SEB'09

International Conference on
Sustainability in Energy and Buildings '09

Invited Sessions

Title of Session: Hybrid Multi-Source Renewable Energy Systems for Domestic Combined Heat and Power

Name of Chair: Dr R J Howlett, Head of Centre for Smart Systems, University of Brighton, UK

Description:

This session will focus on the development of energy-optimised power systems using multiple renewable energy sources, for domestic use. A considerable amount of work is being carried out on the use of photo-voltaic panels, solar thermal hot water panels, and other single renewable energy sources. However, there is are interesting possibilities where a number of these sources are used together, in some circumstances in combination with an energy storage sub-system, such as a battery pack, and a local primary source generator.

These systems use a combination of energy sources, including wind and photo-voltaic power in conjunction with a micro-generation system, for example a fuel cell or efficient diesel generator, and a power storage sub-system such as a battery pack. When available, sun or wind energy would be used to generate electricity to be accumulated in the battery pack. When the battery pack is discharged, and if insufficient wind and sun energy are available to permit an adequate level of battery charging, the diesel / stirling cycle engine / fuel cell generation system would be started.

There is a complex problem to be solved relating to the control of the system component blocks so as to ensure optimum energy efficiency, and at the same time, adequate availability of power for the users needs.

There are also interesting questions to be answered about whether it is best in terms of energy efficiency to invert the battery output to 240V, or whether a lower voltage should be adopted as a standard for systems like this (e.g. 48V, DC or AC), particularly if lighting using high-brightness LEDs is to be used.

Call for Papers:

Papers are requested as contributions to this session that describe the use of combinations of more than one renewable energy source, energy storage sub-systems or micro-generation subsystems, for use in a such hybrid renewable energy system.

Website URL (if any):

Email & Contact Details:

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