LUMIRA™ AEROGEL

Application profiles

Dear readers,

In this brochures we have compiled a selection of interesting projects for you that were carried out in Germany and by our partners in the UK.

The given examples will demonstrate the excellent advantages and the architectural freedom Lumira™ aerogel is offering you when used in polycarbonate sheets.

For any queries or further information you may require please do not hesitate to contact us.

Burkhard Weyers
Sales Manager

Content:

Lafarge Cement Receptionhall, UK

Lafarge's project involved the construction of an extraordinary foyer. One the most significant requirements was to create a pleasant atmosphere with ideal lighting conditions.
An excellent thermal insulation at low cost was also an important aspect. Due to the low weight of the 16 mm polycarbonate sheets filled with Lumira™ aerogel, the architect was given the opportunity to create an unique lightweight frame construction that additionally underlines the pleasant atmosphere inside the foyer. The result was a bright, soft and glare-free light.
The required high insulation value can be easily maintained thanks to the application of Lumira™ aerogel.

Pictures: By courtesy of Xtralite.

Ruf Machine Company Zaiserthofen, Germany

Ruf intended to significantly improve the lighting conditions in their production hall by enhancing the utilisation of natural daylight and light diffusion. The old roof lights were replaced with polycarbonate sheets filled with Lumira™ aerogel.
The result outranged the expectations of the client in such a way that he subsequently decided to equip all four of his production halls with Lumira™ aerogel PC sheets.

HaRo Systems Engineering, Rüthen, Germany

The production hall was supposed to be reconstructed according to the latest state-of-theart light technology and in compliance with all legal stipulations. The main aspect involved the improvement of daylight exploitation and the prevention of glare caused by direct incidence of light. By installing a daylight system comprising of polycarbonate sheets filled with Lumira™ aerogel a diffuse light and a perfect illumination level inside the hall were achieved. Now, production is no longer affected by glare. The production manager was very positive about the final results and mentioned that he did not expect such a significant improvement.

Top view of the roof before renovation

Top view of the roof after renovation

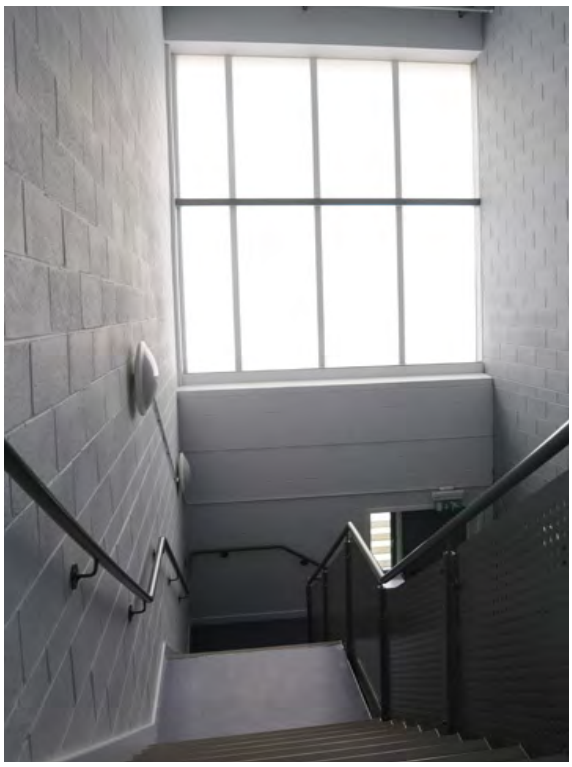
Top view of the roof after renovation

Industrial Foodprocessing Factory, Bavaria, Germany

A food processing company intended to replace their existing polycarbonate sheets, which were old and partially damaged. Their translucence was reduced to the extent that the production hall had to be illuminated additionally by artificial lighting. For reconstruction 16 mm polycarbonate sheets filled with Lumira™aerogel were installed, now providing ideal lighting conditions in the production area. During the day there is no further need for artificial lighting.

Adalbert-Stifter-Secondary-School, Heidenheim, Germany

For fire safety reasons the interior staircases of the school had to be equipped with a smoke and heat extraction system. In addition the following requirements were set for the skylight system: a particularly low weight as well as an excellent U-value. With conventional glazing these tasks were unachievable. Using Lumira™ aerogel filled polycarbonate sheets, however, made it easy to meet the challenges. The transmission of direct sunlight was substantially reduced now providing a diffuse and pleasant light throughout the staircase. Both, the school and the architect are very impressed with the accomplishment and the diffusion of light.



Condor – Royal Marine Training Centre, Scotland

The Lumira™ aerogel panel glazing system proved to be an essential component in realizing Watson Burnett Architect's light and airy design concept for a new Marine training facility.

Alistair Burnett explained: "There is no pretence that this is anything but a big building. But rather than the traditional big dark box solution, we wanted to create an unexpectedly light and open building.

