

Thesis Title	Power Quality Analysis of 200 kW Battery Energy Storage System for Load Leveling
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#### Abstract

This thesis describes the "Power Quality" of the 200kW Battery Energy Storage (BES) system which is owned and operated by the Electricity Generating Authority of Thailand (EGAT) at Fang District Chiangmai Province.

The sequence of this study includes : the literature search on some BES's case studies, theoretical background of related systems/components, regulation/standard, on-site data collection and analysis of results.

The analysis of results is concentrated more on the Harmonic Distortion matters since they are the most likely factor to interfere with the "Power Quality" of the grid during both the battery charging mode (Off Peak 22:00-9:00) and the power delivery mode (Peak Demand 17:00-21:00)

The analysis of results indicated that in general the Harmonic Distortion components of this BES system conform with the regulation/standard adopted in Thailand. However, the Harmonic Distortion components exceed the adopted standard by few percents during the first step of charging mode. A method to keep this Harmonic Distortion components with in the standard, by re-arranging of the charging scheme, is included in the recommendation.

It is found out that this BES System can help improving the Peak Demand capacity of EGAT's generating system at Fang Province (a 300 kW binary cycle geothermal power plant) by a factor of 1.6, while consuming a little less than 4% extra of the daily electricity produced from the Geothermal Power Plant.

Keywords :            Power Quality  
                          Battery Energy Storage. BES  
                          Peak Demand  
                          Grid Interfaced Inverter  
                          Harmonic Distortion Content