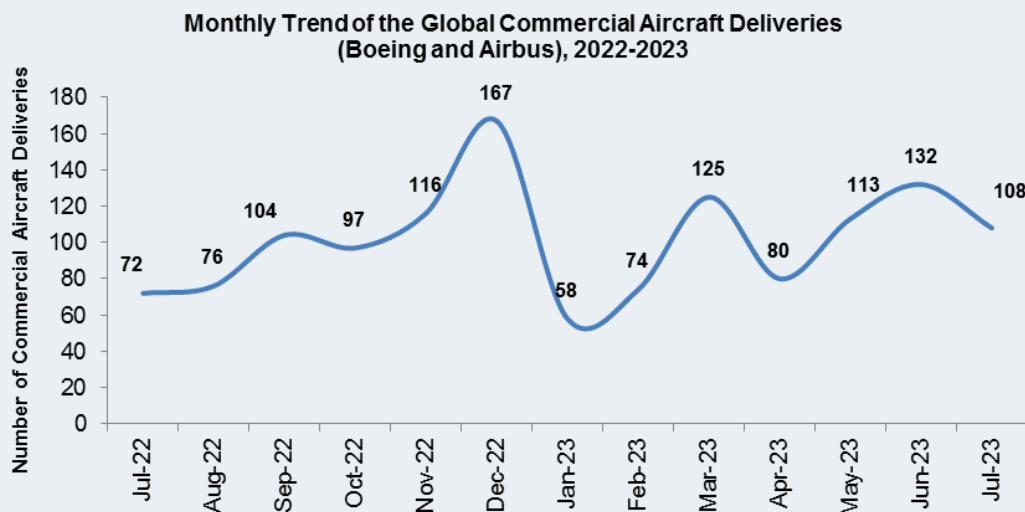


### Composites Market Update for July 2023

Year over year, the composites market dipped around 15% in July, reflecting shorter working days and a strong July 2022. The market in July 2023 declined about 12% as compared to June 2023. YoY, in July 2023, the marine sector contracted about 30%, reflecting strong inventory backlogs in the past. The RV market continued to remain soft, as it works through high inventories following strong demand during the COVID-19 pandemic and into 2022, which fueled staycations. Construction remained soft, dipping about 15%, transportation (including heavy trucks, buses, passenger cars, and RVs) fell about 5%, and the distribution sector also contracted. However, infrastructure (including pipes, storage tanks, renewable energy, utilities, and polymer concrete enclosures for telecommunications) remained solid. Raw material prices trended slightly downward. August can experience some softness, somewhat of a rebound over July is possible, which could include sectors, such as construction and RVs. Prospects would be boosted by lower interest rates, lower inflation, and increased home building. In July, the consumer price Index rose 0.2%, the same as in June. Over the past 12 months, the U.S. CPI increased 3.2%, slightly more than the 3.0% gain for the 12 months ending in June. The U.S. Federal Reserve raised interest rates by 0.25% in July. The Fed may halt interest rate hikes, or initiate one additional hike, before year end to fight super core inflation (professional and personal care services, excluding food, energy, and housing). Privately-owned housing starts rose 3.9% in July from June and 5.9% as compared to June 2022, according to the US Census Bureau and US Department of Housing and Urban Development.

### Aerospace

Commercial aircraft (Boeing and Airbus) deliveries decreased from 132 aircraft deliveries in June 2023 to 108 aircraft deliveries in July 2023.



