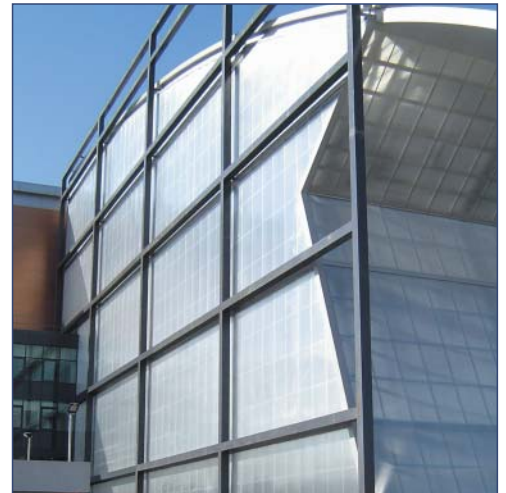


building a transparent presence that doesn't clash with the landscape," sums up Jean-Robert Mazaud, the project's

architect, while underlining the challenges and objectives involved in the design of the Onyx plant.

Visual Impact

When one contemplates this building, the main idea that comes to mind is industrial elegance. With a constant concern for architectural detail, the designers were able to ennoble an activity whose image, all too often, is far from being perceived as positive. "Particular attention was given to the choice of materials and the treatment of their interfaces," confirms Philippe Quetteville, the S'PACE firm's UK Project Manager. "We needed to ensure that the building's façade would be seen as a clean break with current standards for industrial buildings in the UK, without losing sight of its cost effectiveness. Each interface was carefully considered and designed to ensure a consistent level of quality and excite astonishment by delighting the eye."



Transparency

Clear 16mm Danpalon was used for the cladding of the part of the plant housing the ovens and the emissions processing equipment in order to bring natural light into the very heart of the building. But in addition to the quality of the lighting, the translucency of the Dan Pal system serves as a basic affirmation: this plant has nothing to hide. "The play of semi-transparent light hints at the process used to create it, thus setting it off to best advantage in its environment. One immediately feels that this is a clean and perfectly controlled activity." The very architecture of the plant perfectly illustrates its functional purpose. The opacity of the rectilinear space housing the waste holding tank gradually gives way to the curves and translucent appearance of the Danpalon. This transition from the material to the intangible is representative of the entire waste treatment process. Danpalon has also been selected by the S'pace firm for the construction of another Onyx plant in Marchwood near Southampton, which is nearing completion.



Project owner: Onyx UK
Process management: CNIM
Design and architectural supervision:
S'pace ARCHITECTS - J.R. Mazaud, CEO
P. Quetteville, UK Project Manager
General contractor: Osborne Ltd
Installation contractor: Gable (UK) Ltd, Hampshire

The ATELIER 17 building in Bordeaux

A double life in a du

This office building offers all the advantages of carefully controlled natural light – but when night falls, it reveals some hidden facets of its personality. Under its double Danpatherm skin, the building’s dual-purpose architecture combines comfort and “good vibes”.



Pierre Ferret, architect

Located on the right bank of the Garonne, this building constructed by the Juve property investment company was intended for office leasing. As the manager of this project, architect Pierre Ferret imagined an elegantly simple space: a parallelepiped including two levels of offices with the ground floor reserved for parking.

Translucency

A priority objective was stressed in the specifications document – comfortable working conditions. *“Above all, I was seeking maximum clarity along with the elimination of any glare effect.”* With this objective

in mind, the architect opted for a double-walled structure constructed from Danpatherm. For the façade, an outer layer with an ice finish provides sufficient translucency to filter out strong direct sunlight on the inside and transforms the building into a cube of vibrant light. The smooth structural effect is perfectly successful. The façade seems to come to life. *“The building’s appearance changes with the light, giving it the illusion of being alive.”*

Skin colours

Behind the building’s structural frame, the colour scheme changes: the Danpatherm used

here features shades of blue and green – soothing colours that create an atmosphere that lends itself to reflection and professional activity. By combining the transparency of the coloured panels with the translucency of the outer layer, the architect has found the perfect solution by allowing just the right amount of sunlight to filter through. *“The absence of direct sunlight is crucial for these offices fully equipped with computer equipment,”* the architect points out. The feeling of visual well-being is complemented by thermal comfort. *“This double-walled system also results in an advantageous thermal coefficient.”*



