

November 19, 2021

ENEOS Holdings, Inc.
Nippon Sheet Glass Co., Ltd.

ENEOS and NSG Begin Verification Test of Transparent Solar Panels for Use as Windows that Contribute to the Realization of Zero Energy Buildings

ENEOS Holdings, Inc. (Representative Director, President: Katsuyuki Ota; "ENEOS") and Nippon Sheet Glass Co., Ltd. (Headquarters: Minato-ku, Tokyo; Representative Executive Officer, President, and CEO: Shigeki Mori; "NSG") announce that they have begun Japan's first test installing transparent solar panels for use as building windows. These solar panels were developed by U.S.-based Ubiquitous Energy, Inc. (CEO: Susan Stone, "UE ") in concert with NSG, with funding provided from ENEOS.

The panels are capable of efficiently harvesting ultraviolet and infrared light as energy sources and are as transparent as ordinary windows while excelling at thermal shield and insulating performance. They can therefore be used to achieve a high level of building energy efficiency. They can also be installed in buildings such as high-rise buildings, which eliminates the need to secure large areas of land for installation and may make it possible to generate more power on smaller site area than horizontally-installed solar panels on the ground.

The purpose of the test is to verify the energy-saving performance (thermal shield and insulation) and power generation capabilities of UE's solar panels under the weather and solar conditions in Japan. ENEOS and NSG will perform quantitative evaluation together at NSG's Chiba Plant over a one-year period (from September 1, 2021, to August 31, 2022).

After the effectiveness of the solar panels is confirmed in Japan, the companies are considering performing further verification tests of their installation in buildings and their connection to solar power generation systems with a view to possible power supply in the future.

The ENEOS Group aims to enhance the supply of next-generation energy and community services network through the use of distributed energy resources. As part of these efforts, we are investigating community-based energy management services using a variety of renewable and unused energy sources.

The NSG Group is a global glass supplier contributing to the world with high value-added glass products and services. It has identified the eco society as one of the three focus areas to which the Group aims to contribute. It supplies products such as solar energy glass that help protect the environment by increasing the utilization of renewable energy and reducing the environmental impact of heating and air-conditioning.

By leveraging ENEOS's expertise in the power business and the renewable energy business and the knowledge gained through the joint development of solar energy glass by NSG and UE, the companies aim to commercialize this initiative as a new alternative for solar power generation.

<Overview of the verification test>

Objectives	Quantitatively evaluate the energy-saving performance (thermal shield and insulation) and power generation capabilities of solar panels developed by UE under Japan's sunlight and weather conditions.
Period	September 1, 2021, to August 31, 2022 (planned)
Location	NSG Chiba Plant (Ichihara City, Chiba Prefecture)
Description of verification test	<ul style="list-style-type: none"> • The following testing will be performed in two small buildings under identical conditions (southward-facing windows, room temperatures, etc.) • Confirmation of power generation capabilities of solar panels developed by Ubiquitous Energy • Comparison of energy-savings performance between the buildings with and without panels installed in windows (comparison of the amount of power required to maintain identical room temperatures)
Roles	<ul style="list-style-type: none"> • ENEOS: Planning and direction of verification test, analysis of test results • NSG: Provision of test assets, provision of knowledge regarding joint development with UE analysis of test results

<Verification test photo>



Overview of each Company

(1) ENEOS Holdings, Inc.

Representative	Representative Director, President: Katsuyuki Ota
Location	1-1-2 Otemachi Chiyoda-ku Tokyo
Business	Management of Group companies and subsidiaries engaged in the energy business; oil and natural gas exploration, development, and production business; and metals business; and operations incidental to said businesses
Established	April 1, 2010

(2) Nippon Sheet Glass Co., Ltd.

Representative	Representative Executive Officer, President, and CEO: Shigeki Mori
Location	3-5-27 Mita, Minato-ku, Tokyo
Business	Manufacture and sale of architectural glass products (including glass for use in solar panels), automotive glass products, and creative technology products
Established	November 22, 1918

(3) Ubiquitous Energy Inc.

Representative	Susan Stone (CEO)
Location	3696 Haven Ave, Suite B Redwood City, CA 94063
Business	Development, design, manufacture, and sale of high-transparency solar panels
Established	September 14, 2011
Main shareholders	Riverhorse Investments, Eden Financial Investments, etc.

<Relationship between ENEOS/NSG and UE>

As part of initiatives to contribute to the realization of a low-carbon society, ENEOS provided funding to Ubiquitous Energy in March 2021, deeming UE's panels an effective measure for promoting more widespread use of renewable energy.

NSG entered an agreement with Ubiquitous Energy in May 2019 to jointly develop transparent building-integrated photovoltaic (BIPV) windows, whose market is expected to grow as renewable energy usage becomes more widespread.

Media contacts:

ENEOS Holdings, Inc. PR Department PR Group TEL: 81 3 6257 7150 E-mail: pr@eneos.com
Nippon Sheet Glass Co., Ltd. PR Department TEL: 81 3 5443 0100 Website Contact Form: https://www.nsg.com/en/contact-us