April 19, 2023

Japan Renewable Energy Corporation
Morgenrot Inc.

Japanese Renewable Energy Industry's First*¹ Solar-Powered Green Data Center for GPU Cloud Services Achieves Stable Operations

Japan Renewable Energy Corporation ("JRE"; headquartered in Minato-ku, Tokyo; CEO: Kazuhiro Takeuchi) is pleased to announce that stable operation has been achieved at the data center constructed on the grounds of its solar power plant in Nagano prefecture, thereby supplying computing power through 100% renewable energy. The data center will be used by distributed cloud computing solutions provider Morgenrot Inc. ("Morgenrot"; headquartered in Minato-ku, Tokyo; CEO: Hirotaka Inoue) to provide its M:CPP (Morgenrot Computing Power Pool) GPU cloud service.

This project is based on the partnership between JRE and Morgenrot announced in the press release dated June 27, 2022 (release), and is the first example of a renewable energy provider in Japan launching a computing business located outside Japan's large metropolitan areas that is attached to a solar power plant. In December 2022, the data center commenced commercial operation, primarily for CG rendering, and once stable operation was verified, in April 2023 it was adopted for the M:CPP service, which supports additional applications such as AI and simulation. This containerized data center accommodating 40 AMD and NVIDIA GPU servers installed within the JRE Nagano Omachi Solar Power Plant in Omachi, Nagano prefecture, has to date achieved a high rate of capacity utilization and stable operations for a green data center with zero CO_2 emissions. The data center employs a "chiller-less" cooling system that uses water drawn from a well for the server cooling equipment, with no need for the type of CFCs that emit greenhouse gases. Thus, it operates as an environmentally-friendly and exceptionally energy-efficient installation (designed to deliver PUE [power usage effectiveness] of 1.1*²).

Both JRE and Morgenrot will continue to work across industrial boundaries to construct new business models that will lead to decarbonization of critical social infrastructure, thereby using renewable energy for transitioning existing businesses to carbon-neutrality.

JRE will further promote renewable energy and related businesses with a mission to go beyond kilowatt-hour-based value to create new service-based value by using renewable energy not only for providing value in terms of power generated, but also for delivering value-added services.

*1 : The Japanese renewable energy industry's first data center for GPU cloud services constructed on the grounds of a solar power plant that emits zero CO_2 (according to research by JRE)

*2 : GPU servers generate a large amount of heat; however, efforts were made to curb electric power consumption and conserve energy used for cooling and other purposes by designing the data center with a target PUE of 1.1. Measurements taken during the period when the entire site was comprehensively tested prior to the start of service, confirmed that pPUE (partial PUE, or PUE for the data center specifically) was at the target level.

PUE is annual energy consumption of the whole data center facility divided by annual energy consumption of the data center's ICT equipment

Annual energy consumption of the whole data center facility: The combined annual energy consumption of the power inputs to the containers and the power input to the pump room

Annual energy consumption of the data center's ICT equipment: The combined annual energy consumption of the output PDUs (power distribution units) mounted on each server rack

About JRE
Founded in 2012 with a mission "Changing the world with renewable energy." With the understanding of the local community, JRE currently has 95 renewable power plants (including solar, wind and biomass) either in operation or under construction, plus a number of large-scale offshore wind farms and other projects at the planning stage. JRE is committed to addressing environmental and social challenges through renewable energy and working towards a decarbonized and fully sustainable society.
https://www.jre.co.jp/english/

About Morgenrot
Morgenrot is an engineering driven startup that offers cloud-based computing solutions which allow end users to access high performance computing power anytime, anywhere as needed. Our proprietary algorithm Excalibur® platform distributes computing tasks across our global network of thousands of servers, significantly reducing project lead time and overall cost. Morgenrot aims to provide democratized supercomputing services across all industries powered by renewable energy sources to build an earth-friendly digital social infrastructure. Find out more at: www.morgenrot.net.

