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ENEOS Corporation

TOPPAN Holdings Inc.

Nippon Paper Industries Co., Ltd.

Demonstration Project for Bioethanol Production from Waste Paper,
Initiated by ENEOS and TOPPAN,
Implemented at the Nippon Paper, Fuji Mill in Japan

ENEOS Corporation (“ENEOS”) and TOPPAN Holdings Inc. (“TOPPAN Holdings”) have decided to commence construction of a pilot plant at the Fuji Mill of Nippon Paper Industries Co., Ltd. (“Nippon Paper”) as part of ENEOS and TOPPAN Holdings joint demonstration project to produce bioethanol from waste paper.

Bioethanol is expected to be used in a variety of applications to achieve carbon neutrality, such as automotive fuel and raw materials for chemicals. In recent years, the production of sustainable aviation fuel (SAF) using bioethanol as a raw material has also been attracting attention.

ENEOS and TOPPAN Holdings have been jointly discussing the launch of a domestic bioethanol business (“this project”) using difficult-to-recycle waste paper as raw material since 2021, aimed at the decarbonization of energy and the realization of a circular society, and have been implementing a demonstration project (“this demonstration”) toward commercialization since March 2024. To further promote this demonstration, ENEOS and TOPPAN Holdings have decided to commence construction of a pilot plant.

In this demonstration, the pretreatment process developed by TOPPAN Holdings, which removes unwanted parts from difficult-to-recycle waste paper such as water-proof paper and carbonless copy paper to create raw materials rich in cellulose, will be combined with the continuous ethanol production process developed by ENEOS, to scale up the process. Nippon Paper will provide part of the site at the Fuji Mill and operate part of the pilot plant (saccharification and fermentation process). The pilot plant is planned to have a feedstock capacity of approximately 1–3 tons of waste paper per day and a bioethanol production capacity of approximately 300 liters per day. Operations are scheduled to begin in the first half of 2027, and the knowledge gained from this demonstration will be utilized to aim for commercialization of the project planned for after FY2030.

This demonstration project was adopted by the New Energy and Industrial Technology Development Organization (NEDO) as part of its “Research and Development of Technologies to Promote Biomanufacturing” on July 22, 2024.

ENEOS, in its medium-term management plan announced in May 2025, declared its commitment to strengthen its focus on businesses such as biofuels. Through the examination of fuel production technology utilizing bioethanol in this demonstration, ENEOS will contribute to the realization of a decarbonized society.

TOPPAN Holdings, in its medium-term management plan announced in May 2021, aims to enhance corporate value and realize a sustainable society as a leading company solving social issues worldwide through “DX (Digital Transformation)” and “SX (Sustainable Transformation)” and is conducting business activities related to the environment, which has been identified as one of its key initiatives.

Nippon Paper, utilizing its knowledge of cellulose accumulated over the years, aims to contribute to the creation of a decarbonized society and the mitigation of global warming as “a comprehensive biomass company shaping the future with trees” under the biorefinery concept.

Pilot Plant Image



■ Overview of This Demonstration

Objective	Examination of domestic bioethanol production technology using waste paper as raw material
Roles of Companies	<p><ENEOS></p> <ul style="list-style-type: none">• Development of high-efficiency second-generation bioethanol production process• Examination of fuel production technology utilizing bioethanol <p><TOPPAN Holdings></p> <ul style="list-style-type: none">• Establishment of a procurement route for waste paper, including difficult-to-recycle waste paper, through a wide network of customers• Manufacture and supply of raw materials suitable for bioethanol production using the waste paper pretreatment process developed in-house.
Capacity	Waste Paper Input: Approximately 1 to 3 tons/day Bioethanol Production: Approximately 300 liters/day
Construction Site	Within the Fuji Mill of Nippon Paper
Schedule	Operation of the pilot plant is scheduled to begin in the first half of 2027