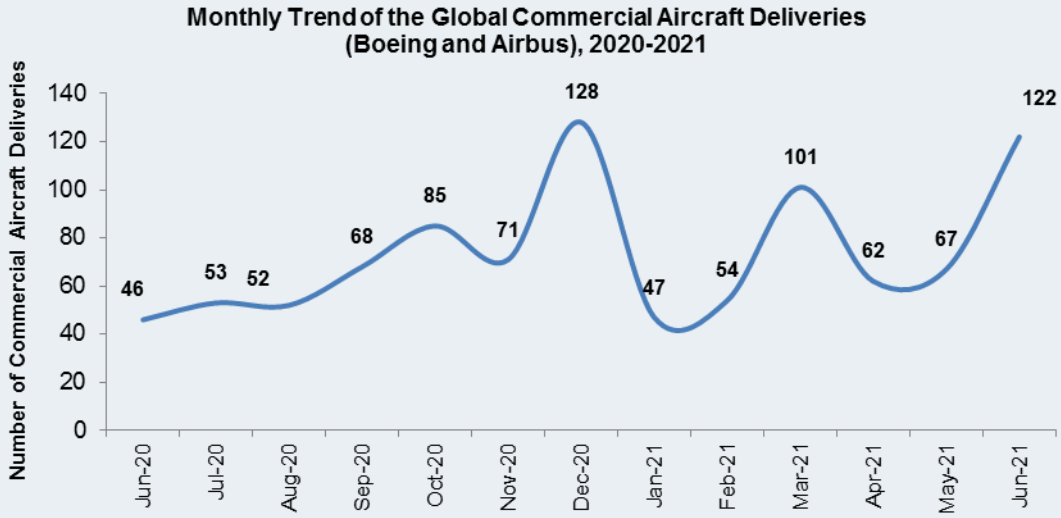
US Composites Market Monthly Insights June 2021

Composites Market Update for June 2021

The US Composites Market in June remained robust from a demand standpoint. Composites remained flat and consistent with May, and slightly (0-1%) ahead of June 2019. Most sectors are growing, with construction, housing, and leisure all performing well. RV and Marine may start to slow, after several months of strong performance. The Composites Market has been trending at 2019 demand levels for the past several months, and that trend is expected to continue. However, production and transportation bottlenecks are key limiting factors. Freight remains a persistent challenge, including access to drums (steel), and trucking. Raw material prices have been relatively stable in June and July overall. The potential for a Covid resurgence has become a recent concern.

Aerospace

Commercial aircraft (Boeing and Airbus) deliveries increased from 67 aircraft deliveries in May, 2021, to 122 aircraft deliveries in June, 2021.



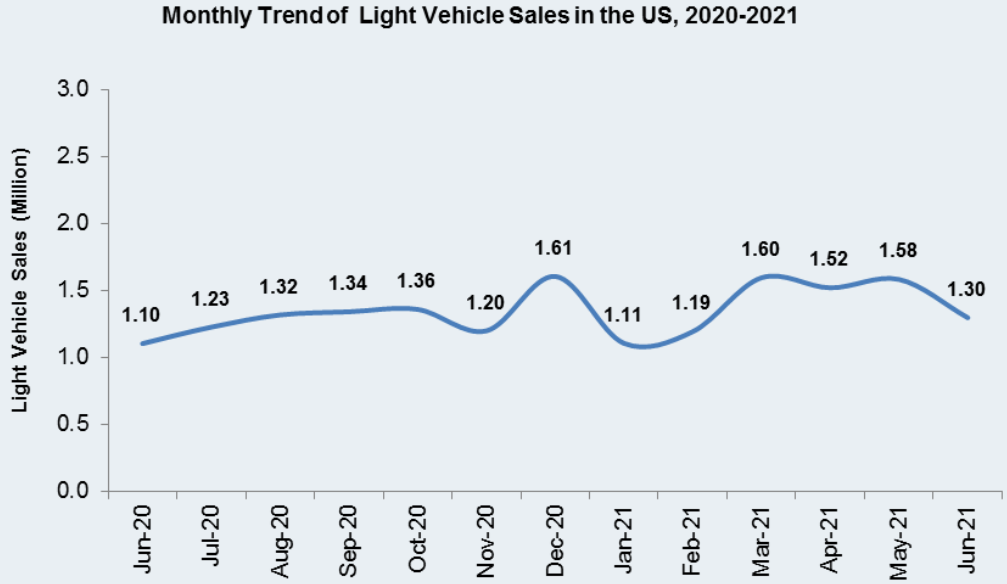
Some highlights of June, 2021, are as follows:

