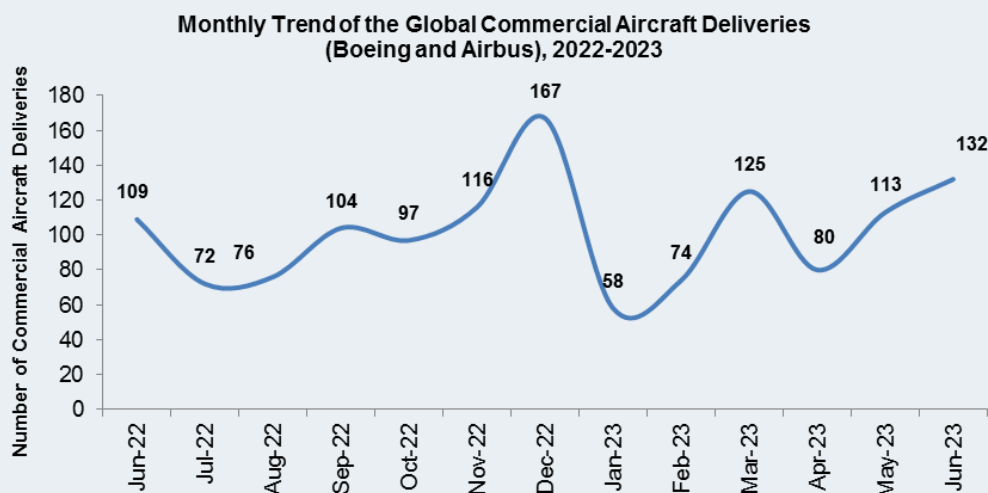


Composites Market Update for June 2023

Reflecting a very strong June 2022, the composites market in June 2023 declined about 15%, year-over-year. As compared to May 2023, the market in June dipped about 3%. In June, the infrastructure sector continued to show growth, of about 2%, driven by applications, such as 5G telecom boxes, electrical distribution, composite utility poles (lightweight, corrosion-free poles that can help enable utility resiliency and storm hardening), renewable energy, pipes, and polymer concrete. The marine sector dipped about 12%, reflecting cautious discretionary spending. Construction and transportation (e.g., fleet trailers, RVs, and passenger vehicles) also showed some weakness, declining about 15% and 7%, respectively. Although July has fewer working days, there are positive signs, including a continuing modest uptick in the infrastructure arena and less sluggishness in construction, with continued softness in marine. Prices for raw materials held fairly steady in June, trending slightly downward. Going forward, the composites market has opportunities to go on a positive direction and experience reduced sluggishness. Drivers can include increased housing starts, upgrading existing housing stock, reduced inflation and interest rates hikes, and economic growth. In June, the US Consumer Price Index rose 0.2%, and 3.0% over the past 12 months, the smallest 12-month increase since the period ending March 2021, according to the Bureau of Labor Statistics. The reduced inflation may influence the Federal Reserve to pause or possibly cease rate hikes after an expected July increase. Privately-owned housing starts dipped 8.0% in June from May and 8.1% from June 2022, according to the US Census Bureau and US Department of Housing and Urban Development.

Aerospace

Commercial aircraft (Boeing and Airbus) deliveries increased from 113 aircraft deliveries in May 2023 to 132 aircraft deliveries in June 2023.



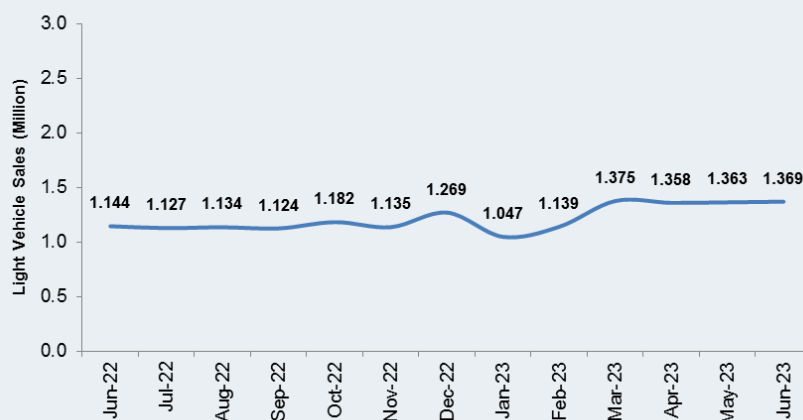
Some of the highlights of June 2023 are as follows:

