بسم الله الرحمن الرحيم

رابطة الجامعيين

جامعة بوليتكنك فلسطين

**Palestine Polytechnic University**

# اليوم العلمي الختامي للشراكة الثلاثية الحلزونية في مجال الطاقة والبيئة.

# The Closing Symposium For Triple Helix Partnership In The Field Of Energy And Environment

**December 28 ,2016**

**Prepared By: Symposium Coordinator**
**Ms. Sameera Abu Ghalyoon**

**Palestine Polytechnic University (PPU)** is one of the leading technical universities in Palestine. The university was founded in 1978 by the University Graduates Union (UGU)– a non-profit organization in the Hebron district. The primary mission of the university is to emphasize high quality vocational and technical engineering education. This is achieved by providing students with practical knowledge to help them acquire an up-to-date experience directly related to their disciplines. The university is currently offering two-year diploma degrees, Bachelor degrees in most science and engineering disciplines, and Master degrees in selective fields.

**PPU** is officially recognized by the Palestinian Ministry of Higher Education (MoHE) and it is an active member in the Rector Conference of Palestinian Universities. Moreover, PPU is a member of the Palestinian Council for Higher Education, the Association of Arab Universities, the Association of Islamic Universities, and the International Association of Universities.

Furthermore, the university received accreditation from the Ministry of Higher Education of Palestine in 2009 and 2010 for two bachelor-degree academic programs "Electrical Power Engineering", and " Environmental Engineering" respectively.

In addition to that, the College of Engineering has received accreditations from MoHE for two graduate master degree programs in the "Renewable Energy" and " Electrical Power" .

There were over 6000 students enrolled in the various areas of specialization at PPU during the academic year 2014-2015. PPU dedicates particular attention and commitment to enhance its relationship with the local community by identifying and working on potential community priorities and needs. It also promotes certain diverse services, strategies and programs to meet these priorities and needs.

## PPU Vision

Towards a Science, Technology, Innovation, and Entrepreneurial University by the year 2016.

## PPU Mission

- To graduate qualified labor forces able to make a positive change and fulfill the needs and requirements of the community in scientific, technological, and research fields.
- To provide innovative ideas and solutions.
- To strengthen the role of the scientific research and development in accomplishing sustainable and substantial national growth.
- To attract qualified and ranked human resources.
- To reform the university environment and atmosphere.

## Main Objectives

- Assuring quality in academic programs.
- Assuring quality in administrative issues.
- Encouraging scientific research.
- Communicating efficiently with the local community.
- Achieving full financial self-dependency.
- Enhancing the university atmosphere and the extracurricular activities.

## College of Engineering

The College of Engineering was founded in 1978 as the first primary institution in the filed of vocational and technical education in Palestine. And it's name was (College of Engineering and Technology) until 2012. .The University Graduates Union (UGU) as a polytechnic institute with four engineering programs established it: Civil, Architectural, Electrical, and Mechanical. These programs comprised about 120 credit hours spread over three years. The Council of Higher Education modified these programs in 1982 to about 72 credit hours spread over two academics years and concentrating on the practical aspects to satisfy the needs and requirements of the local society and the Arabian markets. In this year (1982), the name of Polytechnic Institute was changed to Hebron Technical Engineering College (HTEC).

In 1990, the college initiated its second stage by offering Bachelor Programs in Mechanical Engineering and Computer Systems Engineering. After that, other Bachelor Programs were also offered in different fields, and in 1995 the name was changed again to the College of Engineering and Technology, which is the same year of graduating the first batch of B.E students. The college now has three departments that offering nine Bachelor programs. These departments and programs offered are:

- Electrical Engineering Department: offers the following programs:, Industrial Automation Engineering Program, Biomedical Engineering Program, and Electronic and Communication Engineering. Power Engineering and Technology.

- Mechanical Engineering Department: Automotive Engineering Program, Mechatronics Engineering Program, and Refrigeration and Air conditioning Engineering Program.

- Civil and Architectural Engineering Department: Building Engineering Program, Surveying and Geomatics Engineering Program, and Architectural Engineering Program, Civil & Architectural Engineering Department.

# Triple Helix Introduction

Taking into account the strategic vision of Palestine Polytechnic University toward the innovation, entrepreneurial and integration with different community sectors, Triple Helix project fulfill mentioned vision. This project was funded throughout Quality Improvement Fund managed by Ministry of Higher Education and funded by the World Bank . Triple Helix project aims at enhancing the employability of graduated students from Energy Engineering & Environmental engineering program at College of Engineering- Palestine Polytechnic University. This project presents active and dynamic partnership between three sectors Academia representing Palestine Polytechnic University, Private sector presenting several companies working in the field of energy and renewable energy; and third partner is the governmental sector represented by Authority of Energy & Natural Resources.

**The project activities were distributed over 30 months were the following major tasks were implemented:.**

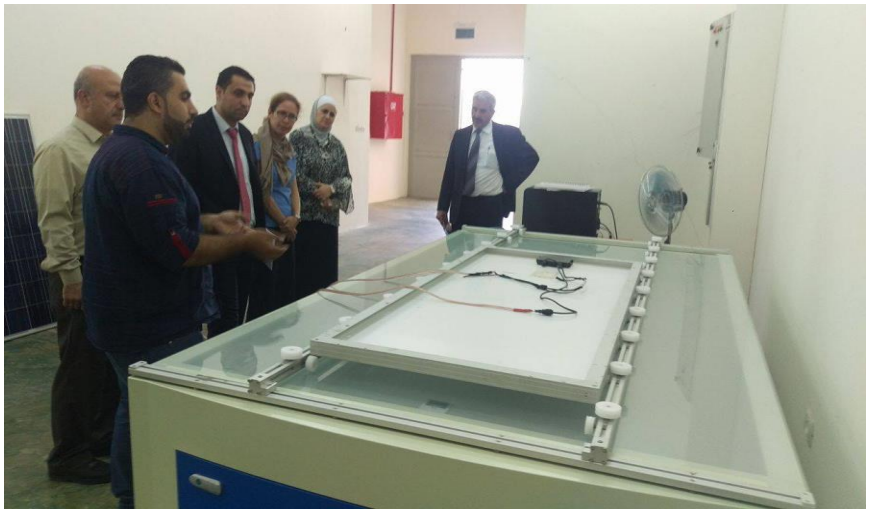
- Curricula development of both energy and environmental engineering programs
- Life skills training of students and train trainers ( passport to success) in order to realize knowledge sustainability
- Infrastructure development in form of labs and software development
- Overseas visits
- Internships and field training

