Industrial Pipe Cleaning Robot

Domain/Area of Interest: Automation / Robotics

Project Members:

Sujay Shirodkar
Osburn Vas
Leny Cardozo
Savio Gracias
Stevan Fernandes

Project Guide:

Prof Ajit Salunke

Brief Idea of project: The 3 track microcontroller based robot is used to remove dirt, mud, aggregates, scales etc. from inside of the pipes which find application in process industries. It has in built vision system for inspection, IR sensors for obstacle avoidance and limit switches for safety interlocks can clean pipes of 10 to 14 inch diameter. Forward cleaning action is accomplished by high pressure water jet and a rotary nylon brush.

***Applications*:** The device finds application across industries like chemical, fertilizer, pharmaceutical, dairy etc. for cleaning of standard pipes used for various processes.

Awards and Participation:

- Research paper published in 3rd Biennial International Conference on Nascent Technologies in Engineering (ICNTE 2019) held at Fr. C. Rodrigues Institute of Technology Mumbai.
- Featured in Clean India Journal magazine and The Navhind Times & Gomantak Times.

Working Model:

Online Monitoring of Lubricating Oil of Journal Bearing of steam power plants.

Domain/Area of Interest: Software based Process Control

Project Members:

Kedar Acharya

Saidatt Kamat

Mandeep Chari

Vivek Patil

Suraj Betkikar

Project Guide:

Prof Ajit Salunke

Brief Idea of project: Using virtual instrumentation and Lab view software, the device can acquire real time data of viscosity and acid contents of Lubricating oil of hydrodynamic Journal bearing of temperature and acidity sensors respectively with a NI 6009 DAQ Card. The critical parameters are monitored online in order to provide information on quality of oil.

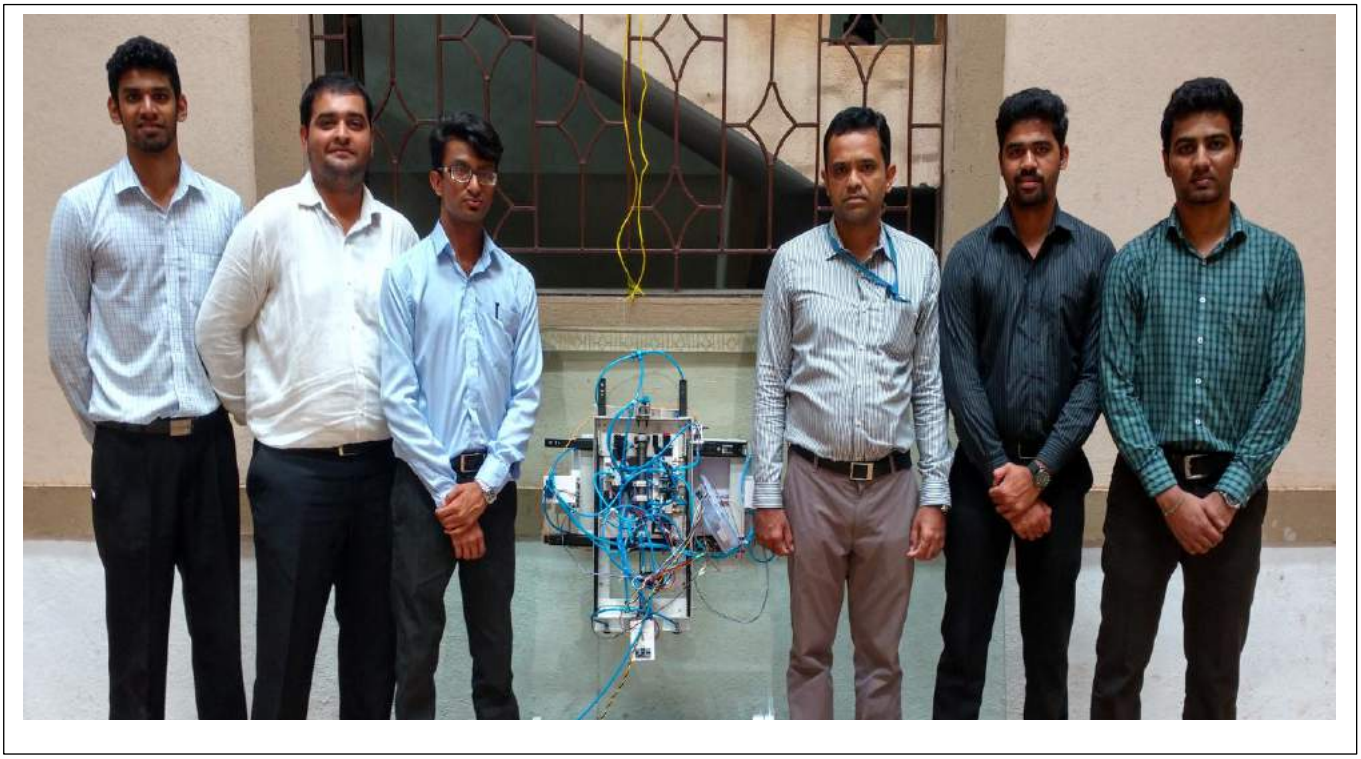
***Applications*:** The device will enable engineers to take quick decisions to control the parameters of Lubricating oil and store data over a long period of time thereby saving time of quality analysis.

