



News Release

April 1, 2021

Nippon Steel Engineering Co., Ltd.

Osaka Gas Co., Ltd.

Commencement of an On-Site Utility Services Business **for Spiber Inc. in Thailand**

NS-OG Energy Solutions (Thailand) Ltd. (Managing Director: Go Takeji; hereinafter "NSET"), a joint subsidiary^{※1} of Nippon Steel Engineering Co., Ltd. (Representative Director and President: Yukito Ishiwa; Head Office: Shinagawa-ku, Tokyo; hereinafter "NSE") and Osaka Gas Co., Ltd. (President: Masataka Fujiwara; Head Office: Chuo-ku, Osaka; hereinafter "OG"), has launched the on-site utility services business (hereinafter the "Business") for a structural protein plant (hereinafter the "Facility") constructed in Rayong Province, Thailand by Spiber Inc.^{※2} (Director and Representative Executive Officer: Kazuhide Sekiyama; Head Office: Tsuruoka City, Yamagata Prefecture; hereinafter "Spiber"). An opening ceremony was held jointly with Spiber in time with the commencement of commercial production at the Facility.

In this Business, NSET takes on the operation and maintenance of the utility facilities constructed by Spiber to supply Spiber with the power, steam, chilled water and other utilities required to run the plant. By supplying utilities in a highly efficient and stable manner, NSET will play a part in the stable operation of the Facility. What is more, through optimization of the energy supply system, including the installation of cogeneration systems in line with the future expansion of the plant, NSET will also contribute to Spiber's initiatives toward the realization of a sustainable society.

NSET was highly recognized by Spiber in regard to the following, which led to the receipt of the order for this business.

(1)Based on the operation management technologies^{※3} nurtured through the operation of cogeneration systems in Thailand, NSET proposed the integrated management of the operation of the entire utility supply facilities, including energy supply facilities such as boilers and other steam supply systems, liquefied natural gas (LNG) regasification facilities, power

substations, chillers, water supply facilities, instrument air facilities and industrial gas receiving facilities.

(2) NSET proposed a green, economically superior facilities plan, including the use of LNG with its low CO₂ emission factor and the adoption of a high-efficiency steam supply system.

(3) Since NSET had a proven record of achieving higher-than-planned energy savings and CO₂ emission reduction through fine-tuned control and management according to various operating conditions, optimal utility supply that was tailored to the Facility's operating status would be expected.

Going forward, NSET will continue to leverage its highly recognized engineering capabilities and operation management technologies. By providing green, economically superior energy solutions that contribute to energy savings and CO₂ emission reduction, which are consistent with Goal 13 ("Climate Action") of the UN's Sustainable Development Goals (SDGs), NSET will support the efforts of its clients toward the achievement of a low-carbon society as well as the concentration of resources toward core businesses, thereby contributing to Thailand's sustainable development.

※1 : **OG's investment in NSET was made through its wholly owned subsidiary Osaka Gas Singapore Pte. Ltd. (President and CEO: Motoyuki Hirabayashi).**

※2 : **Spiber is a bio-tech venture company and developer of the proprietary structured protein material Brewed Protein™. Spiber is headquartered in Tsuruoka City, Yamagata Prefecture, Japan. Brewed Protein™ is produced through a fermentation process that uses plant-derived sugars and microbes. It can be given diverse characteristics depending on its end-use. For this reason, it has the potential of playing a major role as a way to reduce the reliance on oil and animals in various industries and fields, including apparel and transport equipment. It is gaining attention as a next-generation key material that will contribute to the achievement of a sustainable society. In 2018, Spiber established a local subsidiary Spiber (Thailand) Ltd. (Representative Director: Keisuke Morita) to handle, in Thailand, mass production (fermentation and purification), plant construction, preparation for commencement of plant operation, and plant operation after the plant becomes operational.**

※3 : **NSET operates four cogeneration facilities in Thailand. In 2018, it became the first foreign company to receive the Chairman's Award in the Cogeneration Awards. The company has received a certain measure of recognition for its operation management technologies for highly efficient, stable cogeneration facilities. The Cogeneration Awards has been hosted by the Advanced Cogeneration and Energy Utilization Center JAPAN since 2012. It recognizes cogeneration systems that are superior in terms of their newness and progressiveness, their new technologies and energy saving performance so as to boost the awareness of society regarding the usefulness of cogeneration. At the same time, it aims to promote the spread of the use of superior cogeneration systems.**

[Outline of the Utility Facilities Operated by NSET]

Steam supply facilities, LNG regassification facilities, chillers, instrument air facilities, power substations, water supply facilities, etc.



[The structural protein plant constructed by Spiber]