

قائمة المشاريع بقسم الهندسة الميكانيكية للعام الجامعي 1442

Experimental Study of A Gaseous Fuel Combustion System	عنوان المشروع
<p>The present study offers an experimental work on a simple modified design of gaseous fuels combustion system. The test rig was constructed for studying for flame stabilization of non-premixed free jet diffusion flame by bluff bodies. The test rig consists mainly of fuel supply system, bluff body, fuel nozzle and air supply system. The test rig is equipped with the necessary measuring and controlling devices. The fuel is commercial liquefied gaseous fuel (L.P.G) of 52% butane and 48% propane in volume analysis. The tested bluff bodies (stabilizers) are three of different diameters (60, 50 and 40 mm). The effect of excess air ratio on the percentages of flue gases were discussed. The percentages of N_2 and O_2 increase when excess air ratio increases. The percentages of CO_2 and H_2O decrease when excess air ratio increases.</p>	ملخص المشروع
	صور المشروع

<p>Design and Manufacturing of Thermoelectric System for Cold and Hot Water Supply</p>	<p>عنوان المشروع</p>
<p>The refrigerants used in traditional refrigerator systems will be banned in the near future due to the effect of terrible greenhouse gases. A possible replacement for this system is the use of a solid-state device such as a thermoelectric cooler to pump heat. This project is aiming to serve cold and hot water supply simultaneously via using the novel method of the thermoelectric system. To achieve an optimum thermoelectric system design, a prototype has been constructed and instrumented to measure the performance under several operating conditions.</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

<p>Performance Evaluation of Thermoelectric System for Cold and Hot Water Supply</p>	<p>عنوان المشروع</p>
<p>The current project is aiming to improve the performance of a thermoelectric system via controlling the water flow rates and temperatures in the hot and cold partitions. A full control on the cold and hot water cycles has been implemented and complete measurements will be conducted next semester to evaluate the performance and feasibility of the project.</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

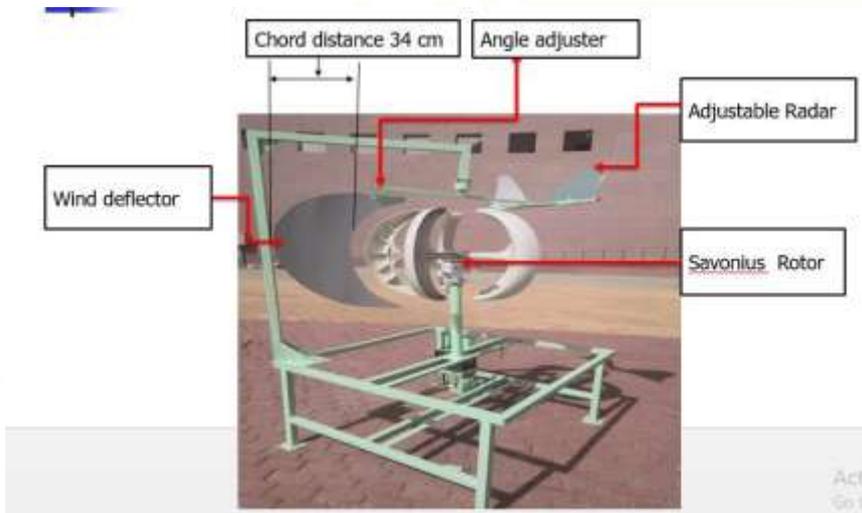
<p>Utilization of Solar Energy for Residential Heating</p>	<p>عنوان المشروع</p>
<p>This project is proposing a new design for residential heating system that utilizes the solar energy. Instead of using conventional heating, the solar energy is used for the heating process via a flat plate collector. The flat plate collector provides hot water to be circulated in pipes embedded in underfloor tiles. Complete measurements will be conducted next semester to evaluate the performance and feasibility of the project.</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