Awards and Participation:

- Published in International Journal of Engineering & Technical research.
- Featured in The Navhind Times.

Working Model:

Glass Cleaning Robot for High Rise Buildings



Domain/Area of Interest: Automation / Robotics

Project Members:

Johan Vernekar

Vibert Trindade

Francis Fernandes

Siddhant Dessai

Cecil Falcao

Project Guide:

Prof Ajit Salunke

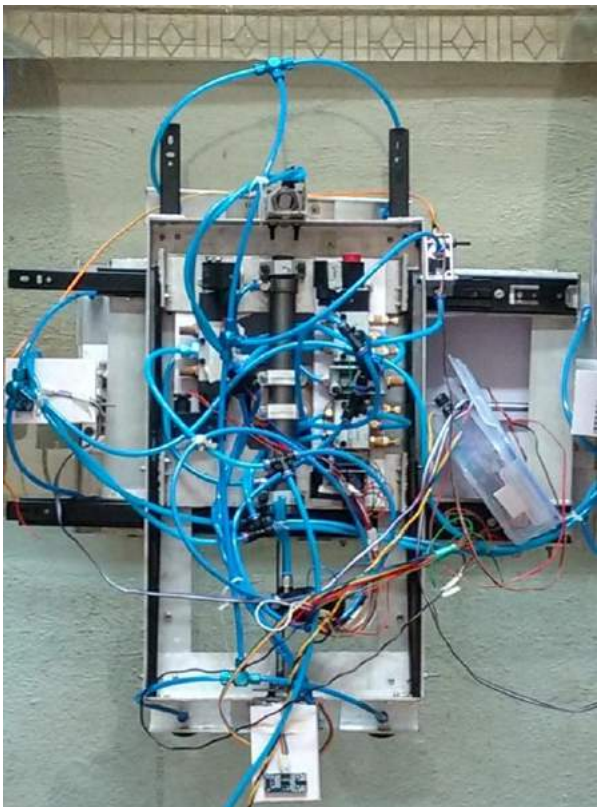
Brief Idea of project: The cleaning is achieved by horizontal movement of a sponge attached to the lower end of the horizontal aluminum frame of the robot. The vertical and horizontal frames consist of vacuum cups which hold the robot against the glass surface. Ultrasonic sensors detect the distance between the glass and the sensor. If the distance is within the limits, the relay circuit is signaled to actuate the solenoid valves which extend/retract the pneumatic cylinders that facilitate the motion of the robot. All the actions of the robot are controlled by ATMEGA328P microcontroller.

***Applications*:** In the present scenario, one of the most important requirements of maintenance of high rise buildings, malls, corporate offices, hospitals, etc. with glass facades is the cleanliness. This project aims to eliminate risk of exposing human beings to laborious and dangerous work and thereby reducing time and cost of cleaning.

Awards and Participation:

- Featured in Clean India Journal in July 2016 issue and Times of India, Goa Edition & Gomantak Times.
- Research paper published in IEEE Xplore / International conference on Innovative Sustainable Computational Technologies (CISCT 2019) at Graphic Era University Dehradun.

Working Model:



Solar Powered Ploughing Robot

Domain/Area of Interest: Automation / Robotics

Project Members:

Dhirendra Singh

Akash Yadav

Sawant Krishnanath Sundar

Abhinav Parulekar

Santosh Mishra

Project Guides:

Prof Ajit Salunke

Brief Idea of project: The autonomous mobile robot effectively utilizes the available solar energy for ploughing small fields, gardens etc. Farmers who own these small fields/lands constitute 70% of the agriculture sector. A 14 W capacity solar panel converts the solar radiations into electricity which is stored in a 12 V battery. A cast iron plough is mounted on an aluminium body. The motion of the robot is controlled by Arduino Microcontroller using 3 ultrasonic sensors for obstacle detection. The battery drives 4 DC motors for vehicle movement and one motor for ploughing. The robot can also be controlled remotely by bluetooth, wireless or through SMS.

***Applications*:** With successful implementation of the prototype, it is possible to minimize the use of bullocks and manual labor for ploughing and reduce the dependency of farmers on diesel powered vehicles. The device can save energy and avoid air pollution due to emissions of toxic gases into the atmosphere.

Awards and Participation:

- Featured in The Navhind Times & Gomantak Times.
- Research paper published in Second International conference on recent advances in engineering sciences at M.S. Ramaiah Institute of Technology Banglore / International research in Engineering & technology.

Working Model:

DESIGN AND FABRICATION OF RETRACTABLE BRIDGE

Domain/Area of Interest: Product/Multidisciplinary

Project Members:

Froylan Gracias
Mikhail Estibeiro
Alvan Fernendes
Samson Reberio
Kevin Thomas

Project Guides:

Prof Chetan Gaonkar

Brief Idea of project: The Project showcases a 4 meter long pedestrian bridge that rolls into an octagon. This is an innovative design wherein trusses retract to form an octagon with the help of pneumatic cylinders. These 14 pneumatic cylinders are operated with the help of compressed air. For long and heavy structure hydraulic cylinders can be used. The unique design mechanism makes it possible to support and maintain the balance and position of retractable part of the bridge. It also has a fail-safe mechanism that locks the bridge in case of pneumatic failure and prevents it from free falling. This bridge is an interesting attraction for anyone who likes architecture, engineering and design or who might appreciate the gentle artistry.