- **GKN Aerospace Delivers Fully Integrated Composite Structures for All-Electric Alice Aircraft.** GKN Aerospace reports that it has reached an important milestone in its collaboration with Eviation by delivering the fully integrated wings, empennage and electrical wiring interconnection systems for Eviation's composites-intensive, all-electric aircraft, Alice, which will also boast three composite doors, carbon fiber blades, a composite fuselage and more. GKN says the wings and empennage feature advanced composite technology and are the first delivered by GKN Aerospace as fully integrated structures.

- **Teijin Ltd. Joins Spirit AeroSystem Aerospace Innovation Centre.** Teijin reports that within this space, it will enhance its capabilities to contribute to Spirit AeroSystems' vision to enable innovative technologies and build a sustainable future. This collaboration will also reportedly strengthen Teijin's advantage as a leading carbon fibers and composites supplier for aerospace applications.
- **Solvay Supplies Composites, Adhesives, Technical Support to Novotech Seagull Aircraft Development.** Solvay is partnering with Italian urban air mobility (UAM) company Novotech s.r.l. and will provide access to its range of thermoset, thermoplastic composites and adhesive materials as well as dedicated technical support to develop the structure of the second prototype of Novotech's hybrid Seagull water landing aircraft. The composite-intensive Seagull is a hybrid-electric aircraft boasting an automatic folding wing system. It is also capable of both landing and taking off from lakes and sea thanks to its trimaran hull configuration, which is said enables a low-cost air-maritime mobility system.
- **Henkel Develops REACH-Compliant Structural Adhesive for Aircraft Interiors.** The adhesive offers good mechanical performance when bonding properly treated thermoplastics and thermosets to a range of other substrates. This user-friendly epoxy also reportedly provides an excellent balance of adhesion performance and FST compliance. The product is available globally and has targeted applications in commercial aviation, defense and rail applications.
- **Collins Aerospace Ramps Up Electric Motor Development for Airlander 10 Airship.** Collins Aerospace completes design review and begins fabrication of a 500-kilowatt electric motor for the composites-intensive aircraft. Airlander 10 has the potential to be the world's first zero-emission aircraft, while pioneering game-changing electric flight technologies in the process.

Automotive

The U.S. new vehicle sales of 1,296,517 units in June, 2021, represented an increase of 17% as compared to 1,103,791 in June, 2020.

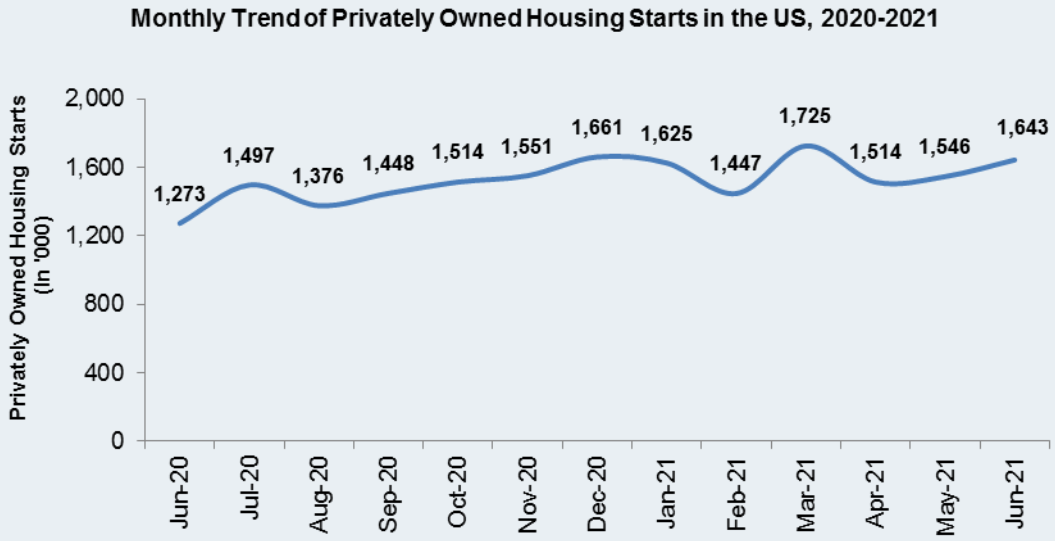


Some highlights of June, 2021, are as follows:

