



# SDG 7: Affordable and Clean Energy





SDG 7: Affordable and Clean Energy

**Al-Furat Al-Awsat Technical University used the Solar Energy -  
System & Wind Energy for more efficient energy.**

The university encourages the establishment of clean power plants using solar cells & Wind Energy, as (7) power plants have been established and this contributes to reducing the consumption of electrical energy as well as reducing its costs, and at the site of the presidency of the university in Kufa, the building of scientific departments is provided with clean energy, as well as feeding student rest stations on site with electricity points to force the charging of their mobile phones and computers from them, and nowadays working on the production of renewable energy through the flow of water.





## Operating a solar-powered water pumping system at AL-Furat AL-Awsat Technical University/ Karbala Technical Institute

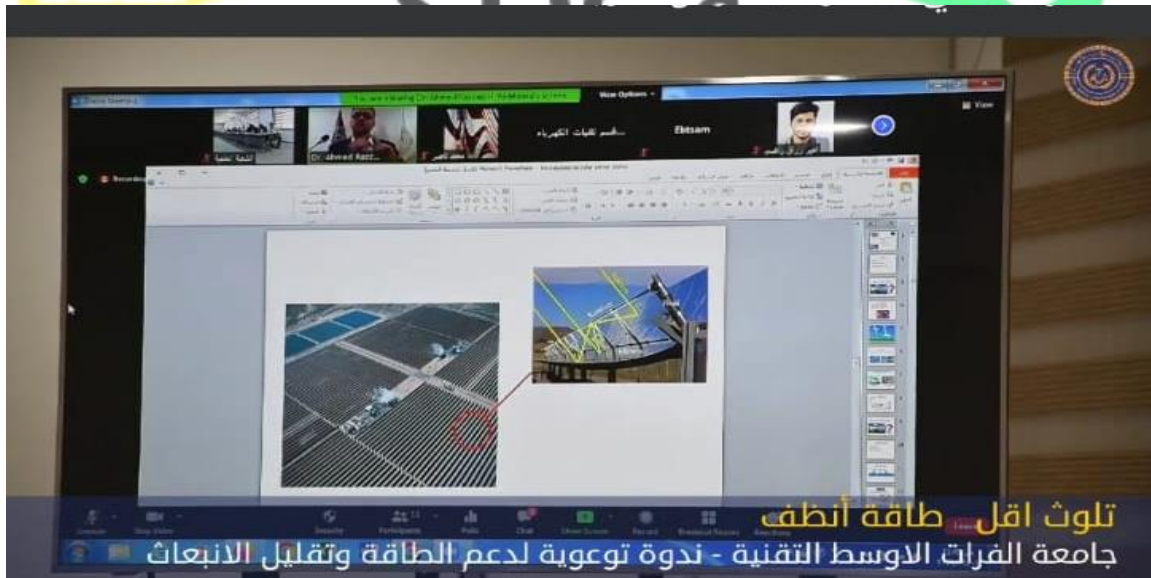
In order to achieve the goals of sustainable development through the transition towards clean energy, a number of students, under the supervision of their teachers, were able to install a water pumping system powered by solar energy.

Note that one of the specifications of this project is that it can work during the day or night by connecting a 350-watt solar cell to a 13-amp DC water pump. A humidity sensor has also been connected to the system so that it works automatically without human intervention.





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Workshops about clean energy (Al-Furat Al-Awsat Technical University, Iraq)



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Ensuring access to affordable, reliable, sustainable and modern energy for all  
The goals include ensuring everyone has access to affordable, reliable and modern energy services.

Environmental sustainability aims to ensure sustainable or optimal use of land, forests, energy and mineral resources. To achieve this goal, the university implemented the following activities:

The university has achieved great progress in adopting clean energy and increasing its production to meet part of its sites' electrical energy needs by using solar panels, spreading the culture of clean energy and benefiting from natural energy sources, as well as holding workshops and seminars, the number of which reached (43), on the importance of renewable energy and the use of motion sensors to illuminate public facilities, the use of economical lighting lamps instead of regular lamps, the use of air conditioning devices with inverters instead of regular devices to reduce electrical energy consumption, and the holding of a workshop on designing a solar energy system for a residential house by the Department of Electrical Technologies and Solid Waste Management and its role in achieving sustainable development. A number of Published research on clean energy (46) research.



**For activities on renewable energy, health, water conservation and hygiene  
/ Al-Musayyib Technical College**



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1- The Department of Soil and Water Technologies, in cooperation with the Continuing Education Unit at Al-Musayyib Technical College, held a course (Water Pollution with Heavy Metals). The course, which lasted five days, aimed to introduce the dangers of water pollution, the damage it causes, and the critical limits of heavy metals in it.

