Power stabilization by renewable energy power generation, and smart grid

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Our Demonstration Site on Sumba Island, eastern Indonesia

Outline of Kyudenko

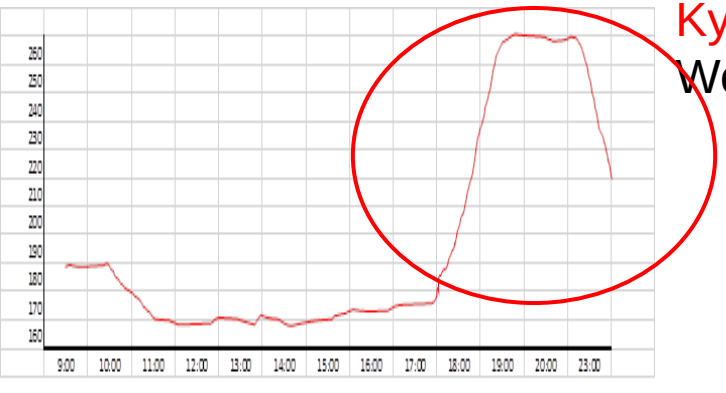
Kyudenko is a leading company of
-Electrical construction
-Air conditioning, water supply and drainage work
-Distribution line construction
-Renewable Energy Plant-Construction, (Solar power , wind power , biomass power ,etc power generation.) O & M

Introduction

By 2025, Indonesia aims to increase the proportion of renewable energy to 23%. Establish stable renewable energy utilization technology by introducing smart grids, improve grid flexibility by digitization, and establish its position as a business.

- Problems with renewable energy power generation facilities in the islands
- "Stabilize PV renewable energy"
- Main themes of power stabilization

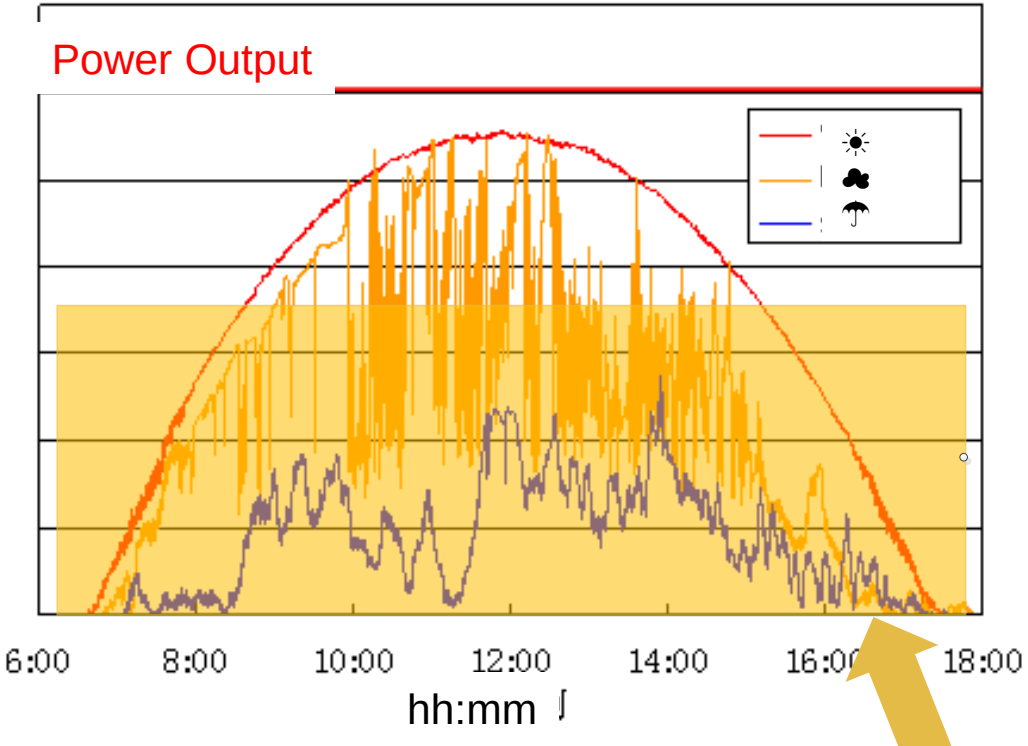
Problems with renewable energy power generation facilities in the islands



- Bring the diesel generator usage rate closer to zero.
- A stable renewable energy power generator is required.
- The energy source is local production for local consumption.
- The lead-acid battery is controlled to maintain its lifespan for 15 years or more.
- Since the demand value peaks in the evening on the islands, the power
  Stabilize supply and demand.