**Main objectives**

1- Realizing solid platform of researchers, academic, and decision makers in the file of energy and environment to discuss hot issues related to these sectors and aspects for sustainability
2- To have a look at the state of the art in these fields presented by local and international speakers….
3- State an overview of status and readiness of the involved in the field of energy & environment sectors , and who they can be integrated with the community,
4- Presenting the project achievements, outcomes and generated success stories
5- Discussing the procedures for overcoming weaknesses and obstacles affect the sustainable development of energy & environment in Palestine with respect to employability rate.

**Achievements of the project**

1. Setting up the Project steering committee and project team.
2. Awareness raising workshop (partners ,students .private sector ).
3. Egypt RCREEE Visit exchange experience with Egyptian side.
4. TOT life skills training –15 participants –contact signing phase.
5. Local and international curricula development consultant recruitment in the contract signing phase.
6. Students visit to local energy company (Tubas electrical company ).
7. Books and notebooks purchase order phase.



# Symposium Chairman Welcome Message

**Dear Symposium Participants, Partners, And Attendance,**

On behalf of the Triple Helix closing symposium Steering Committee, I am honored and delighted to welcome you all to "**The Closing Symposium for Triple Helix Partnership in the Field of Energy and Environment ,** Hebron-Palestine. It is very delightful occasion to host this event at Palestine Polytechnic University Campus. I believe we have chosen a venue that guarantees a successful Scientific Symposium It seeks to a Successful partnership with the three sectors of society(Academic, Public,& Private) .

In accordance with the vision and strategy of Palestine Polytechnic University (PPU) as a university serves community, there are many scientific activities and events organized by the university in support of integrative process with the local community , where Triple Helix project embodying this trend and accelerating the development of this relationship. PPU got this project during the second cycle for enhancing the employability of graduated students throughout Quality Improvement Fund (QIF) for development the Palestinian higher education's institutions funded by the World Bank in 2014. The project entitled: Enhancing Graduate Engineers Employability using a Win-Win Innovative Triple Helix Partnership Model.

The PPU received a total of 240000US$ with 10% co-financing for the period of 30 months from 01/10/2014 until 31/03/2017, where two engineering programs directly benefited from this fund. These programs are Electrical Energy Technology Engineering and Environmental Technology Engineering. In addition two that another 3 programs can be indirectly benefited, 45% of them are females.

This project focuses on the development of the tripartite relationship between PPU and institutions of the public and private sector working in the fields of energy and the environment. The local market need of qualified engineers presents one of the most important inputs to these programs, where determining the required graduates mastery skills of these programs improve the level of competitiveness, and increases their access to the job market.

This project included the implementation of many of the activities related to the development of human resources, infrastructure and improve the teaching environment, where these key factors were determined due to evaluation results of local and international consultants regarding the market need and state of the art

technologies in these fields . In addition to that another activities had been conducted that targeted students and staff such as organizing intensive training courses for senior students called passport to success, curricula's development, purchasing state of the art equipment's in the field of renewable energy & environment, conducting international visits , and conducting filed visits and internships to the beneficiaries.

Since that sustainability represents the most important factor for the success of the continuity of the development of these programs a dual-use equipment's have been purchased that providing an educational model for students; and at the same time they offer quality and validation tests to community institutions dealing with energy and environment.

It is expected after the graduation of the first cohort of students who will study according to the new plans amended to raise their access and opportunity to find jobs, and the employability ratio will be a key indicator for the success and the sustainability of this project.

At the end of this word we extend our sincere thanks and appreciation to QIF administration and the World Bank for their generous support and their keenness to develop the quality of higher education programs. Our thanks go also to the partners in this project, most notably the Jerusalem Distributed Electricity Company JDECO and Hebron Electricity Company HEBCO for their cooperation and interaction in the success of the project activities. And we do not forget the role of the University administration to provide the appropriate conditions and cooperation in the success of this project.

Many thanks also to International speakers who honored us from Netherlands and United States, as well as local speakers who cherish their cooperation and enrich their experiences of excellence in this meeting. At the end of this word, wishing to our students success and progress.

Also I would like to extend my thanks and appreciation to the symposium Steering, administrative,& organizing committees that made this conference a success.

I faithfully hope that the Symposium is going to be very fruitful. My best wishes to you all to enjoy this scientific day and to take out maximum learning and knowledge from the Symposium .

## Prof. Sameer Hana Khader/Symposium Chairman

Prof. Khader is a Full Professor of Electrical Engineering at Palestine Polytechnic University (PPU) – 2012-2015, he was Dean of Graduate Studies & Scientific Research Palestine, during 2010-2011 year he was a visiting professor at University of Hartford, CT, USA spending his sabbatical year. He is a director of Power Electronics & Signal Processing Research Unit at PPU. Before that he served for ten years as university academic provost, dean of college of Applied Professions, and Chair of the Electrical & Computer Engineering Department at PPU. His research interests include Electrical machines, Electrical drives, Power Electronics Converters, Renewable Energy Sources and Smart Grids, in addition to engineering education and e-learning technologies. In 2008 Prof. Khader was awarded for Teaching Excellence Award offered by AMIDEAST. He attended 10 ICT modules offered by EU in 2008 in cooperation with Ministry of Higher Education of Palestine, and hosted by Giunti Labs in Italy:(http://www.checkpoint-elearning.com/article/5379.html). Furthermore Prof. Khader has few IEEE publication in the field of ICT & e-learning Technologies.