Project owner:
SCI Juve (33) - France

Project management:
Pierre Ferret architectural
studio (33)

al Danpatherm skin

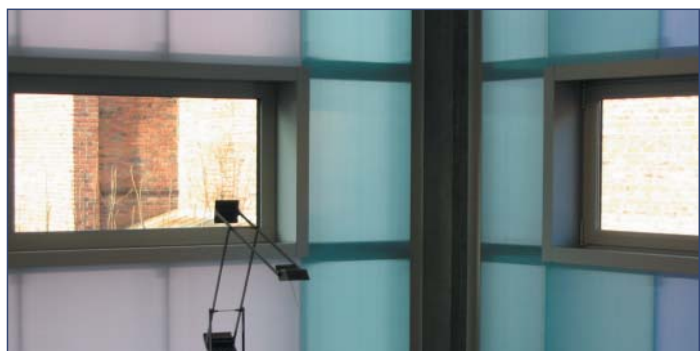


Complexity

As with any perfectly managed project, the final result seems to be self-evident. But as always, appearances can be misleading. *“The double-wall concept entails a certain degree of complexity during the installation stage,”* Pierre Ferret remarks. *“Dust can be trapped between the two walls, so it is crucial to work with highly conscientious installation contractors.”*

Revealing light

The Danpatherm double skin concept is also at the origin of a striking visual effect: when night falls, the light emanating from the inside of the offices causes the colours of the Danpatherm to radiate outwards, transforming the building into a mosaic of soft, warm, blurry colours. *“At night, the light reveals aspects of the building that are not necessarily obvious during the day, thus highlighting certain details of the architecture.”* The structure becomes a wall of light by day and a wall of colour by night – proof that in his quest for functionality, Pierre Ferret did not forget the importance of generating excitement.



Danpalon and the University

Carefully studied lighting

Two projects directed at the academic world, two specific architectural issues, two ways to use light as a fully-fledged construction material... and one solution – the Everlite system – to meet a highly diverse range of expectations. Thierry Maire, an architect at the TOA firm, explains.



The CNRS university restaurant on the Cronenbourg-Schiltigheim campus

Light as a source of wonderment

atmosphere that is just as attractive from the inside as from the outside. It also had to introduce a visual contrast: we wanted a clean break with the appearance of the existing building constructed in the 1970's."

on the idea of using a light metal frame. Since Danpalon is very lightweight, we were able to substantially reduce the structural framework, which turned out to be particularly economical in this case."

A feeling of lightness

Crystal (clear) Danpalon 16 mm was one of the key solutions proposed by the architects in response to the somewhat daunting specifications for this project. *"With the objective of saving time, we focused*

An indoor terrace

Intentionally sparse and minimalist (formed as an expression of function); the architecture of the extension makes extensive use of light as an architectural element. *"We wanted to create the feeling of an outdoor terrace, and the result was*



Adjoining a predominantly opaque building from the 1970's, a volume of light is used to recreate the paradoxical feeling of an outdoor terrace, indoors. In this context, the U in "restau U" (student slang for university restaurant) stands for "unique"...

"The project involved adding an extension onto an already established university restaurant on the C.N.R.S. campus," sums up architect Thierry Maire. *"Since the restaurant needed to continue operating during the entire construction period, it was crucial to reduce the time spent working on the premises. The space also needed to project a positive image by creating a very luminous building with a peaceful, relaxing*





this amazing space, bathed in light on all four sides. In summer, the space opens to the outdoors via sliding doors. In winter, the polycarbonate brings the outside indoors by providing a high level of luminosity.” The contrast with the old restaurant is striking: “The unabashedly contemporary style of the extension resulted in a clear break between these two buildings.”



Project owner:
French Ministry of Education

Project management:
TOA architects (67) (general contractor)
C2BI, SERUE (67) (co-contracting design offices)

Installation contractor: SMAC (67)

The Colmar IUT (University Institute of Technology)

The spatial effects of light

When the environment is structured by intangible elements – in the framework of the expansion currently underway at the Colmar IUT – Danpalon gives light the power to create space.

Amongst other things, this expansion project includes an amphitheatre, a patio, teachers’ offices and examination rooms. It comprises a space on a single level supported by a foundation wall built out of stone from a former factory that used to occupy the site. The contrast created by the contemporary appearance of the perforated metal cladding with which this space is covered creates a bridge between the site’s history and its future.