- The Gill Corp. Introduces New Gillfab 4037 Sandwich Panel.** The Gill Corp. presents the Gillfab 4037 sandwich panel which is made of 7581 fiberglass cloth reinforced epoxy laminate facings and Dura-Core II aluminum honeycomb core. This panel is designed for nonstructural interiors in business aircraft. Constructed with lightweight and high-strength materials, Gillfab 4037 exhibits good corrosion resistance. It also has good self-extinguishing characteristics, meeting the specification of the FAR Part 25.853 60-second vertical flammability test to ensure the safety of passengers and crew members.
- Spirit AeroSystems to Build New Composite Fuselage for the New, Light HondaJet.** Spirit AeroSystems apprised of expanding its manufacturing role for Honda Aircraft Company's all-new light jet that was first introduced at the 2021 NBAA-BACE as the HondaJet 2600 Concept. The work includes an innovative build-to-print composite fuselage and a composite bonded frame. The new light jet designed by Honda Aircraft Company will surpass the performance, comfort, and efficiency of typical light jets by providing a medium-sized jet experience. It is designed to be the world's first light jet capable of nonstop transcontinental flight across the United States, with a quiet and spacious cabin suited for long-range travel and the ability to accommodate up to 11 occupants.
- Strategic Collaboration between Solvay and Spirit to Boost Composites Adoption on Aircraft.** Solvay and Spirit AeroSystems (Europe) Limited have strengthened their relationship as Solvay becomes a strategic partner of Spirit's Aerospace Innovation Centre (AIC) in Prestwick, Scotland. The AIC facilitates collaborative research into sustainable aircraft technologies and processes with Spirit's industrial, academic and supply-chain partners. Both companies intend to further engage on composite development opportunities to meet the performance, cost and production-rate requirements of future aircraft.

Automotive

The U.S. new vehicle sales of 1,368,965 units in June 2023 represented an increase of 20% as compared to 1,143,820 units in June 2022.

Monthly Trend of Light Vehicle Sales in the US, 2022-2023



One of the highlights of June 2023 is as follows:

- **Dash-CAE Launches Revolutionary TR01 for Road Cars.** Dash developed the TR01 chassis to fulfill an unaddressed market need for an affordable high-performance 'off-the-shelf' carbon fiber monocoque chassis. As a large, single carbon component, chassis manufacture is incredibly challenging particularly when performance, quality, and consistency are concerned. Given the substantial growth of the hypercar market as well as motorsport demands for more affordable monocoques, the TR01 offers a compelling 'off-the-shelf' solution. The TR01 is suitable for any two-seat vehicle requiring a lightweight and stiff carbon monocoque and, although predominantly standardized, can be adapted to customer requirements.

Construction

Privately-owned housing starts in June 2023 were at a seasonally adjusted annual rate of 1,434,000. This is 8.0% below the revised May estimate of 1,559,000 and is 8.1% below the June 2022 rate of 1,561,000. Single-family housing starts in June were at a rate of 935,000; this is 7.0% below the revised May figure of 1,005,000. The June rate for units in buildings with five units or more was 482,000.

Monthly Trend of Privately Owned Housing Starts in the US, 2022-2023



Wind Energy

As per the most recent "Energy Infrastructure Update" released by the Office of Energy Projects within the Federal Energy Regulatory Commission, wind energy with the combined installed capacity of 15 units from January to June 2023 amounted to 2,750 MW. This is in contrast to the 5,761 MW generated by 34 units during the same period in 2022. Wind energy, with an aggregated generating capacity of 147.72 GW contributes 11.62% of the total energy sources, which amounts to 1,271.55 GW.

One of the highlights of June 2023 is as follows:

- **Artemis Technologies Receives GBP 2.4 Million to Demonstrate eFoiler Technology at Orsted's Barrow Wind Farm.** A demonstrator project, led by high-performance maritime design and applied Technology Company Artemis Technologies has been awarded GBP 2.4 million to prove the company's capability of serving the offshore wind farm sector through demonstration of its first electric foiling crew transfer vessel and daughter craft, the Artemis EF-12 CTV. ARTEMIS EF-12 CTV is manufactured from robust lightweight glass and carbon fiber composites, which reduces the weight of the boat enabling higher speeds and longer range.

