



University : Universiti Malaysia Pahang  
Country : Malaysia  
Web Address : <http://www.ump.edu.my/> and <http://mygreen.ump.edu.my/>

#### [2.10] Greenhouse gas emission reduction program

Renewable energy program is one of the CO<sub>2</sub> emissions reduction initiatives by reducing the dependency on conventional fossil fuel energy sources. List of the Renewable Energy Sources in Universiti Malaysia Pahang (UMP) Campus, in placed by 2022

No.	Building/Area	Type of Renewable Energy	Year Installed	Capacity, kW	kWh produce year 2021-2022
1	FKKSA	Biodiesel	2007	30 Litre Biodiesel per 50 Litre cooking oil	-
2	Entrance Guard House	Wind power	2012	22kW	-
3	FTKMA & FTKEE	Solar system	2016	21kW	158,166 kWh
4	UMP PEKAN & GAMBANG	Solar Lighting	2017 - 2022	4kW	17,520kWh
5	Solar KP House	Solar system	2018	5kW	5,400 kWh
6.	Walkaway (Canseleri to Kafe)	Solar System	2019	2.4kW- off grid	4,380 kWh
7.	FTKMA & FTKEE	Wind Power	2021	250W 250W 800W	9,490 kWh
8.	Wakf Hut	Solar System	2021	2kW	3,650 kWh
9.	Sea-Lite	Combine heat and power	2022	0.02kW	175.2 kWh
10.	Pico Hydro	Hydro Power	2022	0.015kW	32.85 kWh
11.	FTKEE	Solar System	2022	0.5kW	912.5kWh
				TOTAL	199,726 kWh

**Type: Solar System, UMP Pekan**

**Location: 1. Faculty of Mechanical Engineering  
2. Faculty of Electrical & Electronic Engineering**

**Description:**

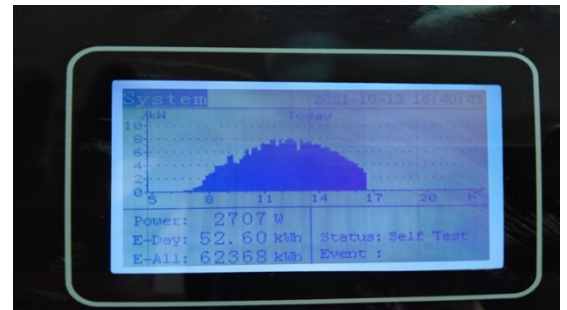
Solar power technology has been installed in UMP since 2016. The system consists of 20 kW solar panels on the top of the walkway to supply electricity to the Faculty of Mechanical Engineering's administration blocks.

In 2021, installation of 2.5 kW solar panels in Faculty of Electrical & Electronic Engineering for the education & research purposed. The supply from the solar panel divert to grid supply for the Block 1 FTKEE, UMP Pekan.

This project is one of the CO<sub>2</sub> emissions reduction initiatives by reducing the dependency on conventional fossil fuel energy sources.

**Publicly Evidence Link:**

<https://mygreen.ump.edu.my/index.php/solar-panels>



**Type: Solar System**

**Location: Solar KP House, UMP Green Office in Maran, Pahang**

**Description:**

This house is UMP's Community One Stop Centre, where the local community get training and classes including religious and academic tuition from UMP staff and students.

The system installed is a system connected off grid where the energy generated, produced, delivered, and distributed directly from the solar power to electricity.

This solar energy system can generate 5kW of electricity directly and 15kW as a reserve to be used during the night time. The electricity generated at the KP House is able to power all electrical appliances in the house.

**Publicly Evidence Link:**

<https://mygreen.ump.edu.my/index.php/kp-house>



**Type: Wind Power**

**Location: 1. Entrance Guard House, UMP Pekan**

- 2. Faculty of Mechanical Engineering**
- 3. Faculty of Electrical & Electronic Engineering**

**Description:**

In 2012, a project to test sustainable energy was conducted in Malaysia under the purview of MOSTI and SIRIM Berhad. UMP Pekan Campus, due to its strategic location, was selected as one of the test-site for four wind turbines with the power of 2 kW, 4 kW, 5.8 kW and 10 kW. The campus which is situated near coastal area provides the windy condition which enables the turbine to convert the kinetic energy into electrical power efficiently. Total 22kWh.

In 2020 & 2021, UMP has diversified the study of wind turbines as renewable energy and as a backup supply for the data collection system. At FKM 800W Windturbine has been install and 500W at FTKKE.