- **Hexagon Purus to Deliver Composite Storage Systems for Hydrogen Vehicle Prototypes.** Hexagon Purus will supply hydrogen storage systems for Keyou's H2 combustion engine DEMO bus with a leading European OEM and its DEMO truck project. Hexagon Purus' storage systems will be supplied from its Kassel, Germany and Kelowna, Canada facilities, with first deliveries slated for November 2021.
- **Optimization Approach Helps Design Lighter Carbon Fiber Composites.** Researchers from Tokyo University of Science have adopted a new design method that optimizes both carbon fiber thickness and orientation, achieving weight reduction in fiber-reinforced composites and opening doors to lighter automotive vehicles. Fiber-steered design only optimizes orientation and keeps the thickness of the fibers fixed, preventing full use of the mechanical properties of CFRP.
- **Ferrari 812 Competizione Makes Extensive Use of Carbon Fiber**. This mass reduction effort took place in all aspects of the car, whether it was the use of titanium con rods in the engine, or carbon fiber trim for the cockpit. The body shell is one area where there is extensive use of the composites, including the front and rear bumpers, rear spoiler and air intakes. One of most the notable features on the front of the car is the transverse groove in the hood into which a carbon fiber blade is fitted. This is for both function and aesthetic. As for the former, it increases the surface area of the vents that provide air to the engine, while the latter makes the hood appear cleaner than would be the case were traditional louvers used.
- **Hexion Partners with Rassini for Composite Leaf Spring Application in New Ford F-150 Model.** Rassini has developed — and manufactures — the vehicle model's hybrid rear suspension, which consists of a parabolic main steel leaf supported by a composite helper spring, at its Piedras Negras, Mexico location. With this hybrid suspension, Rassini says the same stiffness and durability as a conventional multi-steel leaf spring pack is achieved, while realizing a weight reduction of 16 kilograms. In addition to the vehicle's reduce carbon footprint and payload increase, the company notes that the composite component provides a smoother engagement and less friction and noise.

Construction

Privately-owned housing starts in June were at a seasonally adjusted annual rate of 1,643,000. This is 6.3% above the revised May estimate of 1,546,000 and is 29.1% above the June 2020 rate of 1,273,000. Single-family housing starts in June were at a rate of 1,160,000; this is 6.3% above the revised May figure of 1,091,000. The June rate for units in buildings with five units or more was 474,000.



One of the highlights of June, 2021, is as follows:

- **Solico Engineers Composite Elements for Netherlands Infrastructure Project.** Solico partners with Advantage Composites to aid in engineering all composites components and their supporting structures for Phase 3 of an extensive viaduct and underpass reconstruction. Solico says all composites components and their supporting structures were engineered to meet all required national and EU safety standards, and also to include design elements and bio-based materials inspired by the natural landscapes surrounding the new structures.

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 27 units during January-May 2021 was 4,931 MW as compared to 3,661 MW of 38 units during January-May, 2020. With a total installed generating capacity of 125.68 (GW), wind constituted 10.24% of the total installed generating capacity of 1,226.83 (GW) among all energy sources.

Some highlights of June, 2021, are as follows:

- **LM Wind Power Bergama Wind Turbine Blade Manufacturing Site Produces 1,111th Blade.** Turkey-based plant deploys lean management strategies and a diverse workforce to produces two-piece carbon fiber blades for GE's Onshore Cypress platform as well as wind blades for regional and global wind farms.
- **NCC Research Supports New Composite Gripper Solution for Wind Turbine Installation.** Compared to current steel clamping structures, which aid in turbine installation, the feasibility study established that composite grippers could cut cost points, installation time and reduce overall environmental impact. Through conceptual designs, cost modeling, material and

process assessment and a life cycle assessment, engineers at the NCC established that using composite materials for the grippers could potentially decrease the targeted cost point by up to 50%, cut the installation time by up to 50 days on a 100-turbine farm and reduce the environmental impact of the turbine installation by up to 40%. Switching to a composite gripper could also remove unnecessary structures from the turbine leg and jacket and reduce the overall size of the wind turbine legs.

