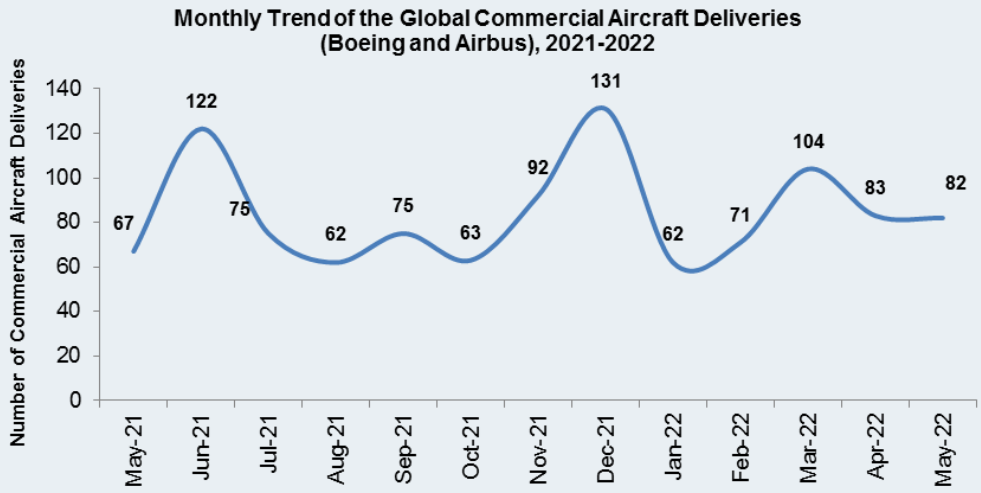
US Composites Market Monthly Insights May 2022

Composites Market Update for May, 2022

The composites market in May continued to perform well, and was up YoY by 8 – 9%, partly due to strong demand in the market, and partly due to supply chain challenges in May ’21. Regardless, demand across most industries remained strong. There are signs that certain industries could be softening, including RV and Busses & Trucks, while Marine remains strong. Short term demand remains high, and June is expected to be flat or slightly down from May due to the (4th) holiday and vacation time (labor constraints). Inflation within the composites industry seems to be greater than the macroeconomic trends. The steady increasing of raw material prices over the year may begin to have an impact on demand. To anticipate this possibility, industry leaders are closely monitoring broader economic factors that could lessen consumer confidence, and decrease discretionary spending, slow housing starts, while simultaneously scrambling to meet the high current demand and working through logistics and labor difficulties.

Aerospace

Commercial aircraft (Boeing and Airbus) deliveries decreased from 83 aircraft deliveries in April 2022 to 82 aircraft deliveries in May, 2022.



Some highlights of May, 2022, are as follows:

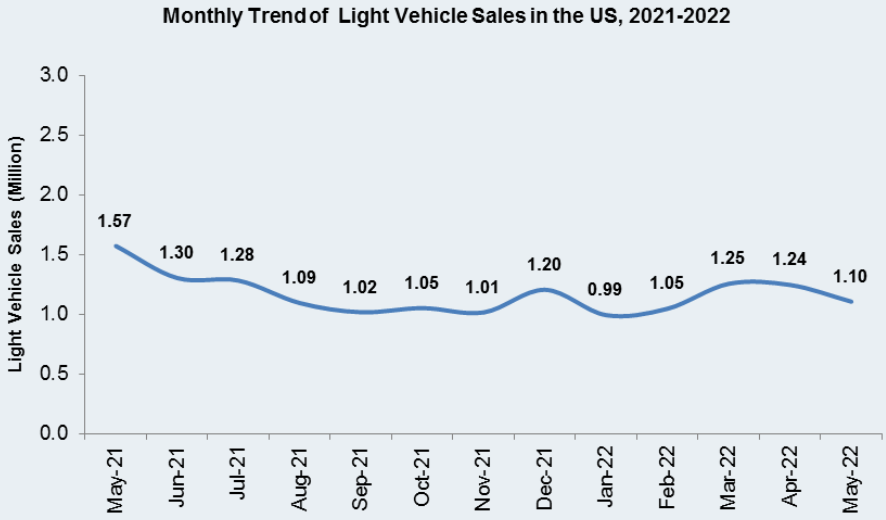
- **Collaboration between Cannon Ergos and Boeing.** Cannon Ergos, a company of the Cannon Group, a world leader in technologies, processing equipment, and mold manufacturing for the composites industry, is working with Boeing on molding trials for the feasibility of using recycled carbon fiber (rCF) for the fabrication of aircraft cabin interior sidewall panels. The project’s latest stage involves Mitsubishi Chemical Advanced Materials (MCAM), a global supplier of high-performance reinforced polymers for which Cannon Ergos has designed,

manufactured, and installed a customized and fully equipped thermo-compression unit. This equipment was utilized to produce prototype sidewall panels with the new Kyrontex material.