As a solution
Kyudenko EMS that can stably output renewable energy
We propose the introduction of the system.

"Stabilize PV renewable energy"



Renewable Energy is Always unstable

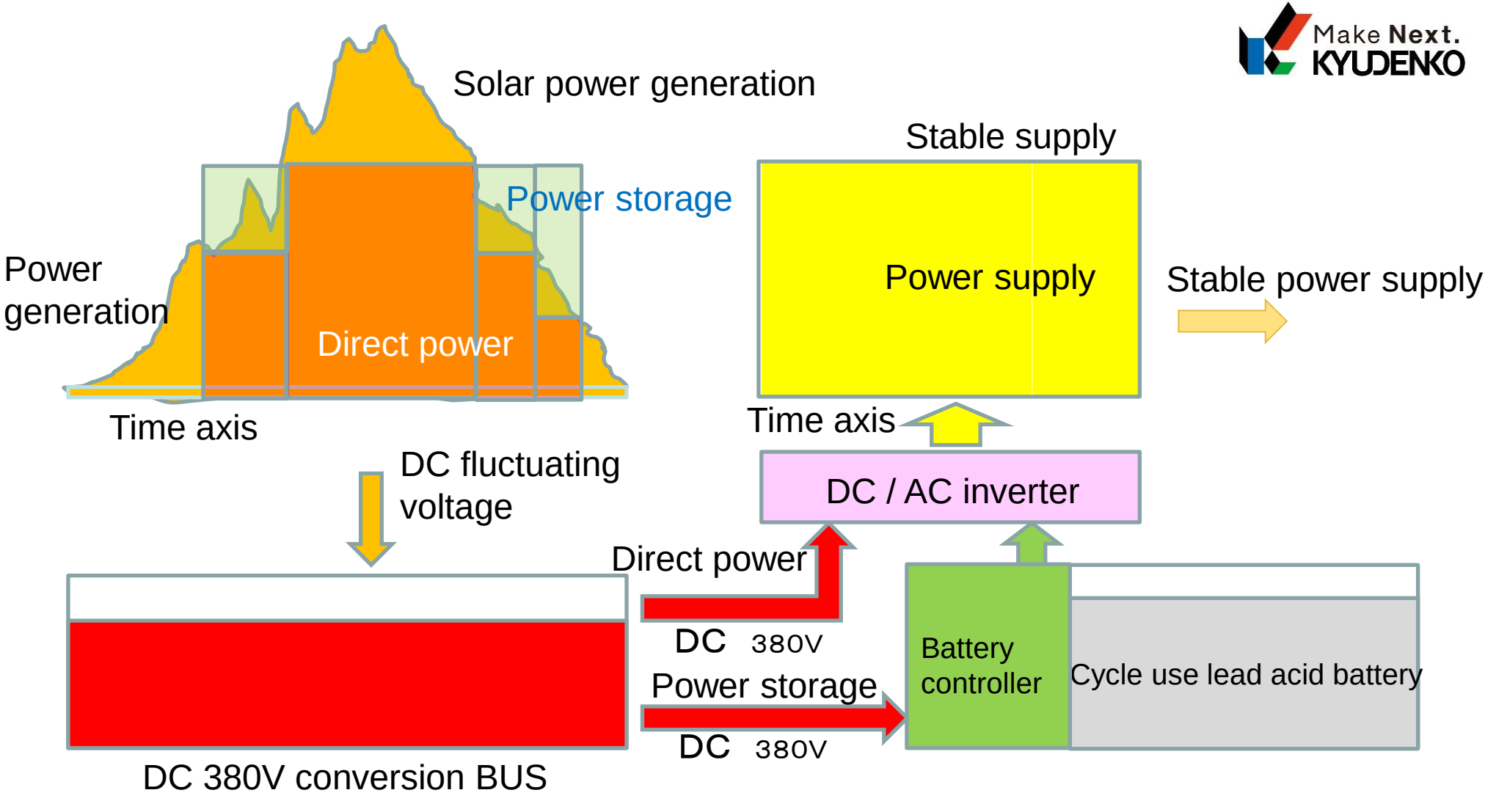
In order to provide a stable power supply,
Requires an easy-to-operate power generation system

Kyudenko EMS is to solve this unstable power transmission
This is the developed power transmission system.

