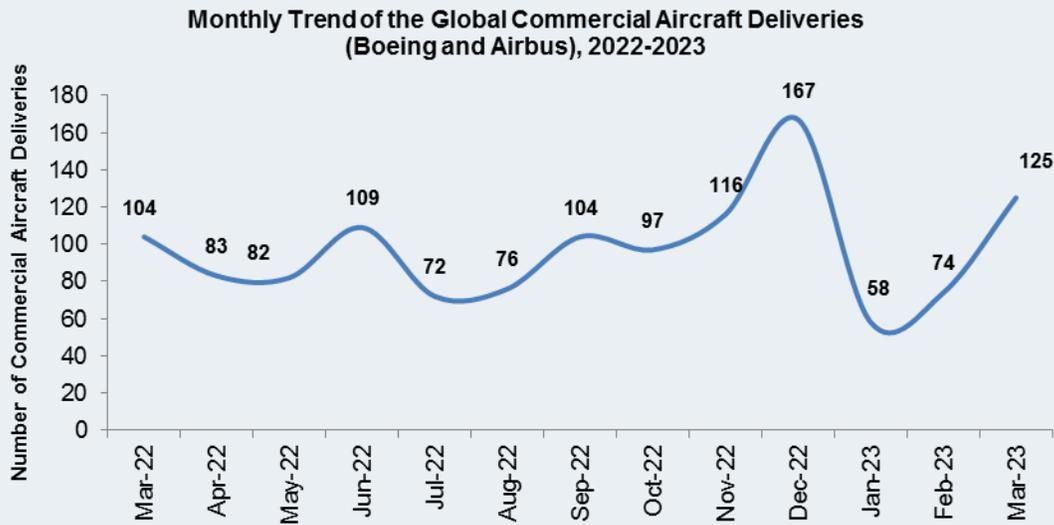


Composites Market Update for March 2023

The composites market in March was down year over year at around 10%-15%, but raised around 10%-15% from February, portending opportunities in the offing for a rebound. Infrastructure, Marine, Passenger Car Transportation, and Home Décor performed well, while Construction and Distribution declined and RVs had mixed results. Construction was impacted by reduced housing starts. According to the US Census Bureau, privately-owned housing starts, at an annual rate of 1.42 million, were 13% less than the revised estimate for February and 17.2% less than the rate for March 2022. February and March in the prior year were very strong. April is anticipated to dip on a YoY basis about 10%, with a decrease of about 8% from March 2023. In April, the recreational segment is struggling, while public spending is driving growth in composites for 5G networks, where pultruded composites allow transmission with lower signal loss than traditional materials. Prices for certain raw materials, used as component materials in resins, increased in March due to supply chain issues. In the coming months, anticipate more normal spending and volumes and a more positive trend. Construction is expected to show positive signs, boosted over time by the Build Back Better legislation in the US, which proposed over one million new affordable housing units, and modernizing existing public housing. Cuts in oil production would likely increase raw material prices.

Aerospace

Commercial aircraft (Boeing and Airbus) deliveries increased from 74 aircraft deliveries in February 2023 to 125 aircraft deliveries in March 2023.



One of the highlights of March 2023 is as follows:

- Partnership between Limosa Inc. and Airborne for Prototyping and Automated Production of Composite Airframes.** Limosa Inc. and Airborne have agreed terms for the production of the LimosaLimoConnect aircraft prototype airframe in parallel to designing automated manufacturing lines and supporting Limosa's industrialization from prototype through to serial production. With their highly collaborative approach, the partners aim for the fast ramp up of the Limosa airframe production and ensure both trade-offs and development will be able to meet the pressing timescales of OEM. Limosa Inc. aims to revolutionize air taxi transportation through the development of the LimoConnect all-electric, 1+7 seater Vertical and Conventional Take-off and Landing (eVTOL + eCTOL) aircraft. The type certification of LimoConnect under regulations of Transport Canada Civil Aviation (TCCA) and entry into service is planned for 2028.

Automotive

The U.S. new vehicle sales of 1,368,094 units in March 2023 represented an increase of 9% as compared to 1,257,821 units in March 2022.

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



Some of the highlights of March 2023 are as follows:

- Lacks Enterprises to Supply Carbon Fiber Wheels for New 2023 Dodge Challenger SRT Demon 170.** Lacks Enterprises Inc. is supplying exclusive high-performance carbon fiber wheels for the new 2023 Dodge Challenger SRT Demon 170. Lacks' two-piece carbon-fiber wheels were designed specifically for the Challenger SRT Demon 170 using a forged aluminum center fastened to a carbon-fiber rim with titanium alloy hardware. A larger weave pattern than traditional carbon-fiber wheels allow the material to be seen from a greater distance while adding increased strength. Lacks patented resin formula is UV stable to ensure the

carbon fiber material does not discolor over time. Lacks Carbon Fiber wheels are, on average, 25% lighter than aluminum alloy wheels.

- Classic Citroen Vans Reconceptualized Using AOC Resins.** Citroen Type H enthusiasts globally are able to recreate the distinctive exterior styling of this versatile van due to composite body kits manufactured by Caselani with AOC resins. The composite body panels are mostly manufactured using hand lay-up processes using AOC's Synolite 8388-I-1 and Atlac E-Nova MA 6325 resins. The Italian company is modifying vehicles in the Citroen Jumper range into retro style 'Type H' vans using glass fiber reinforced polymer (GRP) composite body panels manufactured using AOC resins. Caselani carries out all the work at its plant in Sospiro, Italy. The company manages all stages of the project, from design and prototyping to creation of molds, manufacture of the composite parts, and painting.

