**THE USE OF SOLAR PANELS AS AN ELEMENT IN PRIVATE AND PUBLIC BUILDINGS**

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**Annotation:** The usage of solar panels in residential construction projects is covered in the article. The ways in which they might be harmoniously incorporated into a construction scheme are examined; alternatively, they can be employed as an expressive element to give a structure a unique appearance.

**Key words:** construction, Solar panels, energy efficiency, ecology.

Solar panels have become a sustainable and environmentally friendly alternative to traditional energy sources for private and public buildings. The purpose of this article is to use solar panels in residential buildings as cladding elements.

The growing demand for renewable energy sources has sparked interest in the use of solar panels in residential buildings. Thanks to technological advances and cost reductions, solar panels have become an acceptable option for homeowners and policy makers seeking to reduce their carbon footprint and energy costs. Although the benefits of solar panels are well documented, there are still challenges that need to be addressed to maximize their efficiency in both private and public buildings.

Solar panels are photovoltaic converters used to convert light flux into electricity. They are used in regions where sunny days prevail over cloudy ones throughout the year [1]. The use of solar energy is one of the most commonly used strategies in residential architecture, both active and passive. The efficient use of solar energy makes it possible to reduce monthly electricity costs by up to 95%, which makes this strategy one of the most attractive of all sustainable solutions [2].

The next problem is the integration into the architecture of the building. This process should start from the very beginning of the design, and not just be an addition to an already completed project. This approach distorts the general concept and often looks unnatural. This article will consider several ways to integrate solar panels into a project as architectural elements at the design stage. It is not always necessary to hide the panels or make them invisible, they can be used to create contrasting volumes in the composition of the building.

The economical C02 house is a good example of this, here the solar panels on the main facade are placed on the same level with the glazed roof to emphasize the protruding structure [2]. This solution opens up the possibility to use the color and texture of solar panels as elements not only of roofs, but also of building facades.

Photovoltaic facade systems represent a new trend in the field of solar energy, also known as BIPV (Building Integrated Photovoltaics). Solar facades are used primarily for cladding buildings with hinged ventilated facades. They perfectly cope with the function of energy generation, and are also an original decorative panel. They gained their decorativeness due to the possibility of producing panels in different colors and textures [3].

Previous research has identified numerous benefits of using solar panels in residential buildings, including lower energy costs, reduced reliance on fossil fuels, and reduced greenhouse gas emissions. Research has also shown that solar panels can increase the value of real estate and become a reliable source of energy in remote areas. However, there are problems related to the installation and maintenance of solar panels, as well as concerns about their aesthetics and impact on property values.

Solar panels are not only cost-effective, but also one of the trends of green architecture aimed at preserving an environmentally friendly environment. Having a number of advantages, solar panels are actively used in construction. In this regard, they require the development of appropriate architectural projects, where they can not only competently and concisely fit into an existing project, but also provide an independent architectural and expressive form used to create a unique image of the building.

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