+357 96 030922
info@marketpublishers.com

Global Flexible PV Cell Market Growth 2025-2031

https://marketpublishers.com/r/GF7D1A8134A5EN.html
Date: January 2024
Pages: 98
Price: US$ 3,660.00 (Single User License)
ID: GF7D1A8134A5EN

Abstracts

The report requires updating with new data and is sent in 48 hours after order is placed.

The global Flexible PV Cell market size is predicted to grow from US$ 26.8 million in 2025 to US$ 35.9 million in 2031; it is expected to grow at a CAGR of 5.0% from 2025 to 2031.

A flexible PV cell which is also known as thin film solar cell that is made by depositing very thin layers of photovoltaics material on any kind of substrate, such as, paper, tissue, plastic, glass or metal. It is one of the most revolutionary and epoch making technologies in the sector of solar energy.

The significance of the word “flexible” is that, these kind of solar cells are not like those traditional big, bulky solar panels which is very common nowadays, these are literally flexible, very thin, lightweight, have very little installation cost and can be installed anywhere without going much trouble.

Thickness of a typical cell varies from a few nanometers to few micrometers, whereas its’s predecessor crystalline-silicon solar cell (c-Si) has a wafer size up to 200 micrometers.

In this report, we define flexible PV cells as PV modues fabricated on flexible substrate materials (most commonly used substrates are polyimide, polyethylene terephthalate (PET), polyethylene naphthalate (PEN), and metal foils such as stainless steel (SS) and titanium (Ti)), including flexible a-Si thin ?lm cells, flexible CIGS cells, flexible CdTe cells, OPV cells, flexible DSSC and flexible perovskite PV.

Silicon (Si) solar cells dominate the PV market (92%) followed by cadmium telluride (CdTe, 5%), copper indium gallium selenide (CuInGaSe2or CIGS, 2%) and amorphous

+357 96 030922
info@marketpublishers.com

silicon (a-Si:H, ~1%). Si wafer with thickness around 180 ?m is the traditional materialbeing used for module manufacturing and it has attained signi?cant level of maturity at the industrial level. Its production cost is amajor concern for energy applications. About 50% of the cost of Si solar cells production is due to Si substrate, and device processingand module processing accounts for 20% and 30% respectively.

An alternate to Si solar cells is the thin ?lm solar cells fabricated on glass substrates. The main demerits of using glass substratesare fragile nature of modules, cost of glass wafer having thickness of 300–400 ?m, and low speci?c power (kW/kg) etc. Speci?c poweris an important factor when solar cells are used in space applications. A high speci?c power exceeding 2 kW/kg can be achieved by ?exible solar cells on polymer ?lms which is useful for terrestrial as well as space applications. Production cost can be lowered byusing ?exible substrates and roll-to-roll production (R2R) technique. Apart from light weight, ?exibility and less cost of installation,?exible cell processing involves low thermal budget with low material consumption. Other than solar cell applications, smallerspecialized applications are beginning to become more viable independent markets, including applications for mobile power and building or product integration, which can bene?t greatly from ?exible thin ?lm options. Flexible cells on buildings (known asbuilding integrated photovoltaics or BIPV) can minimize the cost of support, shipments etc., and installations can be handled easily. However, ?exible solar cell technology is less mature when compared to the cells fabricated on rigid substrate counterpart.

Due to four main requirements - high e?ciency, low-cost production, high throughput and high speci?c power, a major researchand development focus has been shifted towards ?exible solar cells. It can o?er a unique way to reach terawatt scale installation byusing high throughput R2R fabrication technique. Most commonly used substrates are polyimide, polyethylene terephthalate (PET), polyethylene naphthalate (PEN), and metal foils such as stainless steel (SS) and titanium (Ti).

The performance of ?exible solar cells is comparable to rigid substrates. Flexible substrates are more advantageous than standardsoda-lime glass (SLG) substrates. As mentioned below, there are several merits of using ?exible substrates:

• Flexible modules are best suited for curved surfaces and used in BIPV. Since modules are produced from thin ?lm materials it issuitable for mass production.

• An important bene?t is that it has potential to reduce the production cost. R2R deposition is bene?cial in terms of production costthan that of rigid substrates. Glass

+357 96 030922
info@marketpublishers.com

cover is an added expense when rigid substrates are used.

• Materials required to produce CIGS, CdTe and a-Si:H ?exible modules are much cheaper than conventional Si wafer, glass cover,frames used in Si modules.