The course included several topics, the most important of which are: Heavy metals, sources of heavy metal pollution, health effects and pollution in Iraq, as well as pollution with products imported into Iraq. The course touched on the causes of water pollution, the methods used to remove or reduce pollution, the effects resulting from pollution, the most important studies and modern techniques about that, and the importance of developing solutions and increasing awareness of preserving the environment and its resources, especially water, one of the types of pollution that has become a threat to living organisms, to achieve sustainability in the ecosystem through Commitment to safety standards and environmental preservation in accordance with international regulations.

Target group: Researchers, graduate and undergraduate students, professors and members of the Department of Soil and Water Technologies.

Both attended the session

A. M. Sabah Latif Assi

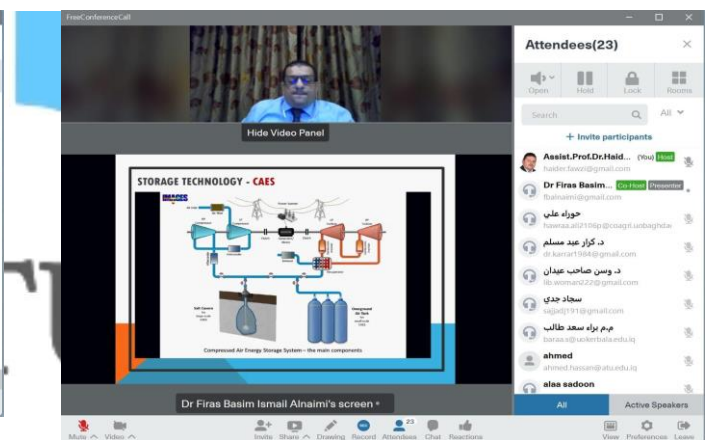
A. M. Muhammad Tarkhan Abu Al-Meikh

M.D. Muhammad Malik Hamed





**Target group:** Academics and researchers in the field of sustainable energy.



8- The Department of Electrical Power Technology Engineering at Al-Musayyib Technical College at Al-Furat Al-Awsat Technical University discussed the graduation projects of its fourth-stage students for the academic year 2022/2023.

The goal of discussing student projects is to consider their completion rate, identify the obstacles facing students during project implementation, and benefit from the guidance that professors provide to students to produce the best results for their graduation projects.

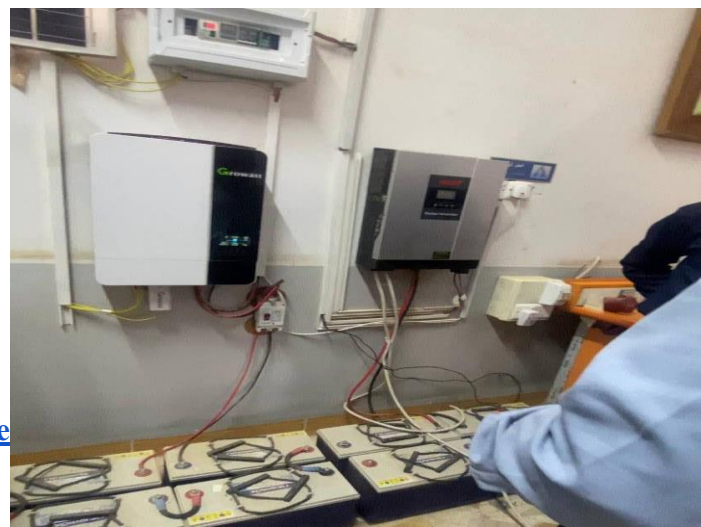
A committee was formed for this purpose, and the students' graduation projects revolved around using the hybrid system to generate electrical energy. Wind energy and solar energy were chosen as clean, sustainable energy sources for generating electricity, and the possibility of applying them in Iraq was studied. The work was divided into groups, and each group was working on part of the



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project. During which they studied the possibility of generating electrical energy from wind and reached results about the use of the best types of turbines that can be used in Iraq, as well as the optimal use of solar panels. A section of the projects touched on the ATS system and the possibility of benefiting from it in modern smart control of homes and various loads, and a section of the projects presented a topic. It is important to manage the electrical network, while he discussed the use of alternative energy in cooling homes and finding the best systems used in cooling homes using alternative energy.







