

Field operation of multiple BESSs for demand management of a large-scale electricity consumer

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Abstract

This presentation specifies an optimal operation framework for multiple battery energy storage systems (BESSs) managing load of a large-scale customer under time-based pricing (TBP). This study focusses particularly on implementation and field test of the optimal operation scheme into the energy management system (EMS) of actual multiple BESSs of an industrial user for long-term field operation. The operation framework mainly consists of optimal scheduling and real-time dispatch. The optimal scheduling uses a simple nonlinear cost minimization model with operational constraints. The real-time dispatch, based on measured system states and the battery schedules, determines operation modes and dispatches final power commands to multiple battery systems. The operation method was applied into the EMS supervising one lithium-polymer BESS and two lead-acid BESSs of an industrial site. Comprehensive field operation results were presented to analyze operation performance and characteristics of multiple battery storage systems. Also technical issues experienced in actual operations are addressed to be shared for efficient deployment into the consumer market.

References

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