NEWS FROM ICC JAPAN

JOINT JAPANESE-GERMAN NEWSLETTER

Connecting the German and Japanese Composite Industry

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COMPOSITES UNITED

ICC Innovative Composite Center

Joint Japanese-German Newsletter

Connecting the Japanese and German Composite Industry

Dear CU Members

Here is the fifth issue of Joint Japanese-German Newsletter, highlighting the events in the former half of FY2025 as well as exciting news in Japanese composite industry.
Hoping you will enjoy reading!

from ICC Team

Advancing Hydrogen and Ammonia Innovation: NEDO Reveals 2025 Project Results

The New Energy and Industrial Technology Development Organization (NEDO), Japan's national R&D agency held the Project Results Presentation Meeting for Hydrogen and Ammonia-related projects in Yokohama, Japan (and online) from 15 to 17 July 2025, with approximately 1,400 participants over the three days. The conference featured 89 oral presentations and 179 poster sessions, showcasing the latest achievements across a broad range of hydrogen and ammonia-related projects. The oral presentations were also streamed online, ensuring the information reached a wider audience.

During this conference, ICC Director, Prof. Uzawa presented findings on the project 'Development of an Innovative High-Rate Manufacturing Process for High-Pressure Hydrogen Tanks Using Non-FW/Split Preforms and New Resin (REDOX-Curing Resin)' (2021-2024). This project, led by ICC in collaboration with Tokyo University of Agriculture and Technology, Nihon University, and Mizuno Technics, focuses on hydrogen storage technology.

Image source: NEDO Homepage

Other noteworthy presentations on composite technology included a presentation on 'Research and Development of Carbon Fibres Balancing Low Cost and High Performance' by Toshihira Irisawa of Gifu University, and a presentation on 'Development of Non-Destructive Testing, Online Monitoring, and Damage Tolerance Technologies to Ensure the Integrity of Innovative Low-Cost High-Pressure Hydrogen Containers for Fuel Cell Vehicles' by Professor Yoshihiro Mizutani of Institute of Science Tokyo.
These three presentations can be accessed via the links below. As the materials are in Japanese, those interested are kindly requested to enquire via the contact information.

Kiyoshi Uzawa
Professor / Director
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Read the presentation

Toshihira Irisawa
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Read the presentation

Yoshihiro Mizutani
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Read the presentation

Wind Hunter: Next-Generation Vessel Gaining Attention at World Expo 2025 Osaka-Kansai
~ Wind and Hydrogen Paving the Way for Future Cities ~

The Wind Hunter Project, an innovative ship project envisioning a hydrogen society promoted by Mitsui O.S.K. Lines, Ltd., is being showcased at the Future City Pavilion of the World Exposition 2025 Osaka-Kansai, which opened on 13 April in Yumeshima, Osaka. The Future City Pavilion—the largest pavilion on the site, jointly presented by the Expo Association and twelve companies and organizations—serves as a place to imagine and experience the future city envisioned by Society 5.0.

Image source: Osaka-Kansai Expo official website

Here, an exhibition centred on a visitor-interactive attraction featuring a large-scale model of the next-generation zero-emission vessel "Wind Hunter" is drawing considerable attention.
"Wind Hunter" is a next-generation vessel, a hybrid plant that combines a moving offshore wind turbine with a hydrogen production plant. It utilizes the sail technology that has been accumulated in the Wind Challenger Project in which ICC had joined and applies even more advanced technology to create, store and transport green hydrogen using offshore wind.
The Wind Challenger (rigid-wing sail wind propulsion system equipped on the Wind Hunter) was awarded the WIPO* Prize at the 2025 Japan National Invention Awards. The invention was credited to Director Kiyoshi Uzawa of the ICC and Mr Kazuyuki Ouchi, CEO of the Ouchi Ocean Consultant, Inc., while Mitsui O.S.K. Lines, Ltd. and Oshima Shipbuilding Co., Ltd. were recognized as recipients of the Invention Implementation Achievement Award.

