

Institute of Business Management (IoBM)

College of Engineering & Sciences (CES)

Electrical Engineering Department



ABSTRACTS OF SENIOR DESIGN PROJECTS

BATCH -2018

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Project Title	EHT Network Upto 220 KV, Including Grid Station; Underground as Well as Overhead Transmission
Students	Narendar Kumar (20182-23314) Narendhar Kumar (20182-23346) Saqib (20182-23358)
Supervisor	Dr. Zeeshan Shahid
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Abstract	<p>This project presents a prototype of “EHT-220 KV Network Including Substation, Underground as Well as Overhead Transmission. “So, that electricity could be transmitted with minimum losses and in an efficient modern method. This includes the design of transformers, capacitive& inductive banks, inverters, and mathematical modeling of the power system. This project prototype will mean as a trainer for upcoming students specializing in power engineering. Besides, power related companies which hire new, inexperienced engineers face certain difficulties in understanding electrical networks and sometime meet with several sophisticated accidents resulting loss of manpower and money spent to build the systems.</p> <p>The prototype replicated model of the modern EHT-220 KV Electrical network. This project will provide newly appointed engineers a real experience and learning platform of the future electrical network they will interact with. Besides, this report contains the explanations of all components which are used in high voltage transmission network up to 220 KV. The first part of the project consisted of the prototype of the generation site where we electricity is being generated using a solar panel and a wind turbine.</p> <p>Further that generated electricity is then converted into AC voltage for transmission. Here as a prototype, it scaled up, 12 V generation voltages as 11 KV after conversion it is scaled up from 220 V to 220 KV. After that it is transmitted using high resilient copper lines. During transmission phase, especially in metropolitan and cosmopolitan cities underground transmission is preferred because it saves the area which could have been occupied by the overhead transmission. According to cost analysis overhead transmission lines are more reasonable in terms of maintenance and fault detection and solving while underground transmission line’s fault detection is a hectic task which require hefty resources and maintenance is also very expensive comparatively. After the transmission 3rd last phase Is of distribution where after the voltage being processed from gird station is distributed for utility use and where it is stepped down to 220 V for household uses.</p> <p>This project serves as the purpose of a trainer for new learners and engineers newly recruited in both public and private power sectors. In real time and original power system it could led any mishandling with fatal consequences. Similarly, in the universities and engineering departments of electrical/electronic this prototype project can serve as a best of the trainers. It will give a comprehensive practical understanding of the real time power system and extra high-tension network with the understanding of all phases from generation to power distribution.</p>

Project Title	CNC Wire Bender
Students	Adeet Kumar (20182-23318) Jatendar (20182-23319)
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Abstract	<p>In this era of technology, the demand for bending machines has increased. Bending is used in factories and industries for various purposes, for example making any 2d shape. Manual bending machine takes a lot of time and a lot of effort for bending the objects. So, for production it takes too much time which makes it less efficient. In manual bending machines, there's a lack of effectiveness, repeatability and reproducibility. The main aim of our project is to fabricate and Design in a way that urges it to work automatically. The CNC wire bending machine is the most useful machine tool in industries. It is mainly designed for bending wire. This bending has been made possible with the help of stepper motor bender head which exerts large force on the work wire to bend. The bending machine is designed in such a way that it can be run without deliberation. Strategy of our project, when it works automatically reduces the time cycle, costs and improved quality of product. This CNC wire bending machine is a replacement for a manual machine.</p>

Project Title	Three axis Kinematics Study for Motion Capture using Augmented Reality
Students	Ali Gohar (20182-23320) Amir Rasool (20182-23313)
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Abstract	<p>MoCap (Motion Capture) refers to the process of tracking, processing, recording, and translating real-world motions into a 3D model. MoCap provides vital realism to animal and human motion not only in gaming and movies but also in other sectors. MoCap is also frequently used in Medical Motion Therapy, robotics, AR, and VR.</p> <p>In addition to the well-known optical techniques, appropriate systems based on Inertial Navigation (IMUs) are progressively being used because they do not require additional cameras and so restrict the range of motion substantially less. The rapid advancement of technology in the manufacture of such IMUs enables the development of compact sensors that may be worn on the body and send motions to a host computer. However, the application of inertial devices to MoCap is still in its early stages.</p>

Project Title	Smart Module Adhesive Showering System (SMASS)
Students	Rahul (20182-23408) Umer (20182-23340)
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Abstract	This project aims to develop a prototype of spraying system for spraying objects such as, floor mats and carpet to reduce the time, cost and human energy instead of doing a manual spraying process. Manual spraying causes bad effect on human health such as respiratory system. To avoid this problem, we have used exhauster at the top of the frame which removes mist from the atmosphere. In this project, many components are used to control the movement path of the spray gun and sensor that detect the object to spray the solution in the set position.

Project Title	Multipurpose Four Axis SCARA Robot
Students	Ebad ul Hasan (20182-23404) Haytham (20182-23312)
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Abstract	SCARA robots are one of the most frequently used robots in the industry due to their high precision and inherent rigidity. Robotics has grown in popularity and has been a huge success over the last few decades, but automation is expensive and not everyone can afford to switch units from manual to automate. The main goal of this project was to create an inexpensive robotic arm that could be used for pick-and-place operations. The project used a NEMA17 stepper motor and an Arduino UNO to control the robot. This robot has four degrees of freedom and can be operated via a graphical user interface that includes both forward and back movements.