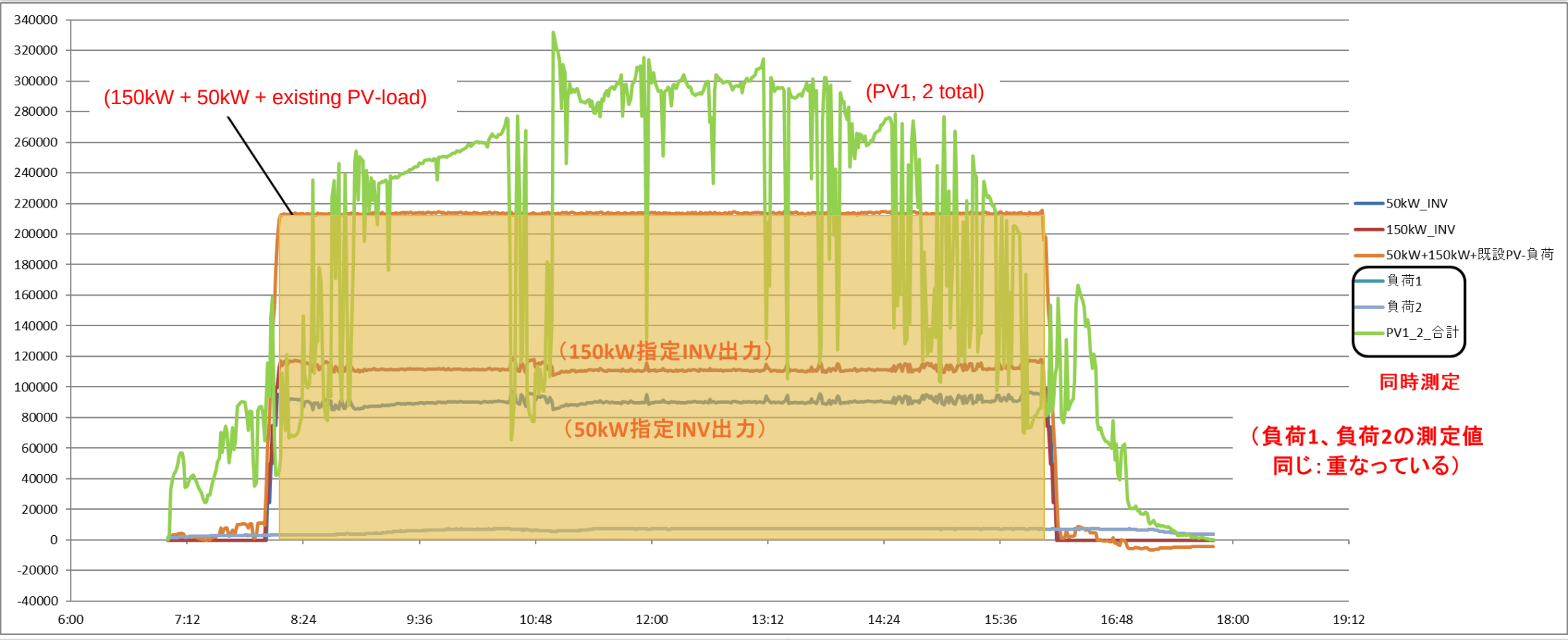
Main themes of power stabilization

- Overview of stable power transmission from renewable energy using EMS
- Transmission waveform graph (Sumba, solar power generation facility)
- Transmission plan to replace whole island renewable energy
- Network system for whole island renewable energy
- Re-energy management system for deployment to smart grids
- Deployment to smart grid

