

Challenges and opportunities in operating islanded power systems with a high share of renewable generation

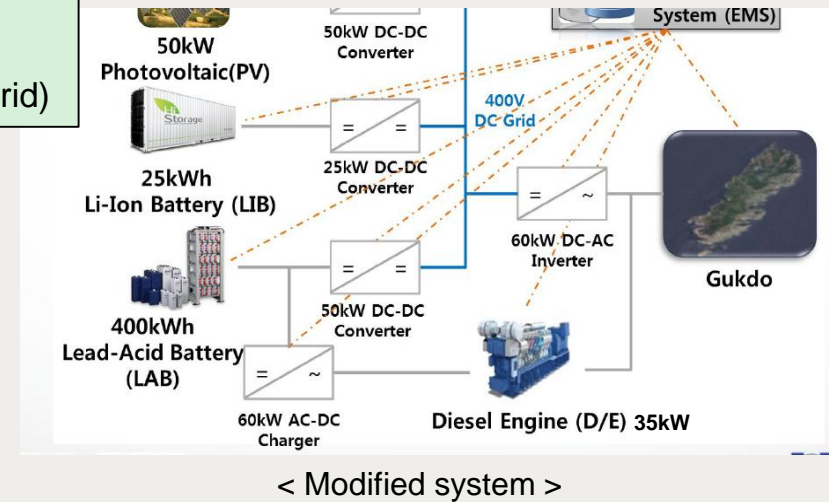
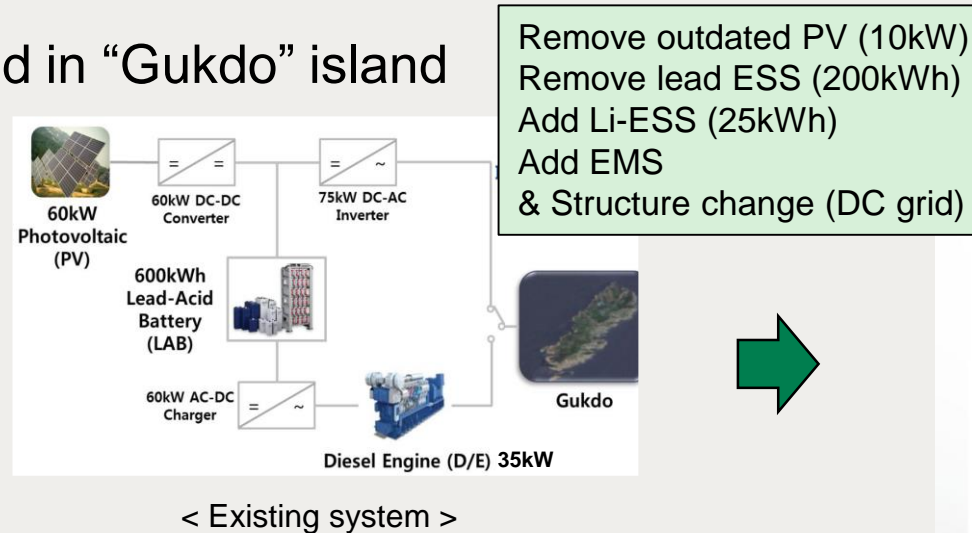
C6 - ACTIVE DISTRIBUTION SYSTEMS AND DISTRIBUTED ENERGY RESOURCES PS 3 – Q.4

What are the main challenges and opportunities in operating rural or islanded power systems with a high share of renewable generation? To what extent are energy storage systems helpful?

Gilsung Byeon (South Korea)

Challenges and opportunities in operating islanded power systems with a high share of renewable generation

Islanded Microgrid in “Gukdo” island



Complaints

- Outdated PV & Lead ESS → low availability
- Inefficient D/E operation → fuel cost increase
- Manual system operation
- D/E night operation → noise