Prof. Khader may be contacted at sameer@ppu.edu; Mobile: 0599889623

## *CONFERENCE COMMITTEES*

## The Steering Committee

### Palestine Polytechnic University members:

Prof. Sameer Khader / Triple Helix Symposium Chairman

Ms.Sameera Abu-Ghalyoun/ Triple Helix Symposium Coordinator.

Mr. Ayman Esead/ Triple Helix Project Coordinator.

- **Dr.Moh'd G. Qawasmi**
- **Prof . Dr. Abdel-Kareem Daod**
- **Dr. Nafez Nasreideen**
- **Dr.Hassan Sawalha**
- **Eng. Ayman Sultan.**

### The Steering Committee External Institutions

- **Palestinian Energy and Environment Center (PEC) .**
- **Palestinian Energy and Natural Resources Authority (PENRA) – Public Sector.**
- **Jerusalem Distributed Electricity Company JDECO - Private Sector.**
- **Hebron Electricity Company HEBCO- Private Sector.**
- **Tubas Electricity Company – Private Sector.**
- **Energy Services Company (ESCOM)– Private Sector.**
- **Al Sun for Solar Energy Co. LTD. – Private Sector.**

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- **Mr.Ashraf Odeh / Graphic Designer**
- **Eng. Omar Alrjoob /Technical Support Committee.**

## ACKNOWLEDGMENT for DONORS

The Triple Helix Steering Committee would like to thank the following institutions for their generous contribution and continuous support and cooperation.

| | |
|---|---|
| **World Bank** | WORLD BANK |
| **Ministry of Higher Education** | فلسطين<br>وزارة التربية والتعليم العالي |

**The Closing Symposium for Triple Helix Partnership in the Field of Energy and Environment Program**
**Alshahid Bilal Amro Auditorium "C-Ground floor**

| Activity | Title | Time |
|---|---|---|
| | **Registration** | **09:15 - 08:30** |
| | **Opening Ceremony** | **10:10 -09:15** |
| **Short Video** | Electrical Power Engineering Program | **10:20 - 10:10** |
| **Success Stories** | Environmental Technology Engineering Program | **10:40 - 10:20** |
| | **Coffee Break** | **10:55 -10:40** |
| **Session 1: Chairman/Prof. Abdelkarim Daud** | | |
| **Keynote Speech** | Building and Sustaining a Vibrant Industry-Academia Partnership/ Prof. Tom A. Eppes | **11:25 - 10:55** |
| **Short Video** | Environmental Technology Engineering Program | **11:35 - 11:25** |
| **Keynote Speech** | Learning-Playing-Working as Spiral in Societal Evolution: A Serious Game Changer/ Prof. Piet Kommers | **11:35- 12:05** |
| **Presentation** | Success Stories for Electrical Power Engineering Program | **12:20 -12:05** |
| **Presentation** | Royal Industrial Trading Co. , About Triple Helix Partnership | **12:35 - 12:20** |
| | **Coffee Break** | **12:50 - 12:35** |
| **Session 2: Chairman/Dr. Hassan Sawalha** | | |
| **Keynote Speech** | Fostering Power Electronics Students Engagement Using Problem Based Learning Prof. Akram Abu-Aisheh | **01:20 -12:50** |
| **Keynote Speech** | Electronic Design Automation for Industry/ Prof.Saeid Moslehpour. | **01:50 - 01:20** |
| **Presentation** | A Jerusalem District Electricity Company About Triple Helix Partnership | **2:05 - 01:500** |
| **Presentation** | Hebron Electric Power Company About Triple Helix Partnership | **2:20 - 02:050** |
| **Success Story** | The Successful cooperation Relationship Between Al-Jebrini Group Companies & Palestine Polytechnic University . | **02:35 -02:20** |
| | **Lunch Break** | **03:15 - 02:35** |
| | **Recommendations & Closing Session** | **03:45 - 03:15** |

# INTERNATIONAL KEYNOTE SPEAKERS

- **Prof. Akram Abu-Aisheh / University of Hartford.**

Akram Abu-Aisheh is an Associate Professor of Electrical and Computer Engineering at the University of Hartford. He was the Assistant Chair of the Electrical and Computer Engineering Department and Director of the Electronic and Computer Engineering Technology Program for two years. Professor Abu-aisheh has a Ph.D. in Optical Communications from the Florida Institute of Technology as well as M.S. and B.S. degrees in Electrical Engineering from the University of Florida. Professor Abu-aisheh's research interests include fiber optic communications and power electronics.

**Presentation Title : Fostering Power Electronics Students Engagement Using Problem Based Learning**


**ABSTRACT:**

The demands for clean and sustainable energy sources have increased rapidly in the last decade, and solar energy is one of the most valuable and abundant low-maintenance clean sustainable energy source that is becoming the preferred energy source. Photovoltaic (PV) solar energy systems require the use of DC-DC converters to regulate and control the varying output of the solar panel. The three basic DC-DC convertor topologies used in photovoltaic solar energy systems are buck, boost, and buck-boost converter topologies. The three basic non-isolated switch-mode DC-DC converters are also used in many industrial applications to regulate and control the amplitude of an unregulated voltage.

Power electronics is used in the design of renewable energy systems. In photovoltaic solar energy systems, DC-DC converters are used to regulate and control the amplitude of the solar panel output voltage. There are three basic non-isolated switch-mode DC-DC convertor topologies; step down (buck), step up (boost), and step up or down (buck-boost). For each of these converter topologies, the converter design and continuous conduction mode (CCM) analysis are presented here in the two PB L examples presented here.

This work presents the effects of implementing two problem based learning (PBL) projects in a power electronics course on student engagement. These PBL projects are in the area of Sustainable LED illumination systems; The first one is an off-grid PV-powered LED street light, and the second one is grid-connected LED illumination system for buildings. These two projects can be used to help power electronics students in getting a comprehensive understanding of power electronics principles.