*WIPO : World Intellectual Property Organization

1. Press release：“Expo 2025 Osaka, Kansai, Japan Opens to Public: MOL Exhibit Offers Hands-on Experience at the Future City Pavilion

2. Learn more about WIND HUNTER

3. WIND VISION "Future Life Expo: Future City" Expo 2025 Osaka, Kansai

4. ICC HP：Received the WIPO Prize at the 2025 Japan National Commendation for Invention for "Invention of a rigid wing sail with height adjustment for wind assisted propulsion ships [Wind Challenger]"

Komatsu Matere's CFRTP strand rod has been adopted for the first time in Japan as a structural component bearing the building's long-term load in the NTT Pavilion at World Expo 2025 Osaka-Kansai

CABKOMA® Strand Rod, thermoplastic carbon fiber (CFRTP) composite developed by Komatsu Matere Co.,Ltd.(Ishikawa, Japan), a leading fabric manufacturer with diverse business domains ranging from fashion to nanotech materials, has been adopted for the first time in Japan as a structural component in a new building at the NTT Pavilion for the the World Expo 2025 Osaka-Kansai.

This material is a next-generation material boasting high tensile strength and durability, while being approximately one-fifth the weight of conventional steel. Its implementation was achieved by utilising a special provision for temporary structures (Article 85 of the Building Standards Act) and passing third-party safety assessments verifying the material's quality and structural safety.

The NTT Pavilion employs 1,454 CABKOMA® rods across its approximately 1,400m^2 structure. Designed as the primary roof-supporting framework, it is engineered to withstand long-term loads. Its performance under high temperatures has been experimentally verified, including resistance to creep deformation (time-dependent deformation).
Future plans include expanding its use for seismic reinforcement in existing structures such as factories and warehouses, alongside obtaining official certification (scheduled for fiscal year 2026).

Image source: Osaka-Kansai Expo official website

1. Press release (Japanese)

2. Learn more about CABKOMA®

Next-Generation CFRTP Cryogenic Rocket Fuel Tank to Be Developed – Maruhachi Corp. Teams Up with ICC and Tokyo University, Supported by JAXA

Project Logo

A collaborative project involving industry, academia and research has commenced, centred on Kanazawa Institute of Technology's ICC, in partnership with Maruhachi Corp. and and the University of Tokyo. Maruhachi Corp., based in Fukui Pref. Japan, has embarked on developing a CFRTP rocket fuel tank in collaboration with the University of Tokyo and Kanazawa Institute of Technology. Leveraging its ability to withstand cryogenic temperatures, the project aims to realize a tank that is lighter and lower in cost than conventional aluminium alloy tanks.

This initiative has been selected for JAXA's Space Strategy Fund program, marking the first such selection within Fukui Prefecture. A prototype small tank will be developed by fiscal year 2027, undergoing leakage testing using liquid hydrogen. Subsequently, development will scale up to a medium-sized tank by fiscal year 2029, with the ultimate goal of achieving a practical-scale large tank (7.9m long × 5.2m diameter).

The division of roles sees Maruhachi providing materials and forming, the University of Tokyo handling design, and Kanazawa Institute of Technology undertaking quality evaluation.

Maruhachi's President, Toshihide Sugawara, stated, 'We wish to contribute to the development of the space industry from Hokuriku,' with expectations placed on this locally developed technology supporting Japan's space exploration endeavors.

Photo : ICC

1. Composite World : MaruHachi Corp. to develop CFRTP cryogenic rocket fuel tank

2. ICC Homepage (Japanese)

MiraiKasei establishes "Aomori Lab" , R&D facility to expand CFRP business

Mirai Kasei Inc. (Head office: Nagano, Japan), a group company of Mitani Sangyo Co., Ltd. (Head Office: Kanazawa, Japan) primarily engaged in the sale of chemical industrial products and food ingredients, has established the 'Aomori Lab' research and development facility in Aomori Prefecture to expand its recycled carbon fiber business. An opening ceremony was held on 27 May 2025.