• For roof top application, ?exible modules are ideal due to light weight. Using lightweight support, it can be installed over the rooftop where glass covered conventional heavy and bulky Si modules are not suitable when roof test fails due to an added weight andstructural issues. Flexible modules can also be installed over the roof of the vehicle, uneven surfaces of building.

• Installation/labor cost is much lower for ?exible modules due to less installation time since racking assembly, glass cover etc. arenot required.

• Low power output ?exible modules for example a-Si:H require large number of modules to get desired output which can beinstalled easily above the roof top.

• Glass covered rigid modules are fragile. Flexible modules are not fragile it can be rolled up, transported and handled easily.

Photovoltaic (PV) technologies are basically divided into two big categories: wafer-based PV (also called 1st generation PV) and thin-film cell PV. The emerging thin-film PVs are also called 3rd generation PVs, which refer to PVs using technologies that have the potential to overcome Shockley-Queisser limit or are based on novel semiconductors. The 3rd generation PVs include DSSC, organic photovoltaic (OPV), quantum dot (QD) PV and perovskite PV. The cell efficiencies of perovskite are approaching that of commercialized 2nd generation technologies such as CdTe and CIGS. Other emerging PV technologies are still struggling with lab cell efficiencies lower than 15%.

In the industry, Sun Harmonics shipments most in 2019 and recent years, while HyET Solar and PowerFilm, Inc. ranked 2 and 3. The top 3 Flexible PV Cell manufacturers accounted for around 62% revenue market share in 2019.

The manufacturer headquarters is mainly distributed in North America, Europe, China and Japan.

There are six types of Flexible PV Cell including Flexible CIGS Solar Cells, Flexible a-Si Solar Cells, Organic Solar Cells (OPV), Flexible CdTe Solar Cells, Flexible DSSC,

+357 96 030922
info@marketpublishers.com

Flexible Perovskite Solar Cells. In addition, the application consists of BIPV, Transportation & Mobility, Defense & Aerospace, Consumer & Portable Power. BIPV occupied nearly 51% of global flexible PV Cell sales market share in 2019.

LP Information, Inc. (LPI) ' newest research report, the “Flexible PV Cell Industry Forecast” looks at past sales and reviews total world Flexible PV Cell sales in 2024, providing a comprehensive analysis by region and market sector of projected Flexible PV Cell sales for 2025 through 2031. With Flexible PV Cell sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US$ millions of the world Flexible PV Cell industry.

This Insight Report provides a comprehensive analysis of the global Flexible PV Cell landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyzes the strategies of leading global companies with a focus on Flexible PV Cell portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms’ unique position in an accelerating global Flexible PV Cell market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Flexible PV Cell and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global Flexible PV Cell.

This report presents a comprehensive overview, market shares, and growth opportunities of Flexible PV Cell market by product type, application, key manufacturers and key regions and countries.

Segmentation by Type:

CIGS

a-Si

OPV

Others

+357 96 030922
info@marketpublishers.com

Segmentation by Application:

- BIPV
- Transportation & Mobility
- Defense & Aerospace
- Consumer & Portable Power
- Others

This report also splits the market by region:

- Americas
  - United States
  - Canada
  - Mexico
  - Brazil
- APAC
  - China
  - Japan
  - Korea
  - Southeast Asia
  - India

+357 96 030922
info@marketpublishers.com

- Australia
- Europe
  - Germany
  - France
  - UK
  - Italy
  - Russia
- Middle East & Africa
  - Egypt
  - South Africa
  - Israel
  - Turkey
  - GCC Countries

The below companies that are profiled have been selected based on inputs gathered from primary experts and analysing the company's coverage, product portfolio, its market penetration.

- PowerFilm, Inc.
- Panasonic
- infinityPV
- Flisom

+357 96 030922
info@marketpublishers.com

Sun Harmonics

F-WAVE Company

Heliatek GmbH

HyET Solar

Ascent Solar Technologies, Inc

Key Questions Addressed in this Report

What is the 10-year outlook for the global Flexible PV Cell market?

What factors are driving Flexible PV Cell market growth, globally and by region?

Which technologies are poised for the fastest growth by market and region?

How do Flexible PV Cell market opportunities vary by end market size?

How does Flexible PV Cell break out by Type, by Application?

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

13 KEY PLAYERS ANALYSIS

+357 96 030922
info@marketpublishers.com

LIST OFTABLES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

LIST OFFIGURES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Global Flexible PV Cell Market Growth 2025-2031
Product link: https://marketpublishers.com/r/GF7D1A8134A5EN.html
Price: US$ 3,660.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/GF7D1A8134A5EN.html