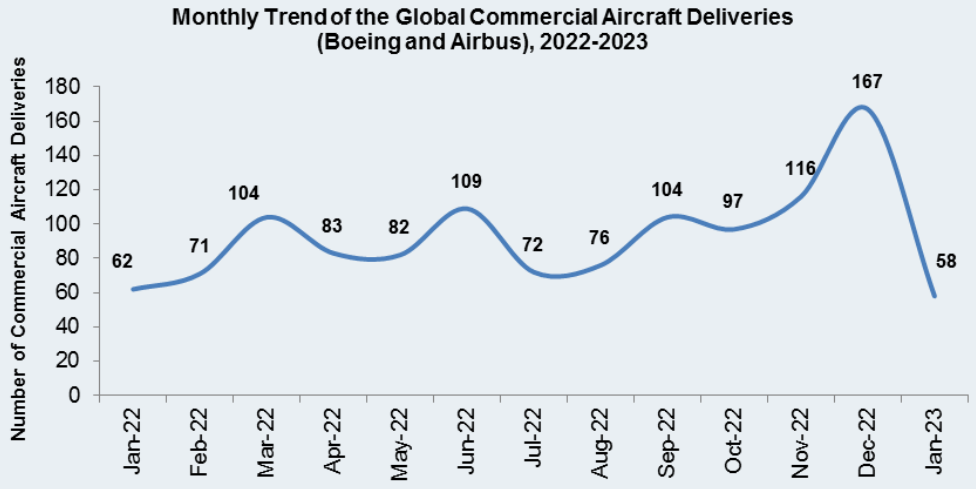
US Composites Market Monthly Insights
January 2023

Composites Market Update for January 2023

The composites market in January was down on a year-over-year (YoY) basis by roughly 10%-11%, but was ahead of December, which could signal some stabilization in the market. Infrastructure, Marine, and Transportation performed better than expected, while Construction and Distribution were down significantly. February is projected to be down on a YoY basis, but the prior year was exceptionally strong. Still, the composites market is facing some headwinds as we enter 2023. Softening demand has created some downward pressure on raw material prices, but fluctuations in oil and gas costs have resulted in uneven changes in these prices. We expect to see more stabilization in the coming months if demand remains steady. Several external factors have impacted the market including inflation, which was high in the composites sector in 2022. The recent increase in interest rates has also softened discretionary spending, and directly impacted on home sales and construction demand. The war in Ukraine has created some uncertainty, but macroeconomic trends remain the biggest concern for the industry in the short term.

Aerospace

Commercial aircraft (Boeing and Airbus) deliveries decreased from 167 aircraft deliveries in December 2022 to 58 aircraft deliveries in January 2023.



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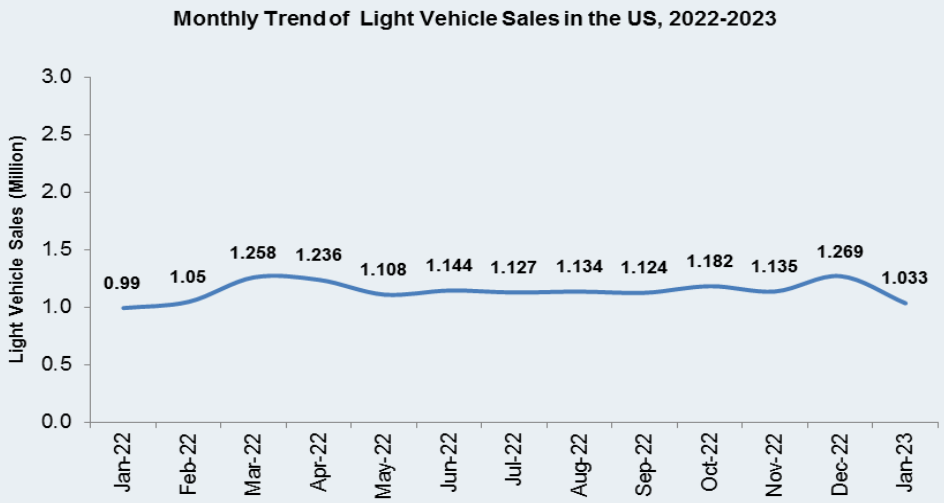
Some of the highlights of January 2023 are as follows:

- **Agreement of $100 Million between Velocity Composites and GKN Aerospace.** Velocity Composites has entered the US market – the largest aerospace manufacturing market in the world – with the signing of an agreement with GKN Aerospace expected to be worth more than $100 million of revenue over five years. To support the expansion into international markets, Velocity Composites also apprised of the development of its first site outside of the UK, a 40,000 sqft advanced manufacturing facility near to the GKN site in Alabama. The new facility will build and supply all the composite material kits for GKN's aero structure and has been upgraded to the required clean room standard, where it also includes Velocity's proprietary digital technology and latest manufacturing systems, covering a diverse range of high-performance composite structures across military, civil and business jet programs.