**Keywords: Problem Based Learning, Student Engagement, Power Electronics, LED Illumination.**

- **Prof. Piet Kommers University of Twente, Faculty of Behavioural Sciences. Professor of UNESCO Learning Technologies**

Prof . Kommers is an early pioneer in media for cognitive- and social support. His doctoral research explored methods for hypertext and concept mapping in learning. Since 1982 he developed educational technology as an engineering approach for learning and teaching. His main thesis is that technology is catalytic for human ambition and awareness. His main function is associate professor in the University in Twente, The Netherlands and adjunct/visiting professor in various countries. He taught more than fifteen bachelor-, master- and PhD courses and supervised more than 30 PhD students. He instigated and coordinated the NATO Advanced Research Workshop on Cognitive Technologies in 1990 and a large series of Joint European Research Projects in: authoring multimedia, web-based learning, teacher education, virtual 3d worlds, constructivist learning, social media, web-based communities and international student exchange. UNESCO awarded his work in ICT for Education in Eastern Europe with the title of Honorary Professor. The Capital Normal University in Beijing awarded his work with the title of Honorary Doctor. He is member of advisory boards in ministries of education and academia of sciences in Singapore, Finland and Russia. Piet Kommers is the initiator of the international journal for web-based communities and overall chair of the IADIS conferences on societal applications of ICT. Since the late nineties he gave more than 40 invited and keynote lectures at main conferences in the fields of education, media and communication. His books and journal articles address the social and intellectual transformations at each transition from “traditional” into the “new” media. Instead of regarding media as extrapolating, supplanting, vicarious or even disruptive, Piet’s view is that new media elicit and seduce both individuals and organizations to reconsider human nature and challenge existential awareness at that very moment. His main publications and citation score can be found here.

**Presentation Title**: **"Learning-Playing-Working as Spiral in Societal Evolution: A Serious Game Changer.**

**ABSTRACT:**

Educational practices shift from curricular to continuous life-long learning in which the learner needs to develop the efficacy in self-regulation and a recurring willingness to revise existential and professional views. In terms of expertise access there is not so much a physical boundary as was before. Much more decisive is the growing need to redefine the concepts of work, jobs and enterprise. This lecture will highlight the typical affordances to equip vocational and regular higher education with 21st century skills and attitudes. The growing awareness is that social media can no longer be seen just as distractions to what we used to call "study mentality"; Students need to work and play in teams; not only in gaming; also in preparing for a next job or to create a new enterprise. For this sake the triangle learning-playing-working is gathering momentum. Its invoked paradigm is that playing as mind-set is a vital hub between existential comfort and conceptual ambitions. Entrepreneurial skills are explored and injected in schooling stages. However, even the suggestion that these skills can be transferred is a vulnerable assumption. Problem-based learning however seems to be more proliferating at that point. Recent and ongoing projects will be illustrated.

- **Prof. Tom A. Eppes, Ph.D/ University of Hartford**

Prof. Eppes received his Ph.D. in Electrical Engineering from the University of Michigan and B.S. and M.S. degrees from Texas A&M University. His industry background spans 30 years with experience in research & development, engineering, product development, manufacturing and operations. He was employed by 3 Fortune 500 companies and later became a principal in four start-up ventures, one of which completed a successful initial public offering. His responsibilities have included an annual budget of $45 million with 150 direct and indirect reports. Prof. Eppes has 14 years of experience in higher education as an assistant, associate, and full professor. His research interests include advanced manufacturing processes, Multiphysics modelling, hybrid aerial projectiles, and software application development. He is a contributing author to over 80 journal articles and conference papers, and holds one US patent. In the last 8 years, he co-developed 7 network and systems software applications. Since joining the University of Hartford, he has been awarded or participated in 30 grants totalling approximately $3 million. Prof. Eppes is a member of the Institute of Electrical & Electronic Engineers (Communications Society), the American Society for Engineering Education, and is a reviewer for the Journal of Laser Applications and the American Journal of Engineering Education. He recently served as Chair of the Department of Electrical & Computer Engineering responsible for 6 programs of which 3 are ABET accredited.

**Presentation Title :On Building and Sustaining a Vibrant Industry-Academia Partnership**


## Abstract

Developing and sustaining a vibrant and collaborative relationship between academia and industry requires persistence and diligence across several fronts. On the educational side, the curricula should ensure that students at the graduate and ungraduated levels possess sufficient practical skills useful in solving real world problems. This may require changes within the engineering programs, among the faculty ranks, and the supporting facility/equipment infrastructure. While both parties must be active participants, it is incumbent on industry to adopt a longer term view of the partnership compared to many of their other endeavours. After several decades growing and strengthening our industry partnerships, some illustrations and lessons learned are presented where we have enjoyed the most success.

Presently, the undergraduate engineering program at the University of Hartford offers a high percentage of industry-sponsored summer internships and senior capstone design projects. Where possible, alumni are selected to be the industry liaisons and work directly with student teams when appropriate. At the graduate level, new courses have been created that focus specifically on skills highly valued by local industry such as optical fibre communications, power electronics, metrology, advanced manufacturing, sustainable design, and Multiphysics modelling. This has fuelled several industry-funded research initiatives and also boosted student confidence in competing for internal and external grants.

## Prof. Saeid Moslehpour / University of Hartford

Saeid Moslehpour is a Professor and Assistant Dean of Graduate Studies in College of Engineering, Technology, and Architecture at the University of Hartford. Currently he is currently editor of Computer in Education Journal of ASEE. He holds Ph.D. (1993) from Iowa State University, Master of Science (1990) and Bachelor of Science from University of Central Missouri and (1989). His research interests include modelling, simulation, CPLDs, FPGAs, analog/digital mixed, embedded electronic system testing, rapid prototyping and cyber learning. He is former faculty senate chair, ASEE Section I chair, co-director of Connecticut NASA Space Grant and ECE department chair, email: moslehpou@hartford.edu

**Presentation Title : Electronic Design Automation for Industry**


### Abstract

Electronic design automation (EDA) is a classification of software means for designing electronic systems such as printed circuit boards (PCBs) and integrated circuits (ICs). These tools work together in a design flow that chip designers use to design and analyze entire semiconductor chips. EDA is also referred to as electronic computer-aided design (ECAD). SPICE (Simulation Program with Integrated Circuit Emphasis is one of the earlies tools of EDA for electronic circuit simulation and is it open source, SPICE1 was first presented at a conference in 1973. With the advancement of digital technology Hardware Disruptive Language (HDL) was introduces first by Advanced Boolean Equation Language (ABEL) and later by Verilog and VHDL ([VHSIC Very High Speed Integrated Circuit] Hardware Description Language). Companies like Cadence, Synopsys and Agility Design Solutions are promoting System C language as a way to combine high-level languages with concurrency models to allow faster design cycles for FPGAs than is possible using traditional HDLs.