Construction

Privately-owned housing starts in March were at a seasonally adjusted annual rate of 1,420,000. This is 0.8% below the revised February estimate of 1,432,000 and is 17.2% below the March 2022 rate of 1,716,000. Single-family housing starts in March were at a rate of 861,000; this is 2.7% above the revised February figure of 838,000. The March rate for units in buildings with five units or more was 542,000.

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



Some of the highlights of March 2023 are as follows:

- Building Code Requirements Renewed for CarbonCast Wall Panels.** CarbonCast high-performance insulated wall panels, manufactured by AltusGroup, an international collaboration of precast concrete companies across North America, have renewed their evaluation report through ICC Evaluation Service, reaffirming that the CarbonCast wall panels meet code requirements. CarbonCast high-performance insulated wall panels with C-

Grid carbon fiber-reinforcing shear truss connectors and rigid foam insulation were tested in accordance with ICC-ES Acceptance Criteria AC-422.

- **Planefibra Translucent Composite Tiles Target Natural Lighting, Energy Savings.** In addition to opaque composite roof tiles, Planefibra is adding translucent versions to its product offerings, highlighting their advantage in providing natural lighting to reduce electricity use, while blocking direct solar radiation to prevent overheating in buildings. According to the company's website, the translucent tiles are made from glass fiber-reinforced polyester and have UV protection film on both sides. With a minimum useful life of ten years, composite tiles have high thermal resistance.

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 6 units during January - February 2023 was 1,066 MW as compared to 3,201 MW of 16 units during January - February 2022. Wind with a total installed capacity of 145.87 (GW) constitutes 11.48% of the total installed capacity of 1,270.36 (GW) among all energy sources.

One of the highlights of March 2023 is as follows:

- **Partnership between TPI Composites, Tex-Tech, and Carbon Rivers for Turning End-of-Life Wind Blades to Liners for Cured in Place Pipe.** TPI Composites, Inc. has partnered with Tex-Tech and Carbon Rivers in a pilot program to process end-of-life wind blades, pyrolyze the material and process the recovered glass fiber into liners for cured in place pipe (CIPP). CIPP gives new life to damaged pipelines without the excavation of streets through rehabilitation of existing water mains and waste lines by lining the walls of the existing pipe with a hardened synthetic fiber tube. With this partnership, TPI is able to contribute to a circular economy providing end-of-life wind blades to Carbon Rivers who has created a pilot line for the recycling process through high-temperature pyrolysis.

Marine

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

One of the highlights of March 2023 is as follows:

- **SeaBioComp Developed and Tested Bio-Based Composites for Marine Application.** SeaBioComp, a European Interreg 2 Seas project, successfully developed and tested a number of bio-based thermoplastic composite materials, manufactured a variety of marine demonstrator products and compiled a commercialization action plan to assess the technological and environmental advantages and identify key potential applications for the materials in the marine environment. The motivation for the project has been to reduce the use of fossil-based materials in the marine sector by developing bio-based composites that have long-term durability with reduced CO₂ emissions and environmental impact on the

marine ecosystem. Early research in the project identified flax as the most suitable natural plant fiber to be used as reinforcement in the bio composite.

Consumer Goods

New orders for manufactured durable goods in March, up following two consecutive monthly decreases, increased \$8.6 billion or 3.2% to \$276.4 billion, according to the U.S. Census Bureau. This followed a 1.2% February decrease. Excluding transportation, new orders increased 0.3%. Excluding defense, new orders increased 3.5%. Transportation equipment, also up following two consecutive monthly decreases, led the increase by \$8.1 billion or 9.1% to \$97.4 billion.

One of the highlights of March 2023 is as follows:

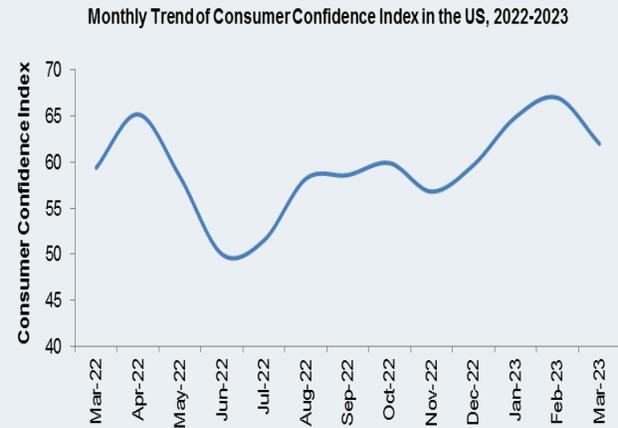
- **Jabil, KAV Sports Deliver Customized Composite Bike Helmets.** Jabil Inc. has teamed with sporting goods store KAV Sports on made-to-order, personalized bicycle helmets that are reported to deliver a better fit for optimized comfort and protection using custom engineered materials and additive manufacturing (AM). The KAV Portola helmet is made from custom nylon carbon fiber material engineered by Jabil to meet exacting standards for performance and aesthetics.

The US Economic Overview – March 2023

The US Consumer Confidence Index decreased to 62.0 in March 2023 as compared to 67.0 in February 2023. The GDP at current price of the US increased from US \$26.43 trillion in January 2023 to US \$26.44 trillion in February 2023.

Real gross domestic product (GDP) increased at an annual rate of 1.1% in the first quarter of 2023, according to the "advance" estimate. The increase in real GDP reflected increases in consumer spending, exports, federal government spending, state and local government spending, and non-residential fixed investment that were partly offset by decrease in private inventory investment and residential fixed investment. Imports, which are a subtraction in the calculation of GDP, increased.

The price index for gross domestic purchases increased 3.8% in the first quarter of 2023 as compared with an increase of 3.6% in the fourth quarter of 2022. The PCE price index increased 4.2% as compared with an increase of 3.7%. Excluding food and energy prices, the PCE price index increased 4.9% as compared with an increase of 4.4%.



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