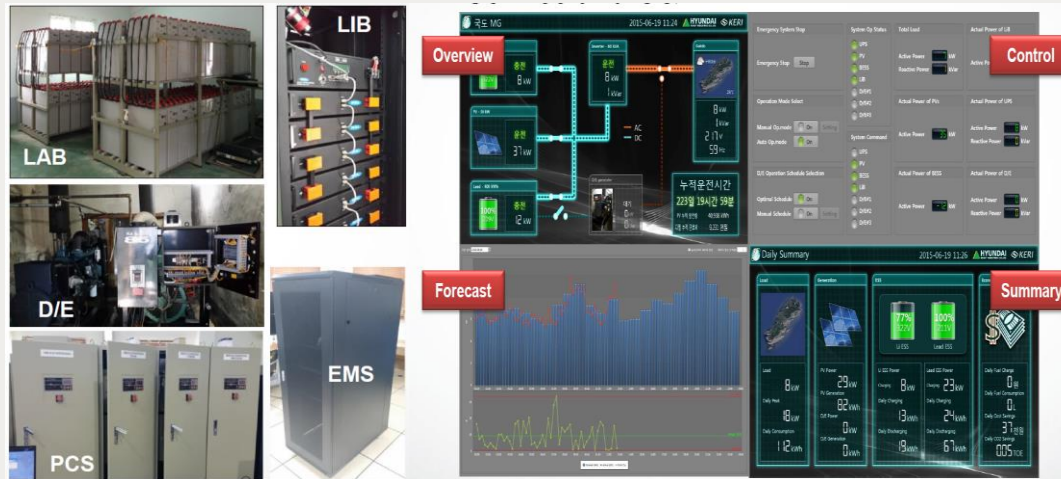
Group Discussion Meeting

Improvements

- Increase availability of DERs
- D/E rated power operation → fuel cost decrease
- Automatic operation
- D/E only runs until evening → quiet night
- System runs only with PV & ESS (sunny day)

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< DERs >

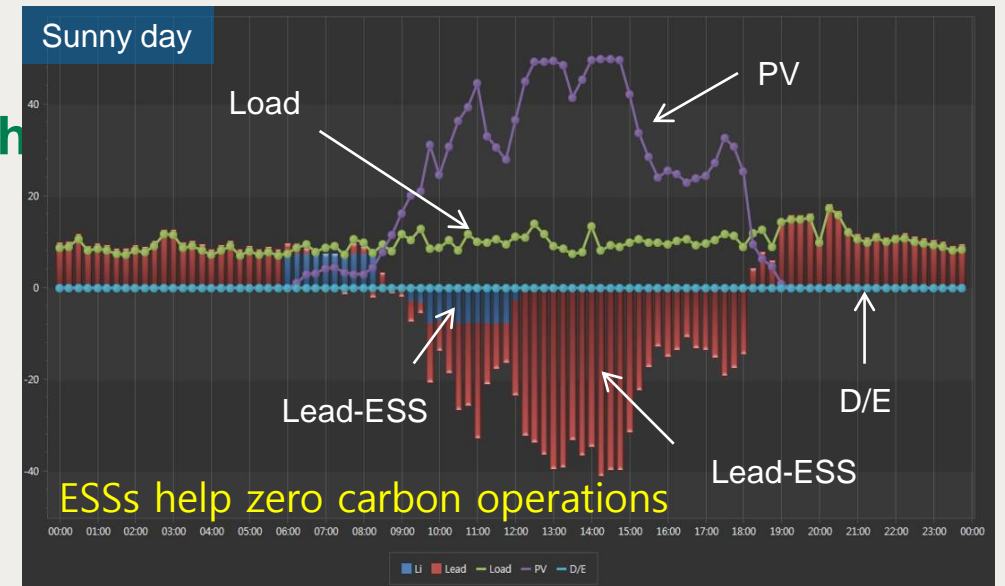
< EMS >

Challenges

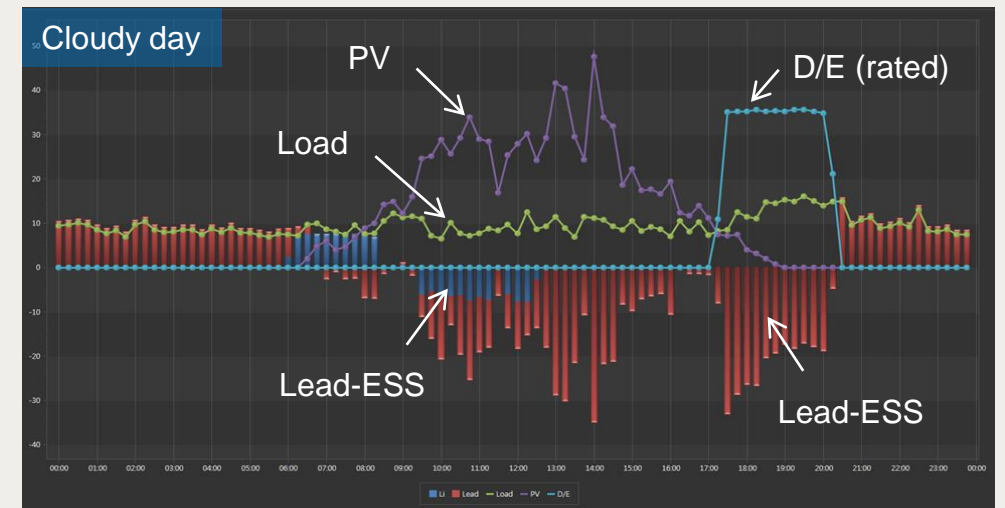
- (Implementation) capacity & cost, construction environment
- (Operation) renewable variability

Opportunities

- (Technology) forecast, schedule, control, etc...
- (Achievement) experience, system advancement, resident satisfaction



< Daily operation result on sunny day >



< Daily operation result on cloudy day >