

PRESS RELEASE

JEC KOREA ONLINE : JEC COMPOSITES INNOVATION AWARDS AND STARTUP BOOSTER WINNERS ARE REVEALED

Seoul, November 25, 2020 – Today, JEC Korea Online 2020 revealed the winners of the JEC Composites Innovation and Startup Booster competitions. JEC Group rewards the best cutting-edge and ingenious projects using composites to their full potential in different categories every year. For the second edition this year, JEC Korea Online revealed the best startups in the Asia Pacific region after a session of pitches held on November 24.

JEC Korea Online's main objective is to promote the composites sector's most significant innovative projects through the JEC Startup Booster and the JEC Composites Innovation Awards.

2020 JEC STARTUP BOOSTER WINNERS

JEC Startup Booster is the leading startup competition in the world of Composites. It enables companies to find and assess innovations with a potential impact on their industry compared to the project they may already be involved in.

To select the finalists, a prestigious jury was assembled for this edition

- Jelle BLOEMHOF, Head of Manufacturing Technologies of Composite, Airbus
- Arne BOETTCHER, Market Development & Venture Manager Composites, Covestro
- Karl-Heinz FUELLER, Manager Future Outside & Materials, Daimler
- Sunkyung PARK, Director, Korean International Trade Association (KITA)
- Henry Hyunkyu SHIN, Head of Carbon Business Center, KCTECH

And the winners of JEC Startup Booster 2020 are:

- **LIGNUM** (South Korea) wins the Jury vote



- **JUC SURF** (Australia) wins the Public vote



2020 JEC COMPOSITES INNOVATION AWARDS WINNERS

The **JEC Composites Innovation Awards** is a long-established and worldwide program with three simple goals: identifying, promoting, and rewarding the most innovative composite solutions in the world. Over the past 15 years, the JEC Innovation Program has involved 1,800 companies worldwide; 177 companies and 433 partners have been rewarded for their composite innovations' excellence. The JEC Innovation Awards reward composites champions based on partner involvement in the value chain, technicality, or commercial applications of innovations.

The **JEC Composites Innovation Awards winners** of JEC Korea Online 2020 have been rewarded for their innovative solutions in 4 categories:

- **Automotive & Road Transportation**
- **Aerospace**
- **Equipment and Machinery**
- **JEC Composites Magazine Special Prize**

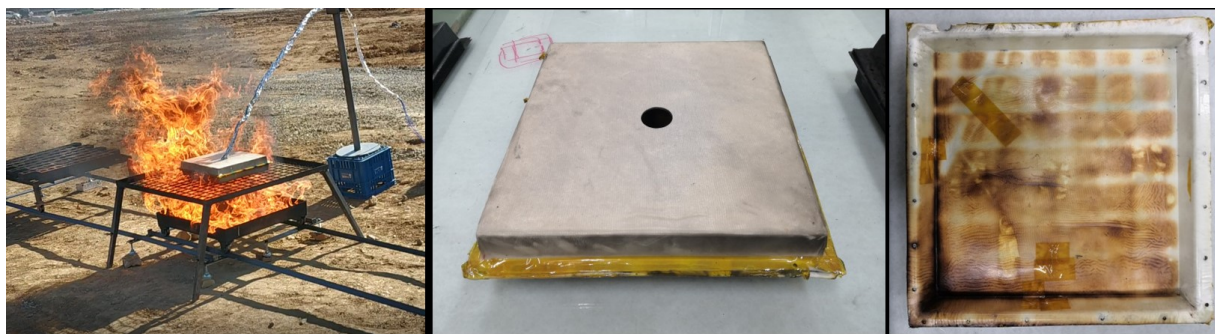
CATEGORY AUTOMOTIVE & ROAD TRANSPORTATION

Hankuk Carbon Co., Ltd (Republic of Korea) www.hcarbon.com



Glass composite material for EV battery case

Light-weight battery cases can be produced with this new fast curing glass epoxy prepreg flame retardant and ready for mass production.



Hankuk Carbon has developed an Epoxy Glass Prepreg, with fast curing resin (4 mins / 150°C) dedicated to mass production. Therefore, it is possible to apply prepreg compression molding (PCM) technology that uses the press method. Moreover it turns out that this material is suitable for all the components using sheet molding methods. Particularly, the material is suitable for producing EV battery case that requires flame retardancy with the UL-94 V0 Grade. Specifically, it can be applied to battery cover as well as to the lower part tray of battery where high mechanical properties are required. In addition, it features similar mechanical properties as carbon fabric and low-cost material compared to carbon fabric.

CATEGORY AEROSPACE

Institute of Polymer Technology (LKT) (Germany) www.lkt.tf.fau.de



with its partners: Deutsches Luft- und Raumfahrtzentrum (DLR) (Germany), Gubesch Group(Germany), Christian Karl Siebenwurst GmbH & Co. KG (Germany), SCHMIDT Gesellschaft für Werkzeug- und Formentechnik mbH (Germany)and Raschig GmbH (Germany).

Thermoset in-mold forming of a turbine strut

The innovation is the integrative production of a turbine strut based on a combination of prepreg compression molding and thermoset injection molding in one mold.