Inquiries:

Japan Renewable Energy Corporation
Corporate Communications & CSR Department
Tel: 03-6455-4905   Email: pr@jre.co.jp
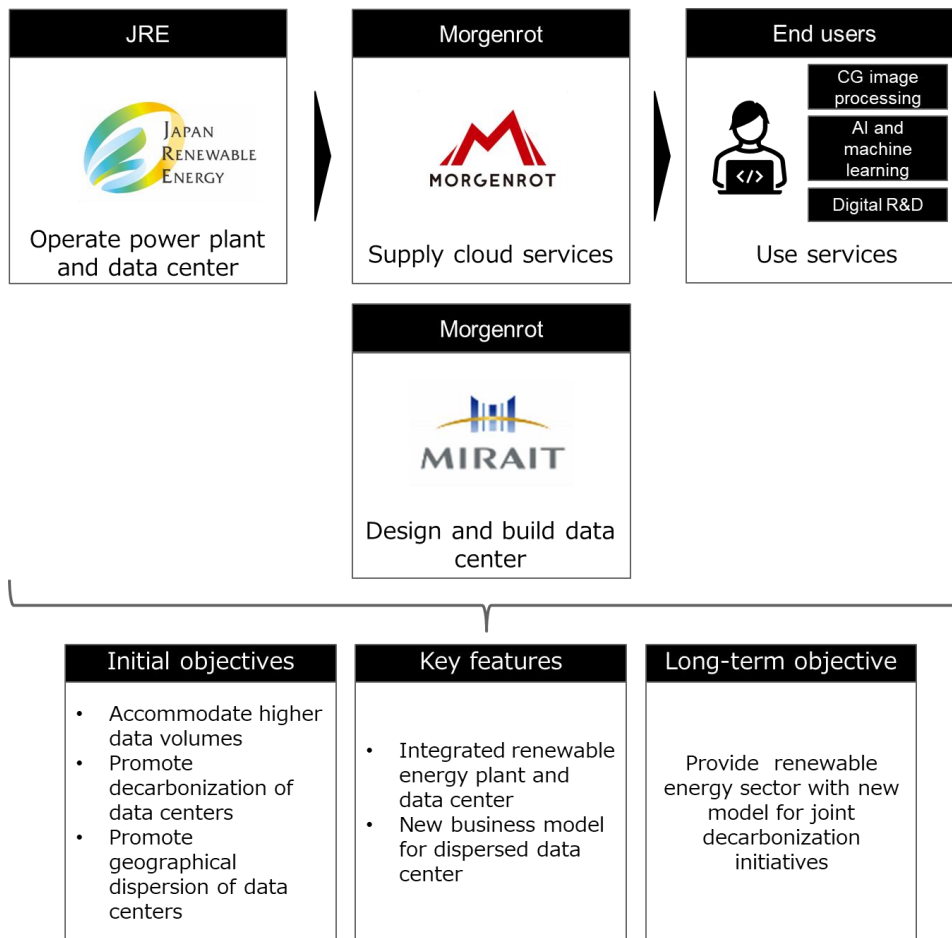
Morgenrot Inc.
Email : contact@morgenrot.net

Overview of JRE Nagano Omachi Solar Power Plant

Name	JRE Nagano Omachi Solar Power Plant
Installed Capacity	2,442.9 kW
Planned output (annual)	3,500,000 kWh
Design, procurement and construction	MIRAIT Corporation
Servers	Morgenrot Inc.
Power station operational	April 1, 2022
Data center construction start	May 2022
Data center operational	October 2022
Data center PUE	designed to deliver PUE of 1.1*²

JRE's approach for data center and telecom industry

① a computing business located outside Japan's large metropolitan areas that is attached to JRE's solar power plant (this business)

② an offsite PPA for data center and telecom industry

Project model

JRE	Morgenrot	End users
Operate power plant and data center	Supply cloud services	CG image processing / AI and machine learning / Digital R&D — Use services

Morgenrot
MIRAIT
Design and build data center

Initial objectives	Key features	Long-term objective
• Accommodate higher data volumes • Promote decarbonization of data centers • Promote geographical dispersion of data centers	• Integrated renewable energy plant and data center • New business model for dispersed data center	Provide renewable energy sector with new model for joint decarbonization initiatives

Photographs inside the data center

The exterior