Linearity

Under the structural framework of the space, a double wall of 16 mm clear Danpalon is used to clad the corridors. *“The two linear spaces of the classrooms and offices are separated by a corridor over 60 metres in length connecting the main lobby, the amphitheatre and the patio,”* the architect explains. *“This linear aspect could prove to be difficult to live with. Through its capacity to transform light, the Danpalon system allowed us to break up the monotony by establishing three separate environments – three very different spaces within the same volume.”* We should point out that the glass roof of the lobby also makes use of a Dan Pal product (the Controlite integrated sun-shade system).



Danpalon and perforated metal cladding create a striking effect



Symbiosis

The corridors are bathed with a pleasant, soft natural light. As one walks along the corridor, the light is transformed, one’s perception of the environment evolves and one’s feelings change. There is a strong feeling of symbiosis between the outside and the inside. The architects also used Danpalon along with traditional glazing in the amphitheatre and the patio.

Project owner:
City of Colmar - France

Project management:
TOA architects (67) (general contractor)
C2BI, Loeb, Poirel, ID (67)
(co-contracting design offices)

Installation contractor:
Controlite glass roof: Laugel-Renouard (88)
Danpalon cladding: Couvrest (54)

The Mona Lisa room at the Louvre Museum

Danpalon, filters the light and smiles down on the Mona Lisa

Danpalon at the Louvre! Not only a distinct honour, but also an essential contribution: in the Mona Lisa room, invisible to the eye, Danpalon contributes to the quality of the lighting of several major works of art, including – enthroned in the position of honour – the Mona Lisa.



Marc Fontoynt

After being closed to the public for four years, the “Salle des États” (State Room) of the Louvre Museum was re-opened in 2005 under the name of “Salle de la Joconde” (the Mona Lisa room). Since the 5th of April, last year, one of the most famous paintings in the world is once again on display for the admiration of the museum’s visitors, opposite Veronese’s Marriage at Cana, in an exhibition hall newly redesigned by the architect Lorenzo Piqueras.

Filtering the light

In this context, the quality of the light is obviously crucial. The lighting was designed by Marc Fontoynt, a professor and director of research at the ENTPE (École Nationale des Travaux Publics de l’État – National Public Works Institute). *“The glass ceiling is located directly under the roof. As is the case with numerous museums, over time, small bits of grime from the roof timbers were deposited on this glass ceiling. We therefore developed the idea of using a filter, placed between the exhibition hall’s glass ceiling and the glass roof, to prevent the grime from accumulating.”*



Longitudinal view of the framework: above, the glass roofing is supported by a metal frame. Below the framework, the 16 mm Danpalon filter, slightly curved, overhangs the hall’s glass ceiling (not seen in the photo).

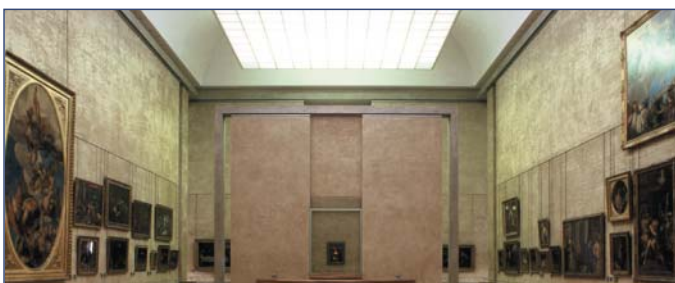
Design requirements

There were a number of rigorous design requirements for this filter: *“The light spectrum needed to be totally neutral, so as not to distort the light, and the diffusion of the light needed to be fully controllable. The weight of the filter was also a major consideration: the filter needed to be installed without weighing down the structural framework to better preserve the solar gain from the glass roof,”* Fontoynt continues. *“Danpalon 16 mm was the perfect solution for these requirements and it offers significant thermal insulation properties as well.”*

Double diffusion

“This process of double diffusion represented a risk: the hall’s glass ceiling could take on the appearance of a rather cold, large white rectangle. We adjusted the light diffusion properties of the Danpalon and the glass to give the appearance of depth, and the result was a beautiful natural light, fully controlled, but appearing to be completely natural.”

The great inventor Leonardo da Vinci himself would probably have been proud of this technological feat that allows the most enigmatic smile in history to continue to fascinate new generations of visitors.



Grenoble tramway maintenance centre

Danpalon, focusing light and mirroring the sky



Michel Ferrand, Philippe Sigal, architects

The construction of the Grenoble tramway maintenance centre is in the process of being completed in Gières. This is a spectacular project, which uses Danpalon to ensure the presence of natural light while contributing to the project's harmonious integration into its environment.

This vast programme (covering 27,000 sq.m) includes five buildings housing respectively a maintenance workshop, a storage space, an operations area, fixed facilities and a guard station.

