

UTILITY MODEL PATENT

No. UA 144186 U

Title

Light-Transmitting Enclosure Structure

Bibliographic Data

Application No: u 2020 06263

Filing Date: March 11, 2020

Publication Date: September 10, 2020

Bulletin Number: No. 17

International Patent Classification (IPC):

C03B 23/00

C03B 23/04

E06B 3/66

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Abstract (57):

The utility model relates to the field of construction materials, specifically to the production of light-transmitting enclosing structures of translucent materials. It can be used in industrial and civil construction, in facades of buildings and structures, as well as for replacing existing glazing systems and other light-transmitting elements.

The structure includes insulating glass where the glass panes are hermetically sealed, with an internal rigid reinforcing profile and a spacer frame securing them together. It is characterized in that the insulating glass is additionally equipped with an external U-profile having a cross-section in the form of a GFRP (glass fiber reinforced plastic) pultrusion profile.

Description

Field of the Utility Model

This utility model relates to translucent enclosing structures made of insulating glass, which are suitable for various applications in industrial and civil construction. They are intended for facades, windows, and as replacements for existing transparent or translucent elements.

Prior Art

There exist various translucent structures, including insulating glass systems comprising multiple panes sealed hermetically. However, existing designs often do not provide sufficient structural rigidity or mounting versatility for certain architectural requirements.

Summary of the Utility Model

The purpose of this utility model is to enhance the rigidity, structural integrity, and installation flexibility of translucent insulating glass units.

The improved light-transmitting enclosing structure is characterized by the integration of a GFRP pultrusion U-profile that reinforces the structure externally, in addition to an internal stiffening profile and a spacer frame. This design ensures higher mechanical strength, load-bearing capacity, and ease of installation.

Detailed Description

The system comprises:

- Two or more glass panes forming an insulating glass unit.
- The panes are hermetically sealed and spaced with a perimeter spacer.
- A rigid inner reinforcing profile is placed between panes for stability.
- A U-shaped pultruded GFRP profile is fixed on the outer edge to enhance structural strength.

The structure is suitable for:

- Large-span facades
- Architectural glazing
- Curtain wall systems

Claims

1. A light-transmitting enclosing structure comprising insulating glass with hermetically sealed panes, an internal stiffening profile, and a perimeter spacer frame, characterized in that it further includes an external U-profile made of a GFRP pultrusion profile for reinforcement.
2. The structure according to claim 1, wherein the spacer frame is made of a metal profile.
3. The structure according to claim 1, wherein the spacer frame is made of a composite material.
- 4–14. (Additional claims detailing specific structural variations and profile cross-sections as illustrated in the drawings.)

Drawings

Figures 1 to 14 illustrate:

- Cross-sectional views of the proposed system (see pages 3–7 of the document)
- Variants of the GFRP U-profile and integration with insulating glass
- Mounting and connection details

Certification

This patent has been registered in the State Register of Patents of Ukraine for Utility Models on September 10, 2020, and issued under the authority of the Ministry of Economic Development, Trade, and Agriculture of Ukraine.

Signed:

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