***Applications*:** The light weight design makes it possible to carry this bridge on vehicle to use it in emergency situations.

Awards and Participation:

- Received funding of Rs. 110000/- from DST Goa
- Second place at Kshitij 2016
- Featured in The Times of India, Goa edition & The Navhind Times.

Working Model: https://www.youtube.com/watch?v=OjKaJnE--Ts

Design and Development of the Washing System for the Underbody of the Car

Domain/Area of Interest: Product Development/ Multidisciplinary

Project Members:

1. Abhijit Dessai
2. Dheeraj Naik
3. Mukesh Naik
4. Pratish Naik
5. Volney Travasso

Project Guides:

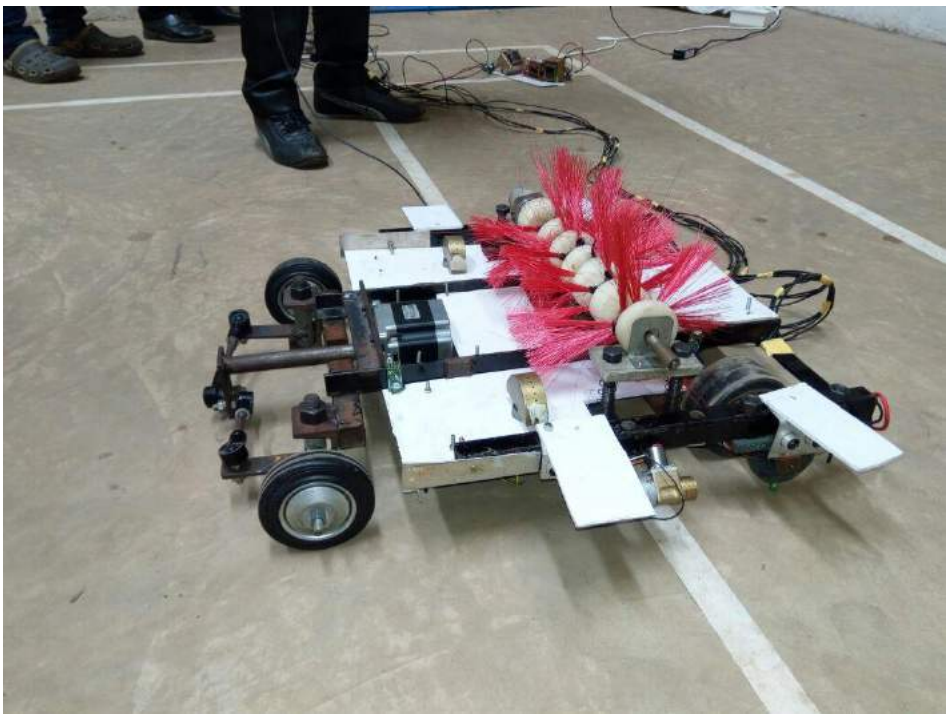
Mr Sachin Turi

Brief Idea of project: The Product has been designed and fabricated to clean the underbody of Hatchback cars within the ground clearance of the vehicle. The system is programmed to get aligned with the width of the car, as per the signals received from IR Proximity Sensors fitted to the system. The action is achieved with the help of a Steering system actuated by a Stepper Motor. The system is self-driven based on a Programmed Arduino Uno, and powered by a DC motor. The cleaning is achieved by rotary motion of a brush powered by a separate set of DC Motors and mounted on a spring base for a varying Ground Clearance. Before activation of brushes, jet of water is sprayed underneath the vehicle with the help of two nozzles fitted in front of the brush system. The full system is mounted on a steel frame and all the actions of the system are controlled by ATMEGA328P microcontroller.

***Applications*:** The product is developed only for Hatchback cars. The Ground Clearance data of Hatchback cars in India is referred to define the maximum and minimum reach of the brush system for cleaning.

Awards and Participation:

- The work was showcased on Clean India Journal & featured in Gomantak Times.



Automated Tile Polishing Robot

Domain/Area of Interest: Automation / Robotics

Project Members:

Eldon Noronha
Isaiah Ferrao
Eufran Rodrigues
Rodvin Rodrigues
Maison Fernandes

Project Guide:

Prof Ajit Salunke

Brief Idea of project: The autonomous robot has been designed and fabricated for polishing of tiles, granite, marble and other floorings. In this device, electricity stored in a battery is used to drive two motors for vehicle movement and one motor for the polishing disk. The polishing disk holds the abrasive material used to grind and polish the tiles. The disk also has provision for holding and easily replacing the abrasives depending on the type of flooring. The motion of the robot is controlled by an Arduino microcontroller which is aided by using 2 Ultrasonic proximity sensors for obstacle avoidance. A universal joint connected to the shaft driving the polishing disk keeps the wheel in constant contact with the surface. The vibration sensor attached to the device determines the duration of polishing. The robot consumes 0.5 HP power and can polish an area of 100 Sq. m in approximately 2 hours for a normal coarse finish.