## Activities on renewable energy

Installation of a solar energy system with a capacity of 3330 watts (maximum power) at the Najaf Technical Institute at Al-Furat Al-Awsat



Technical  
University



## Renewable energy

Students university Euphrates Middle Technology They implement project cleaning cells Solar automatic

do Students College Technology Engineering Najaf One Formations university project cleaning cells Solar automatic, Euphrates The middle Technology

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And he mentions In there more in Use order Solar in Industries And also in Than Gives area A My future A East A For this order. ‘Homes

and that order The mechanic that I suggested it Students and Use Latest non ‘Innovations And replace Technologies The usual To clean Panels Solar practice any pressure and carry mechanical on Panels and saving Alma A and And cancels Costs Plumbing And costs Repeated Related ‘time and wealth With water.

Students of Al-Furat Al-Awsat Technical University are implementing (a project to install and connect a photovoltaic cell system with a capacity of (3 kilowatts)).

Students from the Najaf Engineering Technical College, one of the formations of Al-Furat Al-Awsat Technical University, implemented a project to connect a system of photovoltaic cells with a capacity of (3 kilowatts)).

The goal of the project was to equip the Power Mechanics Department building with alternative energy with a capacity of (3 kilowatts) by relying on photovoltaic cells as an alternative to electrical energy in the event of a national grid outage, thus reducing the burden of dependency on the national grid, based on the fact that the geographical region in Iraq is rich in existing energy. On the sunlight.

At the same time, the project was divided into three groups, each group researching an aspect of the project in its study. The first group (designing and building a photovoltaic system with a capacity of (3 kilowatts)) researched aspects of purchasing the best panels and their supplies and the latest technologies used in enhancing reliability on photovoltaic cells as energy. Alternative.

While the second group studied the effect of operating temperature on the efficiency of solar panels in the holy city of Najaf. Operational conditions have an effective role in the efficiency of panels and suggest the best ways to address them and how to overcome them using the best technological techniques in this regard.



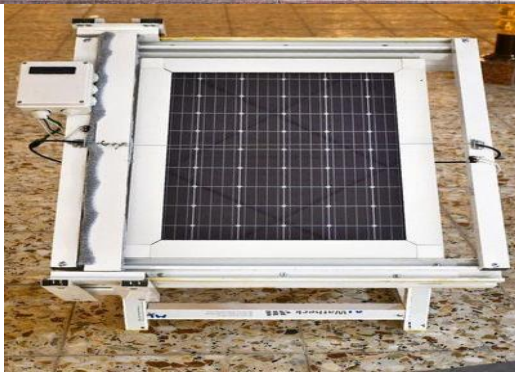
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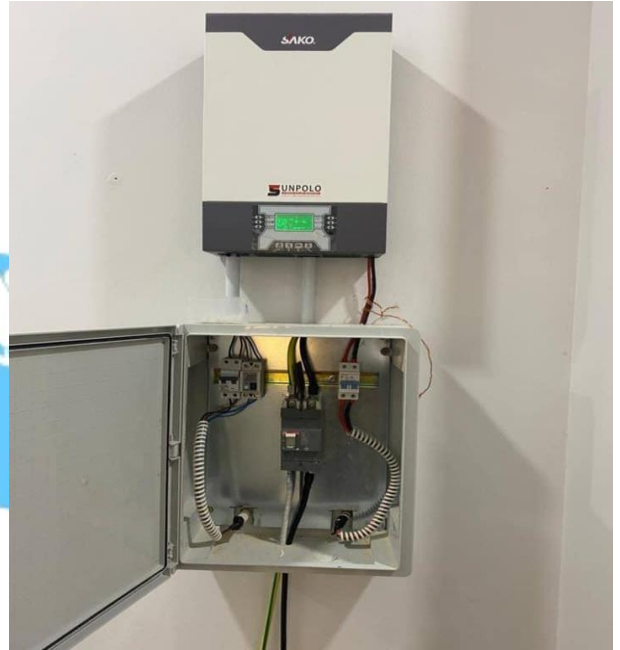
The third group relied on studying the amount of radiation, determining the best angle, and conducting a feasibility study for the system project with a capacity of (3 kilowatts). The clear geographical location of the city of Najaf and the amount of radiation falling on the solar panels was high and could be relied upon to provide alternative energy throughout the year. The economic feasibility also produced positive results to encourage the establishment of such projects in the near future to reduce the burdens of dependence on the national grid.