- **Collaboration between Toray and Bell on New NCAMP Design Allowable Dataset for 3960 Prepreg System.** Toray Composite Materials America, Inc. has entered into a collaborative arrangement with Bell Textron Inc. to support a new National Center for Advanced Materials Performance (NCAMP) design allowable dataset for Toray's 3960 prepreg material system. This prepreg system utilizes Toray's T1100 intermediate modulus plus (IM+) fibers, providing high toughness and exceptional tensile performance ideal for aerospace applications. Toray is excited to work with Bell in the ongoing development of 3960 prepreg system for structural airframe applications.
- **Daher, Luxembourg's LIST to Develop Welding Technology for Thermoplastic Composite Aircraft Substructures.** The new welding technology with automated assembly of aircraft substructures is an enabler that will open the full potential of thermoplastic composites for aviation. Thermoplastic composites are increasingly used in the aerospace industry because of their lightweight properties, strength and resistance, and the capability to be welded. In addition to enhancing aviation sustainability by lowering an aircraft's weight for reduced fuel consumption, thermoplastic composites also require less energy to produce and they can be recycled.

Automotive

The U.S. new vehicle sales of 1,104,993 units in May, 2022, represented a decrease of 30% as compared to 1,570,313 units in May, 2021.



Some highlights of May, 2022, are as follows:

- **STRUCTeam Appoints Tom Cowan from Williams Racing F1.** STRUCTeam continues their expansion into the automotive sector with the appointment of Tom Cowan as Senior Engineer and Automotive Sector Technical Lead. Tom joins from Williams Racing, the British Formula 1 motor racing team and constructor, where he held the position of Head of Structural Engineering. Tom brings considerable experience in the design and analysis of high-performance composite and metallic structures. In his new role, Tom will build on STRUCTeam's engineering competences across the transportation sector, with a strong emphasis on light-weighting in automotive structures to maximize vehicle efficiency and reduce emissions. Assisting customers in the acceleration of development cycles through the application of sustainable and effective multi-material solutions will be central to his responsibilities.
- **Hankuk Carbon Joins Dymag in Strategic Partnership.** Hankuk Carbon Co Ltd, manufacturer of advanced composite materials, has formed a strategic joint-partnership with Dymag, a world leader in carbon composite wheels, to enable the mass production of state-of-the-art high-performance carbon composite wheels for the world's leading automotive OEMs. Together, the two companies will work to scale-up mass production of Dymag's cutting-edge BX-F carbon composite wheel. The collaboration will apply Hankuk Carbon's expertise in advanced materials and industrialization, leveraging Dymag's expertise in manufacturing lightweight carbon composite wheels for the high-performance and luxury vehicle markets. This combination of unparalleled resources and technical expertise will accelerate time-to-market. Enabling economies of scale in the manufacturing of series production carbon composite wheels, the partnership will focus on a uniquely scalable and localized approach.
- **TRB Lightweight Structures announces new Partnership with Kordsa**. This new collaboration aims to continue the development of sustainable lightweight composites for the automotive industry, and make environmental considerations more accessible in transportation. The new partnership will enhance TRB's offerings, with Kordsa's vast materials science knowledge and global operation capabilities helping to source and supply greener materials. This will help provide innovative solutions to TRB's customers, and is part of an ongoing drive to develop lighter components to support clean transportation.

Construction

Privately-owned housing starts in May were at a seasonally adjusted annual rate of 1,549,000. This is 14.4% below the revised April estimate of 1,810,000 and is 3.5% below the May, 2021, rate of 1,605,000. Single-family housing starts in May were at a rate of 1,051,000; this is 9.2% below the revised April figure of 1,157,000. The May rate for units in buildings with five units or more was 469,000.