***Applications*:** Under present scenario tile polishing is a tedious and time consuming process with a high dependency on efficiency of human workers. This device not only helps reduce the dependency on human workers but also reduces the time taken for the entire polishing process. This prototype is also smaller in size and overall makes the entire polishing process more economically viable and if implemented as a product on a larger scale can be a boon to the construction industry and also for domestic use for floor polishing in households.

Awards and Participation:

- Presented at 3rd Biennial International Conference on Nascent Technology in Engineering(ICNTE 2019)
- Featured in the Navhind Times & Clean India Journal.

Working Model:

DESIGN AND FABRICATION OF PNEUMATIC PAPER STAMPING MACHINE

Design and Fabrication of Pneumatic paper stamping machine

Domain/Area of Interest: Product/Multidisciplinary

Project Members:

Aditya D'souza
Chrislee Dias
Jolton D'costa
Linford Dias
Nashlon D'souza

Project Guide:

Prof Pravin Verekar

Brief Idea of project:

The paper stamping is based on principle of metal stamping which is used in the industries. In this case, a rubber stamp is attached to a pneumatic actuator (cylinder) which is driven by stepper motors on an XY table. The envelopes along with the postal stamp are fed to the conveyor belt by friction rollers one after the other. Then the image is captured by a camera and sent to a computer where it is processed in LabVIEW software. In LabVIEW, a previously taken template image of the postal stamp is matched with the stamp on the envelop due to which the stepper motors are activated through a Microcontroller which moves the pneumatic cylinder above the stamp. Once the required position is attained, a solenoid valve gets activated which forces the piston out of the cylinder resulting in stamping action. A rubber stamp is attached to the pneumatic cylinder by a stamp holder. The machine is capable of stamping numerous amount of paper stamps in short amount of time.

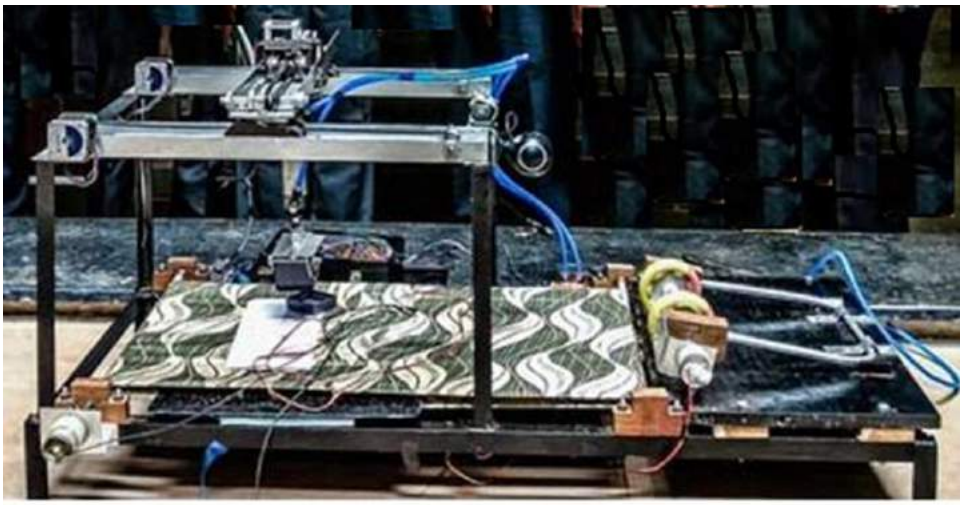
Applications:

Paper stamping in all the offices, institution, banks, and post offices are done manually which is time consuming and laborious . The intensity of the stamp is not uniform. A prototype of an automated pneumatic paper stamping machine has been developed in which stamping is done by a small capacity pneumatic press. This machine can replace the traditional manual stamping.

Awards and Participation:

- Featured in the Navhind Times.

Working Model:



Laterite Stone Dressing Machine

Domain/Area of Interest: Automation

Project Members:

Olencio Zuzarte
Sunny D'mello
Ralston Fernandes
Anish Kharangate
Jonathan Baptista

Project Guide:

Prof Ajit Salunke

Brief Idea of project: The machine provides provisions for various sizes of stone dimensions, eliminates manual labour and minimizes time required for dressing laterite stone. A uniform size of stone per lot can be obtained without sacrificing the surface finish of the laterite stone which can be used for construction applications such as provide vertical and horizontal joints in masonry, exposed masonry, landscaping etc. The prototype if implemented on a commercial scale would be a boon for the Construction Industry.

***Applications*:** The prototype if implemented on a commercial scale would be a boon for the Construction Industry for dressing laterite stone which is presently done manually.

Awards and Participation:

- Featured in The Navhind Times.

Working Model:

LINEARLY VARIABLE - CONTINUOUS TRANSMISSION SYSTEM (LV-CTS)

Domain/Area of Interest: Product Development / Transmission

Project Members:

1. Divyajeet Naik
2. Vivek Kumar
3. Raj Nagzarkar
4. Pranav Savant
5. Sunny D'mello

Project Guides:

Prof. Sachin Turi

Co-Guide: Prof. Avil D'sa

Brief Idea of project: Automobile Industry, over a long period, made use of only manual gearbox solely due to cost and lack of automation. Advancement of technology and automation has seen various companies come up with more fuel efficient and power effective transmission. Nowadays the semi-automatic and automatic has overtaken the manual transmission system. A LINEARLY VARIABLE - CONTINUOUS TRANSMISSION SYSTEM (LV-CTS) is our attempt to potentially eliminate this problem by making use of gears. As the companies attempt to attain higher and higher speeds, LVCTS will help transmit these high speeds at stable rates. LV-CTS is an attempt for designing a system using Epicyclical gear train to attain improved functionality than CONTINUOUSLY VARIABLE TRANSMISSIONS (CVT), Where the planet gears are controlled by an electric motor to attain the different gear ratios. As epicyclical gear box has two inputs i.e. one from the engine to the ring gear and the other from electric motor to the planetary gear set, therefore it has two degrees of freedom. This system also provides with an over-drive system when a reverse feed is given to the planetary system via electric motor.

