Romag

Photovoltaic Systems

PowerGlaz® BIPV

Key features:

- **Bespoke building integrated solar solutions**
- **Multi-functional combining Solar PV and Solar Control**
- **Single laminated or double glazed option**
- **PVB interlayer for reliable architectural performance**
- **MCS approved**
- **'In house' glass processing**
- **Manufactured in the UK**

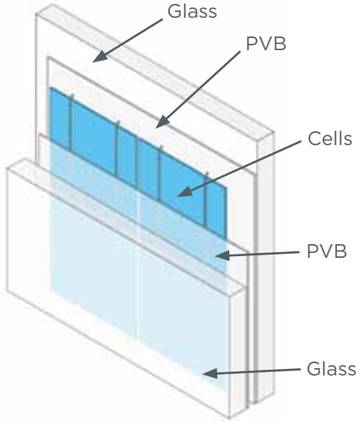
PowerGLAZ
ENERGY IN GLASS

Bespoke solutions

Building Integrated PV uses solar photovoltaic panels to replace conventional building materials in the roofs, walls and sun shading of buildings. The practice of integrating Solar PV modules to enable buildings to generate electricity is increasing in popularity as the technology improves and costs reduce.

Romag's PowerGlaz® BIPV is a laminated composite panel which encapsulates photovoltaic cells into laminated glass and produces solar electricity at the point of use. The panels (or modules) are then integrated into the façade, roof or other exterior elements of the building.

Integrating Solar PV into the fabric of buildings offers architects and designers the freedom to use their imaginative flair to provide aesthetically pleasing designs which emphasise the clients green credentials whilst providing a realistic ROI. In many countries, including the UK, 'Feed-In Tariffs' provide significant revenue which is guaranteed for many years. In addition some of the construction costs can be offset by reducing the amount spent on the construction materials that the Solar PV modules replace.



Multi functional BIPV

Our extensive experience in glass processing means that we process all the glass components used in PowerGlaz® BIPV and this enables us to offer single glazed panels or double-glazed units which comply with building regulations.

PowerGlaz® BIPV is multi functional, it provides significant reductions in solar heat gain whilst controlling light transmission and these features can be further enhanced by including combinations of screen printing, tinted glass or tinted interlayers all of which can also be used for decorative effect.

A polyvinyl butyral (PVB) interlayer is used to bond the components together which means that PowerGlaz® modules comply with BS EN 12600 Class 1, making it safe to use on vertical or overhead glazing applications. If required we can also provide higher levels of safety and security such as blast resistance.

Important features

- **Bespoke solutions to meet the client's needs whilst allowing architectural flair**
- **Highly visible Solar PV integration to emphasise the client's 'green' credentials**
- **Subtle integration achievable by combining Romag's 'in-house' processing techniques such as screen printing**
- **'Low Iron' glass on the outside of the PV laminate improves electrical performance**
- **Multi functional providing Solar PV integration at the same time as reducing solar heat gain and controlling light transmission and shading**
- **PVB interlayer provides reliable high performance glazing meeting demanding criteria including safety, security and blast resistance**
- **Electrical connection is edge mounted to provide discreet interconnection of the PowerGlaz® panels which is hidden within the glazing system**

Applications

PowerGlaz® BIPV is mainly used on glazing elements within the façade or roof structure but this is by no means the only application.

For example, our bespoke modules can be used in 'total roof' solutions where PV panels replace conventional roofing materials. Rain screen systems can incorporate PowerGlaz® BIPV modules where Romag can assist further by factory bonding carrier frames to modules for easy site installation. Solar PV can also be incorporated into external canopies, walkways, covered parking bays, cycle sheds, etc.

