

Global Smart Glass - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Global Smart Glass Market size is estimated at USD 10.09 billion in 2024, and is expected to reach USD 16.70 billion by 2029, growing at a CAGR of 10.60% during the forecast period (2024-2029).

The market has been gaining significant traction due to the surging demand for energy cost savings in high-end commercial offices and residential spaces. With a growing focus on sustainable development, many people have been opting for user-controlled windows in buildings. Smart glass manufacturers have been actively investing in research and development to cut production costs by implementing newer technologies and low-cost raw materials.

Key Highlights

- Smart glass has applications in many end-user verticals, owing to its unique properties. However, only the applications encountered in the construction sector and transportation industries stand to be a high source of demand for smart glass in the current market scenario. The increasing regulatory reforms, such as the National Green Building Standard, Green Globes, LEEDS, etc., enable commercial building owners to spend on smart energy-saving solutions, such as smart glass.
- In December 2021, Halio, builder of technologically advanced smart windows, exhibited an electrochromic glass solution in the "Green Avenue" section of the SK CES 2022 booth located in the Las Vegas Convention Center, Central Hall. The glass solution addressed the ten must-haves for architects, developers, and environmentalists as they formulate strategies to achieve net zero buildings. The advanced smart glass is the first to address critical design and performance issues, including clear and tint color, responsiveness and speed, tint uniformity, and cloud-based artificial intelligence (AI) for autonomous operation. Halio's AI determines the maximum amount of daylight that can enter the building in real-time to deliver energy savings that reduce carbon emissions by up to 20%, aiding in staving off global warming while minimizing glare management that leads to occupant wellness.
- Boeing and Airbus, aerospace application companies, have been deploying smart glass technology by integrating IoT systems. For

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instance, Boeing 787 Dreamliner airplane features electrochromic windows, which turn entirely opaque with a button's click. This trend has been obtaining popularity among all the luxury and private jet manufacturers globally, opening new market opportunities.

-Besides aerospace, smart glass is increasingly being adopted in ships and trains. For instance, recently, Vision Systems exhibited a wide variety of SPD-SmartGlass products designed for the cruise industry to improve the cruise ship passenger experience.

-Moreover, several key federal policy directives, rising energy costs, and stringent regulations concerning greenhouse gas emissions are significant factors driving energy-efficient measures. Therefore, the countries have been increasingly optimizing the use of renewable energy sources.

-However, the outbreak of the COVID-19 pandemic has caused disruptions in the smart glass market. The market studied was highly affected due to decreased construction activities and supply chain disruptions. The outbreak of the COVID-19 pandemic has significantly affected the construction activities of residential and commercial buildings in 2020 and has resulted in building construction projects being delayed or halted in the short term. The demand for construction projects has fallen owing to poor business sentiments, lower operating surpluses and incomes, diversion of funds for COVID-19 management, and liquidity problems.

-According to the European construction forecasting body Euroconstruct, the European construction market is expected to shrink by 7.8% this year and will not recover fully until 2023, with forecast growth of 4.1% in 2021, 3.4% in 2022, and 2.4% in 2023. With such a decline in construction activities, the demand for smart glass is anticipated to decrease.

Smart Glass Market Trends

Automotive is Observing a Significant Growth

- Smart glass has found a large-scale application, particularly in the automotive industry, in sunroofs and exterior and interior automatic dimming rear-view mirrors. Smart glass installations are seen in top automotive manufacturers, such as BMW and Mercedes. Mercedes-Benz offers its S-Class Coupe and other variants of the S-Class, with the option of a modern Magic Sky Control panoramic roof using SPD-SmartGlass technology. Some of the benefits of SPD-SmartGlass include remarkable heat reduction inside the vehicle, UV protection, glare control, noise reduction, and fuel consumption.

- Recent applications witnessed in smart glass that is currently being used to merchandise new launches, notably Jaguar Land Rover, which used it to launch the F-Type, and Rolls Royce, which used it to launch the Dawn. By combining switchable technology with a projection application, the customer can use two of the most coveted switchable glass features to maximum effect.

- Smart glass is also increasingly being adopted in trains. For instance, a monorail train in South Korea has windows that automatically fog when passing by the apartments close to the train. Glazing occurs when the window's light transmission properties are altered by applying voltage, heat, or light to the surface.