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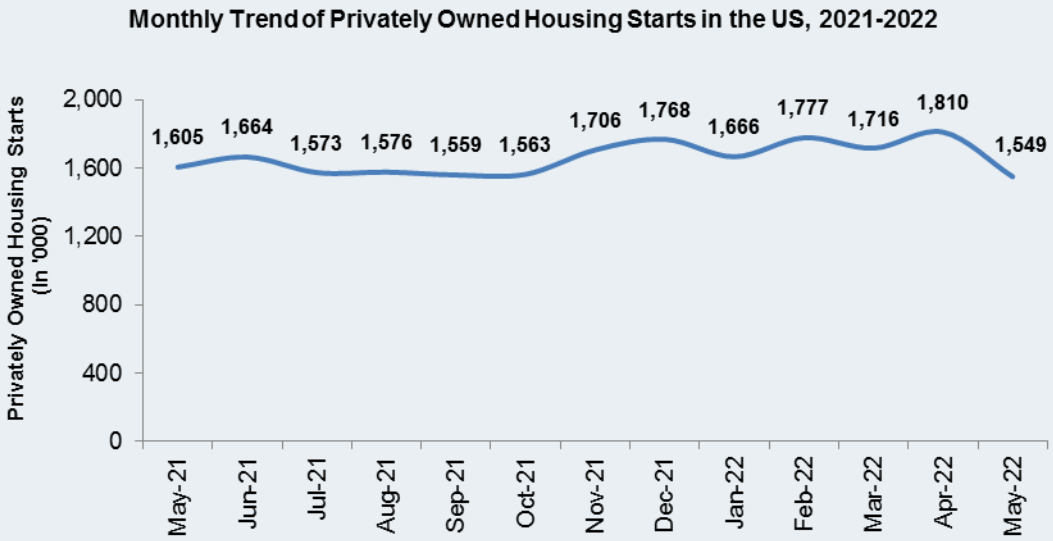

Some highlights of May, 2022, are as follows:

- **The "Smart Circular Bridge" made of Biocomposites.** The Eindhoven University of Technology-led EU project "Smart Circular Bridge" has recognized the potential of natural fiber by building three city bridges made from a biocomposite material consisting of flax and a bioresin for their light and highly stable properties. The first city bridge is now in place in Almere. Biocomposites hold enormous potential for a bio-based circular economy, especially since flax, unlike wood for example, is a fast-growing plant. They also offer an opportunity for the construction industry, which has a large CO2 footprint and high consumption of resources, both of which need to be addressed.
- **Owens Corning to Acquire WearDeck.** Owens Corning has signed an agreement with JR Plastics Corporation to acquire WearDeck, a premium producer of composite weather-resistant decking for commercial and residential applications in North America. The transaction is subject to regulatory approvals and other customary conditions, and is anticipated to close by the end of the second quarter. The acquisition of WearDeck is a positive step in advancing strategy to drive continued growth in Owens Corning and pivoting composites business to focus on high-value material solutions within the building and construction space.

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 18 units during January – April, 2022 was 4,112 MW as compared to 5,563 MW of 28 units during January – April, 2021. With a total installed generating capacity of 139.14 (GW), wind constituted 11.08% of the total installed generating capacity of 1,255.62 (GW) among all energy sources.

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Some highlights of May, 2022, are as follows:

- **Cannon Afros Develops Innovative Direct Resin Infusion System to Boost Wind Turbine Rotor Blade Manufacture.** Cannon Afros, a company of Cannon Group and market leader in high-performance dosing and mixing equipment, has developed an innovative direct infusion system for faster processing of epoxy and polyurethane (PU) resin systems for the manufacturing of wind turbine rotor blades. Benefitting from its long experience of designing and constructing infusion resin mixing machines and auxiliary equipment for degassing resins and hardeners, Cannon Afros focused on improving the cost-efficiency of this particular manufacturing process. Cannon offers rotor blade manufacturers a novel direct infusion system to automatize and provide accurate higher volume dosing to accelerate vacuum infusion for a repeatable, and reliable production process that reduces waste and, in addition avoids volatile organic compounds, thereby improving operator safety.
- **Wind Turbine Blade Recycling Project PRoGrESS Commences.** A pioneering new project gets properly underway this week to develop Britain's first wind turbine blade recycling pilot plant. Project PRoGrESS is a GBP 2 million, three-year scheme, that is part-funded by Innovate UK and leading industry partner Aker Offshore Wind, and seeks to deliver a circular model for wind turbine blades to support the UK's ambitious climate change targets. Project PRoGrESS aims to commercialize a revolutionary method developed by the University of Strathclyde, separating glass-fiber and resin components in composites to recover the glass-fiber component, which can then be reprocessed, molded and reused.

