

# BIPV Wall Markets - 2012

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## Abstracts

### Summary

The goal of this report is to quantify and analyze the market opportunity for BIPV technology in walling markets over the next eight years and it builds on industry analysis that NanoMarkets has carried out in the BIPV and smart windows business over the past few years. NanoMarkets has been covering the BIPV space now for more than five years and the PV space for several years longer.

With regard to the scope of this report, we have included coverage of the use of BIPV in all areas that could broadly be considered walling. We take this to include primarily curtain walls (and related shading products) and siding products of various kinds. But we have also focused on novel technologies in the BIPV space, especially wall-related solar thermal technologies and completely new technologies such as solar-powered wall lights and so-called solar paint.

Also, in the technology sphere we have included an analysis of what the various rival types of PV could bring to the BIPV walling market. Of especial concern in this context is the ability of PV technologies to perform in a shaded environment because walling is always shaded to some extent. Flexibility also has some importance here.

With regard to end user markets, those that we discuss most extensively are commercial and industrial buildings, since this is where most of the revenues in the BIPV walling space are likely to be earned in the next eight years. However, we do include some discussion on residential markets, especially multi-tenant residential buildings which have important business characteristics in common with commercial buildings from the perspective of a BIPV provider. We have also included a special section on the role of BIPV glass in "prestige buildings," a weakly defined category, but one where BIPV has found its first revenues.

We are primarily interested in this report with BIPV products that are based on a fairly high level of integration; that is to say the "I" in BIPV is given some emphasis in this report. However, we also acknowledge that much of BIPV today is more like "first-generation" BIPV, or what is now more usually called building-attached PV (BAPV). In this approach, completely conventional PV panels are disguised by the architecture of a given building and it is this kind of disguise that constituted the "integration." BAPV is still very much alive, which is why we consider it in this report, but contrasts to a high degree with "true" BIPV, where the integration is of a technological rather than an architectural nature.

Several issues are not the focus of the report. Specifically, there is a type of solar thermal technology that is integrated into walls. BIPV has some lessons to be learned from this technology, but solar thermal is, by definition, not BIPV, so we do not discuss it in depth here. Similarly, this report does not claim to be a primer on either BIPV or PV in general. It is assumed that the reader of this report already has a good understanding about these technologies.

This report is worldwide in its scope. However, throughout this report, we discuss the differences among regional and national markets. It goes almost without saying that much of the BIPV markets are focused on a few geographies; because the PV industry as a whole is so focused. Germany, Japan and California account for most of the entire worldwide market.

Other reasons for focusing to some extent on regional or national differences is that regulatory factors and conditions in the construction industry can vary quite a lot from place to place, not to mention taste/architectural factors of importance to the BIPV glass business. Obviously, space does not allow a full coverage of matters as complex as regulation and national construction markets. Rather, we try to point out the impact of general trends.

As with all PV, the economics of including BIPV glass in buildings are better with new construction than with retrofits, we discuss both opportunities in the main body of this report. We also assess the current strategies of firms already pursuing the BIPV walling market. And as with all NanoMarkets reports, this report contains granular eight-year forecasts in both MW and dollar terms of BIPV wall markets, with breakouts by end user, type of product and type of PV technology.

## Contents

### EXECUTIVE SUMMARY

- E.1 Assessment of New Technology Opportunities in the BIPV Wall Market
  - E.1.1 BIPV Walls Today
  - E.1.2 Notable Drivers for BIPV Walling Markets
  - E.1.3 BIPV Walling Products and Opportunities
- E.2 Assessment of BIPV Walls Markets by Building Type
  - E.2.1 Commercial and Industrial Buildings
  - E.2.2 Residential Buildings
- E.3 Supply and Value Chain Opportunities and Challenges
  - E.3.1 The Role of Architects and Construction Firms in the BIPV Wall Value Chain
  - E.3.2 PV Walls in Existing Supply Chains
- E.4 Firms to Watch in the BIPV Walling Market
- E.5 Summary of Eight-Year Market Forecasts for BIPV Walls

### CHAPTER ONE: INTRODUCTION

- 1.1 Background to this Report
  - 1.1.1 Does the BIPV Market Exist?
  - 1.1.2 BIPV Wall Products: Today and Tomorrow
  - 1.1.3 Who is BIPV Walling an Opportunity For?
- 1.2 Objective and Scope of this Report
- 1.3 Methodology of this Report
- 1.4 Plan of this Report

### CHAPTER TWO: WALL-RELATED BIPV TECHNOLOGIES AND PRODUCTS

- 2.1 The Economics of BIPV Wall Products
  - 2.1.1 Building Fabric Cost Sharing as a Driver for BIPV Walling
  - 2.1.2 Adding Value as a Driver for BIPV
- 2.2 "Walling-Attached" PV (WAPV)
  - 2.2.1 WAPV: Current State of the Art
  - 2.2.2 WAPV: Future Trends and Opportunities
- 2.3 Opportunities for BIPV Roofing Products in Wall-Related Markets
  - 2.3.1 BIPV Tiles in Walling Markets
  - 2.3.2 BIPV Shingles in Walling Markets
- 2.4 Dedicated BIPV Siding Technologies

