Energy Conservation Program

Jordan is facing a future of very limited water resources, among the lowest in the world on a per capita basis. Demand for energy in the country is growing at a sustained pace. High economic growth in recent years and an expanding population have increased the need for energy resources. Universities are considered large energy consumers in Jordan.

Mutah University energy vision aims at utilizing renewable energy and implementing energy efficiency measures to achieve net zero energy consumption and minimum carbon emissions at its campus. In stages the mission of this strategy is to provide suitable energy management, apply conservation of energy opportunities, and utilize available renewable energy resources with high efficiency and quality of electrical energy. Several steps have been taken towards this goal.

1. **Renewable Electrical Energy Production–Pilot project:** installing a photovoltaic PV system to generate electricity as part optional environment actions.
   - MU installed a **2.1 KWp** photovoltaic (PVs) as a pilot project (as a seed for the large scale PVs) at PFC-DSEER with the Green universities projects. The system produces around 3.349500 MWh annual.

2. Renewable Electrical Energy Production- Large Scale PVs farms

- MU is working on large scale PVs system, the aim of the project to obtain net zero energy consumption from utility. With less than one month MU is going to announce the Tender document for **5 MWp** Project.
- The figure below shows the proposal location for PVs farm within MU campus

3. Power Quality Assessment and Mitigations Project - SRF

This project is funded by Scientific Research Support Fund (SRF) with 45,000 JD.

The aim idea of project is to investigate, quantify and address the power and energy quality profiles within Mutah University campus (such as: harmonic distortion, power interruptions, voltage sags and surges and other power quality problems). The study will be extended to investigate and characterize the impact of loads characteristic, loads signatures and equipment operation of Medium Voltage (MV), at distribution networks in Electrical Distribution Company (EDCO), on the power quality profiles. Further, as the new regulations has revealed allowing the customers to install as large as their capacities from photovoltaics (PVs) , the project will include extensive measurements and detailed assessment of the impact of small-scale (PVs) arrays on the power quality profiles.

4. Campus Load Management and Energy Redistribution based Supervisory Control and Communication Systems Project - SRF

This project got the initial acceptance from Scientific Research Support Fund (SRF) with 180,000JD.

The main idea of the proposed project is to generate, distribute and redistribute an electrical energy within at least three different locations/sites at Mutah University campus. The indispensible part is to redistribute an electrical energy where needed among these three locations in the campus. The redistribution process based on intelligent control system provides an affordable, reliable, efficient and sustainable supply of electricity without using an external supply of energy (i.e. electrical grid) as a first check. Using state-of-the-art technological advances in the areas of sensing, communications, control and visualization platforms, the idea can be applied on a small scale system as stand-alone system and measure the saving energy percentage afforded by this project.

5. Solar system for water heating at swimming pool and Student housing building

Thermal Solar systems were installed to alleviate the electrical energy consumption for water heating. The installed systems use to heat the water completely during the hot days and help to increase water temperature in other days.