Marine

The US marine industry is anticipated to experience good growth in 2022.

One of the highlights of May, 2022, is as follows:

- **BM Composites announces the Launch of the Linx 30 Superyacht Tender.** The first custom tender brand designed and made in Mallorca, Spain, highlights the customizable Linx 30, a carbon fiber infused superyacht with 30-40% improved fuel efficiency. The prototype Linx 30, offering a layout for 12 passengers, was built with composites, using Gurit's Prime 37 infusion resin system and Corecell marine foam. The hull is said to be a high-tech tour de force, displacing 3.5t, including 430lt of diesel and covering 130 nautical miles at a cruising speed of 25 knots. BM Composites' manufacturing facility has been approved as a CE-certified shipyard and the Linx 30 as a CE-certified C-Class boat.

Consumer Goods

New orders for manufactured durable goods in May increased $1.9 billion or 0.7% to $267.2 billion, the U.S. Census Bureau announced today. This increase, up seven of the last eight months, followed a 0.4% April increase. Excluding transportation, new orders increased 0.7%. Excluding defense, new orders increased 0.6%. Transportation equipment, up two consecutive months, led the increase, $0.7 billion or 0.8% to $87.6 billion.

Some highlights of May, 2022, are as follows:

- **Fernando Alonso and SimplyEV Debut Kimoa E-Bike at Miami Grand Prix Week.** The Kimoa E-Bike is powered by Arevo's lineup of the world's first custom 3D-printed carbon fiber e-bikes, made-to-measure for each rider in a strong, impact-resistant, unibody frame. The Kimoa E-Bike will retail starting at $3,999, and will be exclusively sold online at www.kimoa.com and in-store at SimplyEV and Simply Mac locations across the US. The all-new Kimoa E-Bike powered by Arevo touts a true unibody construction, 3D-printed in a single pass of continuous carbon fiber thermoplastic composite. Unlike other carbon fiber bikes whose frames are glued and bolted together using dozens of individual parts and fabricated from previous-generation thermoset composite materials, the Kimoa bike frame is constructed without joints or glue for seamless strength. Its next-generation thermoplastic materials make it extremely impact resistant, remarkably lightweight, and most importantly - incredibly sustainable.
- **CompPair and Decathlon Successfully Complete Composite Recycling Project.** This project is said to be an industrial proof of concept (POC) of what is possible with HealTech CompPair's self-healing prepreg in terms of recyclability and economic viability and aims to close HealTech's recycling loop on a 3D monolithic product, representative of many sporting goods and relevant to both companies' activities. According to CompPair, HealTech enables the production of composite structures that can heal damage on site in one minute; these structures can also be recycled more efficiently. So far, both companies report achieving their goals by producing a bicycle shoe sole with virgin HealTech glass fiber prepregs, recycling the fabric ply by ply, and producing the same sole with 87% of recycled precut fibers.

Recent Development in Materials

- **Solvay Launches SolvaLite 714 Prepregs.** Solvay has made an important addition to complement its broad portfolio of composite materials for the automotive industry: SolvaLite 714 Prepregs, a new generation of unidirectional carbon-fiber and woven-fabric products pre-impregnated with SolvaLite 714 epoxy resin. These innovative prepregs offer fast-cure cycles, long outlife, and have been optimized for manufacturing automotive components, such as body panels, at short compression-molding cycle times in serial production runs. SolvaLite 714 Prepregs are currently manufactured in Europe, and will be commercially available worldwide beginning in the second quarter of 2022.
- **SABIC Unveils New Upcycled LNP ELCRIN WF0061BiQ Resin.** SABIC introduced LNP ELCRIN WF0061BiQ resin, a novel material that uses ocean-bound polyethylene terephthalate (PET) bottles as a feed stream for chemical upcycling into polybutylene terephthalate (PBT) resin.