"Users will spend a lot of time in this building, whether for training or recreation-there is even a club which acts as the social focus during free time. So, it was essential to create a light, un-oppressive environment," Burnett continued. Activity areas on the ground floor are generally full building height and the upper floor is spanned by a gallery open to the areas below. Bringing all these open areas to life, natural daylight floods in through Lumira™ aerogel panel glazing, used extensively to accentuate the light and open feel of the interior.

The designers sought to maximize energy conservation with passive measures rather than by employing renewable technologies. With a U-value of just 0.91W/m^{2}K the 25mm thick Lumira™ aerogel panel glazing could be used extensively to provide high levels of shadowless daylight - ideal for the physical activities involved - while still easily meeting the thermal insulation requirements of the Scottish Technical Standards, and limiting solar gain.

This extensive use of daylight substantially reduces artificial lighting energy use, particularly when sensor controlled. Various passive ventilation techniques are also employed, including operable windows within the Lumira™ aerogel panel glazing. Controlled clerestory lights allow warm air extract to create a laminar draft-free air flow, supported by purge mechanical extraction during heavier use.

Pictures: By courtesy of Xtralite.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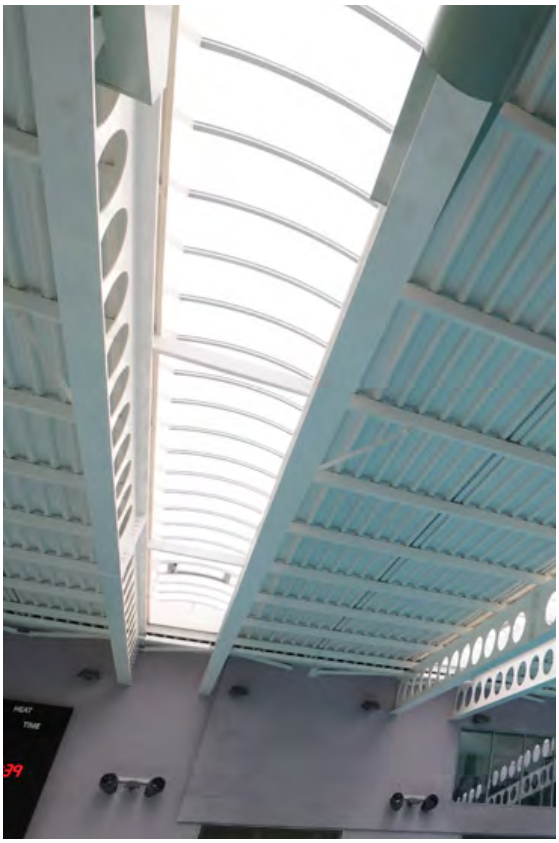

