

September 28, 2022
 NGK INSULATORS, LTD.
 Ricoh Company, Ltd.

**NGK and Ricoh Conclude a memorandum of understanding on the
 Establishment of a Joint Venture in Relation to the Commercialization of
 VPP and Digital Electricity Services**

NGK INSULATORS, LTD. (“NGK”) and Ricoh Company, Ltd. (“Ricoh”) announced today that they have concluded a memorandum of understanding on the establishment of a joint venture company for the purpose of research and development aimed at the commercialization of a Virtual Power Plant (VPP) *1 business and digital electricity services *2.

NGK and Ricoh have been working since May 2022 on a trial project *3 that will utilize blockchain technology to track all processes at Ena Electric Power Co., Ltd.*4 from renewable energy generation to consumption, including charging and discharging of surplus electricity generated in NAS® batteries, used for storing electricity. The joint venture company will examine businesses that combine NGK’s control technologies for its proprietary large capacity NAS batteries and its ZNB *5 zinc rechargeable batteries, which offer high safety performance, with Ricoh’s renewable energy distribution record platform, which uses its proprietary digital and IoT technologies. Furthermore, Ricoh’s group company, Ricoh Japan Corporation is engaged in electricity retail services and solar power generation operations and maintenance (O&M) services, and smart energy business*6, including lighting and air conditioning control systems. By integrating this expertise the joint venture company aims to achieve commercialization of the digital electricity services at an early stage.

Overview of the Joint Venture (Planned)

The two companies are in discussion regarding the joint venture company to be established. The plans for the venture at this point are as follows.

(1) Company name	To be decided.
(2) Locations	Nagoya and Tokyo
(3) Name and title of representative	To be decided.
(4) Business activities	Research and development into a VPP and digital electric services
(5) Capital	To be decided.
(6) Investment ratios	NGK 51%, Ricoh 49%
(7) Business start date	February 1, 2023

*1 Virtual Power Plant (VPP):

A VPP uses digital technology to perform integrated control of various energy resources, thereby functioning as a kind of power plant. These resources include electricity generated through renewable energy sources such as solar power generation, electricity for charging and discharging storage batteries, and electricity consumed by homes and facilities.

*2 Digital electricity services:

New electricity services that offer higher added value by using digital technologies such as block chain technology and data related to electricity obtained through IoT technology.

*3 NGK and Ricoh's trial project:

November 12, 2021: NGK and Ricoh to Start Renewable Energy Tracking Trial Project
https://www.ngk.co.jp/news/2021/20211112_2.pdf (Japanese only)

*4 Ena Electric Power Co., Ltd.:

Ena Electric Power is a regional power producer and supplier established in April 2021 by NGK, Ena City, and Chubu Electric Power Miraiz Co., Inc. (operations started in April 2022). Ena Electric Power independently owns photovoltaic equipment and NAS batteries for energy storage and aims to realize a zero-carbon city through local production and local consumption of energy using the Ena Model. This model is characterized by independent renewable energy use without relying on the Feed-in Tariff system (FIT system), stable corporate management, and a strengthened capability to respond to natural disasters. <https://enaden.jp/> (Japanese only)

*5 NGK's storage batteries:

NAS Battery for electricity storage: <https://www.ngk-insulators.com/en/product/nas.html>

ZNB, zinc rechargeable battery: <https://www.ngk-insulators.com/en/rd/>

*6 Ricoh Japan Corporation's electricity retail services, solar power generation O&M services, and smart energy business such as lighting and air conditioning control systems:

https://www.ricoh.co.jp/solutions/smart_energy/ (Japanese only)