Overview of stable power transmission from renewable energy using EMS

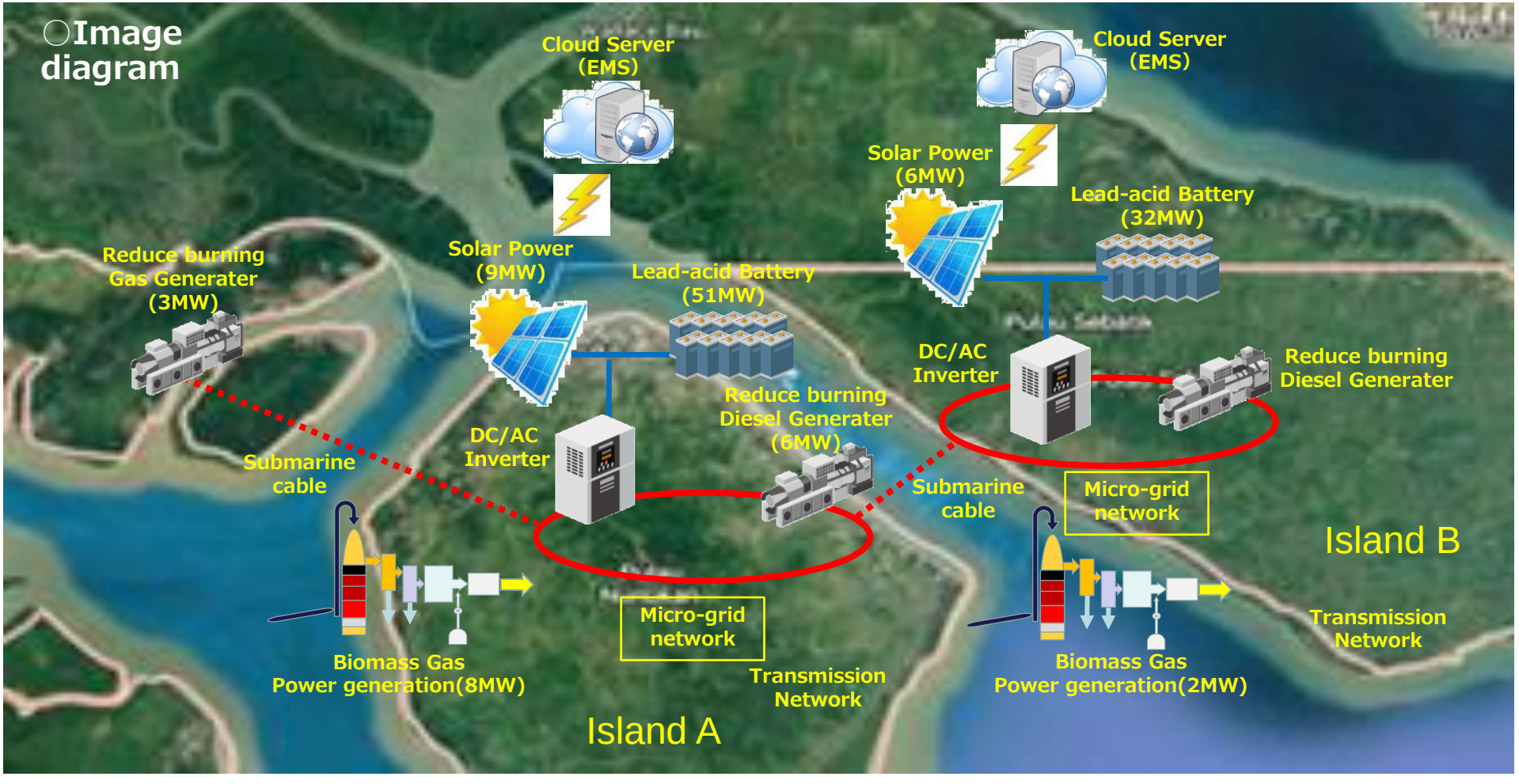


Transmission waveform (kW) Sumba Island, renewable energy power generation facility



