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ZEAL POLYTECHNIC

NARHE, PUNE

NAV NIRMITI

STUDENT PROJECT BOOKLET

**VOLUME
NO. 1**

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**MECAHNICAL ENGINEERING
DEPARTMENT**



ABOUT INSTITUTE ZEAL POLYTECHNIC, NARHE, PUNE

Zeal Education Society was established in 1996 with the vision to offer education with a difference, the expert guidance of Hon. Shri. S.M. Katkar, a distinguished industrialist. ZES hosts eight institutes that provide quality education to students from pre-primary to Ph.D. courses. Zeal Polytechnic started in 2008 and offers Diploma Courses in Mechanical Engineering, Civil Engineering, Computer Engineering, Electronics and Telecommunication Engineering & Electrical Engineering.

The institute aims at providing the students with excellent Infrastructure, state of the art facilities, well-equipped laboratories and a strong force of faculty members. This has resulted in incredible performance of the students continually throughout the years. Recently, our Founder director has been conferred with the 'Icon of Education' award by Lokmat media group in the presence of Hon. Smt. Smriti Irani, Former HRD Minister, Government of India from Hon. Shri. Vinod Tawde, former Technical Education Minister, Maharashtra State.

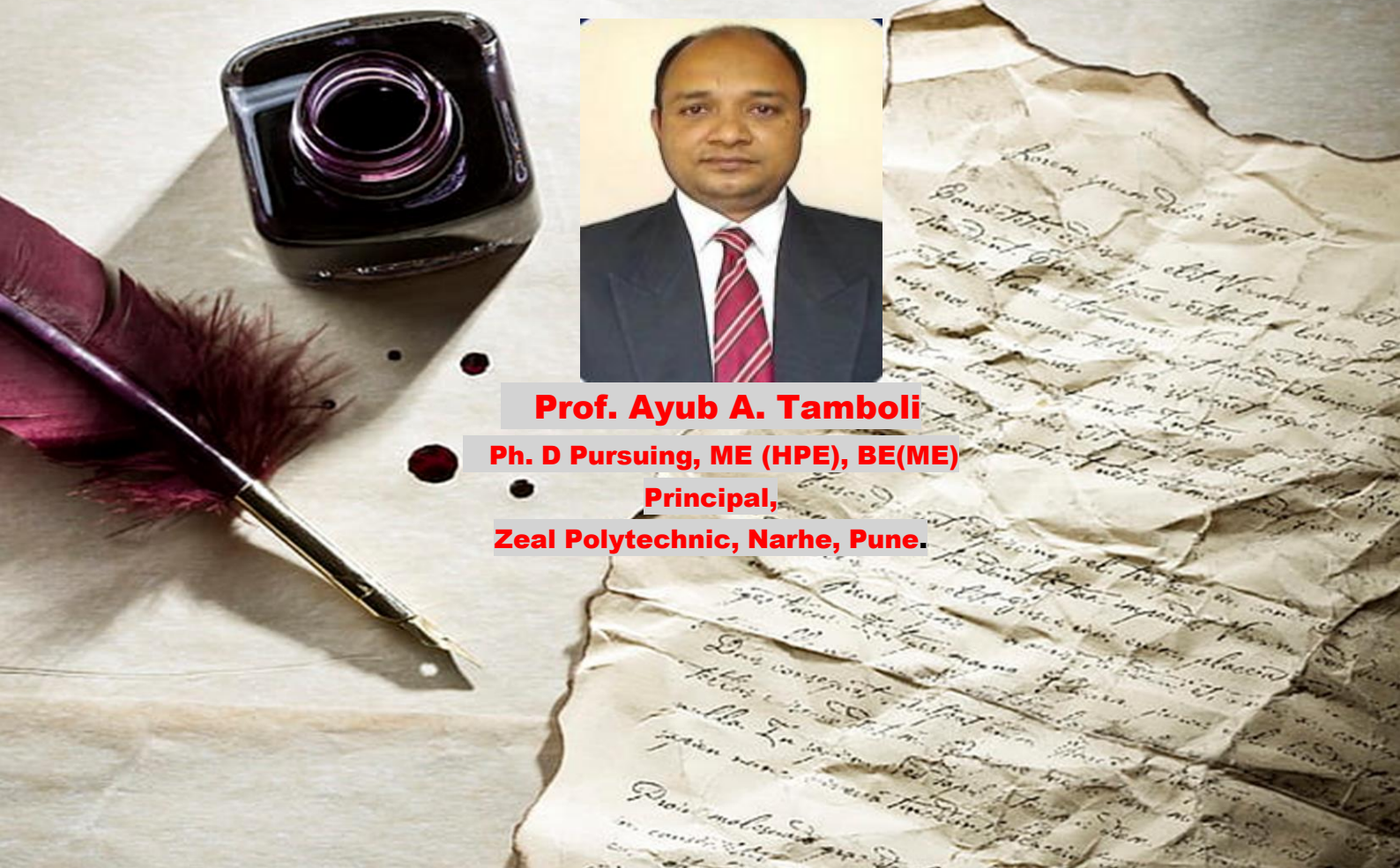
Principal's Message

Prof. Ayub A. Tamboli

I am very happy to note that the department of Mechanical Engineering of Zeal Polytechnic is releasing its NAVNIRMITI, a student project booklet enumerating the various emerging projects of the students. I take immense pride in acknowledging the outstanding academic achievements of our diploma mechanical engineering students. Your commitment to excellence and the pursuit of knowledge has been commendable. Your academic journey is a testament to the dedication and hard work you have invested in your education. Polytechnic education provides the knowledge and skills required to help revolutionize the world in which we live. The students and faculty of department are proactive in taking initiatives in technical, cultural and social events. I hope this NAVNIRMITI a student project booklet will serve the purpose of reflecting all research activities of this department and it will inspire others to do their best. I express my gratitude to each one of you for your contributions to the success of our diploma mechanical engineering program. Together, let us continue to strive for excellence and innovation I congratulate all the students who have put their efforts in bringing this great issue of NAVNIRMITI, a student project booklet and also appreciate HOD and all faculty members for motivating the students towards this fulfillment. I wish each one of them in the department success in all their endeavors.



Prof. Ayub A. Tamboli
Ph. D Pursuing, ME (HPE), BE(ME)
Principal,
Zeal Polytechnic, Narhe, Pune.



HOD Message

Prof. Rameshwar Khorane

The Department was established as Dnyanganga Polytechnic in 2008. It offers a diploma in mechanical engineering and can accommodate 150 students we function with the vision that the Department should get recognized as an innovative and leading Mechanical department in Pune region and afar. The department aims at offering students with the high-quality education clubbed with practical exposure that empowers them with the ability to aid the society by their services in the future. The Department aims at making superior diploma engineering professionals