Waves

The curves of the project's aluminium roofing immediately grab the viewer's attention. "A rectilinear design would not have fit in with this mountainous landscape," explains Caroline Brellier, the architect in charge of this project for the Ferrand-Sigal firm. "We therefore developed the concept of roofing arranged in a wave configuration (set off two by two), which echoes the surrounding countryside and contributes to the harmonious integration of the buildings into the site."

Surroundings

In addition to blending in with the surrounding countryside, the project is also designed to please the eye:

Project owner:
Société Mixte
des Transports en Commun
de Grenoble - France

Delegate project owner:
Territory 38

**Co-contracting
project managers:**
Ferrand-Sigal Architects (69)
Technip TPS (69)

Installation contractor:
SMAC (69)



"This building was meant to be seen. It is visible from above, on one side, from Grenoble's south bypass road. On the second side, it borders on the former towing path that is a very popular place for walks, and on the third side, there is a rapidly growing sports development centre."

Reflections

Danpalon was selected for this project in response to a dual objective. "In each set of waves, a Danpalon 'eye' (or oculus) allows natural light to enter the building, giving the premises a very distinctive atmosphere." For the roof overhang and under-surface, the objective was to create a mirror effect by using the Danpalon system: changing along with changes in daylight, the surface of the Danpalon becomes almost invisible and melts into the environment, thus reinforcing its integration into the site. It is only when the project is completed, in September 2005, that the "third effect" of Danpalon will become obvious: "At night, certain workshops will be lit from the inside. The result should be quite interesting visually," concludes Caroline Brellier.



Controlite and the distribution



J.Yves Clément



Frank David

Controlite gives the Des IDées store a dazzling new look



J.Pierre Baron

The quality of light, which provides a pleasant atmosphere for shoppers, plays a crucial role in a store's success. For the new "Des IDées" home decorating store, the architects at Amplitude used the Controlite system to ensure just the right amount and quality of light.



The Controlite system open...



...and closed

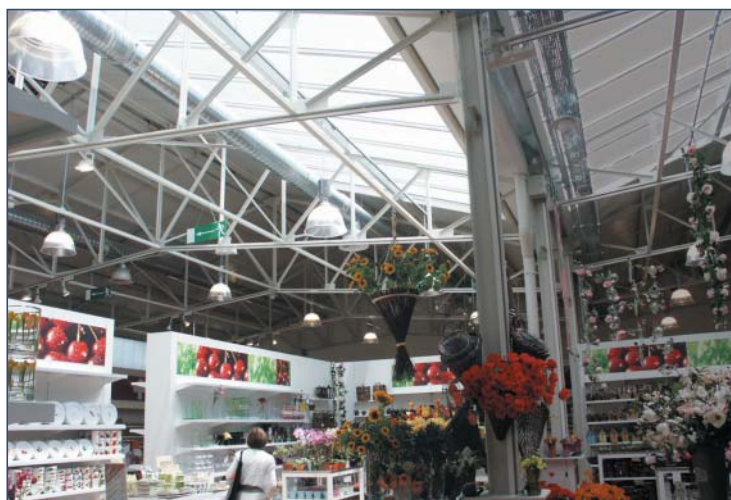
The Des IDées chain specializing in home decoration recently opened a new store in Bassens, France. The store was installed in an existing building, which was rearranged into five different environments corresponding to five specific modes of decoration, including a garden area located at the heart of the store.

A feeling of being outside

"We wanted to recreate natural lighting in the garden area, with a feeling of being outside indoors," explains Franck David, the architect in charge of the project along with Jean-Yves Clément and Jean-Pierre Baron of the Amplitude architectural firm. To achieve this goal, an imposing glass roof with two sloping sides was created as a replacement for the existing roof.

Full control over sunlight

"A traditional glass roof would have required the installation of fixed sun-



shades, eliminating all flexibility in the control of light quality." The Controlite system's integrated sun-shades made it possible to specifically dose solar gain in order to obtain the quality of light desired and also fully control

thermal factors. From this central garden area, a pleasant light radiates throughout the store, creating a natural, soothing atmosphere. In short, Controlite was a bright idea for Des IDées.



Project owner:
La Boîte à Outils (73) - France

Project management:
Amplitude architectural firm (38)
Franck David, Jean-Yves Clément
and Jean-Pierre Baron,
architects

Structure: Secoba (73)

Installation contractor:
Iovini (38)

DAN PAL

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