The Institute of Polymer Technology together with its partners, has developed an innovative process (called Duro-IMF) for the production of rework-free, hybrid components made of thermoset fibre composites, which have the highest lightweight construction potential. These components enable a considerable weight reduction, e.g. by substituting metallic components, and thus reduce fuel consumption and emissions in flight operations. Furthermore, the material and energy efficiency of the process is higher than that of conventional processes. In the integrative process, an uncrosslinked thermoset semi-finished product is formed by the closing movement of the mold and then functionalized by injection molding with an uncrosslinked short-fiber-reinforced thermoset molding compound. Both components then cure together. The joint curing reduces the cycle time compared to conventional comparable processes. In addition, crosslinking reactions and diffusion processes occur at the interface as a result of the joint spatial and simultaneous crosslinking. This leads to a significant increase in bond strength, which allows the application in aviation technologies. Also, 2D and 3D functional elements can be directly integrated by injection molding and only one mold is required. The implementation of the innovative integrative process was realized by an aerodynamic fairing of a turbine strut for an aircraft turbine of the thrust class 70 kN.

CATEGORY EQUIPMENT AND MACHINERY

Ilsung Machinery (Republic of Korea) www.ilsungmc.com



with its partners: Dongsung Corporation (Republic of Korea), Korea Institute of Carbon Convergence Technology (KCTECH) (Republic of Korea), Korea Textile Machinery Convergence Research Institute (KOTMI) (Republic of Korea) and LG Hausys (Republic of Korea).

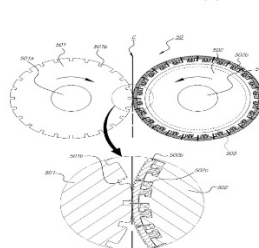
High Performance Carbon Fiber SMC Machine

High performance carbon fiber SMC machine enabling higher mechanical properties, cost reduction, VOC-free SMC and ease of maintenance.

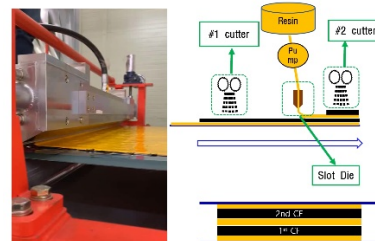
Carbon Fiber SMC machine



Carbon Fiber Chopper



Vertical Slot Die – Better wet-out



Compared to conventional SMC machine, which is generally for glass fiber, developed SMC machine is optimized for carbon fiber. To realize carbon fiber SMC, some parts has been added and enhanced; carbon fiber cutting, spreading & dividing, multiple resin layers, metered and temperature controllable resin supply and carbon fiber transfer unit. 1. Carbon fiber optimized cutting: carbon fiber chopper, consisting of rotating blade roll and groove roll, has innovative cutting mechanism. Appropriate tension is applied by drawing carbon fibers. Cutting blades, located in rotating cutting roll, continuously penetrate dug of the groove roll to cut carbon fiber. This promotes reliable high-speed cutting and longer life of blades. 2. One-line carbon fiber spreading & dividing: considering the cost and impregnation of carbon fiber, this process is highly required in carbon fiber SMC. Carbon fiber is spread by going through heating bars and oscillating spreading bars. Slitting knives divide large K CF(50K) into small K CF(3K). This enables cost reduction and uniform physical properties. 3. Multiple resin layers New SMC machine improves impregnation by adding extra resin layers in between chopped carbon fiber layers by vertical slot dies. More than three (at least, bottom, middle and top) resin layers induces better wet-out, super-high CF contents (up to 65%) and high-speed production possible than conventional SMC machine. 4. Metered and temperature controllable resin supply: using metering pump enables ease manipulation of resin supply. Due to resin temperature control, high viscous resins such as VOC-free resins are usable in developed SMC system. 5. Enhanced carbon fiber transfer: to avoid carbon fiber damage, tendency driver rollers were applied to new machine. Steel pull roll was used to alternate conventional rubber nip roll. As a result, damage to carbon fiber was diminished by lowering friction and it enables SMC present high mechanical properties.

Category JEC Composites Magazine Special Prize

Toray Carbon Magic Co., Ltd. (Japan) www.carbonmagic.com

TORAY

Innovation by Chemistry

A Concept Car which is made up of 47% resin

This design concept can only be achieved by making the entire body out of resin. The CFRP suspension system works for repeated deformation by giving the properties both toughness and stiffness.



The surface configuration of continuous curved surfaces, the large glass area and opening doors, the independent front fender, and the covered rear wheels are all components of this vehicle, which has both a futuristic style and superior aerodynamic performance that contributes to energy saving. The monocoque frame serves as the outer body with the excellent physical properties by thermosetting composites due to light weight, high stiffness and collision safety. The weight, was achieved a reduction of more than 50% from the 300kg of the conventional metal frame to 140kg. The CFRP parts worked for suspension system in the car even though it has been conventionally difficult to be made of resin. It also been realized not only for the main suspension components, but also for the spring with large deformations. The front is a CFRP leaf spring suspension combined with arm of a double wishbone. This contributed to the establishment of a distinctive independent fender and anticipated the layout with vibration-damping which is one of the features of the composite structure. The coil spring at rear side works for repeating deformation by giving both toughness and stiffness.

JEC Korea Online | November 24-26, 2020

More Information
www.jec-korea.events

Save the date JEC Korea 2021, in Seoul, in November 3 to 5

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About JEC Group

JEC Group is the world's leading company dedicated entirely to developing information and business connections channels and platforms supporting the growth and promotion of the composite materials industry. Publisher of the JEC Composites Magazine - the industry's reference magazine, JEC Group drives global innovation programs and organizes several events globally, including JEC World (the top and world-leading international exhibition dedicated to composite materials and their applications), which takes place every year in Paris.

www.jeccomposites.com

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