## WORKSHOP Program

**Presenter : Prof. Saeid Moslehpour / University of Hartford**
**Video Conference Room 4th Floor**

| Thursday, 12/27/2016 | |
|---|---|
| **09:00 – 9:15** | Introduction and Welcome Session |
| **09:15 - 11:15** | Intro to PSpice<br>• Building a Design for Simulation<br>• Bias Point Analysis<br>• DC Sweep Analysis<br>• AC Sweep Analysis<br>• |
| **11:15 - 11:30** | **Coffee Break** |
| **11:30 - 13:30** | Analog Simulation with PSpice<br>• Introduction<br>• User Interface<br>• Netlist the Element Lines<br>• Basic Simulation Types<br>• PSpice Probe Window<br>• DC Analysis<br>• Time Domain Analysis (transient analysis)<br>• AC Analysis<br>• Semiconductors |
| **13:30- 14:15** | **Lunch Break** |
| **14:15 - 14:45** | Panel discussion and "Hands on" Training<br>*1- Professor Saeid Moslehpour*<br>*2- Professor Akram A. Abu-aisheh*<br>*3- Professor Sameer Hanna Khader* |

# NATIONAL KEYNOTE SPEAKERS

- **Royal Industrial Trading Co.**

**Royal** is a leading Palestinian manufacturer of advanced pipe systems and innovative plastic products, with over 23 years of experience. We are specialized in many plastic production fields for the Palestinian and global markets – water supply, indoor & outdoor furniture, household, doormats, and fireplaces.

We are very strong in R&D capability. Most importantly, we have dedicated team who are ready to provide efficient and professional services to our customers anywhere at any time. Our managing departments are responsible for the company operations and development planning. Constant efforts are taken by them to make our services system more efficient, thus serve our customers better.

Our new products all comes out first from the top management and our R&D team. Royal's comprehensive product line of water tanks, pipes, fittings, and flushing cisterns for the building sector is available in all standard diameters and sizes, and in a wide range of plastic materials.

Royal employs more than 600 non-smoker employees with different expertise within different departments on over than 40,000 $m^2$ building area and over than 45,000 $m^2$ surface area. Royal has achieved three main production methods (Extrusion, Roto- Moulding, Blow moulding and Injection).

All Royal products are manufactured in accordance with high quality standards. Royal's manufacturing procedures comply with the most rigorous international standards of quality assurance, environmental protection, and employee health & safety. Royal's Quality management system is ISO 9000 and PSI certified, and the environmental management system is ISO 14000. Our products are also comply with the Palestinian and International Standards.

**Eng.Rjoub, Imad /Plant Manager at Royal Industrial Trading Co**

Eng. Imad Rjoub was born in Hebron - Palestine in 1973. At the end of 1997, he received the degree of Bachelor of Science in the field of Mechanical Engineering from Beirzeit University. He started working in the field of quality and the total quality management at Royal Company. At 2009, he received the master of business administration from Hebron University. Since that time, he worked as a plant manager at the same company. Eng. Imad Rjoub is an expert in the field of Community development and social responsibility. He participated in many workshops related to sustainability management as a speaker. One was presented at the Annual Arabia CSR Awards: Tue, 30th of April, 2013. And the latest one presented at Cairo at April 2016 in corporation with the GIZ. Eng. Rjoub is also expert in the field of environmental quality management and safety. Eng. Rjoub is a Lecturer at Al-Quds Open University as well as Palestinian Polytechnic University (The Management and Control of Quality.

## Presentation Title : Presentation About Triple Helix Partnership

### Abstract

It was an honor for Royal Industrial Trading Co. to team up with the PPU and Palestinian Energy Authority for the Triple Helix program. From this cooperation, Royal has gained many benefits. For example, many effective activities were done such as: Testing water quality (drinking and waste water), testing air quality (air pollution Particle size and dust), Measuring oil level in the wastewater, measuring gas Emission, measuring combustion efficiency, Conducting energy audits.

On the other hand, Royal participated effectively with this program through:

Conducting training programs for students in the field of environmental protection, helping PPU students in conducting environmental researches (practical and theoretical).

Finally, it was our pleasure to cooperate with these organizations and are looking forward to conducting many more projects in the near future with such organizations, in order to positively reflect and to enhance the performance of our organization.

## A Jerusalem District Electricity Company (JDECO):

**JDECO** is one of the most important modern and leading companies in the field of electric power and renewable energy in Palestine, since it provides electric power to more than 200 thousand customers spreading in Jerusalem, Ramallah, Bethlehem, and Jericho. **JDECO** is known for outstanding sustainability since its foundation in 1914 as one of the more serious economic companies in Jerusalem back from the days of the Ottoman Empire, and all the way through the British Mandate, the Jordanian rule and the Israeli Occupation. **JDECO** set its goals to make a mark in improving the level of services it offers to the costumers by the application of modern management approaches and up to date technological systems, which as a result provides energy security via continuity in power supply, while developing top service quality through the use of the best technological tools and applications according to international standards and specifications. The company's vision is to twin its national and professional commitment towards the costumers and the Palestinian electrical sector by providing diverse sources of electricity, infusion of electrical services with modern technology, and protect the sustainability of the company; giving it a well placed role in the national socio-economic development; in the pursuit of building an energy secure and self-sufficient Palestinian society, applying the optimal use of energy as an engine for a stable and flourishing economy.