<p>Performance Analysis of the Micro - Vertical Axis Wind Turbine with Wind Deflector</p>	<p>عنوان المشروع</p>
<p>Wind power is one of the most promising sources of future energy for the world. Global energy availability is far in excess of the energy required to power the globe's current electrical usage. The global energy demand is expected to be about 30% higher in year 2040, which will bring more challenges in future such as enlarged ecological troubles, exhaustion of fossil fuels and unstable prices of oil. It is also reported that the residential and commercial energy use will increase at an average rate between 1.1 and 1.5% yearly. Current technologies only extract a small percentage of the available wind power. The traditional way to generate electricity is through centralized systems (power plants) utilizing large gas, oil, coal or nuclear fuels. These systems supply the generated power to the grids through a high-voltage transmission network. The end users can be connected to the grid at different voltage stages depending on their demand.</p> <p>The main shortcomings associated with centralized power generation are transmission and distribution system costs, security and reliability of power supply as well as energy efficiency and environmental impacts. For small-scale power production, which is defined here to be on the order of a few kW, large horizontal axis wind turbines (HAWTs) are not appropriate, The dramatic difference in design between HAWTs, Darrieus rotors, and Savonius rotors is reflected in their vastly different performance. The performance of a turbine is often measured by the value of its power coefficient. This term is, in essence, an efficiency. It is a measure of the extracted power compared to the power of wind flowing through the turbine's projected area. The Global Wind Energy Council released its biennial Global Wind Energy Outlook today, outlining scenarios where wind could supply 20% of global electricity by 2030.</p> <p>Innovation in micro-generation technologies reflects to</p>	<p>ملخص المشروع</p>

generate heat or electricity at small scale in or around individual buildings (or groups of buildings).

Development of the Micro – Vertical Axis Wind Turbine with Omni-directional wind deflector comprised of the 5 Savonius wind blades. The Omni - directional Wind Deflector is an innovative idea to accelerate up stream wind and to minimize the negative effect of the upstream wind striking on apposite side of the wind turbine

صور المشروع

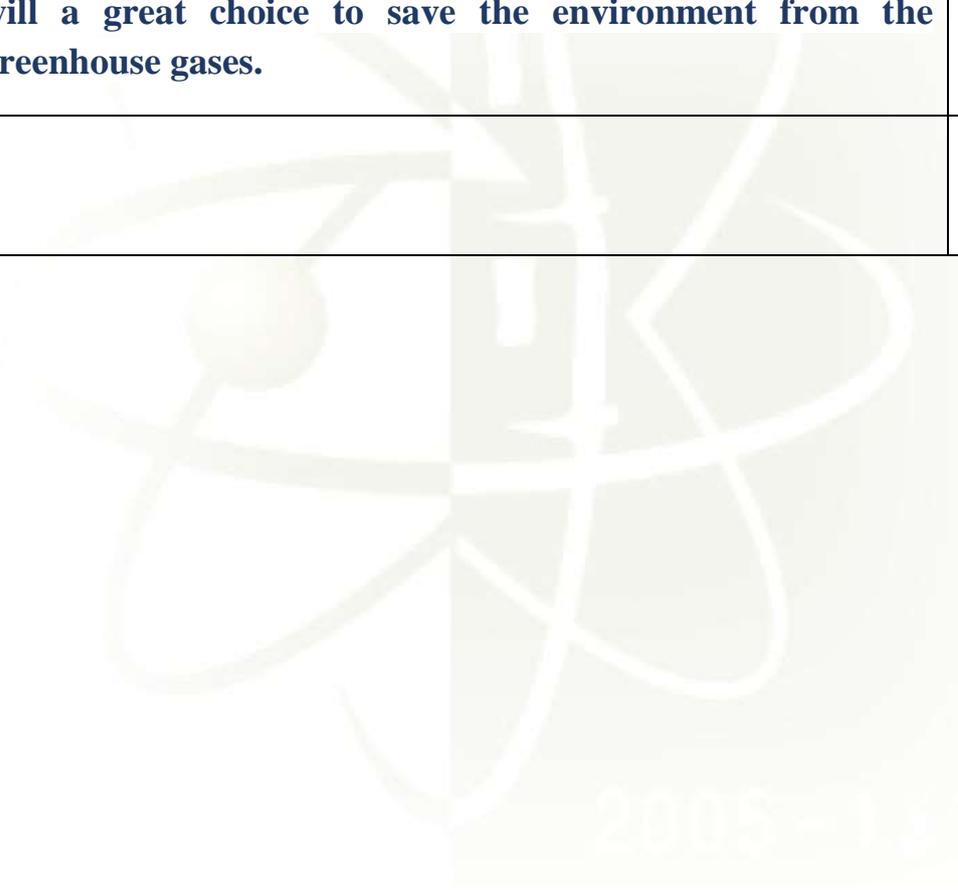


2005-1-27

<p>Design of a novel car air conditioning system</p>	<p>عنوان المشروع</p>
<p>Thermoelectric refrigeration is one of the techniques used for producing refrigeration effect. Thermoelectric devices are developed based on Peltier and Seeback effect which has experienced a major advances and developments in recent years.</p> <p>The aim of this project has been to investigate the potential, for such a cooling devices and to perform an economic evaluation in comparison to pre-existing car air conditioning systems. A prototype will be designed and fabricated as a part of major project to simulate the real system to be designed. Therefore, the prototype will be studied under different operating conditions and develop a computer program to predict the real system performance</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