- **INN-PAEK Creates a 100% Recyclable & Lighter Thermoplastic Flange Wheel for Future Aeronautics.** The aim of the European INN-PAEK project led by Aitiip Technology Center, in collaboration with the Liebherr Group was to develop a technology that allows the manufacture of flange wheels for the cooling systems of the aeronautics with 100% recyclable materials and the contribution to improve the sustainability of the aviation industry. The objective of the INN-PAEK project is to demonstrate the technical, economic and environmental feasibility of manufacturing a thermoplastic flange wheel. On the one hand, regarding the materials, the project seeks to adjust thermoplastic formulations in order to reach feasibility for the transformation process and to modify the material to hold extreme temperatures and chemicals, as well as to reach 40% of weight reduction by introducing new materials such as carbon fiber. On the other hand, it aims to improve sound absorption capabilities and to reduce the final cost by 30% when applying new the manufacturing processes.

Automotive

The U.S. new vehicle sales of 1,033,002 units in January 2023 represented an increase of 4% as compared to 991,575 units in January 2022.

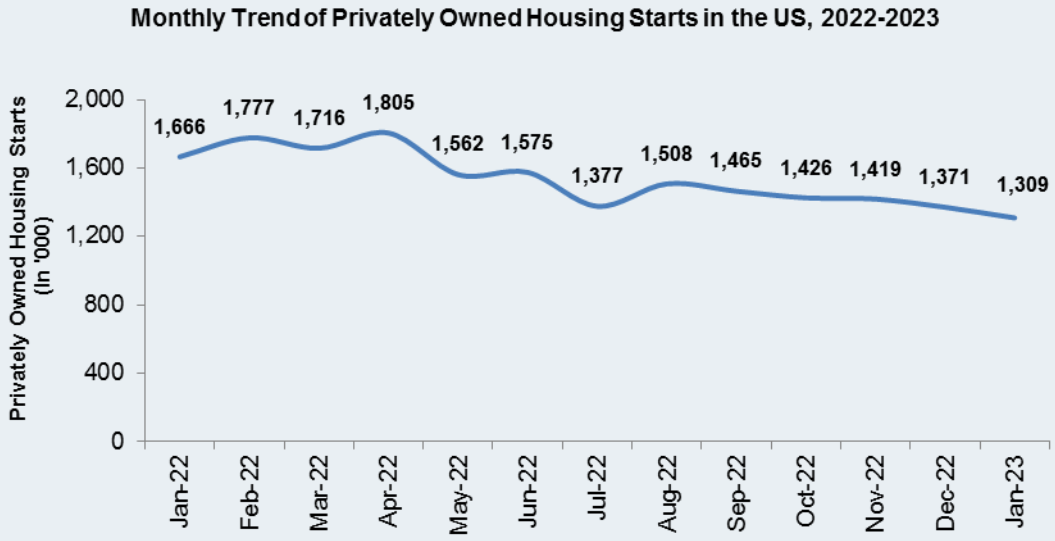


One of the highlights of January 2023 is as follows:

- **Partnership between Sumika and Hexagon.** Hexagon's Manufacturing Intelligence division and Sumika Polymer Compounds Europe (SPC Europe), a leading manufacturer of thermoplastic compounds, have partnered to digitize the performance of new sustainable automotive-grade polypropylene (PP) compounds, enabling engineers to design components that are more recyclable and offer a lower carbon footprint for future vehicles. Sumika Polymer Compounds' short glass-fiber polypropylene (GF-PP) THERMOFIL HP and recycled polypropylene (GF-rPP) THERMOFIL CIRCLE materials benefit from sustainable manufacturing and recycling processes and offer carmakers performance equivalent to incumbent engineering plastics, but with an up to 60% lower carbon footprint. These new Sumika recycled PP compounds are designed for the circular economy, contributing to plastic waste reduction at vehicle end-of-life.

Construction

Privately-owned housing starts in January were at a seasonally adjusted annual rate of 1,309,000. This is 4.5% below the revised December 2022 estimate of 1,371,000 and is 21.4% below the January 2022 rate of 1,666,000. Single-family housing starts in January were at a rate of 841,000; this is 4.3% below the revised December figure of 879,000. The January rate for units in buildings with five units or more was 457,000.



One of the highlights of January 2023 is as follows:

- **Toray Becomes Joint Winner in Japan's Sixth Infrastructure Maintenance Awards.** Toray Industries, Inc. was one of three joint recipients of the Minister of Economy, Trade, and Industry Award in the Electricity category of the Sixth Infrastructure Maintenance Awards. This is in recognition of the development of a carbon fiber-reinforced plastics (CFRP) technique employing in-situ vacuum-assisted resin transfer molding (VaRTM) technology. Toray, Tokyo Electric Power Grid, Inc., and Yasuda Seisakusho Co., Ltd. deployed that technique to repair steel pipe corrosion on transmission towers.