**JDECO** executed many vital and important projects in the energy sector and renewable energy sector over the past years. In addition, JDECO developed smart systems that provide better management systems transferring the company from a traditional company to a modern day electrical company, elevating the company's role as a leader in the sector and as a main player in the direction towards sustainable energy security in Palestine. Within **JDECO**'s strategy to empower the electric and energy sector in Palestine, and in compliance with the directives of the Board of Directors, which seeks to continue laying the foundations for sustainable economic development, the company has established a technical and training Center in 2006 in Jericho. It is the first Center which provides training for undergraduate students and professionals in both technician and management levels for both beneficiaries outside and inside the company; with specialization in the solar power systems. This has enabled JDECO to be actively promoting and

facilitating the connecting of renewable energy systems onto the electricity grid network, helping to provide alternative energy sources to imported power in support of national energy diversification and household efficiency.

## Mr. Hani S. Ghosheh

Mr.Ghosheh has been working at Jerusalem District Electricity Company from 1981 as an administrator of the station section , administrator of Protections , director of the Jerusalem Branch , director of the Ramallah Branch, director of the Bethlehem Branch.Now he is an administrator of Solar file & Manager of Palestinian Incubator for Energy (PIE).

Mr.Ghosheh finished the master degree in electrical engineering. and completed an eighteen months of training courses in the field of electrical engineering from United Kingdom

### Presentation Title: Presentation About Triple Helix Partnership

**Abstract** :

The purpose of this presentation is to present data regarding the nature, extent and consequences of the 'triple helix' of relationships between academe, the government and industry related to Electric Power Companies . First, we present what is currently known regarding the nature and extent of relationships that exist between government and academic scientists and industry. Next we provide evidence supporting the benefits of these relationships for individual scientists, their institutions and the advancement of science. Then we discuss the potential risks of these relationships. In the next section we provide a set of guiding principles and management and policy suggestions regarding the disclosure and management of relationships among the various sectors. In the final section of the paper we discuss the potential implications of academic industry relationships for governmental industry relationships.

- **Hebron Electric Power Company**


Hebron Electric Power Company is a private shareholding company that merged in 2002 as a newly corporatized power utility following a presidential decree for privatizing the energy sector to alleviate the burden off the government and encourage the private sector to participate in developing and investing in this essential sector. In 2005, HEPCo was fully operated by a highly qualified staff using the latest technologies in meter reading and archiving and financial systems, and it succeeded to be one of the fastest growing energy companies present in the Palestinian territories. Our service area covers 92 square kilometers of the largest and fastest growing city in the West Bank. We provide electricity to about 30,000 electric customers throughout Hebron and in Halhul as well as some parts of Sa'ir.

**Objectives**

- To develop HEPCo into a fully electronically operated utility on a par with other leading distribution companies in the region.
- To provide a reliable and sustainable power supply to meet the increase of demand in an efficient manner and at the least cost possible together with the improvement of efficiency and reduction of losses.
- Develop a professional human resources base.

Business Drivers:

Improve the utility performance, productivity, efficiency, and control, Cutting down the liabilities and customers' arrears, Achieve high levels in satisfying customers, Increase of revenues, reduce the operating costs to provide shareholders with a return on investment through sustained growth, development and improved profitability, Lessen the illegal usage and thefts, Adopt new technologies to improve meter reading and collection procedures through prepaid meters and on-site bills, Charge adequate and reasonable tariffs that considers economic conditions, Respect "Best Practices" concerning environmental practices and abide by international standards concerning occupational safety.

**Presentation Title : Presentation About Triple Helix Partnership**

**Abstract:**

The PPU Triple Helix project partnership with Hepco is an outcome of an agreement signed with PPU early this year for joint cooperation in all academic, training , energy aspects, joint projects and quality assurance fields, and to the agreement signed with PPU project manager in October this year to train PPU students level of graduates and undergraduates on power protection for MV systems which took place in November this year as part of Triple Helix activities, In that event Hepco trained 16 student , graduate engineer and supervisor for a period of 8 days on a special course mainly control systems and electrical installations in its premises, funds were allocated by the Ministry of Higher Education quality fund QIF.

This is a three year project funded through quality improvement fund managed by Ministry of Higher Education and funded by World Bank and implemented by PPU. This project will enrich and provide university students with entrepreneurial skills to enable them compete in the market jobs.

Since Hepco is one of the main private companies in the energy market, students of this project will be trained on skills and communications. Triplex model presents actual partnership between three sectors:

- PPU as academic sector
- PEC and PENERA energy sectors as public sector
- Hepco as private sector working in the field of energy and electrical sector.

Realy we are very much confident and proud in this partnership and in the value of this business for current and future projects. I congratulate PPU for this success story in the field of innovation and convey my valued

**Dr.Jihad Jebreini/The General Manager Of Al-Jebrini Group companies**

Dr. Jihad "Mohammed Saleh," Ismail Jebreini was born in Hebron in 1972, and currently serves as general manager of Al-Jebrini Group companies.

Dr. Jihad earned his bachelor's degree in food processing from Milan-Italy in 1997. Then he completed his postgraduate studies from 1997 to 2000 in the city of Parma-Italy, specialty food manufacturing technology. In his studied, Dr.Jihad spent two years in the Italian factories. Upon completing a Ph.D. in 2000, he returned to his homeland to become the general manger of Al-Jebrini groups companies.

Dr.Jihad had a partnerships with global companies specialized in cheese, then Al-Jebrini Cheese Company was opened in 2010. It is the first company in Palestine to produce yellow cheese from fresh milk 100%.

Social responsibility towards the Palestinian community is an essential part of Dr.Jihad work, for example Dr.Jihad is the director of youth sports club-Hebron.

**Presentation Title : The Successful cooperation relationship between_Al-Jebrini Group Companies & Palestine Polytechnic University .**

**Abstract:**

Al-Jebrini Group Companies consists of six companies, which are Al-Jebrini Company for Dairy & Food Industry, Pal Farm Company, Al-Jebrini Cheese Company, Al-Jebrini Food Industries, E.F.G Company for alternative energy, and Pal Group Company.

