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The content of the 2 traditional labs to be installed at PSUT were selected in a way to demonstrate, explain and relate the link between the renewable energy and the actual electric power systems and machines. The two labs: power protection and power systems, and electric machines and power electronics such as students are able to demonstrate the fundamental characteristics and capabilities of the power electronics devices, allows the them to understand the operation of the converters used to integrate between the renewable energy sources and the power systems, contributing into a better understanding of what so called the 'Smart Grid', as well the use of these converter devices for efficient driving and controlling of the electric motors and generators.

The type of the labs were decided according to DEV2.2, and the equipment, specifications, purchase and installing were decided according to internal PSUT tendering procedures. The procedures was initiated by the project manager and technical committees were then formed by the Tender Committee at PSUT to identify the required specification, call for tender in local newspaper, analyse offers technically and financially, draft a report for consideration by the Tender Committee, decide on most suitable offer technically and financially, recommendation for tender awarding, purchase and install equipment. A full report on this procedure with appropriate quality monitoring procedure by the quality committee of the MUREE consortium is attached.

One of the two labs can be shown in the figure (1) below in operation at PSUT. The labs will be open to all JO partner universities to access and share according to an agreement signed between PSUT and UoJ, JUST, HU and Mutah University under supervision of the National Tempus office in Jordan.



Figure (1): Electric Machines and Power Electronics Lab in Operation at PSUT.

A similar procedure was followed when purchasing the 4 remote labs equipment to be installed in 4 Jordanian universities: PSUT, JUST, Hashemite University and Mutah University. The types of the labs were decided according to DEV2.2 and in consultation between UNED, PSUT and HU. The equipment, specifications, purchase and installing were decided according to internal PSUT tendering procedures. The procedures was initiated by the project manager and technical committees were then formed by the Tender Committee at PSUT to identify the required specification, call for tender in local newspaper, analyse offers technically and financially, draft a report for consideration by the Tender Committee, decide on most suitable offer technically and financially, recommendation for tender awarding, purchase and install equipment. A full report on this procedure is attached.

The four labs purchased were distributed amongst Jordanian partner universities as follows:

1. Wind and Solar Power, PSUT
2. Fuel Cell, Mutah University
3. Alternative Energy, Hashemite University
4. Solar Tracking Control, JUST

One of the 4 remote labs shown in the figure (2) below was installed at PSUT and ready to be offered online to all students from different partner Jordanian universities.



Figure (2): Wind and Solar Power Remote Lab Installed at PSUT.

Attachments

1. Full report on Traditional Lab Equipment Tendering
2. Full report on Remote Lab Equipment Tendering