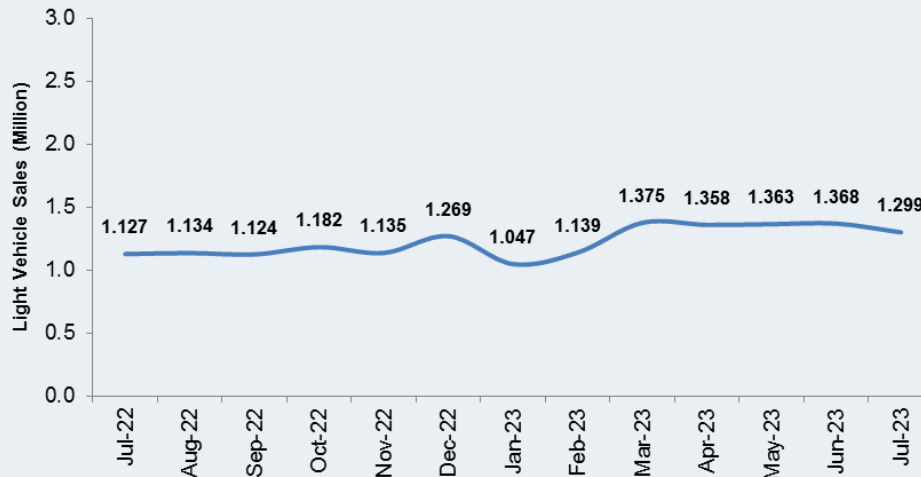
Some of the highlights of July 2023 are as follows:

- **Daher's First Kodiak 100 Equipped with a Five-Blade Composite Propeller Delivered.** Daher has delivered a turboprop-powered Kodiak 100 to the North Carolina Forest Service's Aviation Division, which becomes a new customer as well as the initial operator of this multi-mission aircraft equipped with a composite five-blade propeller. Tailored specifically for use on the Kodiak 100, the new five-blade propeller incorporates Hartzell's lightweight Raptor propeller hub technology. New-production Kodiak 100 Series III aircraft are now available with the five-blade composite propeller as an option. The retrofit for all in-service Kodiak 100s is offered via the Hartzell Top Prop program. At a diameter of 96 inches, the five-blade composite propeller has a ground clearance of 16.4 inches, retaining the Kodiak 100's ability to operate from unprepared strips and in the amphibious version when equipped with floats.
- **BAE Systems' PHASA-35 Completes First Successful Stratospheric Flight.** British engineers have successfully completed a stratospheric flight trial of BAE Systems' High Altitude Pseudo Satellite (HAPS) Uncrewed Aerial System (UAS) - PHASA-35. The PHASA-35 program sits within FalconWorks, a new center for advanced and agile research and development within BAE Systems' Air sector, designed to deliver a range of cutting-edge combat air capabilities to the UK and its allies. PHASA-35, which has a 35-meter wingspan and carries a 15kg payload, uses a range of world-leading technologies including advanced composites, energy management, solar electric cells and photo-voltaic arrays to provide energy during the day which is stored in rechargeable cells to maintain flight overnight.
- **Partnership between Qarbon Aerospace and Supernal LLC.** Qarbon Aerospace, Inc., a premier manufacturer of medium to large complex composite components and assemblies, apprised of its partnership with Supernal LLC, a leading Advanced Air Mobility eVTOL vehicle company. Through this partnership, Supernal and Qarbon will scale Qarbon's unique welding technology to revolutionize the assembly process of Supernal's thermoplastic carbon composite vehicle structure enabling readiness for high-rate manufacture from the start of the program. By leveraging Qarbon Aerospace's established induction welding process, the collaboration will streamline the assembly process delivering high-quality composite components for Supernal's visionary eVTOL vehicles.

### Automotive

The U.S. new vehicle sales of 1,298,862 units in July 2023 represented an increase of 15% as compared to 1,126,523 units in July 2022.

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



### Some of the highlights of July 2023 are as follows:

- Dymag and Hankuk Carbon Join Forces to Re-invent the Wheel.** Dymag, a manufacturer of lightweight wheels for the automotive industry, and its strategic partner, composites material specialists Hankuk Carbon are working with Hyundai on the development of a new carbon fiber hybrid wheel technology for the carmaker's N Performance vehicles. Dymag's proprietary carbon fiber hybrid wheel technology blends together a composite outer rim made from carbon fiber with a precision-machined forged metallic centerpiece. Enhanced safety is another key factor to the technology. As a hybrid wheel, it is capable of bend and springback in the event of an unusually high load or sharp impact in contrast to one-piece aluminum wheels which can permanently deform or shatter.
- HRC Facilitates Development of Karma Automotive Ultra-Luxury EV.** HRC and Karma Automotive are collaborating on the development of glass fiber sheet molding compound (GF-SMC) products. HRC will be providing Karma with low-density glass fiber SMC decklids, fenders and headlamp brackets for its GS-6 vehicle model, delivering customized design and engineering solutions to achieve weight reduction and higher performance. This partnership highlights HRC's commitment to providing comprehensive composite lightweight solutions for customers in different regions in a substantial diversified way.