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Republic of Iraq  
Ministry of Higher Education & Scientific Research  
AL-Furat AL-Awsat Technical University



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Web Address: <http://en.atu.edu.iq/> / <http://auu.edu.iq>



<https://cms.atu.edu.iq/?p=4564>

<https://atu.edu.iq/?p=15349>

Wind Energy Production

[https://drive.google.com/file/d/10LVx\\_pG9BITYjKJFpW9A1jA2lQoibRvO/view?usp=sharing](https://drive.google.com/file/d/10LVx_pG9BITYjKJFpW9A1jA2lQoibRvO/view?usp=sharing)

In the following image, Al-Furat Al-Awsat Technical University offers its services to Supply, Install, and Maintain of Solar Systems for NGO.





Solar Energy ( Al-Furat Al-Awsat Technical University,Iraq )







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Wind Energy ( Al-Furat Al-Awsat Technical University,Iraq )

Al-Furat Al-Awsat Technical University provides the local community with different knowledge about the importance of energy efficiency and clean energy by different workshops and courses actually the use it as in the following links.

<https://youtu.be/recdyfJhmbE>

<https://atu.edu.iq/?p=19409>

<https://www.facebook.com/79adnan/videos/1151355189021216/>

<https://atu.edu.iq/?p=18705>



Workshops about clean energy (Al-Furat Al-Awsat Technical University,Iraq)

Publications about energy for ATU Academic Staffs

<https://docs.google.com/spreadsheets/d/1gOYbw25l6xG9Hpf1x4nCqm9aVZEJ56zO/edit?usp=sharing&oid=115154825454630381457&rtpof=true&sd=true>

The university's formations continue to strive to reduce the emission of harmful gases to the environment and their impact on climate change by establishing clean electrical power generation stations to reduce dependence on electricity generators that emit large quantities of harmful gases and noise, in addition to their need for large sums to provide supplies such as (kerosene and Maintenance), relying on sunlight, wind and water, as well as expanding the cultivation of green spaces by



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planting evergreen trees to improve the environment and as buffers to reduce pollution, fruit trees and planting flowers and shrubs. Thus, the university and all its sites contribute to achieving the thirteenth goal “Climate Action” of the seven sustainable development goals. Ten and increasing construction of environmentally friendly buildings that depend on renewable natural energy sources to obtain electrical energy to fill the need in classrooms, laboratories and administrative buildings at the university, and this achieves the seventh goal, “clean energy at reasonable prices,” of the sustainable development goals.

The university's first department for renewable energy technologies was opened at the Karbala Technical Institute. It is the first department created for renewable energy at the university level. The department includes a group of scientific laboratories and mechanical and electrical laboratories. The construction of environmentally friendly buildings that rely on renewable natural energy sources to obtain electrical energy has increased to meet the need in classrooms, laboratories and administrative buildings at the university, and this achieves the seventh goal, “clean energy at reasonable prices,” of the sustainable development goals.

With the increasing need for electrical energy and in light of the dramatically changing climate, this requires finding ways to provide it at acceptable prices as well as rationalizing its consumption. This is what the university is working on through the instructions and procedures it specifies for the purpose of rationalizing energy consumption and using economical technologies that consume less energy, such as the use of (LED) and light sensors. Exterior and construction of environmentally friendly buildings that take into account the benefit of natural lighting and air, in addition to the keenness of human resources therein to rationalize energy consumption by turning off devices and turning them on when finishing work or leaving the place. (47) courses, workshops and seminars were implemented regarding awareness of rationalizing energy consumption. For university members and students and for



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members of society in general. The university contributes to meeting part of its needs by establishing clean electrical power generation stations (solar panels) in most of its sites, as (404)A were produced during the year 2022. In addition, all university sites are taking measures and policies that will reduce and rationalize electrical energy consumption, such as using light sensors. In health groups and corridors, using inverter air conditioning devices instead of regular devices to reduce electrical energy consumption, carrying out continuous maintenance of electrical appliances and generators to reduce their fuel consumption and increasing their work efficiency, making shades for generators and maintaining electricity networks on an ongoing basis. Through this, the university is working to achieve the seventh goal (clean energy). At affordable prices) is one of the sustainable development goals set by the United Nations.