Mirai Kasei has developed and deployed proprietary technology to recover carbon fibers from offcuts and waste materials generated during CFRP manufacturing processes. At the Aomori Lab, they aim to utilize this proprietary technology not only for material development, but also to establish an integrated technology system extending all the way to molding and processing. This enables prototyping recovered fibers into shapes closer to final products, thereby driving new value creation that simultaneously enhances CFRP functionality and reduces environmental impact.

The highlight is the world's first introduction of a Mitsubishi Electric's CO2 3D Laser Processing Machine for CFRP (CV Series). Capable of high-precision, high-speed cutting, it is expected to improve molding efficiency. Ms. Haruna Maruko, the local-born section managerchief in charge of development and manufacturing, expressed her enthusiasm: 'We want to advance the social implementation of recycled materials from Aomori.' Expectations are also high for the facility to serve as a new starting point for regional industry.

Aomori Lab

1. Read the Press Release (Japanese)
2. Learn more about Mirai-process system
3. Contact : Mirai Kasei Inc. Aomori Lab.
   Circular CFRP Development Dept.
   Tomotaka Tsurugi (Mr.)
   e-mail t.tsurugi@miraikasei.com

Establishment of the IHI-Fukui Prefecture-AIST Sky Carbon Neutral Advanced Composites Collaborative Research Lab.

IHI Corporation (Head Office: Koto-ku, Tokyo; President and Representative Director: Hiroshi Ide; hereinafter 'IHI'), Fukui Prefecture (Governor: Tatsuji Sugimoto), and the AIST Group (National Research and Development Agency National Institute of Advanced Industrial Science and Technology (Head Office: Chiyoda-ku, Tokyo; President: Kazuhiko Ishimura; hereinafter referred to as 'AIST') and its wholly-owned subsidiary, AIST Solutions Co., Ltd. (President: Seiji Osaka), will establish the 'IHI-Fukui Prefecture-AIST Advanced Composite Materials Collaborative Research Laboratory for Carbon Neutrality in Aviation' (hereinafter referred to as 'the Collaborative Research Laboratory') at AIST on 1 April 2025. This initiative aims to further advance composite materials development.

Read More (Japanese)

Asahi Kasei Introduces SunForce™: A Breakthrough FRP Core Material [Production-Ready]

FRP-foam composites offer lightweight and high-stiffness performance with design flexibility and cost advantages. However, conventional processes require heat-resistant foam sheets, leading to limited material choices and high processing costs.
Asahi Kasei proposes composite core materials using the PCM method to mold the engineering plastic foam beads "SunForce™ " with FRP as one of the composite methods.
SunForce™ is a foamed bead made from modified PPE resin (modified polyphenylene ether resin), and combines heat resistance, dimensional stability, and low water absorption of modified PPE with the lightweight, heat insulating, and formability of foamed beads.
SunForce™ beads can be molded by in-mold foaming, utilizing the steam chest molding process. This process in combination with the small-sized beads allows for the medium- to high-volume production of composite core parts with accurate, complex and curved shapes and without the need for additional milling. SunForce™ features low water absorption, allowing it to be used without a drying process. It is suitable as a foam core or sandwich material for composite applications in the medical, industrial, aeronautical, or sports industries.

1. Learn more about SunForce™

2. Europe Contact:
Asahi Kasei Europe GmbH
foam@asahi-kasei.eu

ICC ANNUAL REPORT 2024 Is Published!

We are pleased to announce the publication of the ICC 2024 Annual Report. This report provides a comprehensive overview of the research activities and achievements during the previous financial year.
The report highlights key research projects, major outcomes, academic publications, conference presentations, awards received, and collaborative research initiatives both within and outside the Institute.It also includes reports on outreach activities and partnership initiatives. We hope this report provides valuable insights into the scope and impact of our center's work.
We would be grateful to receive your comments and feedback, and appreciate your continued interest in our institute. We extend our sincere gratitude for your ongoing support of our research activities.

You can access the full report here:

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