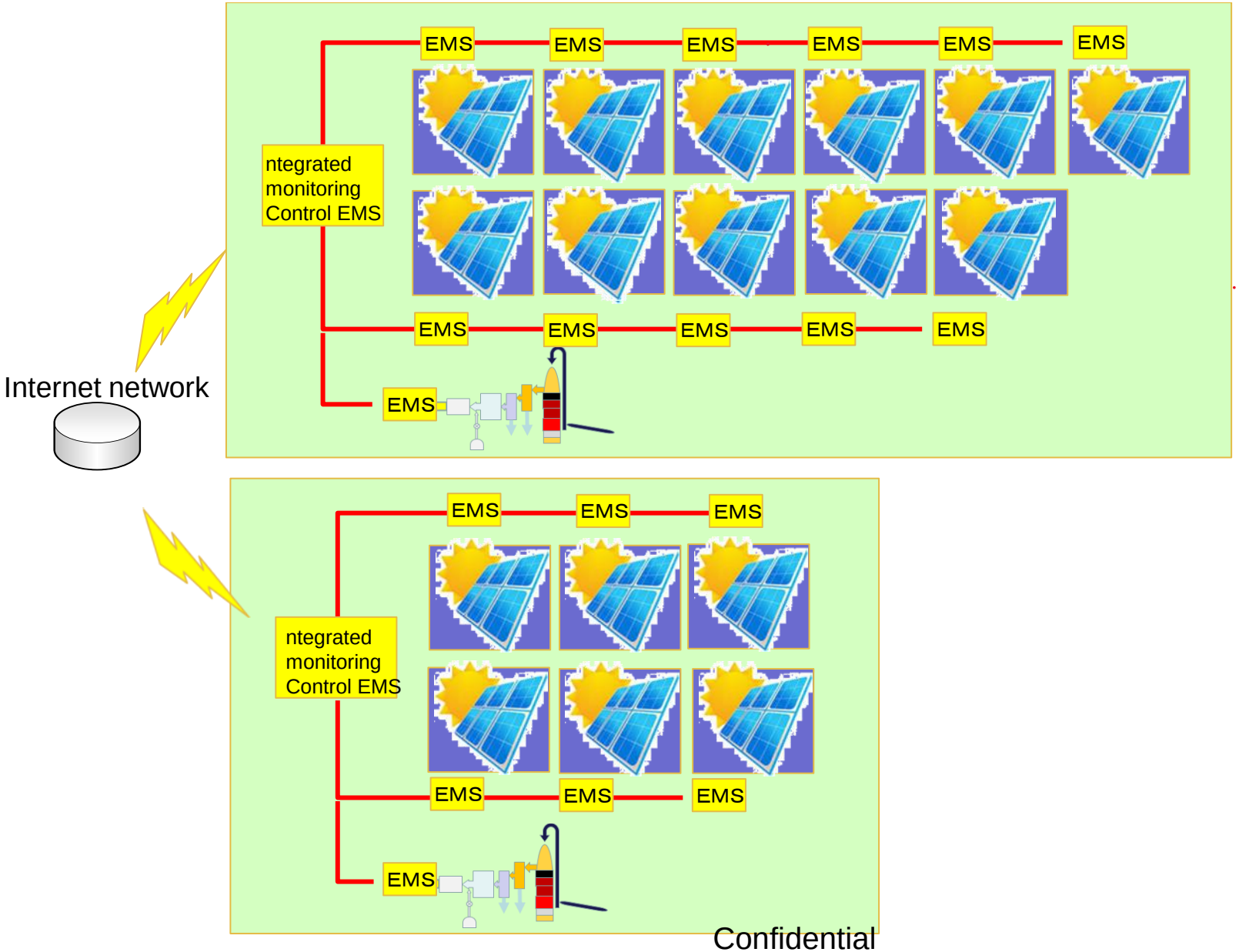
	50kW_INV	150kW_INV	既設PV1	既設PV2	負荷1	負荷2	50kW+150kW_INV	50kW+150kW+既設PV-負荷	PV_1_7	PV_1_8	PV_1_9	PV_1_10	PV_1_11	PV_1_12	PV_1_13	PV_1_14	PV1_合計		PV_2_7
2019/8/5 7:59	-265	-260	15010	15007	3069	3080	-525	11416	2706	2682	2771	2813	301	-50	-8	215	11430		99
2019/8/5 8:00	-261	-260	13030	13038	3061	3072	-521	9448	1287	1333	1447	1408	1179	463	546	1093	8756		104
2019/8/5 8:01	-259	24642	10788	10776	3045	3059	24383	32126	4008	4185	4084	4213	5458	5208	5381	5425	37962		85
2019/8/5 8:02	24366	24691	15216	15210	3076	3089	49057	61197	5775	5853	5788	5861	3886	3685	3798	3767	38413		110
2019/8/5 8:03	24387	49631	9066	9052	3025	3030	74018	80059	4566	4590	4679	4666	8575	8339	8492	8310	52217		49

