

April 24, 2024

FUKUVI CHEMICAL INDUSTRY CO., LTD.

Nagase & Co., Ltd.

CAPTEX Co., Ltd.

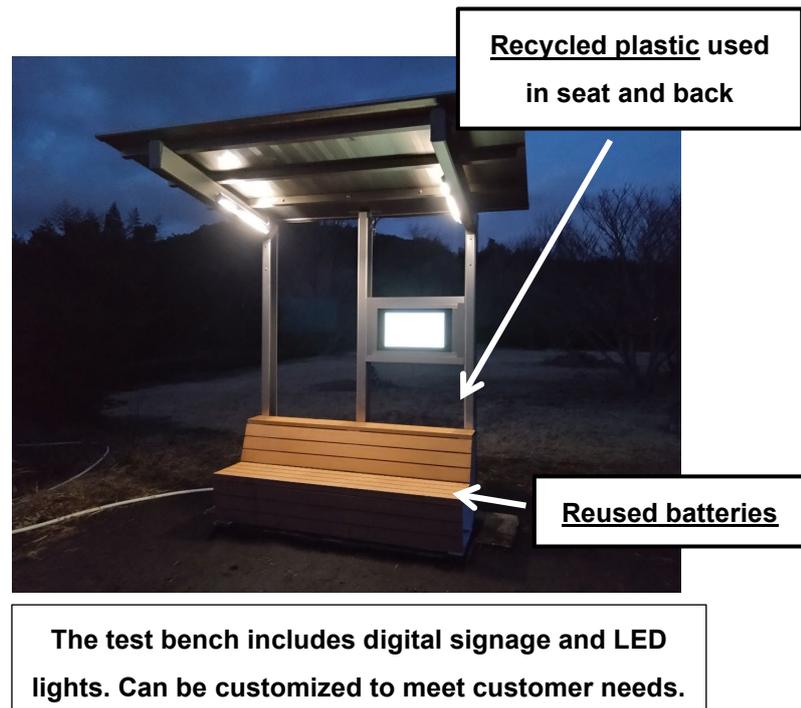
Jointly Developed Environmentally-friendly Smart Bench Using Recycled Plastic and Reused Car Batteries—Demonstration Test Begins, Working Towards Smart Cities and Carbon Neutrality

FUKUVI CHEMICAL INDUSTRY CO., LTD. (Head Office: Fukui, Fukui; President and Representative: Seiichiro Yagi), together with the NAGASE Group's Nagase & Co., Ltd. (Head Office: Chiyoda-ku, Tokyo; Representative Director, President and CEO: Hiroyuki Ueshima) and CAPTEX Co., Ltd. (Head Office: Okazaki, Aichi; President: Yohei Mayuzumi), have jointly developed environmentally-friendly smart benches (*1) using recycled plastic and reused batteries, with demonstration tests beginning in March 2024. The development of smart benches using recycled plastic and reused car batteries is a pioneering example within the industry. A test bench has been placed in Susuno, Shizuoka, with plans to release the final product in FY2025 once its convenience and safety have been demonstrated.

FUKUVI CHEMICAL INDUSTRY, a building materials manufacturer with strengths in making designs with optimal materials, is responsible for the smart bench's design and expanding its sales, mainly targeting local governments. The development of the reused batteries installed in the smart benches and systems development for the solar power generation and electronics to be used with those reused batteries are the responsibility of Nagase & Co., with its wide-reaching network based around the chemical industry, and of CAPTEX, with strengths in power storage technology, development, and manufacturing.

Through increasing the convenience and safety of cities, the three companies are building an ongoing system for cooperation towards making smart cities and carbon neutrality a reality.

The test bench is an environmentally-friendly smart bench which uses reconstituted wood (*2) made from recycled plastic materials for the seat and back, and reused lithium-ion batteries taken from automobiles (*3). In addition to functions as a public installation and power source, it is hoped the smart benches will contribute to carbon neutrality by demonstrating the concepts of recycling and reusing.



What is Smart Bench?

*1: Currently, smart city initiatives throughout Japan are looking for ways to solve urban issues with the use of digital technology and to make public spaces more convenient for residents. The installation of smart benches, with a variety of added functions such as solar panels, charging, and internet access, has been receiving significant attention as a smart city initiative. Due to not requiring large-scale electrical work during installation, allowing lights and electronics to be used and charged, and acting as an emergency power source in case of disaster, there has been growing domestic demand for smart benches.

New Type of Environmentally-friendly Smart Bench Based on the Concepts of Recycling and Reusing

*2. A Bench Using Recycled Materials

The seat and back of the bench use Pluswood, a reconstituted wood material made by FUKUVI CHEMICAL INDUSTRY. Pluswood is made from recycled plastic waste materials and domestic wood material from sustainable forests, and is durable enough to be used outdoors for long periods of time with minimal deterioration or discoloration.

The bench's design is based on a design used for Fandaline, an outdoor furniture line which went on sale in October 2021, modified for use as a smart bench. Space in the bottom of the bench was adapted to store the batteries, and the leg design was improved to allow for supporting the roof, making a practical design with the necessary materials and parts for the smart bench.

