

# Paris Session 2022



## 100% RE Supply Technology for Micro-grid in the Hahajima-Island project

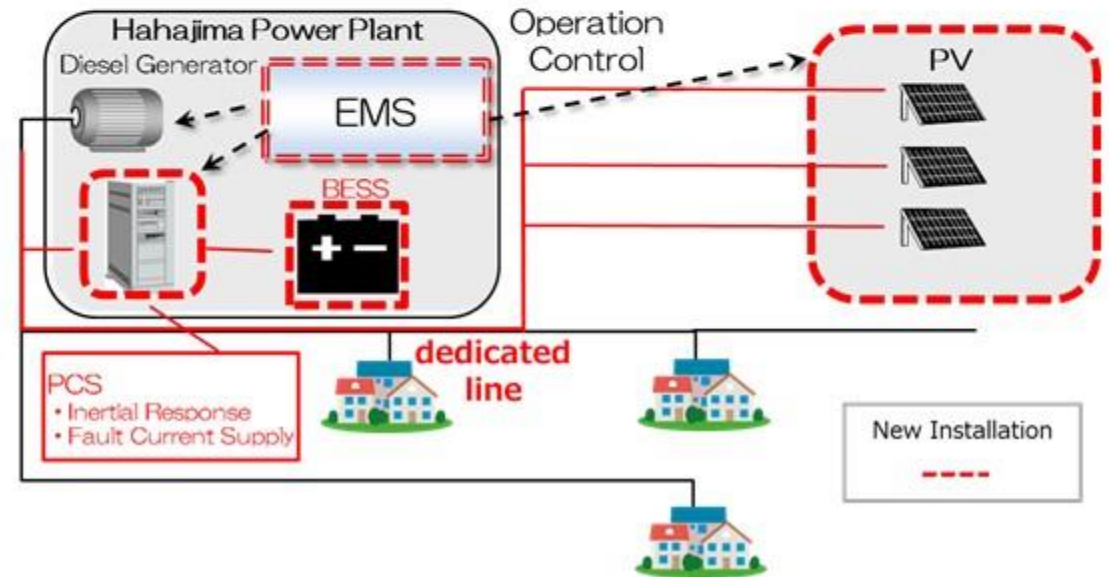
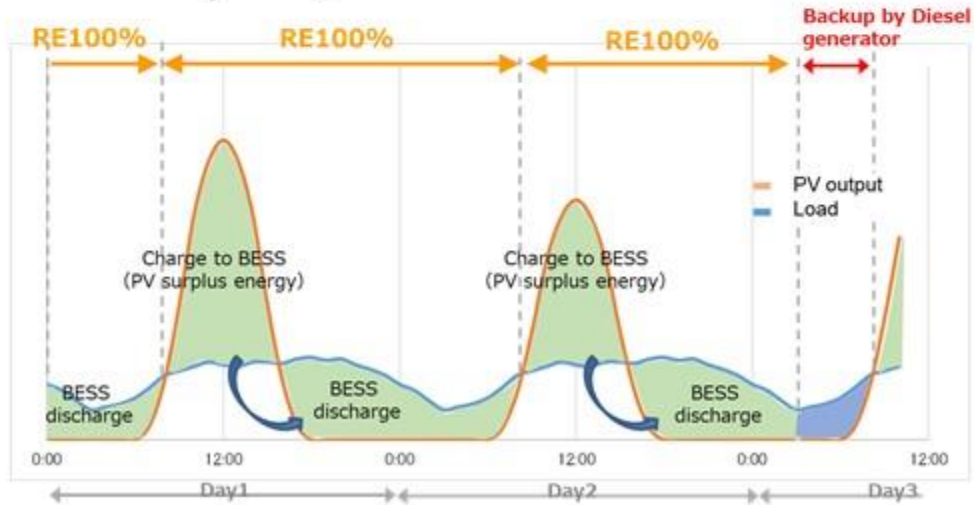
C1 – PS1

**Question 1.2.3** Paper 11030 describes studies of the special problems of island system in integrating renewable generation. How have other island systems addressed the challenges of renewable generation?