- Dash-CAE Launches Revolutionary TR01 for Road Cars.** Leading advanced engineering company Dash-CAE with its DNA derived from F1 technology has launched a ground-breaking new carbon monocoque chassis, the TR01. 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 July 2023 were at a seasonally adjusted annual rate of 1,452,000. This is 3.9% above the revised June estimate of 1,398,000 and is 5.9% above the July 2022 rate of 1,371,000. Single-family housing starts in July were at a rate of 983,000; this is 6.7% above the revised June figure of 921,000. The July rate for units in buildings with five units or more was 460,000.

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



One of the highlights of July 2023 is as follows:

- Joint Venture of Dura Composites and Mekina Industries.** As one of the world leaders in creating composite products and solutions, Dura Composites have invested in Mekina Industries. This collaboration will empower Mekina Industries in its aim to lead the way in GRP construction products such as permanent formwork, copers, and custom moldings. This joint venture allows Mekina to benefit from the knowledge, expertise and experience gathered by Dura Composites, with over 27 years of supplying structural walkways to infrastructure markets. Effective immediately, Dura owns 50% of Mekina Industries; however, both remain separate businesses that will operate independently.

## 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 July 2023 is as follows:

- **Hexagon Purus Receives Orders for H2 Refueling Station, H2 Distribution Systems.** Hexagon Purus has received an order from a large European OEM to deliver a mobile 700-bar hydrogen (H2) refueling station and secured a five-year framework agreement with a leading global energy company to deliver H2 distribution systems comprising its Type IV tanks using carbon fiber-reinforced polymer (CFRP) composites. Per its order, the European OEM intends to integrate the mobile refueling station to demonstrate and verify H2 energy supply to commercial vehicles. The order is valued at around EUR3 million and delivery is scheduled for Q4 2024.

## Marine

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

### One of the highlights of July 2023 is as follows:

- **Northern Light Composites Launches EcoRacer30 Sailing Boat.** Italian startup Northern Light Composites (NIcomp) has launched its new EcoRacer30 sailing boat, which the firm claims can be fully recycled due to new composite technology. NIcomp, which is based in Monfalcone, specializes in rComposite technology, which the firm says allows for easier recycling of composite material at the end of the boat life. Currently, it is estimated that approximately 95 per cent of fiberglass boats end up abandoned at the end of their lifecycle. The Ecoracer30 is a 9-meter sailing boat designed by Matteo Polli that utilizes rComposite. It was launched during the recent Ocean Race Grand Finale in Genova. rComposite 'replaces thermosetting resins with a thermoplastic matrix', which allows for easy chemical processing and recovery of the raw materials, enabling the boat to be recycled.

## Consumer Goods

New orders for manufactured durable goods in July, down following four consecutive monthly increases, decreased \$15.5 billion or 5.2% to \$285.9 billion, the U.S. This followed a 4.4% June increase. Excluding transportation, new orders increased 0.5%. Excluding defense, new orders decreased 5.4%. Transportation equipment, also down following four consecutive monthly increases, drove the decrease, \$16.4 billion or 14.3% to \$98.7 billion.