Consumer Goods

New orders for manufactured durable goods in June, up four consecutive months, increased \$13.6 billion or 4.7% to \$302.5 billion. This followed a 2.0% May increase. Excluding transportation, new orders increased 0.6%. Excluding defense, new orders increased 6.2%. Transportation equipment, also up four consecutive months, led the increase, \$12.4 billion or 12.1% to \$115.3 billion.

One of the highlights of June 2023 is as follows:

- **Cycle Inspect, UNSW Investigate Carbon Fiber Bicycle Damage.** Cycle Inspect, a provider of cutting-edge training and technology solutions in nondestructive testing (NDT) for the bicycle industry, announces a collaborative research initiative with associate professor Soufiane Boufous and associate professor Julie Hatfield of the University of New South Wales' Transport and Road Safety (TARS) Research Centre. This partnership will begin to explore the prevalence and impact of structural damage in carbon fiber bicycles currently in use by the general public. This joint research project, commencing in June 2023, aims to assess the magnitude of the issue and examine experiences of those impacted by some form of structural equipment failure. This initial phase will provide crucial insights that will underpin subsequent rounds of research by Cycle Inspect that will explore the condition of carbon fiber bicycles in "real-world" scenarios.

Recent Development in Materials

- **SABIC Launches LNP THERMOCOMP Compound.** SABIC has introduced new LNP THERMOCOMP WF006V compound, which is well suited for laser direct structuring (LDS) of antennas that are integrated into the housings and covers of consumer electronics devices, appliances and other electronic components. The new material can help facilitate the adoption of LDS antennas to replace incumbent options such as flexible printed circuit (FPC) antennas by enabling customers to create complex and miniaturized designs, accelerate production and reduce system costs. The glass-fiber-reinforced compound provides a tensile modulus more than two times higher than that of unfilled polybutylene terephthalate (PBT) or polycarbonate (PC) resin, and could be used for molding small, thin-wall parts. It also delivers good surface quality for attractive aesthetics, and good signal gain and LDS performance. Compared to traditional materials, the LNP THERMOCOMP WF006V compound offers better chemical resistance and hydrolytic stability, and lower warpage.

Recent Product Launches in the Composites Market

The following table represents new product launch in the composites market in June 2023.

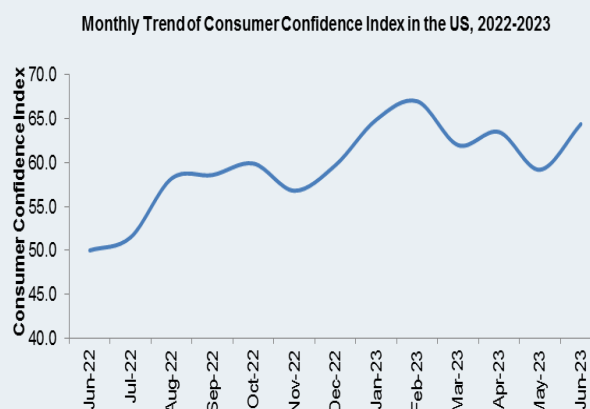
Product	Company Name	Description
Volvo EX30	Volvo	Volvo Cars is using ampliTex flax fiber composites from Swiss company Bcomp to make optional trim for the dashboard and doors of the new EX30 compact electric SUV. It is the first production vehicle to use the new, lightweight material. Made from flax fibers grown in Europe, ampliTex is a lightweight, high-performance technical fabric. Available as dry fiber or natural fiber prepreg, the material can be used to make thermoplastic or thermoset composite parts. The material's properties include high radio transparency, vibration damping and resistance to ultraviolet radiation.

The US Economic Overview – June 2023

The US Consumer Confidence Index increased to 64.4 in June 2023 as compared to 59.2 in May 2023. The GDP at current price of the US increased from US \$26.86 trillion in May 2023 to US \$26.99 trillion in June 2023.

Real gross domestic product (GDP) increased at an annual rate of 2.4% in the second quarter of 2023, according to the "advance" estimate. The increase in real GDP reflected increases in consumer spending, non-residential fixed investment, state and local government spending, private inventory investment, and federal government spending that were partly offset by decreases in exports and residential fixed investment. Imports, which are a subtraction in the calculation of GDP, decreased.

The price index for gross domestic purchases increased 1.9% in the second quarter of 2023, as compared with an increase of 3.8% in the first quarter of 2023. The personal consumption expenditures (PCE) price index increased 2.6% as compared with an increase of 4.1%. Excluding food and energy prices, the PCE price index increased 3.8% as compared with an increase of 4.9%.



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