Wind Energy

According to the latest "Energy Infrastructure Update" report from the Federal Energy Regulatory Commission's Office of Energy Projects, the cumulative installed capacity of 40 units during January – December 2022 was 8,512 MW as compared to 12,875 MW of 77 units during January – December 2021. With a total installed generating capacity of 143.28 (GW), wind constituted 11.36% of the total installed generating capacity of 1,260.95 (GW) among all energy sources.

Some of the highlights of January 2023 are as follows:

- **Collaboration between TPI Composites and WindSTAR to Create a Digital Twin of the Wind Blade Manufacturing Process.** TPI Composites, Inc., (TPI) has collaborated with WindSTAR, a National Science Foundation (NSF) funded Industry-University Cooperative Research Center, to design a composite manufacturing process based on a digital twin approach, as released in the 2022 WindSTAR Annual Report. The project leveraged machine learning (ML) using big data to serve as the digital twin of the blade manufacturing process. This ML framework provides real-time feedback during fabrication, results in reduced defects, and enables more efficient production of wind blades versus the current high computational costs of the physics-based models.
- **Continuum Proposes Wind Turbine Blade Recycling Factories.** Continuum's commitment towards net-zero doesn't stop generating clean energy from wind. The company is taking it a step further by delivering to the European market a revolutionary industrial scale end-to-end service that ensures end of life wind turbine blades never die. Continuum efficiently recycles turbine blades into high-performing composite panels for construction and related industries. Each Continuum factory in Europe will have the capacity to recycle a minimum of 36,000 tons of end-of-life turbine blades per year and feed the product back into the circular economy by 2025.

Marine

The US marine industry is anticipated to experience good growth in 2023.

Some of the highlights of January 2023 are as follows:

- **Chantiers de l'Atlantique Receives First Initial Orders for SolidSail.** A few orders have been confirmed for the all-composite SolidSail, designed, and developed by France-based Chantiers de l'Atlantique. The shipbuilder has signed a letter of intent with hotel group Accor for the construction of two large sailing ships. SolidSail will also be used to propel Neoline's first sailing cargo ship. SolidSaila highly rigid, high-performance carbon fiber foldable sail and mast, will be the main propulsion system for Neoline's 136-meter-long cargo vessel. It will consist of two 76-meter masts and a sail area of 3,000 square meters. Its use on the cargo ship is said to portend a wider application use for SolidSail rigs beyond the cruising sector.
- **MAXBlade Project to Advance Tidal Energy Generation with 13-Meter Composite Blades.** MAXBlade investigated the full lifecycle of tidal turbine blades, from materials, manufacture, and operation, to decommissioning and recyclability. The project's long-term aim is to ensure the European composite sector becomes the international leader in tidal blade manufacture. The project plans to increase the area harnessed by Scottish tidal technology company Orbital Marine Power to generate power known as the rotor swept area by 70%, to more than 1,000 square meters. To achieve this, MAXBlade will increase the length of tidal turbine blades from 10 to 13 meters making them the longest of their kind.

Consumer Goods

New orders for manufactured durable goods in January, down two of the last three months, decreased $13.0 billion or 4.5% to $272.3 billion. This followed a 5.1% December increase. Excluding transportation, new orders increased 0.7%. Excluding defense, new orders decreased 5.1%. Transportation equipment, also down two of the last three months, drove the decrease of $14.2 billion or 13.3% to $92.8 billion.

Some of the highlights of January 2023 are as follows:

- **Arris Composites Wins 2023 BIG Innovation Award.** Arris Composites has been named a winner in the 2023 BIG Innovation Awards presented by the Business Intelligence Group (BIG, Berkeley) for its continuous carbon fiber plate used in consumer and sports products. The continuous carbon fiber plate, made using Arris' Additive Molding technology, enables new design latitudes for designers.
- **babyark Launches the World's Safest Car Seat at the 2023 Consumer Electronics Show.** babyark recently launched the Babyark convertible car seat at the 2023 Consumer Electronics Show (CES). The car seat introduces a holistic approach to safety, focusing on the materials it is made of which include composites and the technology that has been added to it.

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The US Economic Overview – January 2023

The US Consumer Confidence Index increased to 64.6 in January 2023 as compared to 59.7 in December 2022. The GDP at current price of the US increased from US $26.09 trillion in December 2022 to US $26.34 trillion in January 2023.

Real gross domestic product (GDP) increased at an annual rate of 2.7% in the fourth quarter of 2022, according to the "second" estimate. The increase in real GDP in the fourth quarter reflected increases in private inventory investment, consumer spending, federal government spending, state and local government spending, and non-residential fixed investment that were partly offset by decrease in residential fixed investment and exports. Imports decreased.

The price index for gross domestic purchases increased 3.6% in the fourth quarter, an upward revision of 0.4% from the previous estimate. The PCE price index increased 3.7%, an upward revision of 0.5%. Excluding food and energy prices, the PCE price index increased 4.3%, an upward revision of 0.4%.