Al-Jebrini Company for Dairy & Food Industry has compiled long experience in production and distribution of dairy products for the local market to become one of the largest manufacturers. Al Jebrini Dairy Company played an important role in developing the Dairy sector in Palestine by working with local milk farmers and ongoing improvement to the production and distribution facilities

On the other hand, E.F.G. "Energy for Future Generation" for Alternative Energy is a Palestinian private limited Company, established in 2013, linked to a dairy farm

with the objective to produce renewable energy from organic residues. It is the first company that has started the Biogas project in Palestine.

The EFG Biogas project is the first project in the Palestine Authority aimed to produce renewable energy and bio- fertilizers by treating dairy farm waste through the Anaerobic Digestion process which converts cow manure into electricity.

The biogas plant produces biogas from biomass (organic waste) through Anaerobic Digestion. This process generates biogas and bio-fertilizer (digestate). The biogas plant will transform the biogas through a Combined Heat and Power unit into thermal energy (heat) and (green) electricity.

The Palestine Polytechnic University (PPU) in Hebron will participate as a knowledge partner in this project. Its faculty of Energy has executed extensive research in the field of rural and renewable energy in the Palestinian Authority and will share its knowledge about the Palestinian energy market.

## OPENING SESSION SPEAKERS

**Head of the University Graduates Union (UGU) Council/ Head of the Board of Trustees/Palestine Polytechnic University (PPU) :Mr.**

## Ahmed Said Bayyoud Tamimi

Mr. Tamimi was born in Hebron in 1948,He finished high school in 1967, He studied at Beirut Arab University from 1969-1973 majoring in economy and commerce ,He worked for the Islam Awqaf Department in Jerusalem in the following positions:

- An accountant
- The head of the Accounting Department
- The Director of finance
- The Director of Hajj (1989-1994)

He worked as the General Director of Industrial Islamic Orphant School in Jerusalem and Eizarieh , Deputy Minister of the Palestinian Interior Affairs (1994-2006), Deputy Minister of the Palestinian Social Affairs (2006-2008). Mr. Tamimi was elected as a member of the UGU Council (1983-1986). He was elected as the Head of the UGU Council and the Head of the Board of Trustees of the PPU (1991-present). A member of the Awqaf of the Prophet Mohammad's companion Tameem Dari in 1975, then the director (Mitwali) (1993-present). A member of the Zakkat and Charity Committee .The Treasurer of the Hebron Rehabilitation Committee. A member of the Fath's Revolutionary Council. A member of the Palestine National Council.

**University President :Pro. Imad Khatib**

**Khatib** is a professor of energy and fluid dynamics at the faculty of engineering of Palestine Polytechnic University (PPU). In 1999, he has established and lead the Renewable Energy and Environment Research Unit (REERU) and its solar energy testing, energy auditing, water testing, air pollution and material energy testing labs. In 2007, appointed the dean of research and graduate studies, and since 2014 was appointed the president of PPU. Khatib also serves, since 2001, as the secretary general of the Palestine Academy for Science and Technology; a national umbrella organization for science, technology and innovation. He holds a Ph.D. from Karlsruhe Institute of Technology-Germany in modeling environmental engineering and an M.Phil. from Cardiff University-UK in energy engineering. He has contributed in preparing the National Energy Efficiency Action Plan, the Climate Change Assessment Report, and in preparation of other national development documents, including preparing the recent National STI Policy Framework commissioned by UNESCO. Khatib has initiated/co-initiating several programs and projects that were funded by the EU-FP programs 5,6,7 and H2020, USAID, US-CEP, AFD, HPF, BMBF, WB-QIF, ESCWA, UNDP, UNEP, UNIDO, and IDB. Since 20110, Khatib studied innovation in Palestinian development sectors based on the OECD Manual, including stone and marble, food and beverages, software development and pharmaceutical industries and has documented studies in reputable journals. Khatib is a member of the World Innovation Foundation, the International Energy Foundation, the Higher Council for Innovation and Excellence, the Palestine Incubator of Energy and the National Committee on Climate Change and on scientific boards of UNEP, UPM and IAP.

## Dr .Issa Musa Moh'd Albaradeiya

**Dr . Albaradeiya *Had*** PhD on Environmental Engineering from the Faculty of Civil Engineering, University of Lille for Science and Technology – Laboratory of Mechanics – France. 2007. Master of Science in Agriculture - and Genetics. NWFP Agricultural University, pakistan. 1998. B.Sc. in Agriculture with concentration Courses on Genetics. NWFP Agricultural University, pakistan. 1996.

***Positions:*** From 01/01/2011 till now: Director General of the Environmental Resources Directorate responsible for Biodiversity Management, water and wastewater resources and Desertification combating, renewable energy and information system. national coordinator for developing the fifth national report to convention on Biolgical Diversity (2015). From 01/01/2012 till now: team member of national adaptation plan for climate change (involved in formulating the NAP for 12 sectors including Biodiversity and Ecosystem Adaptation to Climate Change, and National Communication Report of UNFCCC, and team leader of GHG inventory report. From 01/01/2008 till 30/12/2010: Technical assistance to the Head of the Environment Quality Authority (EQA) and acting Director General of Finance and Administration of EQA. From 15/7/2002 till 30/09/2005: Deputy General Director, Environmental Quality Authority/ Northern Governorates. Responsible for the administration and supervision of all works of the Ministry in the WEST BANK. From 15/8/1999 – 14/7/2002, Acting General Director of the Environmental Resources Department in the Ministry of Environmental Affairs (Northern Governarates), responsible for projects management scheme and strategical plans of Biodiversity, protected areas, Desertification and natural resources.

