

## **Energy-related Funded Projects**

### **1. High Level Renewable and Energy Efficiency Master Courses (HEBA)**

[https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj\\_id=5](https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj_id=5)

**Acronym:**

HEBA

**Full title:**

**High Level Renewable and Energy Efficiency Master Courses**

**Project Duration**

46 Months

**Project Start Date**

2017-11-01 00:00:00

**Project End Date**

2021-10-30 00:00:00

HEBA is a three years project started on October 15, 2017, and funded by the European Union through Erasmus+ program. The project aims to reform and improve existing master programs in Energy Efficiency (EE) and Renewable Energy (RE) on single technology and energy systems level, improving existing or establishing Centers/Laboratories of EE+RE in Jordan, Lebanon, and Egypt. The consortium will help the society to protect the earth. It will help in providing qualified professional resources capable of sustaining and managing the huge effort of EE+RE infrastructure development. Special emphasis will be given to advanced energy management. HEBA will be oriented to further development of the process of interaction with professional communities and reflects their requirements in the developed curriculum. The EU experience is a major component in the success of the HEBA project. The courses/modules and adapted curricula within HEBA project should be based on the needs and challenges of the building/industry/energy sectors.

Moreover, an online regional webinar on “High Level Renewable Energy and Energy Efficiency – HEBA” on July the 2th 2020.

This webinar is a deliverable of the Erasmus Plus Project entitled: **High Level Renewable Energy and Energy Efficiency Master Courses** whose partners are universities from Austria, Italy, Germany, Cyprus, Lebanon, Jordan and Egypt for building capacity of Egypt in renewable energy and energy efficiency to build a model for the environment change in Egypt and use that to draw a roadmap for the renewable energy and urban planning.

Referring to MAIA-TAQA's work package 4 which will focus on capacity building for sustainable services, attending the HEBA webinar provided MAIA-TAQA team with information about local experts in the fields of renewable energy who can be potential trainers and assist in the capacity building activities of MAIA-TAQA.



HEBA

Co-funded by the Erasmus+ Programme of the European Union

**Building Capacity of AASTMT LABs in Renewable Energy and Energy Efficiency**

**Dr Mahmoud Elwadie**

Arab Academy for science, Technology and Maritime Transport  
Smart Village Campus, Egypt

**Heba**

DISCLAIMER: This project has been funded with support from the European Commission. This publication (communication) reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.  
HEBA Project Number: 585740-EPP-1-2017-1-AT-EPPKA2-CBHE-JP

## **2. AASTMT participation in "Green Land: GREEN-skills for a sustainable Development" Project funded by European Union (GREENLAND)**

[https://aast.edu/en/sites/port\\_saeid/news.php?unit=1&event=5406&event\\_type=1&language=1](https://aast.edu/en/sites/port_saeid/news.php?unit=1&event=5406&event_type=1&language=1)

**Acronym:**

**GREENLAND**

**Full title:**

**GREEN-skills for a Sustainable Development**

**Start date**

**16 October 2020**

**End date**

**15 April 2023**

The project objective is to increase the employability of NEETs (up to 30 years old) and women (all ages) by providing them with marketable skills and qualifications to prepare them for skill-based occupations within the Green and Circular Economy sectors and reduce skill mismatches in rural areas particularly affected by the climate change.

AASTMT has participated in this project that promotes social inclusion and fight against poverty by providing unskilled and underprivileged young people with marketable skills in the Green and Circular Economy, with the potential to generate thousands of jobs. To reach its objective, the project will create new curricula based on market needs, skills transfer to NEETs and women, media-based training tools, and cultural exchanges among young people, as the Mediterranean area suffers from extremely high rates of youth and female unemployment. AASTMT cooperates with the project partners from Lebanon, Jordan, Egypt, Palestine, Italy, Portugal, and Greece, as to achieve the requirements and objectives of the GREENLAND project, where the thematic objective is the Promotion of social inclusion and the fight against poverty, as AASTMT main role is to manage the work package 4 (WP4), which represents the essence of the project, by establishing an e-platform containing specialized curricula based on market needs to transfer skills to NEETs in addition to providing advanced training tools, GREENLAND project is the creation of new employment opportunities that will be reinforced by the sector-skills alliances between the Technical and Vocational Education and Training institutions (TVETs) and the Small and Medium Enterprises (SMEs).

### **3. Research on Optimizing the Effect of Loads on Characteristics of Power Electronics Converters for Renewable Energy Applications**

[https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj\\_id=28](https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj_id=28)

#### **Project Duration**

12 Months

#### **Project Start Date**

2021-10-01 00:00:00

#### **Project End Date**

2022-09-30 00:00:00

The main objectives of this project proposal are to: -Perform mathematical analysis on the effect of different loads when connected to the renewable via the interface of power electronics converter. - Better understanding of the load effect on overall performance of power electronics converters and associated control techniques such maximum power tracking with PV or wind applications. - Implement a prototype setup for experimental study for different system topologies for practical validation - Develop a standardized method of the selection and design of the suitable converter and control technique for a given load within renewable energy applications for enhanced overall system performance.