<p>Modelling and Simulation of Solar Dryer</p>	<p>عنوان المشروع</p>
<p>The solar drying system utilizes solar energy to heat up air and to dry any food substance loaded, which is beneficial in reducing wastage of agricultural product and helps in preservation of agricultural product. Renewable energy sources (RESs) gained a great attention in the last decades; they are used as alternatives to fossil fuels sources which have harmful effects on the environment. There are several forms of RESs like solar, wind, tidal, biomass, geothermal and chemical. In our project we are focused on solar energy conversion system. This project presents modeling and simulation of solar dryer system for vegetable drying. In the dryer, the heated air from a separate solar collector is passed through a grain bed, and at the same time, the drying cabinet absorbs solar energy directly through the transparent walls and roof. The results obtained during the test period revealed that the temperatures inside the dryer and solar collector were much higher than the ambient temperature during most hours of the day-light. The dryer exhibited sufficient ability to dry food items reasonably rapidly to a safe moisture level and simultaneously it ensures a superior quality of the dried product.</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

<p>Building and Enhancing a Wind Turbine using an Attainable Materials</p>	<p>عنوان المشروع</p>
<p>The demand for energy is on rapid increase with the development of new technologies and the growth of the human population thus most companies resort to using cheap and easy to obtain energy without considering the harm that could be caused to the environment. Therefore, the need for Green Energy (Renewable Energy) nowadays is more demanding than ever.</p> <p>This study aims to design, build and test a wind turbine with an easy to obtain materials. In order to do so, first a literature review is carried out to understand the theory behind wind turbines and to understand the different types and characteristics of wind turbine. A Computer Aided Design (CAD) tool is then used to draw a simple 3D model of the wind turbine.</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

Fabricating a vertical axis wind turbine for electrical energy	عنوان المشروع
<p>Nowadays life, with the increase in demand of electrical energy its generation in huge amount has also become very important. In today's era, electricity is generated by burning the fossil fuels, however these fossil fuels will soon get depleted and this critical situation gives rise to the use of renewable sources of energy for generation of electricity. The main objective of the attempt is to generate electrical power by using the vertical axis wind turbine. The current attempt describes vertical axis wind turbine and its importance in energy production. The results output of electrical power energy will be estimated. Wind turbine will a great choice to save the environment from the greenhouse gases.</p>	ملخص المشروع
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2005-1-17

<p>Design and Manufacturing of Combined PV/Humidification-Dehumidification System</p>	<p>عنوان المشروع</p>
<p>Photovoltaic (PV) panels can be considered the most direct way to produce direct current (DC) electricity from solar energy. A main drawback of PVs is that heat is dissipated from PVs and build up during electricity generation, which eventually leads to a dramatic reduction in the electrical efficiency of PVs. However, the temperature of PVs can be lowered and the electrical efficiency of PVs can eventually be increased by cooling the PV panel down using a cooling medium such as air. On the other hand, thermal energy recovered from the PV panel can be utilized in desalinating saline water by using Humidification-Dehumidification Technology. In this project a combined PV and Humidification-Dehumidification system is designed and manufactured. The performance of the PV panel and the Humidification-Dehumidification is tested under various weather and operation conditions.</p>	<p>ملخص المشروع</p>
	<p>صور المشروع</p>

<p>Design and Manufacturing of A Combined Solar Still and Humidification-dehumidification System</p>	<p>عنوان المشروع</p>
<p>Solar stills, as a simple technology, have many advantages such as simple design; unsophisticated fabrication; low capital cost and easily maintained. However, their low daily production puts constraints on their usage. A radical improvement in the performance of solar stills can be achieved by the partial recovery of the energy losses from the glass cover of the still. The glass cover of the still is replaced by a glass air heater where flowing air recovers the condensation energy loss of the still, reduce the glass cover temperature, and hence improve the still productivity. In addition, the resultant hot air is circulated through a humidification unit, where it is humidified by a spray of saline water. Then humid air is cooled down inside a dehumidification unit, where fresh water is extracted from the flowing air. Finally, air is circulated back inside the glass solar air heater.</p>	<p>ملخص المشروع</p>
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