### One of the highlights of July 2023 is as follows:

- **Omni Tanker Introduces Composite Road-Train Tanker.** Australian composite materials manufacturer, Omni Tanker, has launched a world-first composite triple road train, able to move almost 100-tons of payload in a single haulage run, while significantly reducing operational costs for its customer Townsville Logistics. Employing advanced composite materials and engineering practices commonly found in aerospace, Omni Tanker's new triple tanker features world-first Mold-in-Baffles to better manage the movement of fluid (surge) in the road tankers, enhancing safety, while advanced fabrication techniques also reduce the weight of the trailer units. The collaborative project between Omni Tanker and Mick Murray Welding delivered a triple road train solution that boasts a 15% gain in payload as a result of the advanced carbon fiber composite construction enabling a reduction in the number of trips and associated emissions through the greater carrying capacity.

## Recent Development in Materials

- **SABIC Introduces SABIC PP Compound H1090 Resin and STAMAX 30YH611 Resin.** SABIC introduced SABIC PP compound H1090 resin and STAMAX 30YH611 resin, two breakthrough materials well-suited for sheet extrusion and thermoforming that offer a unique alternative to traditional sheet metal forming, compression and injection molding, allowing customers to form large, complex structural parts. Both short glass fiber-reinforced SABIC PP compound H1090 resin and long glass fiber-reinforced STAMAX 30YH611 resin feature a distinct combination of intumescence for fire safety and balanced stiffness and ductility. These new products are 30 percent glass fiber-reinforced, intumescent, flame retardant (FR) materials, based on polypropylene (PP), and can be used for electric vehicle (EV) battery pack components such as top covers, enclosures and module separators. Compared to injection molding of thermoplastics and compression molding for thermosets, which requires expensive tooling and equipment, extrusion and thermoforming can be more cost-effective and efficient for several cases.

## Recent Product Launches in the Composites Market

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

Product	Company Name	Description
6 Axis Robotic Filament Winding Cell	Carbon ThreeSixty	The cell is based around a 6 axis Kuka KR240 robot that is capable of handling a wide range of composite materials and processes, further extending CTS's manufacturing capability in Chippenham, UK. The winding cell will be capable of processing a wide range of materials, in dry tow, wet wind and pre-impregnated formats on parts up to 1.2m diameter by 3.5m long and will be used for products, such as hydrogen storage, transmission shafts, and electric motors. The robot will be used for both filament winding and development of future manufacturing automation processes across Carbon ThreeSixty's advanced product portfolio.

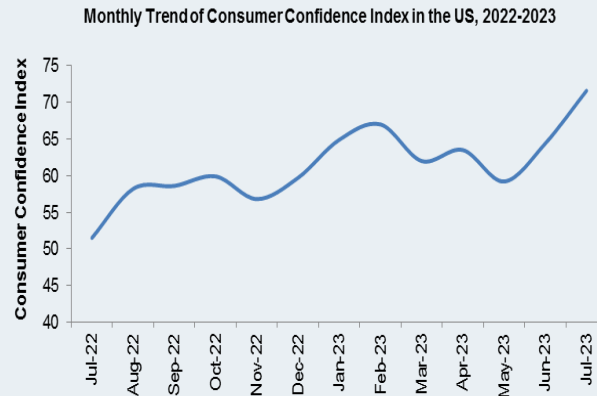
## The US Economic Overview – July 2023

The US Consumer Confidence Index increased to 71.6 in July 2023 as compared to 64.4 in June 2023. The GDP at current price of the US increased from US \$26.92 trillion in June 2023 to US \$27.13 trillion in July 2023.

**Real gross domestic product (GDP)** increased at an annual rate of 2.1% in the second quarter of 2023, according to the "second" estimate. The increase in real GDP reflected increases in consumer spending, non-residential fixed investment, state and local government spending, and federal government spending that were partly offset by decreases in exports, residential fixed investment, and private inventory investment. Imports, which are a subtraction in the calculation of GDP, decreased.

The price index for gross domestic purchases increased 1.7% in the second quarter of 2023, a downward revision of 0.2% point from the previous estimate. The personal consumption expenditures (PCE) price index increased 2.5%, a downward revision of 0.1%. Excluding food and energy prices, the PCE price index increased 3.7%, a downward revision of 0.1%.





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