***Applications*:** Automobile Industry**.** A LINEARLY VARIABLE - CONTINUOUS TRANSMISSION SYSTEM (LV-CTS) is an attempt to potentially eliminate the manual Transmission problem by making use of gears.

Awards and Participation:

- The Project got Funding of 75000 from Goa Shipyard Ltd. The concept has been registered under Goa Innovation Council and is in the process of further Patent development procedure.

REFINING OF USED ENGINE OIL

Domain/Area of Interest: **Automobile**

Project Members:

Mr. Joshua Sapeco

Mr. Senroid Fernandes

Mr. Uddhav Pai

Mr. Satyam Prabhudesai

Mr. Sree Hari Nair

Project Guides:

Asst. Prof. Sharad Shanbhag

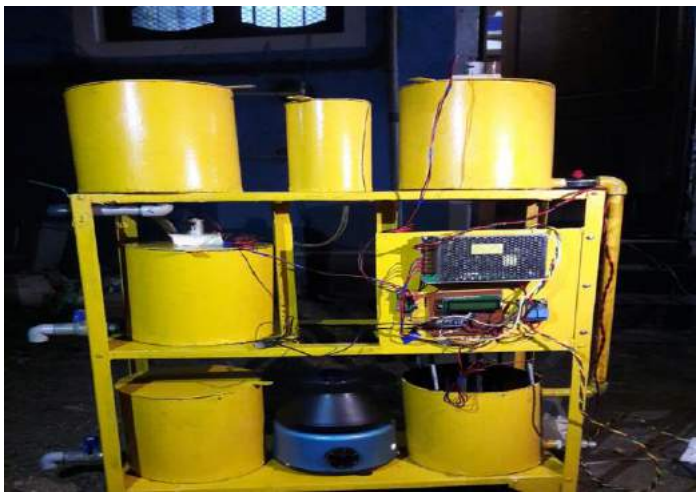
Brief Idea of project: This project addresses recycling of waste engine oils treated using acetic acid. This gives the recycled oil the potential to be reused in car engines after adding the required additives. It is a device that receives used engine oil and refines devalued properties of that oil close to its original valued properties. The processes would include various methods like Pre-treatment, dehydration, supplementation of acetic acid, mixing of kaolinite and blending.

***Applications*:** This research has shown that used engine oil can be recycled by using glacial acetic acid. This method produces base oil comparable to that produced using conventional methods.

Awards and Participation:

- Paper was presented during the International Virtual Conference on "Future Trends in Automotive Technologies, organized by VIT, Chennai on 3rd July 2020.
- Paper was published in International Journal of Engineering Research and Technology. (IJERT) Volume 9, Issue 5, May – 2020

Working Model:



DESIGN AND FABRICATION OF AUTOMATED HEIGHT AND ANGLE MEASURING FIXTURE FOR BLADE MOUNTING BRACKETS OF FANS

(From L to R) Amey Tari , Sairaj Gauns , Prof. Ajit Gaonker, Nithin Rajmohan, Prof. Suraj Marathe , Rajesh Kumar , Suyash Khandeparkar seen with their automation set up.

Domain/Area of Interest: Automation & Process Improvement

Project Members:

Amey Tari

Nithin Rajmohan

Rajesh Kumar

Sairaj Gauns

Suyash Khandeparkar

Project Guide:

Prof Suraj Marathe (Guide)

Brief Idea of project: Blade mounting brackets play a vital role in successful operation of fans. Light weight metal blades if mounted directly onto the rotor, it will not be possible to obtain desired angle or the lift for the blade which invariably determines the output from the fan. Also, the chances for vibrations and blade breaking increases. This in turn leads to an increase in noise during operation. So, to get a rigid joint between the rotor and the blades, the blade holding brackets are used. The lift and the inclination of the blade mounting bracket are the major parameters to be monitored while designing blade brackets. Presently the inspection of blade mounting brackets is done manually by incorporating a vernier height gauge, V-block, and bevel angle protractor. This requires a skilled person to carry out the inspection. It also requires very accurate measurement of the dimensions. Carrying out the inspection manually is time consuming. An extensive research and study have been carried out to overcome these limitations of manual inspection. The device is designed to overcome all the above-mentioned issues associated with the manual mode of inspection. The project explores the field of electromechanical engineering by integrating the concepts of industrial engineering with the aim of reducing the overall measurement and inspection time.

