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## Running a Home Water Filter Using Solar Energy

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*Energy is considered one of the most important demands in our everyday life. Solar energy is a promising renewable energy source that can be obtained from the sun rays using a suitable collector. In the present work, solar energy is extracted by a photovoltaic (PV) panel to produce clean electrical energy to run a home water filter. This initial model can be leveraged for reducing the cost of water desalination by use of solar energy as a free energy source. Thus, desalination plants can be established in areas where there is no infrastructure, and the uses of fossil fuels can be reduced. Expansion in the field of desalinated water use (due to the reduction of its cost) is vital alternative source to natural sources of fresh water in case of scarcity of those sources. Other benefits include reducing pollution, lowering the costs of mitigating global warming, and keeping fossil fuel prices as low as possible. These advantages are global [1]. However, desalination is an energy-intensive process and most of the world's plants are currently powered by conventional energy production. As the costs of fossil fuels increase, their operation becomes increasingly expensive and with the additional costs of pollution and greenhouse gas emissions. Hence, the integration of renewable energy production with desalination is increasingly attractive. Thus, the present work is based on utilizing the idea of operating a home water filter by solar energy as a laboratory demonstration for water desalination.*