**Publicly Evidence Link:**

<http://mygreen.ump.edu.my/index.php/iniciative1/93-ump-s-wind-turbine>







**Type: Biodiesel**

**Location: Faculty of Chemical & Natural Resources Engineering, UMP Gambang**

**Description:**

The Faculty of Chemical & Natural Resources Engineering has been producing biodiesel since 2007, based on years of research. On the average, for every two days the faculty collects 50 litres of used cooking oil, to produce 30 litres of pure biodiesel. In one month UMP is therefore capable of producing 450 litres, totaling to 5,400 litres in a year. Taking note that 1 litre of biodiesel weighs 0.875 kg, the total mass of biodiesel produced by UMP in a year is 4,725 kg. The calorific content of the produced biodiesel is 34 MJ/kg, hence ideally generate yearly  $160,650 \text{ MJ} = 44,625 \text{ kWh} = 44.625 \text{ mWh}$ . Based on the installed 10 kW generator, the amount of the biodiesel needed is 2.6 L/h. Hence, the actual (useful) amount of generated electricity is 20,770 kWh (= 10kW X 2077 hours).





### Type : Picohydro

#### Location : Toilet in Pusat Pembangunan & Pengurusan Harta, UMP Pekan.

This project is the result of the efforts technical teams in this department for the purpose of energy sustainability programmes. Picohydro use as a backup supply for toilet lighting and there is a addition function for phone charging.



### Type : Sea Lite

#### Location : Entrance Guard House, UMP Pekan

Sea-Lite is a portable lamp that uses seawater as an electrolyte source. This device is called Sea-Lite referring to the sea that gives light (light or lite). It has a small design, easy to carry and maintain. This device is able to provide light and electricity and is able to last for a long time.



**Type : Solar**  
**Location : UMP Pekan & UMP Gambang**

There are 20 waqfs huts inside UMP Pekan & UMP Gambang equipped with solar systems. This 100W solar produces electricity for lights, phone chargers and there is also a Power Delivery Charger, PD for laptop charging and other electronic devices range 5V - 12V. For phone charging there is 2 options of charging mechanism:

1. Using usb type cable
2. Wireless charging, UMP developed in house.





## Local community outreach for energy efficiency

*Provide programmes for local community to learn about importance of energy efficiency and clean energy*

### KUALA PAHANG HOUSE EQUIPPED WITH SOLAR SYSTEM



**Kuala Pahang House, KP House**



**Program conducted at KP House in 2019**

## Description:

Kuala Pahang House or KP House in short is a transformational centre for the Kuala Pahang community. There are 66 houses been selected based on strict criteria for the programme. The houses been renovated and all of the electrical appliances have 5 stars energy saving rating installed in the houses. The installation was conducted in 2018 by UMP and the solar system is well monitored by UMP. **Till now, KP house is a one-stop-centre for all kinds of activities that brings benefits to the community in Kampung Kuala Pahang.**

This house is the first “Green House” in Pahang, in which the energy is fully generated using green technology from solar. The 5kW Off Grid System is retrofitted to the roof of the KP House. The 25mm ventilation distance is to ensure that the system will not be overheated. This solar energy system can generate 5kW of electricity directly and 15kW as a reserve to be used during the night time. The electricity generated at the KP House is able to power all electrical appliances in the house.

KP House is also equipped with the energy-saving LED lights, new technology fan operating fully using DC electrical current, which can save electricity more efficiently and also the usage of inverter technology air conditioner with the environmentally friendly R410A gas. The house is also equipped with motion sensors to activate the bathroom lights.



1. Massive Open Online Course (MOOC) on Sustainability Campus.  
*MYSUN: Bringing Future Campus Today*



**mysun**  
Malaysia Sustainable University  
Campus Network

**MASSIVE OPEN ONLINE COURSE (MOOC)**

**MYSUN : BRINGING FUTURE CAMPUS TODAY**

This course is dedicated to promote and deliver information and create awareness among universities on the sustainable campus.