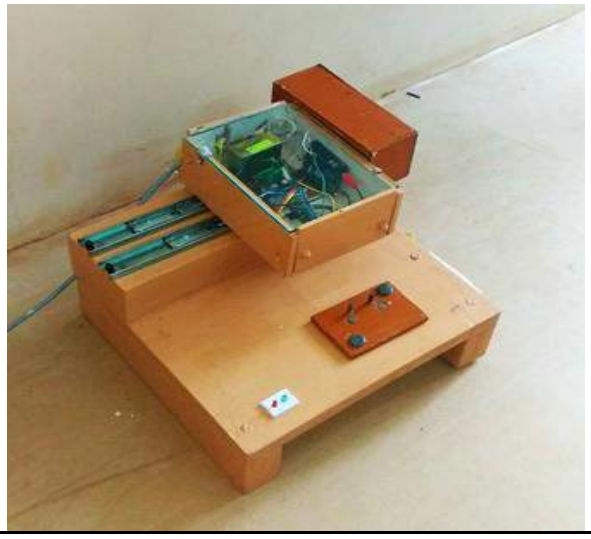
Applications:

The automated height & angle measuring fixture was specifically designed to overcome the challenges that was faced by Sri Om Engineering Works to increase their testing capacity and save labor costs.

Awards and Recognitions:

1. 93% reduction in the cycle time which resulted in a 100% testing of all the components produced.
2. Research paper published at the **International Journal of Engineering Research in Mechanical and Civil Engineering.**
3. First place at "Kshitij 2016"
4. Featured in The Navhind Times.

Working Model:



DESIGN AND FABRICATION OF BEACH SAND CLEANER

Domain/Area of Interest: Product/Cleaning (Swatch Bharat)

Project Members:

Kaygun Pereira
Vallon Dsilva
Mark Ferrao
Selvin Pereira
Akshay Phadte

Project Guides:

Prof Suraj Marathe (Guide)
Prof Tanay Rege (Co-Guide)

Brief Idea of project: In this project the main aim of this machine is to lift the waste debris from the sand and dispose them into the hopper. Due to motor the rake rotates; as the rake rotates it collects the waste debris from the sand. As the machine is placed on the sand, the waste debris on the sand will get lifted by the rake and move it to a conveyor and lift it at upward direction. As the waste reaches upper extreme position it will get dropped in the hopper. The machine will be pulled by a 4 wheel drive vehicle. Hence this will result in the cleaning of beach surface and safe collection of waste debris from the sand.

***Applications*:** This project aims to eliminate and keep the beach sand clean under swatch bharat and thereby reducing time and cost of cleaning.

Awards and Participation:

- Featured in a local newspaper NAVIND TIMES, Gomantak Times and Clean India Journal.
- first place at Kshitij 2019

Working Model:

DESIGN AND FABRICATION OF DISABLED FRIENDLY WHEELCHAIR

Domain/Area of Interest: Product/Multidisciplinary

Project Members:

Deepak Kolur

Saideep Naik

Vinay Naik

Anay Kalghatgi

Prashant Gaonkar

Project Guides:

Prof Swapnil Ramani (Guide)

Prof Ajit Salunke (Co-Guide)

Brief Idea of project: The project deals with Design and Fabrication of disabled friendly wheelchair which helps the disabled and physically challenged people. The currently available wheelchair in the market does not have the facility such as converting wheelchair into seating to sleeping position, automatic bracing system. The available cost of wheelchair is high. We have addressed this issue through our project by designing a new mechanical system to help physically challenged people in standing and sleeping, simple structure which is less power consuming and economical compared to existing product. The disabled person will be able to stand by means of a specially de-signed mechanism and a pneumatic piston, which will provide stability and support. The mobility of the wheelchair will be controlled by high torque dc motor. Motion of the wheelchair is controlled by arduino microcontroller which is operated through joystick.

***Applications*:** The Wheelchair finds application in care of immovable people (people with persistent vegetative state, paraplegia, stroke and spinal cord injuries), where the care requires a lot of time and manpower.

Awards and Participation:

- Featured in top-100 at India international Science Festival and in top-165 in DRDO student project competition (DRUSE)
- Represented Goa University at Inter UGC Anveshan 2019 at Udaipur and Kalpak 2020 at Panaji
- 2nd place at FSIE expo Mumbai 2019
- First place at Kshitij 2019.
- Featured in Gomantak Times, The Navhind Times & Times of India, Goa edition.

Working Model:

Solar Powered Plant Trimming Machine

Domain/Area of Interest: Automation

Project Members:

Mukesh Naik
Bindesh Khandeparkar
Kshtij Naik
Savio Pereira
Swapnil Karapurkar

Project Guides:

Prof. Ajit Salunke (Guide)
Prof. Swapnil Ramani (Co-Guide)

Brief Idea of project: The project deals with design and fabrication of a prototype of plant trimming machine operated by solar power. It uses a 1.5 HP motor and a 12 V battery which is charged by a solar panel to run the prototype. Power from the battery is used to drive the cutting blades. The cutting frame is assembled with the help of mechanical links .Different shapes can be achieved with the help of the cutting blades by using various attachments. The cutting action is carried out using horizontal blades mounted on high speed motors fast enough to cut the plants and shrubs. The cutting frame rotates at 15 RPM and the cutting blades rotate at a very high rpm to trim and give the required shape to the plants. Automation of the project is achieved with the help of the Arduino microcontroller and can also be operated manually with the help of switches. The prototype is easy and simple to use, reduces manual labor and constant supervision is not required. It is relatively faster than the existing hand held equipment technique and can be easily assembled and disassembled on site.