Deployment to smart grid
Island area, whole island renewable energy transmission plan

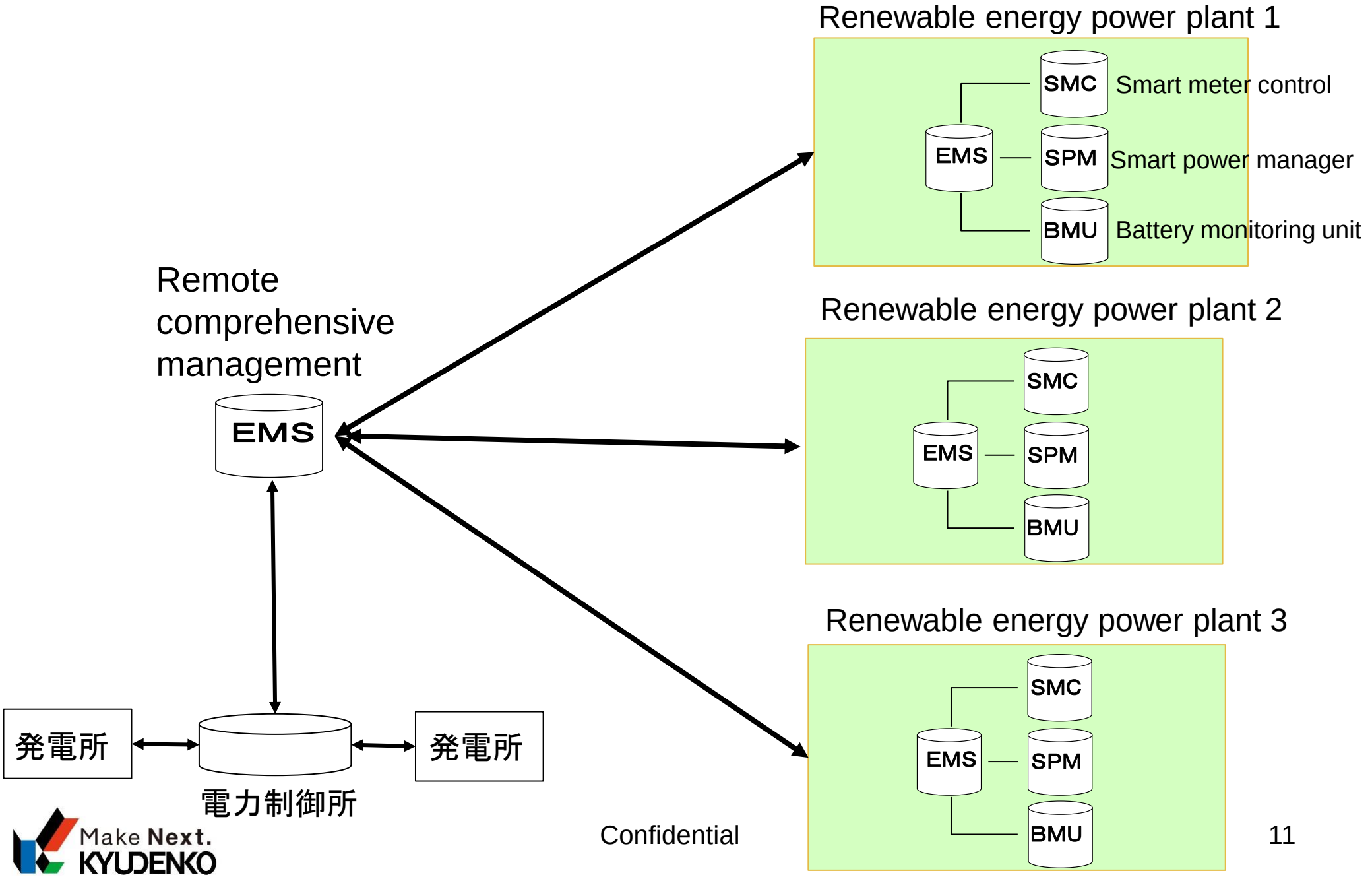


Attempt to shift internal-combustion power generation on islands A and B to renewable energy power generation

PV power generation and biomass gas power generation hybrid system
Mutual control system by integrated EMS and local EMS