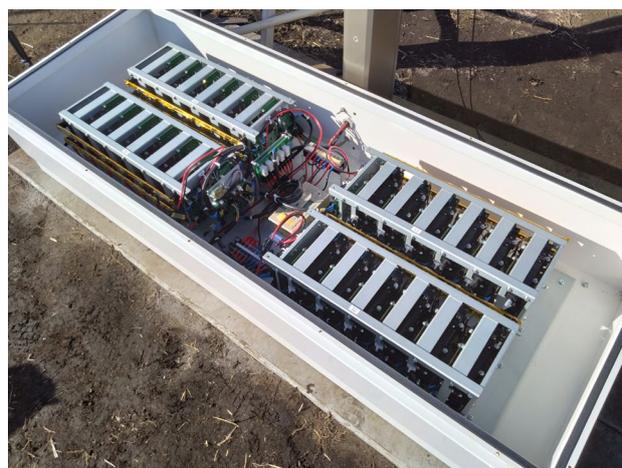
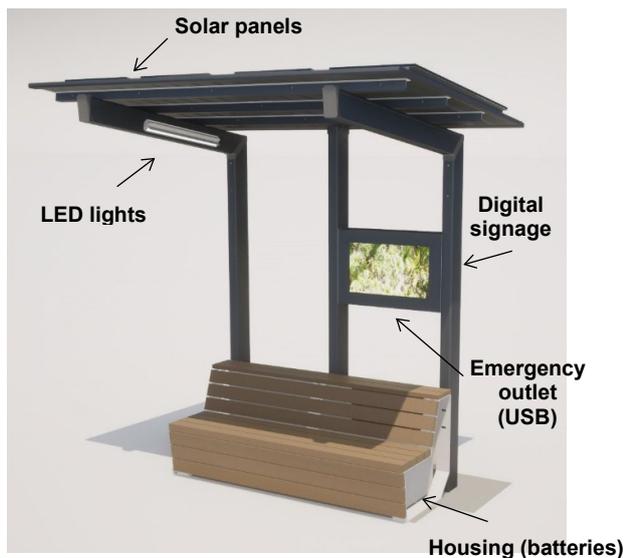
By using FUKUVI CHEMICAL INDUSTRY's HARZLAS AR coating on the digital signage monitor covers, there is minimal reflection and it is easy to see the information displayed on the digital signage.

*3. Reusing Lithium-ion Batteries

The lithium-ion batteries in this test bench are reused batteries from the Ene-Charge and S Ene-Charge systems of four-wheeled vehicles manufactured by Suzuki Motor Corporation. With cooperation from Suzuki, the used lithium-ion batteries removed from Suzuki vehicles have been modified by Nagase & Co. and CAPTEX to be used in smart benches. Nagase & Co. and CAPTEX have been working on developing technology and uses for environmentally-friendly reused batteries for years, and by reusing batteries removed from vehicles will work towards bringing about a cyclical battery society.

For this demonstration test, Nagase & Co. and CAPTEX developed the battery management system (BMS) for the reused batteries. This BMS does not only safely control the reused batteries to provide power to the smart bench signage and LED lights, but was also designed to allow redundancy for the battery capacity and easy adaption to a variety of uses. CAPTEX also has the capability to evaluate the performance of used batteries, a strength for reusing batteries as their remaining performance and reliability can be tested, making it possible to propose safe reused batteries.

The solar panels, the primary battery for this test bench, are also reused. Reusing solar panels in smart benches contributes to reducing waste.



Batteries

<p>■ FUKUVI CHEMICAL INDUSTRY Profile</p>
<p>Company Name: FUKUVI CHEMICAL INDUSTRY CO., LTD.</p>
<p>Head Office: Fukui, Fukui</p>
<p>Representative: President and Representative Seiichiro Yagi</p>
<p>Established: May 1953</p>
<p>Business Summary: Manufacture and sale of building materials, plastic industrial materials, and precision chemical products</p>
<p>URL: https://www.fukuvi.co.jp/</p>

<p>■ Nagase & Co. Profile</p>
<p>Company Name: Nagase & Co., Ltd.</p>
<p>Head Office: Chiyoda-ku, Tokyo</p>
<p>Representative: Representative Director, President and CEO Hiroyuki Ueshima</p>
<p>Established: June 1832</p>
<p>Business Summary: Import/export and domestic sales of chemicals, plastics, electronics materials, cosmetics and health foods</p>
<p>URL: https://www.nagase.co.jp/</p>

<p>■ CAPTEX Profile</p>
<p>Company Name: CAPTEX Co., Ltd.</p>
<p>Head Office: Okazaki, Aichi</p>
<p>Representative: President Yohei Mayuzumi</p>
<p>Established: July 2004</p>
<p>Business Summary: Development and manufacturing of products using lithium-ion rechargeable batteries</p>
<p>URL : https://group.nagase.com/captex/</p>



◆Inquiries

FUKUVI CHEMICAL INDUSTRY CO., LTD.

Town Development Business Promotion Office gksqs@fukuvi.co.jp

Nagase & Co., Ltd. <https://www.nagase.co.jp/>

CAPTEX Co., Ltd. <https://group.nagase.com/captex/>

<Business Inquiries>

FUKUVI CHEMICAL INDUSTRY CO., LTD. Town Development Business Promotion Office

Tel: 03-5742-6321

Nagase & Co., Ltd.: Development Section No. 3, Future Co-creation Office Tel: 03-3665-3183

CAPTEX Co., Ltd.: Sales Division Tel: 0564-66-3031

<Media Inquiries>

FUKUVI CHEMICAL INDUSTRY CO., LTD. Town Development Business Promotion Office

Tel: 03-5742-6321

Nagase & Co., Ltd.: PR Section Tel: 080-8828-8676

CAPTEX Co., Ltd.: Sales Division Tel: 0564-66-3031