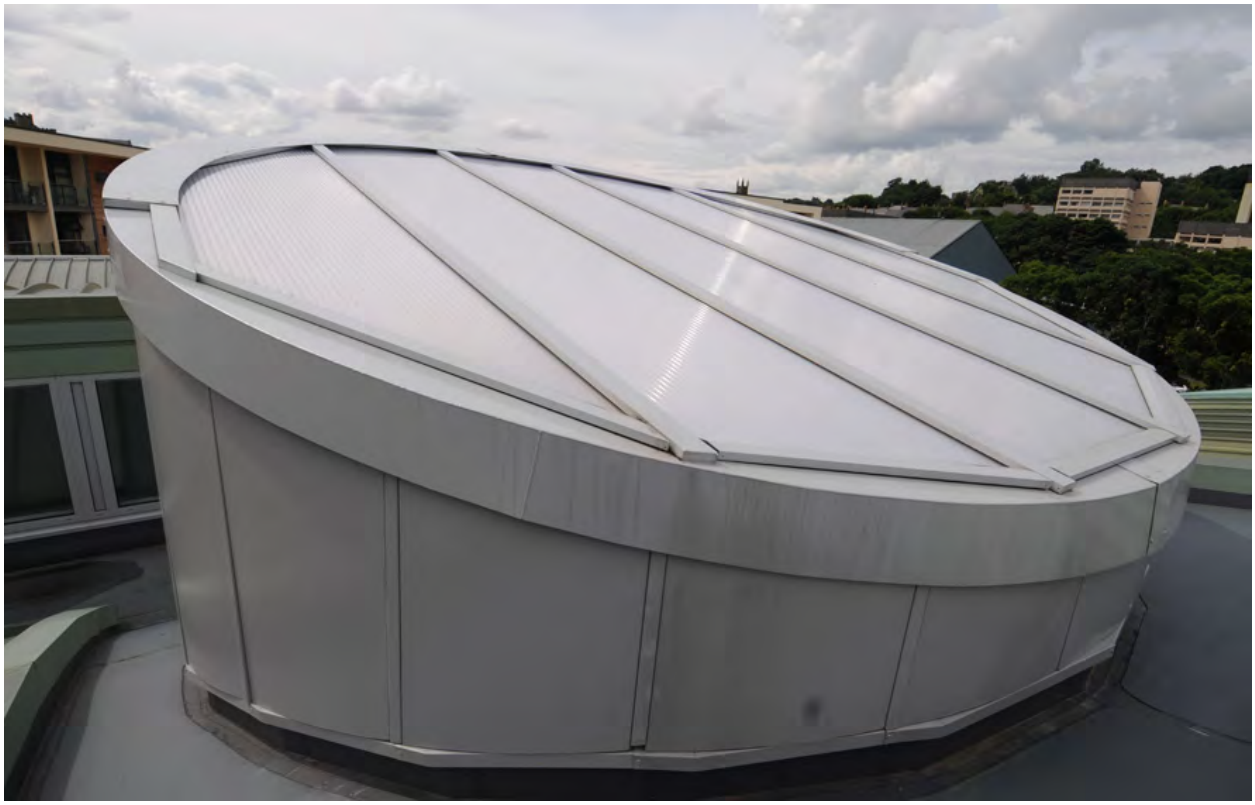

Freeman’s Quay Swimming Pool and Leisure Centre, Durham, UK

The structural glazing incorporating Lumira™ aerogel technology is a key element in the Wm Saunders Partnership LLP’s design of the wholly contemporary Freeman‘s Quay Swimming Pool and Leisure Center.
The complex consists of different activity spaces and is surmounted by a distinctive roofscape, incorporating a variety of long barrel-vaulted Lumira™ aerogel rooflights, some including opening vents. Glazing is multiwall polycarbonate filled with Lumira™ aerogel, to provide enhanced thermal and acoustic performance as well as high levels of diffuse daylighting.
The building fabric contains 50% higher insulation values in the pool hall than those required by building regulations and 25% higher in all other areas. The center has been designed to maximize natural light and employs some of the most advanced building techniques and materials to accomplish this. Daylight modeling was conducted on the main pool, learner pool, fitness suite and sports hall to ensure the required light levels were achieved throughout the day without the aid of artificial lighting. The design and orientation of the glass in the pool hall prevents glare and direct sunlight on the water‘s surface while maintaining an incredible quality of natural light.
All areas with effective daylight have been provided with automatic daylight switches allowing light sensors to activate luminaries at programmed light levels.

Pictures: By courtesy of Xtralite.


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Canning Street School, Newcastle, UK

The school was equipped with a U-shaped skylight system stretching throughout the entire building. Main issues were to prevent the intense solar transmission during the summer, to improve lighting conditions and to achieve a considerable reduction of the street noise arising from the road next to the building. The existing skylight system was replaced with 16 mm polycarbonate sheets filled with Lumira™ aerogel. As all requirements were fully met the feedback has been very positive accordingly. Lumira™ aerogel's excellent thermal and sound insulation qualities now prevent an overheating of the building during the summer whilst the noise level has been significantly reduced. The light scattering has created a very pleasant atmosphere inside the entire building.

Pictures: By courtesy of Xtralite.

Meadow Wood School, Herfordshire, UK

The school was suffering from intense overheating during the summer, glare and heat losses throughout the winter months due to a conventional insulating glazing that covered the classroom area. The result was a very bad indoor climate compromising substantially the efficiency of pupils and teachers alike.

The architect explained that the replacement of the old glazing with the innovate Lumira™ aerogel system exceeded his expectations by far. During the hot summer months heat reduction in the classrooms is now enormous. The thermal insulation meets all new standards without any problems. The light is evenly distributed providing a glare free atmosphere. All these factors contribute to a pleasant indoor climate. Lessons can be given again in the classrooms without any restrictions.

For reconstruction 16 mm Lumira™ aerogel filled polycarbonate sheets were mounted. Not having to change the original supporting construction proved to be an extra benefit in this case.

Beverly Library, Yorkshire, UK

The Beverly Museum in Yorkshire planned a reconstruction of their roof lights. It was especially important to find a solution, which both protects the delicate art objects from damaging UV radiation and offers an ideal illumination and even light scattering inside the exhibition rooms. Another relevant aspect was the requirement of an excellent thermal insulation. After comprehensive search and careful consideration the choice was made for Lumira™ aerogel filled polycarbonate sheets of 25 mm thickness produced by Xtralite.

Since the new roof lights have been in use, no more damaging UV-radiation has been able to penetrate through to damage the art objects. The Lumira™ aerogel filled polycarbonate sheets create a pleasant atmosphere with ideal lighting conditions catering for the particularly high demands of a museum. It is worth to mention that these outstanding results were achieved despite the fact that the facades are facing south and southwest. Also, the thermal insulation reaches an exceptionally good U-value of 0.89 W/m2.K.

Thanks to the low weight of the 25 mm thick Lumira™ aerogel glazing, no heavy supporting base is required, lending a light and airy character to the frame construction.

The landlord of the building is highly pleased with the exceedingly positive results.

Pictures: By courtesy of Xtralite.

In case you need more information about these applications or products used, please let us know and we will be delighted to be of service to you.

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