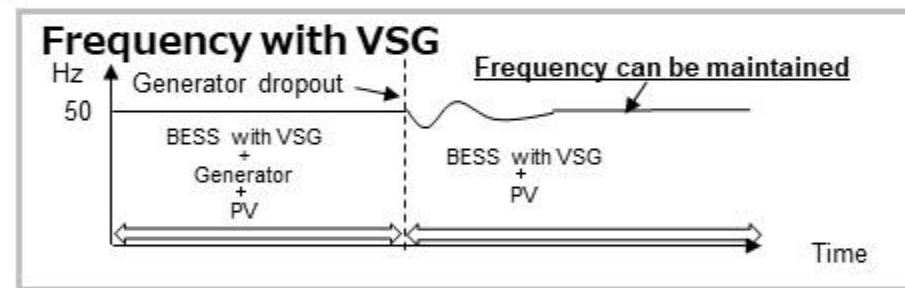
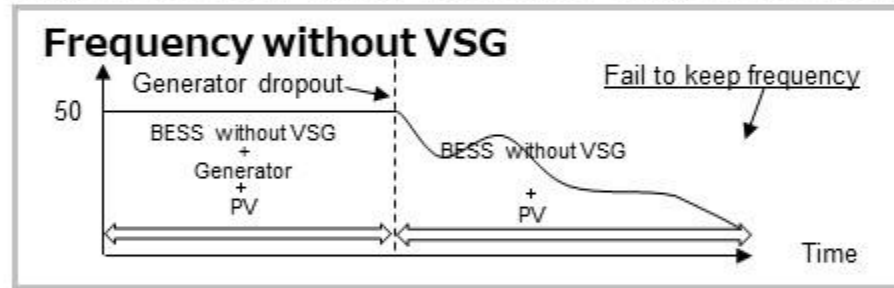
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- It's a project to switch the energy sources in the island to Renewable Energy (RE).
- PV and batteries are planned to be settled in around 2024 to establish 100% RE supply more than half the time throughout a year.
- PCS (VSG) and EMS system to maintain stable supply have been developed, and its effectiveness has been confirmed in a computation.



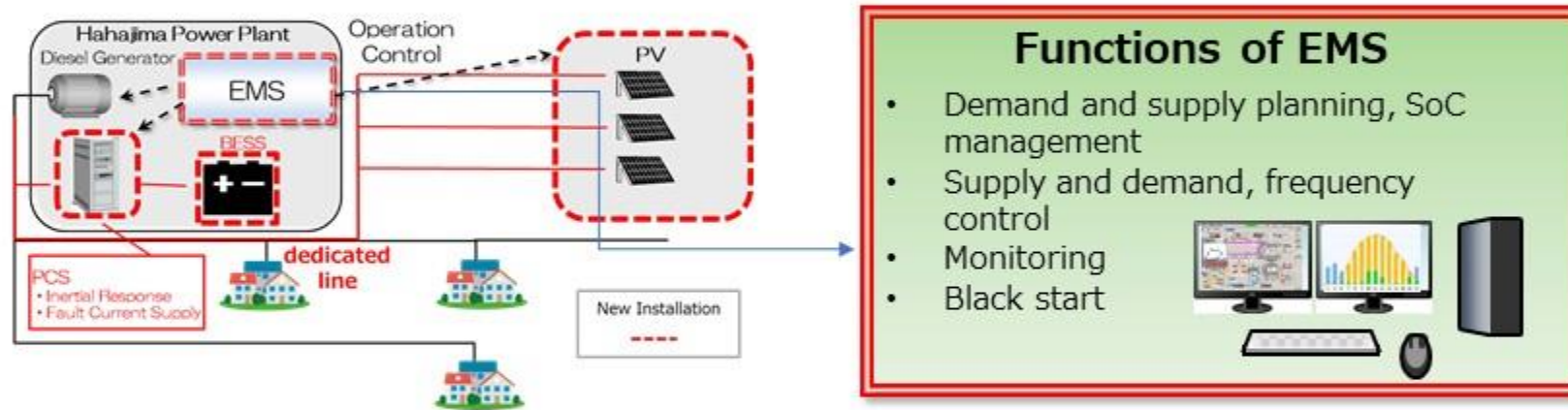
- To establish 100% RE supply, we have to overcome technical issues.
  - The biggest problem is that RE don't have the inertia that conventional synchronous generations have. Poor inertia system is vulnerable to frequency fluctuation due to load fluctuations.



A PCS(VSG) system cooperating with storage batteries have been developed in a real-time simulator.

It has been confirmed that sudden change of frequency can be maintained at the same level as the synchronous generator with the PCS.

- To ensure grid stability and economic efficiency, it is necessary to coordinate the operation of batteries, PV and diesel generators.



1/100-scaled model,  
settled in a building  
(Hino-City, Tokyo)

Whole system tests in a 1/100-scaled real-model are performing aiming at the installation in Hahajima-island in 2024.

The whole system test includes the effectiveness of PCS (VSG).