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Design development and fabrication of 'Saradhaa' hybrid solar box cooker

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Energy is one of the basic needs and a means to increase productivity, enhance employment opportunities and improve the quality of life of people. It is the driving force behind the growth of a modern economy and is also an essential prerequisite for all developmental activities including the spread of education, health care, transportation and infrastructural facilities. The role of energy in the economic development is very vital and the wheel of economic progress remains stagnant without the essential input of energy. The world energy scenario projects the deepening of the fuel energy crisis, the implications of which would be equally serious for both the developed and the developing nations. In this critical situation, solar energy which is pollution free, cost-free and available in abundance during most part of the year offers a practical solution to the household energy problems. The total solar insolation over the landmass of India is estimated at 5000 trillion kWh/year and this could very well provide with the sources of sustenance for the myriad energy needs of a growing population. Solar cooker has a relevant place in the present fuel consumption pattern because it meets the requirements of a safe, ideal fuel and can save fossil fuels, and electrical energy to a large extent. It is a simple cooking unit for domestic cooking during most of the year except the monsoon season, cloudy days and during winter months. Solar cooking saves up to 550 to 600kg of firewood per year or more than three cylinders of LPG per year. This indicates that the capital invested in a solar cooker can be recovered within two to three years. Among the solar cooking devices, solar box cooker has been adjudged as the best device, as it is compact, portable and easy to operate. In order to maximize the efficacy of the solar box cooker as it is compact, portable and easy to operate a new model hybrid solar box cooker with electrical backup was fabricated with the available best materials for each part of the cooker. This study would be helpful for Indian homemakers to conserve their time, energy and money.

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