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Thin-Film Photovoltaic Market by Material (Cadmium Telluride, Copper Indium Gallium Selenide, Amorphous Silicon, Perovskite, and Organic PV), Type (Rigid, and Flexible), Component (Module, Inverter, and BOS), End Use & Region - Global Forecast to 2029

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Abstracts

The thin-film photovoltaic market is projected to grow from USD 6.2 billion in 2024 and is expected to reach USD 12.4 billion by 2029, growing at a CAGR of 15.1% from 2024 to 2029. The flexible features of thin-film solar cells make them more suitable for a wide range of roof styles and shapes than rigid crystalline silicon panels. Moreover, some thin-film technologies are available in a range of colors, which may potentially enhance the aesthetic value of a home and eventually favor the market for thin-film photovoltaics in the residential sector.

“Perovskite (CaTiO3) material segment of the thin-film photovoltaic market is expected to hold second-largest market share during the forecast period.”

Perovskite-structured materials used in solar cells are generally hybrid organic-inorganic lead or tin-halide materials, for example Methylammonium Lead Halide. In past few years, continuous research and development have been conducted to commercialize perovskite. For instance, in February 2024, a team of researchers from China and the US summarized the commercialization status of several manufacturers, including Saule Technologies (Poland), Solaronix (Switzerland), Panasonic Holdings Corporation (Japan), Toshiba (Japan), Utmolight (Washington), Wonder Solar (China), Kunshan GCL (China), and Microquanta (China). Moreover, in February 2023, in France, the IPVF (Institut Photovolta?que d'Ile-de-France), a solar institute partnered with a French manufacturer, Voltec Solar, to build a solar panel factory to produce Tandem 4T Perovskite/Silicon cells. The partners aim to start production in 2025 and

ramp up capacity to 5 GW by 2030.

“In the end use segment of the thin-film photovoltaic market utilities is expected to hold largest market share during the forecast period.”

Large scale production facilities often require massive solar installations to meet their energy demands. Thin-film PV's cost effectiveness and low installation costs are highly beneficial for the large scale production facilities. Thin-film PV's generally leads to lower costs per watt compared to traditional crystalline silicon panels. These panels are generally lighter and more flexible, greatly improving the simplicity of installation processes that reduce labor costs for large-scale projects. Moreover, these panels perform better under high-temperature conditions, which has its advantage in many regions where a number of utility-scale solar projects are located.

“The US is expected to hold the largest market size in the North American region during the forecast period.”

During the forecast period, the US is expected to account for the largest share of the North American thin-film photovoltaic market. The growth of the US thin-film photovoltaic market is mainly driven by the increase in state and federal policies and programs boosting the adoption of PV modules and other renewable technologies. The country has formulated several supporting policies, such as the federal policy for solar energy generation and solar investment tax credit (ITC). These policies are also expected to help the regional market meet its national energy goals and enable high system efficiency and enhanced integration of renewable energy with solar systems. The Solar Energy Technologies Office (SETO) and National Renewable Energy Laboratory (NREL) are providing supportive policies and large-scale electrification to increase the solar energy supply to about 40% by 2035 and 45% by 2050.

By Company Type: Tier 1 – 35%, Tier 2 – 45%, and Tier 3 – 20%

By Designation: C-level Executives – 35%, Managers –25%, and Others – 40%

By Region: North America –45%, Europe – 20%, Asia Pacific– 30%, and RoW – 5%

The report profiles key players in the thin-film photovoltaic market with their respective market ranking analysis. Prominent players profiled in this report include KANEKA CORPORATION (Japan), Ascent Solar Technologies, Inc. (US), First Solar (US), Oxford Photovoltaics Ltd. (UK), and Hanwha Qcells (South Korea). JA SOLAR Technology Co., Ltd. (China), SHARP CORPORATION (Japan), MiaSole (US), AVANCIS GmbH (Germany), Solbian (Italy), SOLARA (Germany), Custom Solar BIPV

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Panels – MetSolar (Lithuania), Enecom S.r.l. (Italy), TRONY (China), NanoPV Solar Inc. (New Jersey), QS SOLAR (China), Heliatek (Germany), Wuxi Suntech Power Co., Ltd. (China), Jinko Solar (China), Trinasolar (China), Panasonic Holdings Corporation (Japan), Sol Voltaics (Sweden), Tandem PV, Inc. (US), SOLAR FRONTIER K.K. (Japan), and REC Solar Holdings AS (Norway) are among a few other key companies in the thin-film photovoltaic market.

Report Coverage

The report defines, describes, and forecasts the thin-film photovoltaic market based on By material, type, component, end use and region. It provides detailed information regarding drivers, restraints, opportunities, and challenges influencing the growth of the thin-film photovoltaic market. It also analyzes competitive developments such as product launches, expansions, acquisitions, and actions carried out by the key players to grow in the market.

Reasons to Buy This Report

The report will help the market leaders/new entrants in the market with information on the closest approximations of the revenue for the overall thin-film photovoltaic market and the subsegments. The report will help stakeholders understand the competitive landscape and gain more insight to position their business better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key drivers, restraints, opportunities, and challenges.

The report will provide insights into the following pointers:

Analysis of key drivers (Rising government-led initiatives for thin-film solar cells), restraints (Availability of substitutes), opportunities (Ongoing technological/material developments in thin-film solar cell manufacturing s), and challenges (Rising adoption of traditional crystalline silicon solar cells in large-scale solar installations) of the thin-film photovoltaic market.

Product development /Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the thin-film photovoltaic market.

Market Development: Comprehensive information about lucrative markets; the report analyses the thin-film photovoltaic market across various regions.

Market Diversification: Exhaustive information about new products & services, recent developments, untapped geographies, and investments in the thin-film photovoltaic market.

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Competitive Assessment: In-depth assessment of market share, growth strategies, and services, offering of leading players like KANEKA CORPORATION (Japan), First Solar (US), Ascent Solar Technologies, Inc. (US), Oxford Photovoltaics Ltd. (UK), Hanwha Qcells (South Korea) among others in the thin-film photovoltaic market.

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