RES 1.0 a Software Simulation of PV - Diesel Hybrid System for Rural Electrification

Nipon Ketjoy[1,2], Jürgen Schmid[1], Aekkalak Rojanaporn[2]

[1] Department of Efficient Energy Conversion, University Kassel, D-34109 Kassel, Germany
[2] Solar Energy Research and Training Center (SERT), Naresuan University, Phitsanulok 65000, Thailand
Tel +66-55-261067, Fax: +66-55-261067
E-mail: ketjoy@yahoo.com

Abstract

One problem of rural electrification is unknown which technologies are suitable for the target area. Two frequently used indicating parameters are technical and economic performance. In order to evaluate and establish the appropriate technology as well as the technical and economic performance of power systems for a rural area, simulation software called “Rural Electrification System (RES)” was developed.

RES 1.0 has been developed by the Solar Energy Research and Training Center, Naresuan University in the framework of MGCT projects (A Study of Mini-Grid Concept for the Villages without Electricity in Thailand). RES is a sizing, simulation and economic analysis tool for PV-diesel hybrid systems, stand-alone PV stations and stand-alone diesel generator stations used to power mini-grid and other technologies for rural electrification such as solar home systems, centralizes battery charging stations and conventional grid extensions. The technical result shows all the energy data necessary in comparing various system types. The economic results showed net present values, life cycle costs and levelized costs of each system, which enabled users to compare different technologies. The highly accurate results can be produce by this software depending on the meteorological database input.

This software will help the energy planners or other users to select suitable rural electrification options for the people in rural areas with the fitting technology and economic considerations.

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