Marine

The US marine industry is expected to recover in 2021 as compared to the declines of 2020.

Some highlights of June, 2021, are as follows:

- **Fine Hulls Brings Bold Boat Design with Diab Sandwich Composites.** The pleasure yacht is entirely made from Diab's Divinycell foam sandwich core using a vacuum infusion process for excellent stiffness, strength and light weight. The design commenced with hydrodynamic evaluation of the hull form with towing tank tests, optimizing the hull for space, powering and comfort.
- **Hexagon Purus Accelerates Zero-Emissions Efforts for Maritime Industry.** Newly established Hexagon Purus Maritime AS expects to advance composite hydrogen storage vessel commercialization to bring zero-emission technology to the maritime industry.

Consumer Goods

New orders for manufactured durable goods in June increased $2.1 billion or 0.8% to $257.6 billion. This increase, up thirteen of the last fourteen months, followed a 3.2% May increase. Excluding transportation, new orders increased 0.3%. Excluding defense, new orders increased 1.0%. Transportation equipment, up two consecutive months, led the increase, $1.6 billion or 2.1% to $77.5 billion.

Some highlights of June, 2021, are as follows:

- **Carbitex Carbon Fiber Plates Featured in New Speedland Trail Footwear.** DFX carbon fiber inserts from Carbitex help the purpose-built trail SL:PDX model achieve dynamically flexible performance while also providing stability and agility. The foam midsole are made with Speedland's PEBAX high-performance polymer, located directly on top of the Carbitex carbon fiber plate.
- **Covestro Composite Materials Augment High-Performance Active Footwear.** Desmopan TPU and Maezio carbon fiber-reinforced TPU fibers applied to basketball shoe and a foot shape-based running shoe concept to demonstrate comfort, style, durability and superior performance. Covestro says its TPU powder offers high tear and abrasion resistance and is ideal for running shoes as it is flexible and offers a high energy return. As an added bonus, much of the leftover powder from the process can be recycled.

- **Cobra International Supports Composite Electric Hydrofoil Board Evolution.** Cobra continues to deliver materials, production process support, as well as manufacture Fliteboard's carbon fiber Fliteboard Series 2 surfboards.

Recent Developments in Materials

- **Recycling of Polycarbonate Composites.** The Maezio brand of continuous fiber-reinforced polycarbonate composites (CFRTPs) developed by Covestro are characterized by their extremely light weight, very high strength and exceptional flexibility of design. This means that waste generated during the production of composites also becomes a valuable raw material. However, because they consist of different materials that cannot be easily separated from one another, the recycling of composites is a challenge. Covestro is cooperating with recycling specialist carboNXT on this. It has developed a process that allows the waste to be processed on an industrial scale.
- **Ground-Breaking NCC Research Proving Recycled Composites can be used in New Industry Applications.** The project has successfully extracted carbon fiber from two Airbus A320 vertical tail planes that had reached the end of their service lives, using a pyrolysis process. The reclaimed fibers will now be processed and configured into a fabric format that can be used with liquid resin composite manufacturing processes. The new material combination will be assessed and characterized for its mechanical performance, before being used to manufacture a wheelchair ramp against design criteria from the rail sector.
- **Bio Amni Is the Latest Edition to the Group's Sustainable Textile Fibers.** Solvay is globally launching Bio Amni, the first partially bio-based polyamide textile yarn developed by the company. It is a polyamide 5.6, which is produced entirely at the company's textile industrial unit in Brazil. The development of Bio Amni follows the growing global trend in demand for more sustainable textile products, especially bio-based materials. Solvay's research and innovation teams worked on the creation of the product for two years.
- **Yellowing belongs to the Past with Allnex newest Product Innovation DAOTAN 7061/35WA.** allnex, a global leader in industrial coating resins, informed the launch of DAOTAN 7061/35WA, a new, universal, premium polyurethane dispersion developed for the Automotive OEM and Vehicle Refinish coating markets. The 7061 adds significant value to the allnex polyurethane dispersion portfolio coming from its remarkable versatility and high performance in multiple application areas including waterborne Automotive and Refinish Basecoats, Automotive interior and exterior primers and general industrial applications. DAOTAN 7061/35WA is an emulsifier free, high molecular weight, aliphatic urethane-acrylic-hybrid aqueous dispersion with excellent shear stability. When cured at ambient temperature, DAOTAN 7061/35WA yields clear, crack-free films without cosolvents/coalescent or additives.

