

Nikorn Chaicharoen 2014: Monitoring of Hybrid Power Systems for Rural Electrification by using Appropriate Tools. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Patamaporn Sripadungtham, Ph.D. 82 pages.

The goal of this research is to design and develop monitoring of hybrid power systems for rural electrification by using appropriate tools. The monitoring systems could display parameters and collected data in database format. The communication devices and network topologies were divided into two characteristics depend on the location of the hybrid power systems. The first communication method is data exchange via the GSM network with Network Address Translation (NAT) to transfer data from private network to a public IP address and the second method used the Domain Name System of the organization. The first and second communication methods were applied to monitoring systems at Phukradueng National Park and Bangkhunthien demonstration site, respectively. The parameters from the hybrid power systems were transferred, exchanged, and stored in a central server. The monitoring systems were designed to filter out unnecessary parameters, which were not required for the calculation of the hybrid power systems' efficiency. The LabVIEW program was used to create a user-friendly graphic display of the systems and collected parameters. The monitoring systems at both sites operated successfully and data could be displayed on a public network as designed.

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Thesis Advisor's signature