The new LNP ELCRIN WF0061BiQ grade, a glass fiber reinforced PBT material, features non-brominated, non-chlorinated flame retardant, meeting the UL94 V0 standard at 0.8mm and F1 rating. It also delivers excellent heat resistance, toughness and stiffness, and high flow well-suited for molding thin-wall applications for outdoor environments such as electrical equipment enclosures.

Recent Product Launches in the Composites Market

The following table represents new product launched in the composites market in May, 2022.

Product	Company Name	Description
HexPly Nature Range	Hexcel	HexPly Nature Range includes proven resins such as HexPly M49, M78.1-LT and M79 but with bio-derived epoxy resin content. The excellent resin characteristics remain unchanged in the new Nature Range products, maintaining high mechanical performance and consistent processing properties. In addition, the HexPly Nature Range provides prepreg options with natural fiber reinforcements that can be seamlessly integrated into existing production processes.

The US Economic Overview – May, 2022

The US Consumer Confidence Index decreased to 58.4 in May, 2022, as compared to 65.2 in April, 2022. The GDP at current price of the US increased from US $24.56 trillion in March, 2022, to US $24.80 trillion in April, 2022.

Real gross domestic product (GDP) decreased at an annual rate of 1.6% in the first quarter of 2022, according to the "third" estimate. The decrease in real GDP reflected decreases in private inventory investment, exports, federal government spending, and state and local government spending, while imports, which are a subtraction in the calculation of GDP, increased. Personal consumption expenditures (PCE), non-residential fixed investment, and residential fixed investment increased.

In the first quarter, an increase in COVID-19 cases related to the Omicron variant resulted in continued restrictions and disruptions in the operations of establishments in some parts of the country. Government assistance payments in the form of forgivable loans to businesses, grants to state and local governments, and social benefits to households--- all decreased as provisions of several federal programs expired or tapered off. The full economic effects of the COVID-19 pandemic cannot be quantified in the GDP estimate for the first quarter, because the impacts are generally embedded in source data and cannot be separately identified.

The price index for gross domestic purchases increased 8.0% in the first quarter, as compared with an increase of 7.0% in the fourth quarter. The PCE price index increased 7.1%, as compared with an increase of 6.4%. Excluding food and energy prices, the PCE price index increased 5.2%, as compared with an increase of 5.0%.

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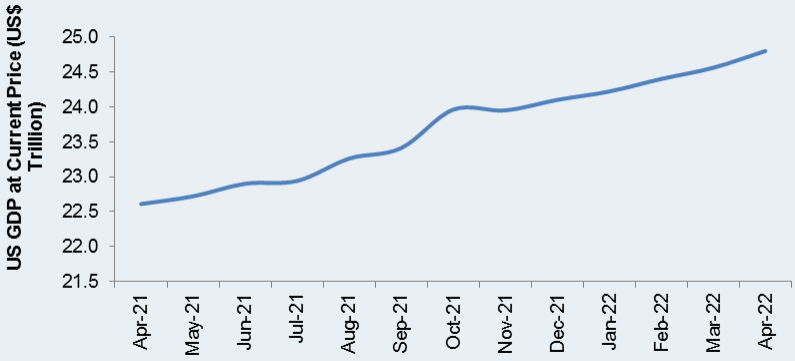
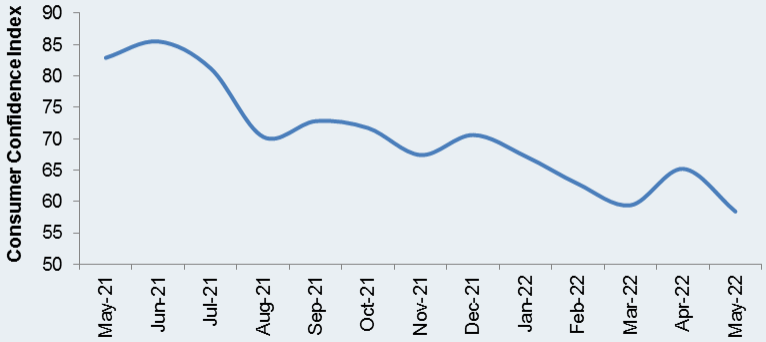
Monthly Trend of the US Current GDP in 2021-2022



Monthly Trend of Consumer Confidence Index in the US, 2021-2022



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