Recent Product Launches in the Composites Market

The following table represents new product launch in the composites market in June, 2021.

Product	Company Name	Description
OceBot	Mantaro Networks Inc.	Mantaro informed that the release of the OceBot unmanned ground vehicle (UGV). The OceBot is a four-wheeled UGV with a rugged carbon fiber chassis. It is equipped with four-wheel drive and specialized wheels (patents pending) for navigation in urban terrain. The UGV can climb over obstacles and ascend or descend stairs. It comes standard with four cameras allowing 360-degree visibility of the surrounding environment. The cameras are equipped with a switchable IR filter for use in low-light situations with IR illumination. IR illumination allows camera surveillance without giving away the UGV's presence. The front camera can be remotely controlled to tilt up or down for uses such as under-vehicle inspection.

The US Economic Overview – June, 2021

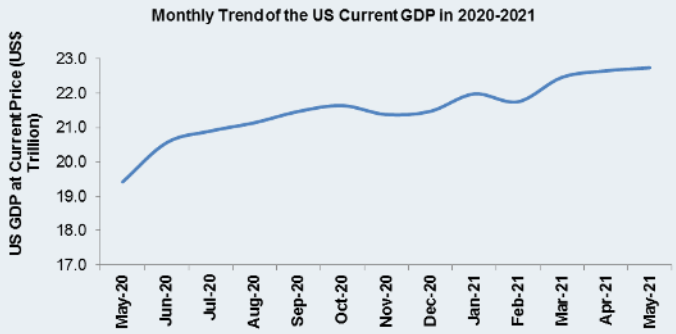
The US Consumer Confidence Index increased to 78.1 in June, 2021, as compared to 82.9 in May 2021. The GDP at current price of the US increased from US $22.65 trillion in April, 2021, to US $22.74 trillion in May 2021.

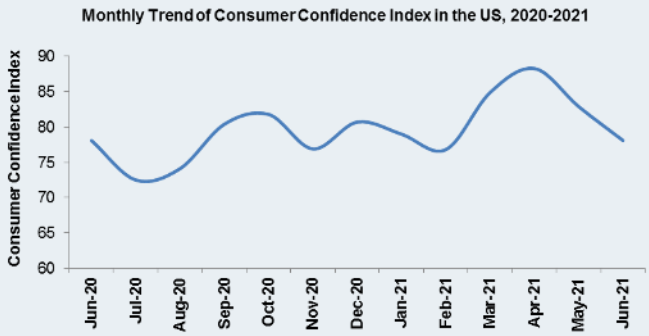
Real gross domestic product (GDP) increased at an annual rate of 6.5% in the second quarter of 2021, according to the "advance" estimate. The increase in real GDP in the second quarter reflected increases in personal consumption expenditures (PCE), nonresidential fixed investment, exports, and state and local government spending that were partly offset by decreases in private inventory investment, residential fixed investment, and federal government spending.

The increase in second quarter GDP reflected the continued economic recovery, reopening of establishments, and continued government response related to the COVID-19 pandemic. In the second quarter, government assistance payments in the form of loans to businesses and grants to state and local governments increased, while social benefits to households, such as the direct economic impact payments, declined. The full economic effects of the COVID-19 pandemic cannot be quantified in the GDP estimate for the second quarter because the impacts are generally embedded in source data and cannot be separately identified.

The price index for gross domestic purchases increased 5.7% in the second quarter, compared with an increase of 3.9% in the first quarter. The PCE price index increased 6.4%, compared with an

increase of 3.8%. Excluding food and energy prices, the PCE price index increased 6.1%, compared with an increase of 2.7%.





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