

## Feasibility Study of Air Conditioners Operated by Solar Energy in Saudi Arabia

**Authors :** Eman Simbawa, Budur Alasmri, Hanan Munahir, Hanin Munahir

**Abstract :** Solar energy has become currently the subject of attention around the world and is undergoing many researches and studies. Using solar energy, which is a renewable energy, is aligned with the Saudi Vision 2030. People are more aware of it and are starting to use it more for environmental and economical reasons. A questionnaire was conducted in this paper to measure the awareness of people in Saudi Arabia regarding solar energy and their attitude towards it. Then, two kinds of air conditioners (one powered by electricity only and one powered by solar panels and electricity) are compared in terms of their cost over a period of 20 years. This will help the users to decide which kind of device to use depending on its cost. The result shows that as the electricity tariffs in Saudi Arabia increases, depending on the sector, the solar air conditioner is cheaper. In fact, if the tariff in the future increases to reach 50 Halalah/kWh, the solar air conditioner is more economical. This will influence users to buy more solar powered devices, and it will decrease the consumption of electricity. Therefore, the dependence on oil will decrease.

**Keywords :** Airconditioner, solar energy, photovoltaic cells, present value

**Conference Title :** ICPTRE 2020 : International Conference on Photovoltaic Technologies and Renewable Energy

**Conference Location :** Dubai, United Arab Emirates

**Conference Dates :** March 19-20, 2020