

# Harnessing the Power of the Sun

## The Rise of Building Integrated Photovoltaics

Powerhouse Brattørkaia

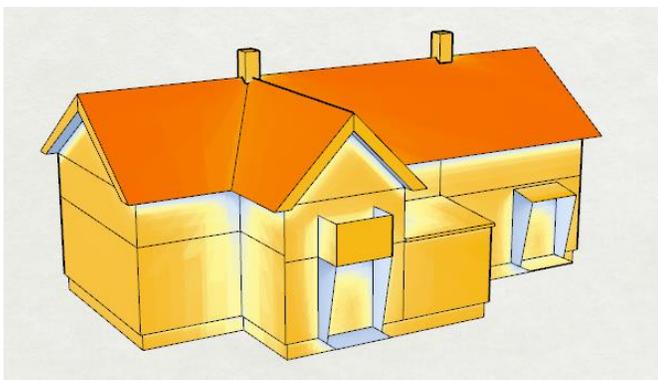
Malling & Co (n.d.)

### Introduction

As the world increasingly embraces renewable energy solutions, one promising technology has captured the attention of architects and environmental enthusiasts alike: Building Integrated Photovoltaics (BIPV). By seamlessly integrating solar panels into building facades, BIPV offers a compelling solution for areas where rooftops may not receive optimal sunlight angles. Beyond its practical benefits, BIPV also allows for the harmonious preservation of architectural aesthetics. In this article, we explore the advantages of BIPV and make a case for Ørland municipality to invest in this transformative technology.

### Convincing Ørland Municipality to Embrace BIPV

The Ørland municipality has an exciting project involving relocating 22 listed houses from the 18th century. These historical buildings and 33 new homes designed to match their scale and placement will form a vibrant residential area at Brekstadbukta. To further enhance this project, Ørland municipality is considering the integration of Building Integrated Photovoltaics into the old and new houses. This presents a unique opportunity to showcase the advantages of BIPV in a historically significant setting.



### Simulating Solar Irradiation for Optimal Results

To assess the feasibility of BIPV integration, simulations were conducted on the house modelled after one of the listed buildings set for relocation. These simulations utilised weather files specific to the Brekstad region, allowing us to evaluate the pros and cons of implementing BIPV in similar areas. The findings confirmed our expectations: during the winter months, when the sun sits at a low angle, relying solely on rooftop solar panels becomes ineffective. Harnessing solar power from the

building facades is imperative to overcome this limitation and achieve a partly self-sustaining residential area. This approach ensures sufficient electricity generation and aligns with the historical buildings' architectural requirements.

## The Role of Roof Slope in Maximizing Solar Energy Collection

During an enlightening visit to Hovde Hen Farm, situated on the same peninsula as the ongoing project, we discovered the significance of roof slopes in optimising sunlight collection. The farm's owners, who have installed solar panels on their roofs, shared valuable data that underscored the impact of roof design. Surprisingly, even a modest 15-degree difference in slope had a substantial effect on power production. These findings emphasise the importance of carefully considering roof angles when implementing BIPV, unlocking the full potential of solar energy utilisation.



## Balancing Environmental Benefits and Practical Considerations

As the world intensifies its focus on combating global warming and embracing sustainable practices, environmentally friendly methods of electricity generation take centre stage. Building Integrated Photovoltaics presents a compelling contribution to these efforts. While integrating solar panels into buildings has pros and cons, the benefits outweigh the drawbacks. Although the upfront cost of purchasing and installing BIPV systems can be substantial, numerous factors compensate for this investment. These include reduced power bills, long-term savings, low maintenance requirements, the upward trend of power prices, continuous improvement and declining solar technology costs (Crail, 2023).

## Conclusion

Adopting Building Integrated Photovoltaics is a critical solution for a greener future in pressing environmental challenges. Ørland municipality has a unique opportunity to lead by example and demonstrate its commitment to sustainability by embracing BIPV for its listed houses and new residential area. They can contribute to environmental preservation and economic resilience by harnessing the sun's power. Let us strive to save the planet and money to pursue a brighter, sustainable tomorrow.

## Sources

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