Renewable energy management system (deployment to smart grid)



Deployment to smart grids Island region, whole island renewable energy transmission plan

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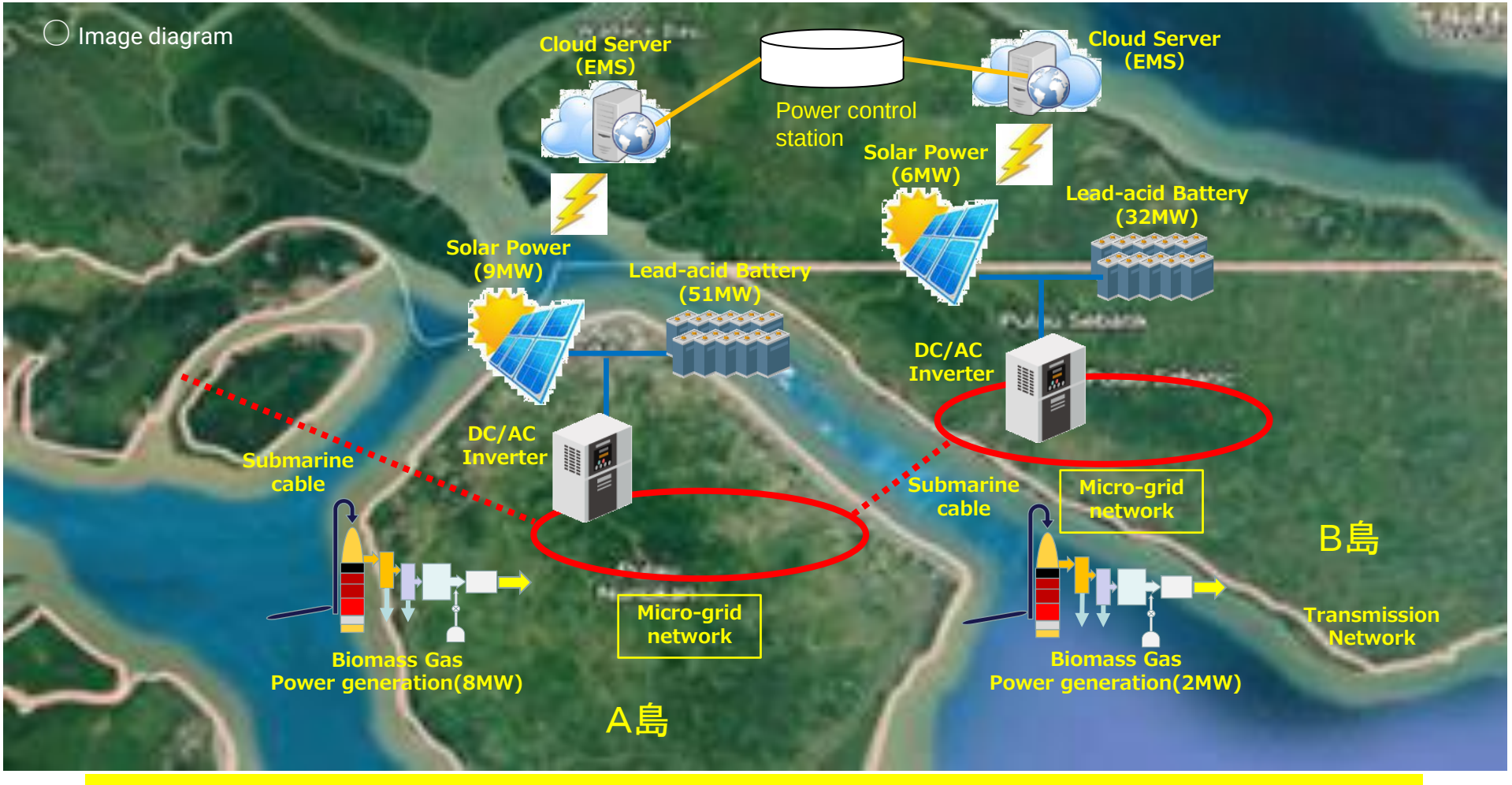
○ Image diagram



Attempt to shift internal-combustion power generation on islands A and B to renewable energy power generation

thank you for your attention

Terima kasih atas perhatian Anda