# Electrical Power Engineering Technology Program

**Project name :Experimental study to investigate the effect of dust, wind speed and temperature on the PV module performance.**

## Executive Summary

This study investigates the environmental effects (temperature, wind speed and dust) on photovoltaic module (mono-crystalline) performance. The degradation of the PV performance owing to an increase of temperature and dust density is investigated. A series of experiments were conducted in order to study the effect of these parameters on the PV performance. The first section describes a test of the PV module at standard test conditions (STC). In the second section, the effect of temperature on the I-V curve, power, and efficiency is explained. In the third section, the effects of several type of dust are studied. These are red soil, sand and white soil dust. The experimental results show that the PV voltage and power is affected significantly by pollutant type and deposition level. In the fourth section, the effects of wind speed on the PV module is investigated.

## Participants Name :


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| **Supervisor:**<br>Maher M. A. Al-Maghalseh<br>maherm@ppu.edu | Mohammed T. Khalefha<br>mohammed_93_k@hotmail.com |
| Mohammed M. Azzeh<br>azzeh-1993@hotmail.com | Huda H. Jabari<br>hudajabari0@gmail.com |

**Project name : Small Scall Wind Turbine for a Demostic use**

## Executive Summary

This project deals with the design and manufacturing processes for a small scale wind turbine. The turbine consists of two components. The first is a coreless axial flux permanent magnet generator. The second is the small scale wooden blades which can be manufactured as a low cost rural electrification application. The process is based on already existing open source design and construction manuals, but a systematic approach to designing the generator and direct battery charging is described. The manufacturing process of a (740 Watt) small wind turbine is for direct battery charging. Emphasis is given to the use of simple tools and techniques to achieve a low cost, while the intricate steps of the manufacturing process are described in more detail.

**Participants Name :**


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|---|---|
| **Supervisor:**<br>Maher M. A. Al-Maghalseh<br>maherm@ppu.edu | Mahmoud Sbiah<br><br>Mahmoud_sbi1991@hotmail.com |
| Ahmad Rjoub<br><br>ahmadalrjoub@yahoo.com | |

# The Success Stories of Environmental Technology Engineering

**Project name : Flocculation Sedimentation Process for Tile Processing Wastewater Treatment: Pilot Scale Design and Operation**

## Executive Summary

This paper aims at characterizing the wastewater generated from tile industry and proposing a flocculation sedimentation process for treating the generated wastewater. A pilot plant was built by scaling down the existing industrial flocculation sedimentation process applied in stone cutting industry. Wastewater samples were collected from different tile plants in Hebron, The effects of various design and operating parameters on the flow field in the sedimentation vessel, and particle separation efficiency were investigated experimentally.

The tile wastewater was found highly alkaline of pH around 12 with a total mass fraction of suspended particles of about 2.5 wt%. The settling curves were obtained for plain suspensions and the average particle size was found to be in the range of 20-40 μm, which is slightly larger than that obtained from stone cutting industry. Using the commercial flocculating agent (used in stone cutting industry), turbidity experiments were performed to investigate the optimum polymer dosage for flocculation. Based on the batch settling results, a lab-scale conical sedimentation tank with a total volume of 10 L was designed for the treatment of the tile wastewater.

Particle separation efficiency was determined experimentally by measuring particle concentration in the outlet treated water stream using spectrophotometer. The effects of the flow rate (0.4-4 L/min) and flocculent

dosage (50-400 mg/L) on the particle separation efficiency were investigated. The separation efficiency without addition of flocculation agent increases with decreasing the flow rate. With a maximum separation efficiency of 77% at flow rate of 0.4 L/min. the separation efficiency significantly changes with flocculent dosage. The optimum flocculent dosage was found at 100 mg/L with a separation efficiency of 97%.

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**Participants Name :**

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|---|---|
| **Supervisor1:**<br>**Dr. Hassan Sawalha** | **Supervisor2:**<br>**Dr. Maher Al-Jabari** |
| **Musaab I.Talahmeh** | **Jaber A. Al-Rjoub** |

**Project name : Adsorption of Organic Pollutants from Dairy Wastewater Using Natural Adsorbent**

## Executive Summary

In this study, the organic pollutants in wastewater from dairy industry are removed through adsorption onto natural adsorbents including stone cutting powder, soil and marl particles with relatively fast adsorption kinetics. The operating conditions including stirring rate, particle dosage and pH significantly affected the adsorption efficiency and removal percentage of the organic pollutants. The equilibrium adsorption capacity increases with increasing stirring rate and adsorbent to wastewater ratios. Besides, the adsorption process favoured acidic conditions; the adsorption capacity at high pH values approached zero. The adsorption process used in the present study is highly effective in treating wastewater from dairy industry and might be successful in treatment of wastewater generated from other industries.

**Participants Name :**



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| **Supervisor1:**<br>**Dr. Maher Al-Jabari** | **Nareman Zahdeh** |
| **Nadia Iqefan** | **Hiba Dwiek** |

**Project name : Biodegradation of Plastics by *Bacillus* Bacteria Isolated From Landfill Soil**

## Executive Summary

The accumulation of plastic wastes is considered a serious problem in the environment. This is mainly because plastics are usually nonbiodegradable and can last embedded in the soil for decades. An attempt was made to isolate bacteria from landfill soil samples and to characterize its degrading ability of certain types of plastics including low density polyethylene (PE), polypropylene (PP), polystyrene(PS), polyurethane (PU) and polyethylene terephthalate (PET). This work reveals that landfill soil is rich in microbes capable of degrading plastic materials. Two bacterial strains of Bacillus simplex and Virgibacillus picturae were isolated. Over three months incubation period of the films viable biofilm formed, and degradation was performed for Bacillus simplex using differential scanning calorimetry (DSC) to analyze change in enthalpy of melting between the samples and their controls. Enthalpy for PET decreased from 42.66 to 30.42 J/g and from 11.65 to 8.69J/g for PU, for PS it decreased from 14.21 to 11.61 J/g, which indicated that degradation occur. But for PP and LDPE enthalpy increased from 66.57 to 85.44 J/g and from 7.274 to 19.63 J/g respectively which indicated that structural modification occur in these samples due to the presence of bacteria leading to new type of crystal.

**Participants Name :**


| Supervisor1: Dr. FawziRazem | Supervisor2: Dr. Hassan Sawalha |
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| **Ola M. Al-Sao** | **Jood J. Salah** |