Typical applications include:

- **Atria**
- **Curtain Walling**
- **Structural Glazing**
- **Roof Glazing**
- **Louvres and Bries Soleil**
- **Rain Screens**
- **Spandrel Panels**
- **Canopies & Walkways**

Optional features:

- **Double glazed units**
- **Screen printing to enhance solar control or aesthetics**
- **Solar control interlayers**
- **Structural bonding carrier frames for structural glazing and rain screens**
- **Enhanced safety and security glass options**
- **Blast resistant options**
- **Heat soak tested glass available**

Customer support

At Romag we recognise the importance of providing help and assistance at all stages of the design and project procurement. In the early stages of design we will assist the architect in developing an achievable design which will combine Solar PV economically whilst ensuring that the client can benefit from Feed-In Tariffs. Additionally we can assist the design team by liaising with appropriate glazing specialists and PV installers who have MCS accreditation which is essential if the benefit of FIT is to be sought. Romag will then continue to liaise with all parties to ensure that the PowerGlaz® installation runs smoothly through to final commissioning.

Our support package includes:

For the Architect and Designer

- **Free consultation at early and later design stages**
- **Assistance in developing realistic, buildable integrated Solar PV solutions**
- **Co-ordination with glazing specialists**
- **Liaison with MCS certified PV installers (which is essential for UK 'Feed-In Tariffs')**

For Glazing/Roofing Specialists

- **BIPV module design support**
- **Assistance in integrating PowerGlaz® with the chosen glazing system**
- **Project referrals**
- **MCS certified BIPV modules**

For MCS Installers

- **Provide estimated electrical output and performance data for individual projects**
- **Liaison with glass installers and glazing system manufacturers**
- **'Flash Test' data supplied for all PowerGlaz® BIPV modules**
- **In-house BIPV training at Romag**

Technical data and compliance

PowerGlaz® BIPV panels are bespoke and are therefore made to meet project specific dimensional and load requirements.

The glass used in the PV laminate is a combination of heat strengthened and toughened glass laminated together and the thickness of the glass components will be dictated by the design criteria.

The outer leaf of the PV laminate is always a 'low iron' glass which improves light transmission to the PV cells and thereby maximises the electrical efficiency of the panels to meet significant performance criteria when used with the correct glass combinations such as:

- BS EN 12600 Class 1 – Safety Glass
- BS EN 356 – Physical Security
- DIN 52290 Part 5 – Blast Resistance
- BS EN 14179 – Heat Soak Testing
- MCS Certified – UK 'Feed-In Tariffs' (qualifies under the 'Transitional Arrangement')

Dimensions

The principle of PowerGlaz® BIPV is that the modules are purpose made to suit the designers specific requirements for individual projects, so we can make panels to any size required.

The following information is for guidance only but if you have requirements outside these parameters please contact our technical department as we may be able exceed these guidelines in certain circumstances.

Single glazed modules

Maximum Panel Size:
4000mm x 2200mm

Module Thickness: Minimum 9.5mm (Toughened/heat strengthened laminated glass)

Maximum – to suit project specific design criteria

Double glazed modules

Maximum Panel Size:
3600mm x 2100mm

Glass Outer Leaf:
Minimum 9.5mm (Toughened/heat strengthened laminated glass)

Maximum – to suit project specific design criteria

Air gap: 12mm or 16mm
(Warm edge Swiss spacer V)

Glass Inner Leaf: Minimum 6mm (Hard and soft coat low E variants available)

Double glazed in accordance with BS EN 1279 Part 2

Dimensional tolerances in accordance with BS EN 12543-5:1998

Electrical output

Output depends upon the type and efficiency of PV cells within the panels combined with the density or spacing of the cells within the module. Glass thickness may also have an influence on the output.

Estimated electrical data is therefore included with individual project quotations and actual output is measured using industry standard 'flash test' methods. Accurate 'flash test' data is supplied for all modules at the time of delivery.

Warranty

Performance: 10 year performance guarantee for 90% of original measured power output and 25 year performance guarantee for 80% of original measured power output.

Product: 5 years against de-lamination and other reasonable visual defects.

Full warranty conditions are available on request.

The information given in this brochure may be subject to change without warning. Please check with our technical department prior to ordering.

PowerGLAZ
ENERGY IN GLASS

MANUFACTURED
Visionaries in glass
since 1943

APPROVED PRODUCT
KM 558842 BS EN 61215
Photovoltaic Modules

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