**-Attending the opening events of the Solar Energy, Information Technology and Banking Conference: <https://atu.edu.iq/?p=20208>**



The President of Al-Furat Al-Awsat Technical University attended the proceedings of the conference (Solar Energy, Information Technology and Banking), which was held by the Najaf Governorate Office in cooperation with the Chamber of Commerce in the governorate. The conference was attended



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by the Governor of Holy Karbala, the Deputy Governor of the Central Bank of Iraq, and delegations representing ministries and local governments in the Iraqi provinces and banks. It was attended by the Consul General of the Kingdom of Bahrain in Najaf and the Consul of the Islamic Republic of Iran, in addition to companies specializing in solar energy and other investment companies in various fields. The Governor of Najaf, Dr. Engineer Majid Al-Waeli, opened the conference activities, welcoming the participating delegations, stressing that the conference is the first of its kind in Iraq. Al-Zuhairi, in his intervention at the conference, expressed the readiness of the university presidency to adopt the establishment of an advanced center for solar energy and other alternative energies. Pointing out that the university possesses advanced scientific and technical personnel that can deal with this important detail. Al-Zuhairi, in a press statement, stated that the conference held in the Holy Land of Najaf constitutes a qualitative initiative to address the issue of energy at this particular time, especially in light of the challenges facing the country in this sector and the global trends to achieve sustainable development goals, especially with regard to the use of clean energies and reducing the environmental impacts resulting from energy.

Use of fossil fuels.

Al-Furat Al-Awsat Technical University provides the local community with different knowledge about the importance of energy efficiency and clean energy by different workshops and courses actually the use it as in the following links.

Renewable Energy Workshops : <https://youtu.be/recdfvJhmbE>

Course on energy subsidies and emission reduction: <https://www.youtube.com/watch?v=kHSeVqfhMFk>

The university publishes and distributes posters to members of the community and invites them and at all university sites to attend workshops, seminars and courses on rationalizing the use of energy and the use of clean energy, and conducting studies and research for the competent authorities to help them produce and use clean energy and install their own systems

**Al-Awsat Technical University holds an electronic workshop (webinar) in partnership with Malaysia Perls University, entitled Geopolymer Concrete and Green Building Materials.**

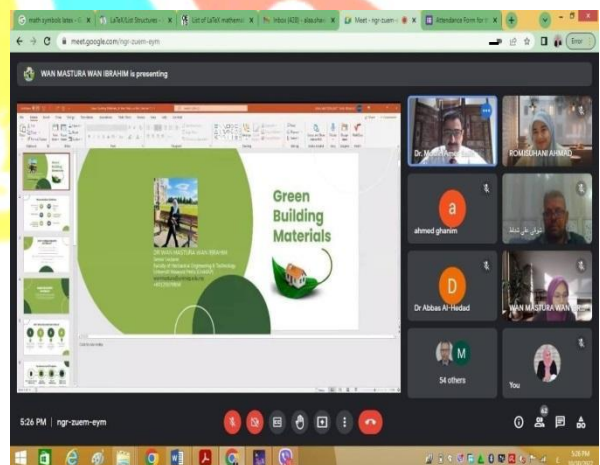
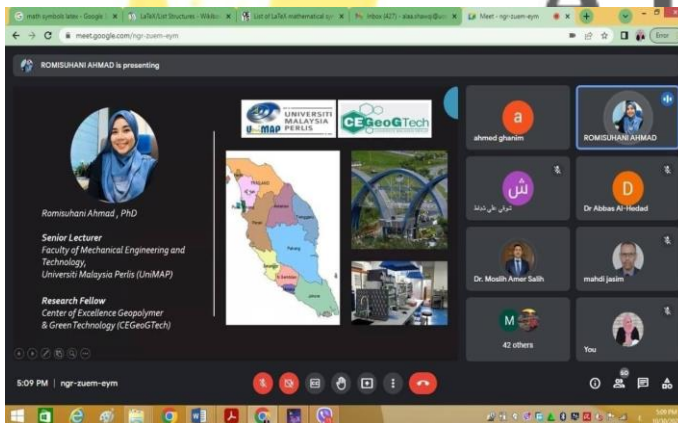
Under the auspices of the President of Al-Furat Al-Awsat Technical University the Department of Scientific Affairs at the Presidency of the University, in cooperation with the Technical Institute of Babylon, held an electronic workshop (webinar) in partnership with the University of Malaysia Perls, entitled (Geopolymer Concrete and Green Building Materials).



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The scientific assistant, Prof. Ahmed Ghanem Waday, delivered a speech in which he emphasized the university's great interest in achieving sustainability and its goals in many areas such as renewable energy, reducing carbon emissions, using solar energy and smart buildings, and called for more coordination and cooperation with international universities.

We draw your attention to the fact that (details of the workshop and the lecturers are in the attached file). After completing the two lectures, the discussion was opened and questions were asked, which were answered by the two lecturers. The workshop was moderated by Assistant Professor Dr. Musleh Amer Salih from the Babylon Technical Institute.





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