- 2.4.1 Relationship Between Siding Functions and BIPV Functions
- 2.4.2 Siding and Flexible PV
- 2.4.3 Heliatek and RECKLI: A Concrete BIPV Wall
- 2.5 BIPV Curtain Wall Technology
  - 2.5.1 BISEM's Project at the Sacramento Municipal Utility Commission
  - 2.5.2 Konarka's Curtain Wall
  - 2.5.3 Mage Sunovation and Transparent BIPV Plastic
- 2.6 Novel Technologies for BIPV Walls
  - 2.6.1 Integration of BIPV Walls and Solar Lighting
  - 2.6.2 Solar Paint
  - 2.6.3 A Note on BIPV in "Solar Walls"
- 2.7 Opportunities for PV Panel Makers in the BIPV Wall Market
  - 2.7.1 Silicon PV Panels and BIPV Walls
  - 2.7.2 Role of OPV and DSC in BIPV Walls
  - 2.7.3 CIGS and BIPV Walls
  - 2.7.4 A Note on CdTe in BIPV Walls
- 2.8 Substrates and Encapsulation for BIPV Walls
  - 2.8.1 Rigid BIPV Encapsulation
  - 2.8.2 Flexible BIPV Encapsulation
- 2.9 Key Points Made in this Chapter

## **CHAPTER THREE: MARKETS AND FORECASTS FOR BIPV WALLS**

- 3.1 Forecasting Methodology
  - 3.1.1 Macroeconomic and Regulatory Assumptions
  - 3.1.2 Sources of Information
  - 3.1.3 Assumptions About Pricing and Units of Measurement
  - 3.1.4 Alternative Scenarios
- 3.2 Regulatory and Subsidy Factors Impacting BIPV Walls
  - 3.2.1 BIPV Walls and Zero-Energy Buildings
  - 3.2.2 Building Codes, LEED and BIPV Walls
  - 3.2.2 BIPV Subsidies and BIPV Walls
- 3.2 BIPV Walling and the Question of Aesthetics
  - 3.2.1 Restrictions on Conventional PV
  - 3.2.2 Aesthetics and WAPV
  - 3.2.2 Aesthetics Considerations in "True" BIPV Walling
- 3.3 End-User Markets by Type of Building
  - 3.3.1 The Importance of Prestige Buildings for BIPV Markets: Impact on BIPV Walls
  - 3.3.2 BIPV Wall Markets for Commercial and Industrial Buildings

- 3.3.3 Residential Buildings: Multi-tenant, Single Tenant and BIPV Walls
- 3.3.4 Retrofit and New Installations for BIPV Walls
- 3.4 Forecast of BIPV Roofing's Share of the BIPV and General PV Market
- 3.5 Eight-Year Forecasts by Type of Wall and Functionality
  - 3.5.1 WAPV Walls: End-User Markets and Type of PV Technology Used
- 3.4.2 Roofing BIPV Repurposed for Wall Applications: End User Markets and Type of PV Technology Used
- 3.4.3 BIPV Curtain Walls: End User Markets and Type of PV Technology Used
- 3.4.4 Dedicated BIPV Siding: End User Markets and Type of PV Technology Used
- 3.5 Preliminary Thoughts on the Size of BIPV Wall Markets of the Future: Solar Paint and Integrated Lighting/Wall Panels
- 3.6 Summary of Eight-Year Forecasts of BIPV Wall Markets
  - 3.6.1 Breakout by Type of BIPV Wall Product
  - 3.6.2 Breakout by Type of Building
  - 3.6.3 Breakout by Type of PV Technology
- 3.7 Eight-Year Forecasts of BIPV Walling by Region
- 3.8 Key Points Made in this Chapter
  - Acronyms and Abbreviations Used In this Report
  - About the Author

## List Of Exhibits

### LIST OF EXHIBITS

- Exhibit E-1: Summary of Available Opportunities and Products for BIPV Walling
- Exhibit E-2: Firms to Watch in the BIPV Walling Space
- Exhibit E-3: BIPV Walling Markets by Type of BIPV Wall Product (\$ Million)
- Exhibit 2-1: Advantages and Disadvantages of Major PV Absorber Materials for BIPV Walling
- Exhibit 2-2: CIGS PV Competitors in 2011
- Exhibit 3-1: Common Building Requirements for BIPV
- Exhibit 3-2: Aesthetic Advantages and Disadvantages of BIPV Walling by Type of PV Technology
- Exhibit 3-3: BIPV Walling: Share of Worldwide PV and BIPV Markets
- Exhibit 3-4: WAPV Wall Shipments by End User
- Exhibit 3-5: WAPV Material Shipments by Type of PV Technology Used (\$ Millions)
- Exhibit 3-6: BIPV Walls Using Repurposed BIPV Roofing Products: Shipments by End Users
- Exhibit 3-7: BIPV Walls Using Repurposed BIPV Roofing Products: Shipments by Type of PV Technology Used (\$ Millions)
- Exhibit 3-8: BIPV Curtain Walls: Shipments by End Users
- Exhibit 3-9: BIPV Curtain Walls: Shipments by Type of PV Technology Used (\$ Millions)
- Exhibit 3-10: BIPV Siding: Shipments by End Users
- Exhibit 3-11: BIPV Siding Products: Shipments by Type of PV Technology Used (\$ Millions)
- Exhibit 3-12: BIPV Walling Markets by Type of BIPV Wall Product (\$ Million)
- Exhibit 3-13: BIPV Walling Markets by Type of Building (\$ Million)
- Exhibit 3-14: BIPV Walling Market by Type of PV Technology (\$ Millions)
- Exhibit 3-15: BIPV Walling Market by Region (\$ Millions)

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