



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

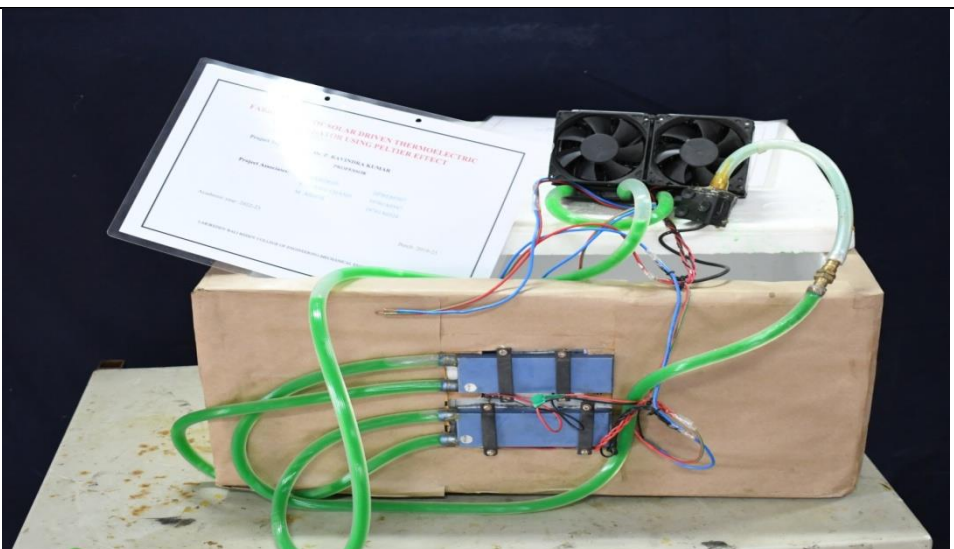
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L.B. Reddy Nagar, Mylavaram, NTR District, Andhra Pradesh - 521230



## Details of Products/Prototypes/ Models developed for the A.Y. 2022-23

Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Fabrication of Solar Driven Thermoelectric Refrigerator Using Peltier Effect
Description ( in 200 words)	In this project, it is proposed to develop an environmentally friendly refrigerator system that neither depletes the earth's limited fossil fuel reserves nor harms the environment by depleting the ozone layer or contributing to global warming through greenhouse gas emissions. The electrical energy required for cooling is supplied by a solar panel. In recent years, issues like the energy crisis and environmental degradation due to increasing CO <sub>2</sub> emissions and ozone layer depletion have become major concerns for both developed and developing countries. A solar-based cooling system is cost-effective, clean, and environmentally friendly. This setup does not require any traditional refrigerants or mechanical devices such as condensers, compressors, and evaporators for its operation. As power consumption trends increase, using renewable energy sources becomes essential to mitigate these effects. While conventional refrigerants like CFCs, HCFCs, Freon, and ammonia offer maximum efficiency, their primary disadvantage is their contribution to global warming and ozone depletion. In this project, it is proposed to produce simple and eco-friendly cooling using a Peltier module powered by solar energy.
Register Number and Name of Students	20765A0307- <b>K. Sandeep</b> 19761A0347- <b>V.Purna Chand</b> 19761A0324- <b>V.Ashok</b>
Photographs	


Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Design and fabrication of Agriculture wheel spraying machine – Dr MBSSR
Description ( in 200 words)	In our country majority of the people depend on agriculture. In agriculture work, the farmer uses pesticides to the spray as part of farming. Even today the farmers are using knapsack sprayers to spray the liquid pesticides to their fields. Usage of knapsack sprayers requires fuel or electricity and it requires human effort causing problems like back pains to farmers. A low cost mechanically/manually operated wheel spray pump with multiple uniform nozzle is developed to facilitate the farmers. Wheel spray pump consumes less time to spray due to multiple nozzles with very less human efforts. In the past years, the farmers used to spray the liquid pesticide by hand operated crank mechanism. Based on that application, a crank mechanism with a piston pump, driven by a wheel is used in this product to inject the liquid pesticide uniformly through nozzles. The present prototype is modelled in CATIAV5 and required main components are analysed in ANSYS software and then it is fabricated. This wheel operated spray pump is very much convenient to operate with less human effort and less cost.
Register Number and Name of Students	19761A0322-Kuppala Narendra 19761A0340-Simhadri Phani Raja 19761A0316-Kalimidi Shalem
Photographs	

Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Fabrication of fused deposition modelling (FDM) double nozzle 3D Printer – Dr BSK
Description ( in 200 words)	Fused Deposition Modeling (FDM) is a popular additive manufacturing process that constructs objects by layering thermoplastic materials. The fabrication of an FDM double nozzle 3D printer involves several key steps to enhance its capabilities, such as printing with multiple materials or colours simultaneously. Initially, the design process includes creating a detailed CAD model of the printer. This model specifies the dimensions, the placement of components, and the overall structure. The frame is usually made from aluminium or steel for stability. The next step


	<p>involves assembling the mechanical components. The motion system, typically comprised of stepper motors, belts, and pulleys, ensures precise movement of the print head and bed. Linear rails and lead screws may be used for enhanced accuracy and durability. The double nozzle system is the core innovation. Each nozzle is independently controlled and can extrude different materials. The nozzles are mounted on a movable carriage, often with a sophisticated cooling system to prevent cross-contamination and ensure optimal performance. The electronic components, including the motherboard, power supply, and wiring, are installed next. Firmware is uploaded to control the printer's operations. Finally, the printer is calibrated. This involves levelling the print bed, aligning the nozzles, and fine-tuning extrusion settings to achieve high-quality prints. This complex yet meticulous process results in a versatile and efficient 3D printer capable of producing intricate, multi-material objects.</p>
Register Number and Name of Students	<p>20765A0310- Pilla Saikumar  19761A0310-Edula Nani  19761A0345-Vellanki Sai Krishna</p>
Photographs	

Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Design and Fabrication of Semi-Automatic Fire Extinguisher - VSR
Description ( in 200 words)	<p>Firefighting is an important and hazardous job. A fire fighter can extinguish fire quickly, preventing damage and reduce losses. The purpose of this project is to establish a system that can detect fire and extinguish it in the shortest time. In this project we fabricate a semi-automatic fire extinguisher and lifter with the help of electric power. Till date we have fire hydrant systems that are manually operated i.e., firemen should move the water pipe to the fire location. The water outlet itself can reach the fire location. Firemen should operate this equipment from the observation point and the extinguisher moves and rotates accordingly. This project reduces the risk of health issues like heart attack, cancer, Hepatitis B and C, Chronic respiratory disease, stress, etc. facing</p>





	by firemen. This project is also used in agricultural applications by spraying pesticides. To reduce the cost of a normal fire fighting vehicle, reduce labor and labor cost we fabricate this semi-automatic fire extinguisher.
Register Number and Name of Students	20765A0326-Shaik Hameed 19761A0382-Rayalla Guru Babu 18765A0323-Komari Siva Shankar 19761A0359-Gudela Hemanth
Photographs	

Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Design and Fabrication of an Electricity Generation System Using Solar Panels and Waste Materials-Dr VDR
Description ( in 200 words)	Environment plays a vigorous role in the life of both living things and non-living things. Various factors affect the environment, and this causes ecological imbalance. The waste produced by the direct and indirect influence of living things causes a lot of damage to the environment. In the world, around 2.01 billion tons of waste is produced every year and little of this waste is recycled and reused. A large scale of plastic waste cannot be recycled and is dumped in certain areas and left for natural decomposition for many years. Plastic takes 20 to 500 Years for natural decompose. This project proposes to design a device that generates electricity by using all types of solid waste (Plastic, Rubber, Wood, and Paper wastes) as its input source. The radiation is produced by Burning waste materials, and with help of solar panels the radiation is converted into electric energy. This energy is stored in batteries, or it can be

	directed to the transmission lines. By burning the waste Greenhouse gases are emitted which are most harmful to the environment and humans. These gases are treated with various treatment techniques. This process can be done with minimum cost and with minimum effort.
Register Number and Name of Students	19761A0363-Modiboina Srinivasa Rao 19761A0357-Gadde Kalyan 19761A0369-Mynam Jeswant
Photographs	

Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Design and Fabrication of Eco-Friendly Pedal Assisted Quadricycle – Dr BSK
Description ( in 200 words)	<p>The design and fabrication of an eco-friendly pedal-assisted quadricycle involves several stages aimed at creating a sustainable and efficient mode of transportation. The initial phase focuses on conceptualizing and designing the quadricycle. This involves drafting detailed CAD models that specify the dimensions, materials, and structural components. Emphasis is placed on using lightweight, durable, and recyclable materials like aluminium and composite plastics to minimize environmental impact. The frame of the quadricycle is fabricated from aluminium tubes, chosen for their strength-to-weight ratio and corrosion resistance. These tubes are cut to precise lengths, welded, and assembled to form a sturdy, yet lightweight chassis. The design includes provisions for four wheels to ensure stability and a comfortable ride. The pedal-assist mechanism incorporates a chain-driven system connected to the rear axle. A key feature is the integration of an electric motor and battery pack, which helps when pedalling, reducing rider effort and extending range. The motor controller and battery management system are installed to regulate power output and ensure efficient energy use. Wheel assemblies, including tires suitable for various terrains, are attached to the frame. The braking system, usually consisting of disc brakes, is installed for reliable stopping power. Ergonomic seats, a steering mechanism, and user controls are added to enhance rider comfort and control. The final assembly includes integrating all components and conducting rigorous testing to ensure safety, performance, and reliability. This eco-friendly quadricycle offers a sustainable transportation solution,</p>

	combining human power with electric assistance to reduce carbon emissions and promote environmental responsibility.
Register Number and Name of Students	19761A0393-Vulluri Vivek 19761A0364-Moturi Venkata Monish 19761A0391- Vemireddy Sai Krishna Reddy
Photographs	

Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Fabrication Of Dual-Type Steering Controller for Wheelchair - KLP
Description ( in 200 words)	This project suggests a straightforward attachable extension that can be attached to a wheelchair and converted into an electric wheelchair that doesn't need any physical work. In order to operate the attachment, the modified wheelchair is attached with a motor and chain link arrangement that connects the motor to the wheel arrangement. The primary process depends on batteries to drive the motor, and a switching device manages to turn the motor on and off to accomplish the required movement.
Register Number and Name of Students	20765A0340- Pattapu Prasad 19761A03B2-Goda Harikrishna 19761A03A0-Batta Jagadeesh Kumar
Photographs	



Department Name	Mechanical Engineering
Academic Year	2022-23
Name of the Product	Design And Fabrication of Eco-Friendly E-Bike-Dr BSK
Description ( in 200 words)	<p>The design and fabrication of an eco-friendly e-bike focus on creating a sustainable, efficient, and user-friendly mode of transportation. The frame is designed to accommodate both the rider and the electric components, including the battery and motor. A high-efficiency brushless DC motor is selected for its reliability and performance. This motor is mounted on either the rear or front hub, depending on the design preference. A lithium-ion battery, known for its high energy density and long life, is installed, usually integrated into the frame or mounted on a rear rack. The e-bike includes a sophisticated controller to manage power distribution from the battery to the motor, offering various levels of pedal assistance. The system is equipped with sensors to adjust power output based on the rider's input, providing a seamless riding experience. The final assembly includes rigorous testing for safety, performance, and durability. The eco-friendly e-bike represents a modern, green transportation alternative, reducing carbon footprints and promoting sustainable urban mobility.</p>
Register Number and Name of Students	<p>19761A03C3-Kurmala Jagadeesh  19761A03C2-Kurakula Siva Ramakrishna  19761A0396-Athava Balaji</p>
Photographs	