### **4. MULTIDIMENSIONAL STUDY OF WIND ENERGY POTENTIAL IN ALAMEIN**

[https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj\\_id=15](https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj_id=15)

#### **Project Duration**

12 Months

#### **Project Start Date**

2021-10-01 00:00:00

#### **Project End Date**

2022-09-30 00:00:00

The Egyptian economic transformation vision foresees the north coast as one of the main pillars for future economy and development. Transformational urban and economic development is being carried out along the 400 km length coastline from New Alamein eco-city to Al-Salloum. The north coast region The World Bank global wind atlas shows that the average energy density in that region is in the range of 0.5 to 1 kW/m<sup>2</sup> and average wind velocity higher than 5 m/s. These estimations show promising potential of wind energy. This project presents the first comprehensive evaluation of wind energy viability and feasibility in Egypt's north coast. The project adopts a multidimensional approach to reproduce the spatiotemporal wind field over the north coast utilizing status quo GIS-BIM-CFD integrated simulation systems. The project's primary goal is to identify the best wind energy systems for power generation in the region and estimate its economic feasibility. Secondary objectives include identification of the main characteristics of atmospheric boundary layer and urban aerodynamics of Alamein city. The outcome of this project will be the first comprehensive evaluation of wind energy potential in Alamein city and region.

## **Energy-related Research**

### **1. Renewable Energy and Sustainable Development (RESD) journal**

<http://apc.aast.edu/ojs/index.php/RESD>

Link for publications in journals

[https://www.scilit.net/articles/search?offset=0&q=container\\_group\\_id%3A%2868381%29](https://www.scilit.net/articles/search?offset=0&q=container_group_id%3A%2868381%29)

The journal is **financially supported by the Arab Academy for Science, Technology and Maritime Transport** in order to maintain quality open-access source of research papers on renewable energy and sustainable development.

The RESD journal is a biannual international peer-reviewed journal featuring open-access and free charge fees. It presents a global forum for dissemination of research articles, case studies and reviews focusing on all aspects of renewable energy and its role in sustainable development for authors and readers.

The journal aims to present to the international community important results of work in the fields of renewable energy and sustainable development research to help researchers, scientists, manufacturers, institutions, world agencies, societies to keep up with new developments in theory and applications. Experimental, computational and theoretical studies are all welcomed to RESD. The topics of focal interest to RESD include, but are not limited to, all aspects of wind energy, wave/tidal energy, solar energy, Hydropower, Geothermal Energy, Hydrogen & Fuel Cells as well as energy from biomass and biofuel. The Energy Savings and efficient energy is a major interest of the RESD journal. The integration of renewable energy technologies in electrical power networks and smart grids is another topic of interest to RESD.

### **2. Samples of energy-related publications of AAST staff in international conferences**

- [Power Flow Control of a Hybrid Battery/Supercapacitor Standalone PV System under Irradiance and Load Variations](#)

NE Zakzouk, RA Lotfi in 2020 10th International Conference on Power and Energy Systems (ICPES), pp. 469-474

- [The use of double skin and photovoltaics in AAST Campus in South Valley, Egypt](#)

Ahmed Fikry Abou El Wafa in 2021 8<sup>th</sup> international scientific conference on Digital technology in Architecture, Arts and Era Challenges.

### 3. Research Prizes

The chemist Ahmed Elzahawy Hegazy received the bronze award in the global competition held by the international union of inventors on the 13<sup>th</sup> of October 2021 in Morocco for his scientific research about GREEN HYDROGEN.



الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري  
Arab Academy for Science, Technology & Maritime Transport

6 نوفمبر 2021

السيد الأستاذ الدكتور / إسماعيل عبد الغفار إسماعيل فرج

رئيس الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري

تحية طيبة وبعد

أحيط سيادتكم علماً بأن الكيميائي / أحمد محمد الزهاوي محمد حجازي (فني بكلية الصيدلة بفرع العلمين) قد حصل على الجائزة البرونزية في البحث العلمي عن (الهيدروجين الأخضر) في المسابقة الخاصة بالاتحاد الدولي للمخترعين (في أول مشاركة له)، والتي أقيمت في المملكة المغربية في 13 أكتوبر 2021.

ويمثل البحث الذي تقدم به الثورة النظيفة القادمة. وهو مصدر مثالي لتشغيل قطاعات صناعية كثيفة الاستهلاك للطاقة، وذلك للعيش في بيئة نظيفة خالية من التلوث، وهو ما تسعى إليه كل دول العالم. الرجاء التكرم بالموافقة على صرف تشجيعية له، علماً بأن كل ما أجراه بالبحث كان على نفقته الخاصة.

وتفضلوا بقبول فائق الشكر والاحترام

أ.د. مصطفى حسين

مستشار رئيس الأكاديمية لشئون التعليم والطلاب بفرع العلمين

2021/11/6

هـ.د. محمد العلي

السيد الأستاذ الدكتور / إسماعيل عبد الغفار إسماعيل فرج  
السيد د. / أحمد الزهاوي  
السيد د. / أحمد الزهاوي  
مرفقات  
شهادة تقدير المسابقة  
شهادة استشاري نقابة المهن العلمية أحمد الزهاوي