***Applications*:** If implemented as a product on a larger scale can be beneficial to maintenance of gardens in public space, college campuses, hospitals, resorts etc. It is also much more economically viable option compared to the other plant trimming machine and also environment friendly since it makes use of Solar energy.

Awards and Participation:

- Featured in Gomantak Times.

Working Model:

DESIGN AND FABRICATION OF HOPPER SYSTEM FOR CRAYON LABELING MACHINE

Domain/Area of Interest: Product/Multidisciplinary

Project Members:

SANDEEP KOLAMBKAR

SANGHARSH NAIK

SAURAV NAIK

VYAS NAIK

VIKAS VELIP

Project Guides:

Prof Chetan Gaonkar

Brief Idea of project: The project deals with Design and Fabrication of hopper system for crayon labeling machine which is used in industry to automate the process of labeling the crayons. This pneumatically operated hopper system is an advanced design of conventional hoppers with pneumatic cylinders controlled by direction control valves the Pneumatic cylinders operate at a pressure between (1-10bars) the fast action of the cylinders helps in improving process speed.
The system consist of pneumatic cylinders which are controlled by 5/2 direction control valves with solenoid actuation the automation the system is done using Arduino which is programmed as per the required sequence of operation the Arduino send the signal to the relay switch to open or close the valves all together they help in releasing one object at a time in addition the guide rail is adjustable to adopt different sizes.

***Applications*:** This kind of hopper system is that it can adopt to different kind of cylindrical objects such as crayons, cylindrical bottles, test tubes etc the guide rail provided can be adjusted as per diameter of the object and if necessary small changes in design and program can be made.

Awards and Participation:

1. The project was supported by industry, Faber-Castell Pvt Ltd., Corlim, Goa

Working Model:

Design and Development of a Platform with Stabilization and Control Mechanism

Domain/Area of Interest: Product/Multidisciplinary/Automation

Project Members:

Yatish Danageri
Manjunath Alve
Harshad Kawlekar
Nolan Pires
Siddhanth Kalagutkar

Project Guides:

Prof Ramnath Prabhu Bam

Brief Idea of project: Due to the bad road conditions it is often difficult for passengers to have comfortable drive on the Indian roads. Many of the times the bad road conditions affect the health of the passengers in the long run. The same difficulty and the problem get aggravated when it comes to medical ambulance. The patient being carried on the ambulance experiences the road excitations which can have adverse effect on the condition of the patient. This problem can be solved by developing a device which can cancel and dampen out these vibrations and stabilize itself at the same time. This study mainly aimed at developing such a platform which will cancel and dampen out these excitations with the help of linear actuators. It will be controlled by a microcontroller which will get its inputs from set of sensors. This data from the sensors in conjunction with the feedback from the actuators is processed. Then the output signals are sent to the actuators which will result in stabilization of the platform. The model is tested for different excitations including random excitations and the stability of the platform is observed.

***Applications*:** The project was carried out mainly targeting the Ambulance application.

Awards and Participation:

- Second Place at Kshitij 2019.
- Presented the paper on the work at **National E-Conference on Progresses and Research in Mechanical Engineering** (***PRIME-2020)*** **31st July, 2020** held at SDM College of Engineering and Technology, Dharwad.

Working Model:

AUTOMATED WELD SLAG CLEANING MACHINE

Domain/Area of Interest: Product/Manufacturing

Project Members:

Josan Da Costa

Denis Palmeira

Vibhav Pai

Aadesh Verenkar

Joel Fernandes

Sairaj Sinari

Project Guides:

Prof Sanjeel Naik (Guide)

Brief Idea of project: Welding is a fabrication or sculptural process that joins materials, usually metals, by causing fusion which is distinct from lower temperature metal joining techniques such as soldering and brazing, which do not melt the base metal. The slag produced during welding protects the puddle from atmospheric contamination. The slag from the weld is removed while sending the job for the next operation, but it is a tedious process to clean the flux manually and a huge amount of skilled labour is also needed. An automated weld slag cleaning machine would reduce the time required for slag removal for lengthy plates, at a low cost and without much skilled labour. The main disadvantage of traditional slag removal processes are that they are time consuming, inefficient and destructive at times. The main objectives of the creating the machine was

