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# Design and Implementation of Aurdino Based Smart Home Energy Management System Using Renewable Energy Resources

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**Abstract :** Energy Management System (EMS) is a computer-aided tool used by power system operators to monitor and controls the power flows in the micro grid by adjusting the power imported/exported from/to the main grid, the dispatchable DERs and the controllable of the market, the generations, and the loads in order to meet the operational objectives. The proposed work focuses on the design and development of Arduino controlled Smart Home Energy Management System (SHEMS) using Renewable Resources for micro grid with an objective to manage the load demand by using distribution grid supply, renewable resources like solar, wind and Lead Acid Battery to minimize the rate of energy consumption. This also minimizes harmful gas emissions and improves energy utilization efficiency. In this work, Arduino controller is employed to monitor and control the energy generation and consumption of smart home .This work enhances the usage of renewable energy at home to perform energy saving and to reduce CO<sub>2</sub> emissions.

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