- With smart glass, drivers can adjust the amount of light penetrating the car just with a click of a button. The capacity of the windshield and the windows can be customized to suit the driver and the passengers. Moreover, incremental adjustments in tint are also being allowed. With smart glass, driving has become safer due to reduced glare, and comfort improves because of the air-conditioning's better functioning as light influx reduces.

- The growing applications in the field of transportation have been generating immense demand for smart glass. To that extent, in February 2022, Israeli smart glass technology provider Gauzy acquired a French company to bolster its offerings and become a prominent global solution firm for light control and shading system technologies. With the acquisition of Vision Systems, Gauzy plans to make inroads into the ADAS (Advanced Driver Assistance System) industry, leveraging the French company's SafetyTech solutions that offer camera-based image analysis and monitoring systems and customized designs for light control and shading elements.

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North America is Expected to Hold Significant Share

- According to U.S. Census Bureau, U.S. new home construction in June 2022 amounted to 1.6 billion units. Furthermore, Public construction spending on commercial projects in 2021 is USD 3.54 billion, an increase from USD 3.15 billion in 2017. In business spaces, smart glass is employed in windows, cabins, walls, room dividers, etc. Making private areas in offices is the best option. Smart glass dividers in offices complement flexible open floor plans very well. They maximize space in a contemporary office while maintaining privacy. The use of smart glass in conference rooms is also highly recommended. Smart glass walls not only offer privacy but also make excellent conference projection screens. Additionally, smart glass gives an office setting a dash of elegance and contemporary.
- Smart glass has become an increasingly widespread feature in the commercial design sector because of its aesthetic value. For instance, Spirit Lake Casino and Resort, a fine dining restaurant in North Dakota, installed smart glass to provide (the guests) spectacular views of the natural surroundings, despite solar glare problems. The technology is also helping the restaurant save money by reducing the conditions' cooling load of air conditions on sunny days.
- The demand for smart glass is increasing owing to the growing concerns about energy consumption in buildings, especially in the commercial sector. According to the Department of Energy (DOE), buildings account for 40% of the total energy consumption of the United States and about 70% of the electricity use. Windows are commonly considered the least energy-efficient building components. They are responsible for about 40% of the total energy consumption for cooling and heating, as well as lighting (as natural light blocked by shades has to be replaced by artificial light, according to the California Energy Commission). The factors mentioned above are expected to influence the demand for smart glass in the region.
- In June 2022, General Motors announced that it would invest more than USD 81 million into the company's Global Technical Center in Warren, Michigan, to prepare the campus to build the Cadillac CELESTIQ. Cadillac's all-electric premium flagship is scheduled to begin deliveries in 2023. One of the first full glass roofs to use a four-quadrant, suspended particle device (SPD) smart glass is anticipated to be CELESTIQ's. With this smart glass, each car occupant may customize their own level of roof transparency utilizing Research Frontiers' patented SPD-Smart light-control technology.
- In June 2022, View, Inc., a company involved in smart building technology, declared that Phoenix Sky Harbor International Airport's (PHX) new "Eighth Concourse," also known as T4 S1, had been outfitted with their smart glass. The new concourse is enclosed with floor-to-ceiling Outlook Smart Glass to maximize the terminal's natural lighting and attractive view, according to the design of SmithGroup and Corgan.

Smart Glass Industry Overview

The Global Smart Glass market is partially consolidated with the presence of numerous players manufacturing these products. Some of the prominent players in the market include View Inc., Corning Incorporated, Gentex Corporation, Smart Films International, and Argil Inc., among others.

- July 2021 - Viracon, a single-source architectural glass fabricator, introduced Viracon PLUS Smart Glass powered by Halio, a breakthrough self-tinting smart glass solution that incorporates Halio, Inc.'s proprietary electrochromic technology into Viracon's insulated glass units. Viracon PLUS Smart Glass powered by Halio optimizes occupant comfort by autonomously adjusting tint levels to reduce energy consumption while natural light is maximized.
- July 2021 - View, Inc., one of the prominent players in smart building platforms and smart windows, stated it had acquired IoTium, the provider of secure, cloud-managed, software-defined IoT networks. IoTium's easy-to-deploy solutions allow building owners to quickly achieve enterprise-grade safety, reduce operating costs, and gain real-time visibility into their complete real estate portfolios.

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