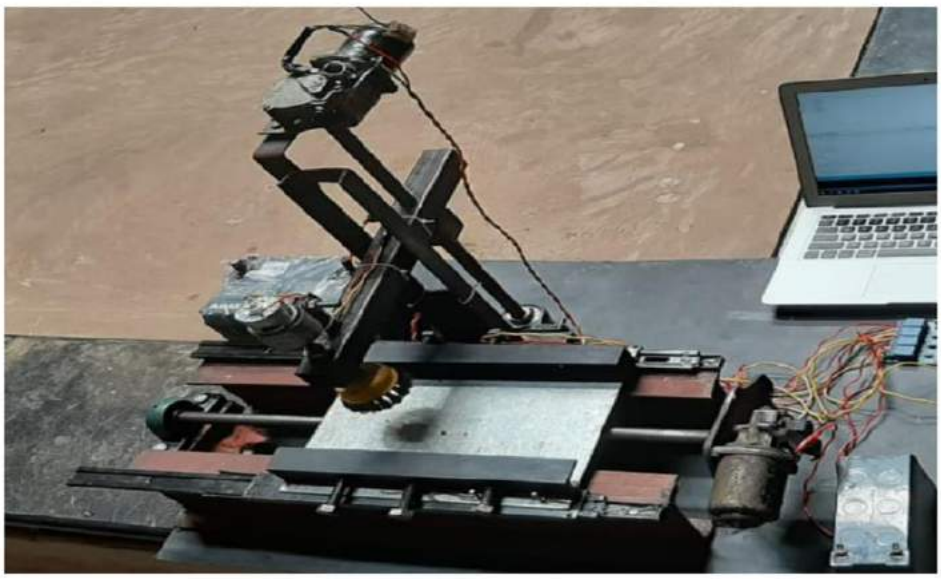
a. To design a low-cost weld slag cleaning machine.
b. To eliminate manual work required during slag removal.
c. To make the machine portable and compact.
d. To reduce the time required for slag removal for lengthy plates.

***Applications*:** The machine finds applications in cleaning slags of long welded plates in construction sites, or in manufacturing industries.
Since it involves very less human interaction it can also find applications in slag removal during automated welding of components especially plates.

Awards and Participation:

1. Participated in Kshitij 2019.
2. Presented Technical paper in National E-Conference PRIME 2020 at SDMCET, Dharwad.

Working Model:



PRODUCTION AND CHARACTERIZATION OF FUEL DERIVED FROM PLASTIC

Domain/Area of Interest: **Thermal**

Project Members:

Mr.Brijesh Prakash Gajinkar
Mr.Shubham Nandan Hande
Mr.Sushmay Shivanand Madkaikar
Mr.Nagesh Vishwanath Kochkar
Mr.Sidhant Rajaram Naik

Project Guides:

Asst. Prof. Sharad Shanbhag

Brief Idea of project: Plastics have become the way in our lives and now pose tremendous threat to environment. We have found innovative way to reduce this plastic pollution by converting plastic into value added products. Waste plastics were used for the pyrolysis process to get fuel oil that has physical properties like petrol and diesel.

Applications:

Conversion of plastics into fuel solves two issues, one of the large plastic seas, and the other of the fuel shortage. Only as long as these waste plastics last these dual benefits, will exist, but will surely provide a strong platform for building a sustainable, clean and green future.

Awards and Participation:

- This Project secured 1st place during the Kshitij- 2019 project exhibition.

Working Model:

DESIGN AND FABRICATION OF GLASS POWDERING AND GRADING MACHINE FOR VARIOUS INDUSTRIAL APPLICATIONS

Domain/Area of Interest: Product/Waste Management

Project Members:

Shivdas Gaad

Rajat Halarnekar

Ranjeet Naik

Rajat Naik

Sahil Naik

Project Guide:

Prof Suraj Marathe

Brief Idea of project: The project involves Design and Fabrication of glass powdering machine, such that it can crush any waste glass including tubelight and successfully segregate the crushed glass according to its size. The currently available machine in the market do not have the feature of controlling the crushed glass size while the prototype built by us can be adjusted to do so, also our machine is affordable and portable as compared to the ones available in the market.

The built prototype is able to crush waste bottles, tubelight, and other waste glass into fine powder. The machine setting can be changed to give out a specific size of crushed glass thereby catering to various requirements as per applications. In addition, the machine is able to crush and separate out the paper labels from the glass bottles.

***Applications*:** The Machine finds application in the field of waste treatment plants i.e. to turn the waste glass into powder and to use this for various applications. The crushed glass can be used to partially substitute the sand/ aggregate used in construction.

Awards and Participation:

- Third place at Kshitij 2019 organized by DBCE
- Third place at Aarush 2019 organized by PCCE
- Represented DBCE at KALPAK project exhibition organized by Goa University 2020
- Second place at waste management hackathon 2020 organized at DBCE.
- Featured in Times of India, Goa edition.

Design and Development of System for the Extraction of water from Air by using Vapor Compression cycle

Domain/Area of Interest: Product/Multidisciplinary

Project Members:

Noah Gomes

Gerhard Lourenco

Johan Godinho

Hubert De Barros

Anand Raikar

Project Guides:

Prof Gaurish M Samant

Brief Idea of project: There is a water crisis today, and it is directly or indirectly affecting us. Today, one in every 10 human beings has no access to clean water. This is due to various reasons such as droughts, lack of natural supply of water, inadequate infrastructure, and contaminated water, etc. With the increasing population and rising global warming, the water crises are becoming a huge danger to our ecosystem. Atmospheric Water Generator (AWG) is a device that collects humidity available in our atmosphere utilizing condensation and is like condensation happening around a glass filled with cold water. The collected condensed water is purified using purification cartridges and then mineralized before dispensing it for drinking. The present prototype model generates **24 liters** a day and the cost of this prototype is approximately **Rs. 65000/-**

***Applications*:** The project was carried out mainly targeting the potable water

Awards and Participation:

- Participated in Project Competition organized by Goa Chamber of commerce and Industry 2020
- Selected as a potential Project by IIIC

Working Model: