



Project Title: Modernising Undergraduate Renewable Energy Education: EU Experience for Jordan

Acronym: MUREE

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Coordinator: Princess Sumaya University for Technology (PSUT), Jordan

Project Manager: Professor Abdallah Al-Zoubi

Address: Khalil Saket Street 118, Amman 11941, Jordan

Tel: +9626 5359949/+9627 77355299

Fax: +9626 5347295

Email: zoubi@psut.edu.jo

Project Website: <http://muree.psut.edu.jo/Home.aspx>

Deliverable Title	<i>Selection and Design of Remote Labs</i>		
Author(s)	<i>Salva Ros and Abdallah Al-Zoubi</i>		
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During the kick-off meeting, Dr Salvador Ros, UNED, gave a presentation on renewable energy virtual and remote laboratories and distance learning, focusing on examples on existing online resources such as Lab2go, Alecop, Lucas-Nulle, and Edibon. A committee consisting of Salvador Ros, UNED, Abdallah Al-Zoubi, PSUT and Bashar Hammad, Hashemite University, was formed to follow all matters related to the design and implementation of remote laboratories. A team consisting of Belal Sababha and Husam Abed, PSUT, Ahmad Al-Khasawneh and Bashar Hammad, Hashemite University, and Mamon Dmour, Jordan University, visited UNED in the period 18-22 January 2013 to discuss the matter of selection of the remote labs, their technical specifications, equipment, installation and integration with the VLE, in addition to training engineers, technicians and programmers from Jordan member universities on how to build and integrate the labs with their VLEs. Visits to remote labs manufacturer in Madrid have also been made to see the latest technology in this field. A report on the visit is [attached](#).

UNED and the Jordanian team have then decided on the following remote labs: Wind and Solar Power, Hybrid Energy, Fuel Cell and Solar Tracking Control, and agreed to initiate the process of equipment purchase as shown in the letter to PSUT president depicted in Fig. (1).

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Princess Sumaya University for Technology



جامعة الأميرة سمية للتكنولوجيا

24/7/2013

**Professor Dr Issa Batarseh
University President**

I would like to inform you that Princess Sumaya University for Technology is currently leading a Tempus project entitled:

“Modernizing Undergraduate Renewable Energy Education: EU Experience for Jordan”, MUREE

under TEMPUS project number 530332-TEMPUS-1-2012-1-JO-TEMPUS-JPCR. Part of the project’s activities is to select, develop, adopt and integrate 4 remote labs into the bachelor programme with the help of EU partners. PSUT, JUST MUTAH University and Hashemite University will host one remote lab each in order to share resources of expensive and sophisticated renewable energy systems. Financial resources for the 4 remote labs have been taken into consideration within the project’s budget.

I would kindly like to ask you to agree to initiate the purchase process of these 4 remote labs according to both PSUT and Tempus regular tendering procedures. One computer server is also required to host the Virtual Learning Environment (VLE) for the 4 remote labs. It will be hosted at PSUT.

Yours faithfully



Professor Abdallah Al-Zoubi
MUREE Coordinator

Fig. (1): Letter addressed to PSUT president to initiate the process of remote lab equipment purchase.

A committee was then formed by the PSUT tender committee to prepare the technical specifications of the four remote labs, call for offers following standard tendering procedures, choose the suitable and appropriate offer and purchase the equipment. The technical specifications and tendering procedures documents are **attached**. The 4 labs were subsequently purchased, installed in the 4 partner universities, tested, given appropriate IP addresses and are currently being connected to the internet. Fig. (2) shows one example of administrative procedures to run the labs.

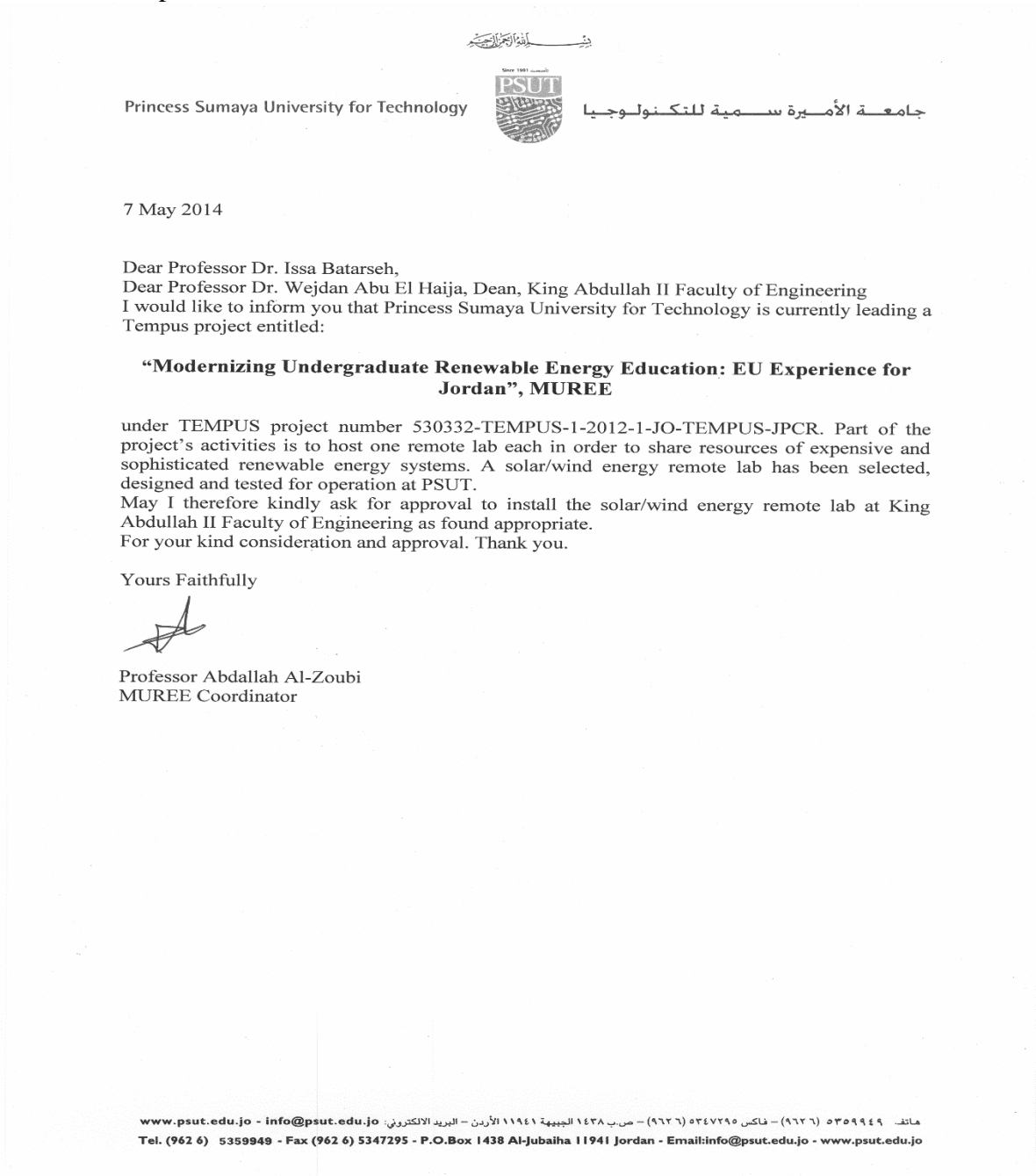


Fig. (2): Letter addressed to PSUT president to install and run the solar/wind run the remote lab.