✓ SELF-PACED    ✓ ANYTIME & ANYWHERE (From 20 June to 31 August 2022)    ✓ FREE    ✓ CERTIFICATE PROVIDED

**WHAT YOU WILL LEARN**

- 1 Sustainability in General
- 2 Sustainable Campus
- 3 Water Efficiency
- 4 Energy Management
- 5 Waste Management
- 6 Financial Sustainability
- 7 Sustainable Lifestyle

**ENROLL NOW!**

<https://ilmu.ump.edu.my/ILMU/>

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

2. Roundtable Discussion with stakeholders on Sustainability, Energy Efficiency and Green Campus Topic



**ROUNDTABLE DISCUSSION 2.0**  
"TNB'S PERSPECTIVE ON SUPPORTING SUSTAINABLE PROGRAM IN MALAYSIA"

28 DECEMBER 2021, TUESDAY | 3.00 PM - 4.30 PM  
PLATFORM: ZOOM ONLINE

**OPENING REMARKS BY:**

**SPEAKER:**

**MODERATOR:**

**ASSOC. PROF. IR. DR. NURUL HAZLINA NOORDIN**  
ASSISTANT-VICE CHANCELLOR  
GRADUATE DEVELOPMENT DEPARTMENT, UMP

**IR. MOHD YUSRIZAL BIN MOHD YUSOF**  
MANAGING DIRECTOR  
TNB RENEWABLES SDN. BHD.

**NUR AMINATON SUFIA YUHARMON**  
ASSISTANT RESEARCH OFFICER  
MYSUN UMP

UNIT LESTARI UMP

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

Figure 3. Roundtable Discussion with Tenaga Nasional Berhad



Figure 4. Roundtable Discussion with Ministry of Environment & Water

### 3. Sustainability Campaign



Figure 5. Campaign on Tree Planting

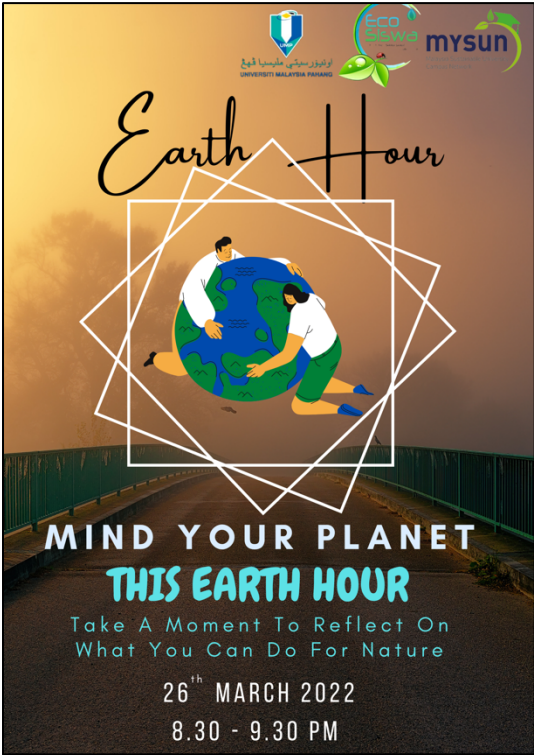


Figure 6. Earth Hour Campaign



#### 4. Sustainability Workshop



Figure 7. MYSUN Sustainability Workshop & Management Meeting



