

Japan ' s First Off-Grid Clinic | Tanabe Clinic ' s Power Independence and Continuity of Care

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Overview

Commissioned in 2013, Tanabe Clinic in Sakuho, Nagano, pioneered off-grid clinical operations. Our custom PersonalEnergy BMS576 combines a 19.74 kW solar array, 57.6 kWh lithium iron phosphate battery storage and 12 kW + 11 kW AC outputs. Daytime operations are powered off-grid; the battery is supplemented from the utility grid at night. More than ten years of one-second measurements and 24/7 remote monitoring support ongoing operations.

Case Answer

An off-grid clinic during operating hours, backed by more than a decade of 24/7 monitoring

Commissioned in 2013, Tanabe Clinic set out to establish what we describe as Japan ' s first off-grid clinic. Because the equipment was costly and converting the electrical infrastructure of the entire building required substantial work, we declined the project three times. Dr. Tanabe ' s determination ultimately led our company representative to design and install a custom PersonalEnergy BMS576 system.

The system incorporates 19.74 kW of solar generation, 57.6 kWh of olivine-type lithium iron phosphate battery storage, and AC outputs rated at 12 kW + 11 kW. During clinical hours, solar power and batteries supply the clinic off-grid. Our monitoring records show the battery state of charge (SOC) reaching 100% during the day and remaining fully charged for a period while supplying the clinic.

From 20:00 after clinical operations until 06:00 the next morning, utility power provides supplementary charging to maintain SOC in the 40–60% range. The operating strategy treats a possible disaster as something to prepare for every day, ensuring stored energy is available for the following day ' s care.

For more than ten years since installation, our company has recorded power measurements at one-second intervals and provided remote monitoring 24 hours a day, 365 days a year. Independent power, continuously connected monitoring: long-term measurements and supervision underpin the system ' s reliability.

Facility

- Tanabe Clinic, Sakuho, Nagano Prefecture
- The complete electrical system of a newly built, single-story timber clinic
- Off-grid electricity supply during clinical hours

Requirements

- Reconfigure the existing split-phase, three-wire installation to supply the whole clinic
- Avoid phase/load imbalance
- Accommodate winter heating loads while sustaining daily clinical operations
- Provide overnight battery replenishment and continuous monitoring for disaster readiness

Engineering decisions

- Divide the single-phase three-wire system into three single-phase two-wire routes
- Shift heating loads to a wood stove and underfloor heating while keeping electric heat-pump air conditioning (EHP) fully off-grid
- Design for approximately 20 kW of required input power
- Deploy a custom BMS576 with 57.6 kWh batteries, 19.74 kW PV and 12 kW + 11 kW AC outputs
- Record one-second measurements with 24/7 remote monitoring

Evidence / References

Kei Communication Technology Inc., Tanabe Clinic electrical design records

Supports: Electrical route reconfiguration, phase/load balance, heating redesign and system ratings

URL: <https://www.ieee802.co.jp/cases/case-010-tanabe-offgrid-clinic-en.php#s2>

Kei Communication Technology Inc., Tanabe Clinic installation records

Supports: Procurement background, design and installation of the custom BMS576

URL: <https://www.ieee802.co.jp/cases/case-010-tanabe-offgrid-clinic-en.php#s1>

Kei Communication Technology Inc., Tanabe Clinic monitoring records

Supports: Off-grid clinical hours, overnight charging, one-second monitoring and long-term operation

URL: <https://www.ieee802.co.jp/cases/case-010-tanabe-offgrid-clinic-en.php#s3>

CLINIC BAMBOO, March 2016

Supports: Published magazine feature

URL: https://www.ieee802.co.jp/downloads/cases/clinicbamboo2_201603.pdf

greenz.jp, October 16, 2014

Supports: Contemporaneous interview

URL: <https://greenz.jp/2014/10/16/tanabe-clinic/>

SOLAR JOURNAL, April 25, 2016

Supports: Contemporaneous interview

URL: <https://solarjournal.jp/information/242/>

Original Source

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