

Daylight systems: Functionality in extreme weather events

Acting before the damage

As the climate changes, extreme weather events are not only increasing, they are also becoming ever more devastating in their impact. It therefore stands to reason that the loads and requirements placed on buildings and their individual components by wind and rain are also increasing. This is why LAMILUX daylight systems have been specially tested for their resistance to extreme weather events.



According to the Deutscher Wetterdienst (*German Weather Service*), the 2017/2018 storm season was one of the most active in recent years. For example, during the autumn storm Sebastian, hurricane gusts of almost

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130km/h were recorded on the North Sea coast and considerable damage was caused inland by the leafy trees. In January 2018, hurricane Friederike cost German insurers roughly 500 million euros.

It is not possible to offer comprehensive protection against storm damage. That being said, quality and functional building products can prevent some of the damage. This is particularly true of skylights such as glass skylights, rooflights and continuous rooflights.

Best in class

The new Glass Skylight FE with real glass even came out best in class for all test variables. It is impervious to driving rain up to 1950 Pascal (as per DIN EN 12208 class E1950) and resistant to wind load up to 2000 Pascal (as per DIN EN 12210 class C5).

The water tightness tested by the Independent Testing Institute up to a test pressure of 1950Pa commonly corresponds to a load caused by heavy rain at a wind force of more than 14Bft. By comparison, reference is made to a hurricane at a wind force of 12Bft and the associated wind speed is roughly 120 km/h.

In-house test procedure for storms and heavy rain

LAMILUX is constantly improving its products and constructions as far as their functionality in extreme weather events is concerned. Its aim: a high degree of safety and fitness for use. For example, the daylight specialist, together with the Institute for Industrial Aerodynamics (I. F. I.), developed an in-house test procedure for rooflight domes and continuous rooflights: Contrary to normative test scenarios, it depicts the extreme conditions of storms and heavy rain. No tests are required by law in this regard, but LAMILUX safeguards the quality of its products nonetheless. Thanks to this test procedure, the effect of a combination of both extreme events on the

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elements can be tested and comparisons with the driven rain index (DRI) can be made.

Driven rain index (DRI)

The tests of the continuous rooflights and skylights were conducted in a driving rain-wind tunnel. In this context, all of the elements and their critical components, such as ventilation flaps, were exposed to considerable volumes of water. The maximum water volumes per square metre were approx. 450 l/h. This equates to 7.5 litres per minute per square metre.

Such high volumes of water can occur momentarily in Germany. The 24-hour maximum for Germany is 312 l/m², which corresponds to an average of 13 litres of rain per hour and square metre.

To safeguard the fitness for use of plastic building products in such weather events, LAMILUX recommends a DRI of 3.0 m²/s as the minimum quality standard. LAMILUX Skylights and Continuous Rooflights each achieve values of up to 14 m²/s.

Help in the event of damage

If damage does however occur, this often requires action on several fronts: Leaky elements, damaged flaps and glazing, uncovered roofs or bent profile systems. But often the elements can be repaired with the right solutions and even renovated in an energy and cost-efficient manner.

LAMILUX takes care of this with renovation frames or replaces upper parts, seals and profile parts of skylights quickly and without any fuss. An individual consultation is always important: no two roofs are the same. In the event of damage, LAMILUX even provides a service hotline, which you can call to get competent help for your roof and have the damage repaired skilfully and quickly.

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About LAMILUX Heinrich Strunz GmbH

LAMILUX has been manufacturing high-quality daylight systems made from plastic, glass and aluminium for roughly 70 years. Architects, construction engineers, planners and roofers use **LAMILUX CI Systems** when building industrial facilities, commercial buildings and industrial shed complexes as well as private residences. The purpose of these structures primarily consists in optimising the use of natural light and guiding it into building interiors. Fitted with controllable flap systems, they also serve as smoke and heat exhaust ventilation systems (SHEVS) and energy-efficient building systems providing natural ventilation. The range includes rooflights and continuous rooflights as well as glass roof constructions in aesthetically pleasing shapes. The company also offers considerable expertise in developing and manufacturing building control systems for activating and automating both smoke and heat exhaust systems and ventilation and solar protection installations. In 2018, LAMILUX, with roughly 1200 employees, generated a turnover of 317 million euros in its two corporate divisions, **LAMILUX Daylight Systems** and **LAMILUX Composites**.

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