## 5. MYSUN National Conference & Workshop

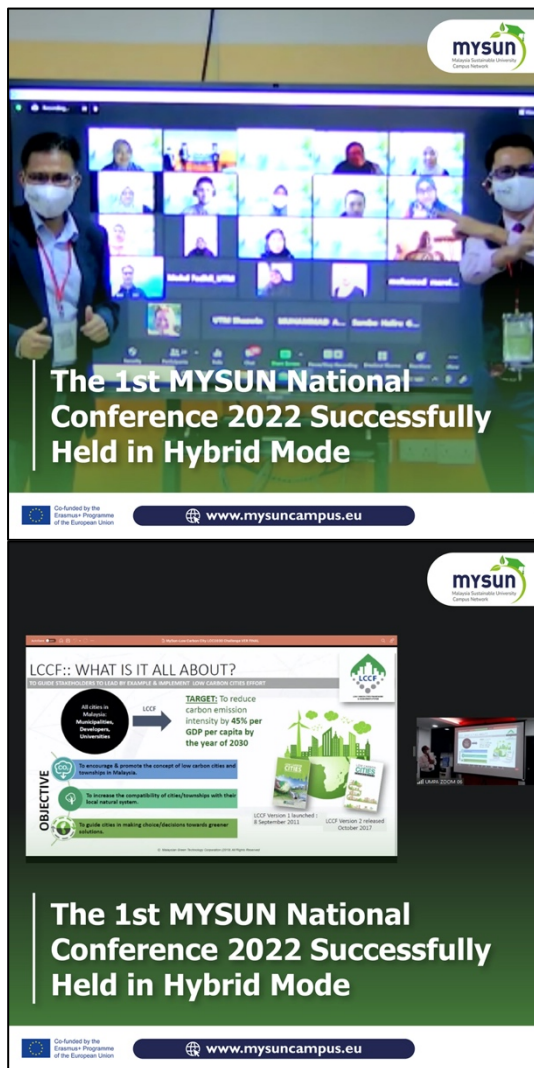


Figure 8. MYSUN 1<sup>st</sup> National Conference

## 6. Training of Trainers – for UMP Staff on Sustainability and Green Campus initiatives

- TOT 1 – UMP Road to Sustainable Campus

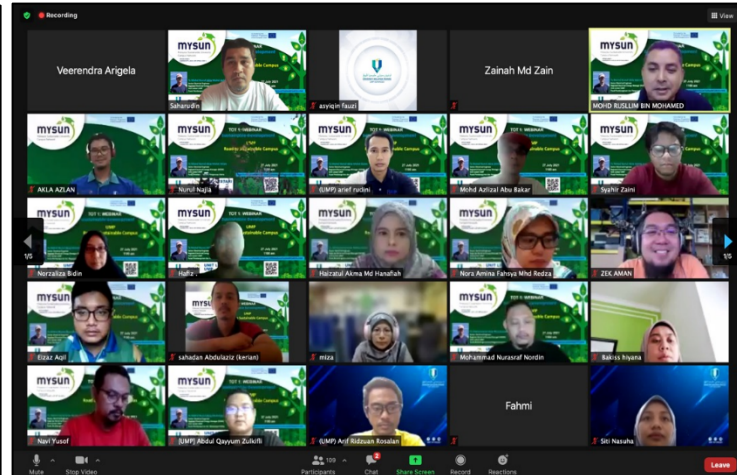
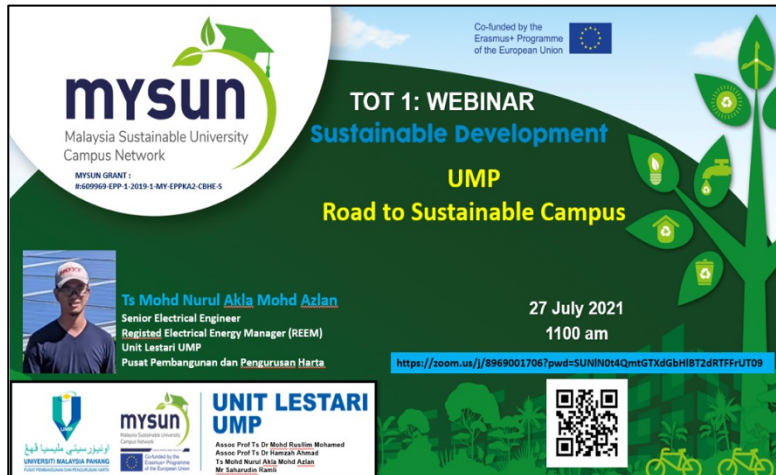
*Speaker: Ts. Mohd Nurulakla Mohd Azlan, Senior Electrical Engineer UMP*

- TOT 2 – UMP's Commitments to SDG Initiatives

*Speaker: Assoc. Prof. Ts. Dr. Herma Dina, Vice Director of Corporate & Quality Centre UMP*

- TOT 3 – Going Green with UMP's Research & Innovation

*Speaker: Prof. Ir. Dr. Mohd Faizal Jamlos, Ts. Dr. Roshaliza M. Ramli, Dr. Noormazlinah Ahmad*



### Additional evidence link:

<https://mygreen.ump.edu.my/index.php/kp-house>

<https://news.ump.edu.my/community/kp-house-centre-attraction-among-kuala-pahang-residents>

<https://news.ump.edu.my/community/perpustakaan-mini-di-pusat-sehenti-komuniti-kp-house-pupuk-budaya-minat-membaca>

### FB link :

<https://www.facebook.com/211192305607973/posts/5454783397915478/>

<https://www.facebook.com/universiti.malaysia.pahang/posts/5153182721408882>

<https://www.facebook.com/universiti.malaysia.pahang/posts/5076275969099558>

<https://www.facebook.com/universiti.malaysia.pahang/posts/5010659558994533>

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<https://www.facebook.com/universiti.malaysia.pahang/posts/5487310664662751>