through academic brilliance and excellent education. The syllabus in Mechanical Engineering is steered with an extraordinary approach that helps students to meet the modern requirements of industries. To cater to the current advancement in technology, new subjects such as CAD / CAM and Automation, alternative Energy Resources, Material Handling System are also conducted using modernized laboratories and the required infrastructure. A team of well qualified and experienced faculty members forms the backbone of the Department. This team is determined to empower students with sound academic knowledge and practical experience which in turn makes the students ready to face the industry challenges.



Prof. Rameshwar Khorane

HOD,

B.E. (Production)

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Dear Readers,

In the vibrant tapestry of our academic journey during the 2020-21, the NAVNIRMITY project booklet has been a transformative odyssey. As students passionately engaged in ground breaking research, we found ourselves at the crossroads of curiosity and innovation. This project booklet serves as a testament to our collective pursuit of knowledge and the unyielding dedication that fuelled our academic endeavours. Each student's contribution represents a unique thread in the intricate fabric of NAVNIRMITY, weaving together diverse perspectives and disciplines. Through late-night brainstorming sessions, countless hours in the lab, and the shared excitement of discovery, we forged bonds that extended beyond the realm of academia. The challenges we faced became stepping stones, and the solutions we unearthed stand as markers of our resilience and creativity. This booklet encapsulates not just our academic achievements, but the spirit of collaboration, curiosity, and determination that defines our collective journey through the NAVNIRMITY project. May these pages inspire future students to embrace the joy of exploration and the limitless possibilities that lie within the realm of research.

Warm Regards,

The Editorial Team

Mechanical Engineering Students



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CAPSTONE PROJECT EXECUTION & REPORT WRITING

LIST OF PROJECTS FOR A.Y. : 2020-21

S. N.	Group No.	Name of Students	Project Title	Guide Name
1	1	1) Kulkarni Chinmay	Faulty Product Detection & Separation Machine	Prof. R.H. Tike
2		2) Joshi Omkar		
3		3) Poman Prathmesh		
4		4) Devkate Abhijit		
5	2	1) Pedde Mukesh Shivraj	Design Fabrication of Hill Assist System Using Ratchet & Pawl Mechanism.	Prof. T. Y. Gadade
6		2) Shinde Ganesh Balaji		
7		3) Sonkar Sahil Shankar		
8		4) Singh Anmol Shyam		
9	3	1) Salunke Anup Jagannath	Study of Rice Thresher Machine Using Bicycle.	Prof. M. M. Deoghare
10		2) Dhabale Omkar Prakash		
11		3) Pawa Hemant Prashant		
12		4) Takale Pankaj Ganesh		
13	4	1) Balkawade Akshay Dattatray	Motorized Hydraulic Jack.	Prof. R. S. Khorane
14		2) Sangodkar Atharva Dhananjay		
15	5	1) Mahagaonkar Aasawari Madhukar	Reciprocating Air Compressor for emergency in Heavy duty Vehicles.	Prof. R.H. Tike
16		2) Yadav Omkar Nilesh		
17		3) Taslim M. D.		
18		4) Kachare Vishal Balu		
19	6	1) Darwatkar Rohit Ramchandra	Modifying Existing Design of Small Hand Lever Operated Plastic Injection Moulding	Prof. S. R. Kulkarni
20		2) Gunbhairat Siddhi Vishwas		
21		3) Duddoo Parth Prashant		
22		4) Shinde Aditi Ashish		
23	7	1) Kuril Abhishek Shivdas	Design & Manufacturing of Roller Burnishing Tool.	Prof. T. Y. Gadade
24		2) Deshmukh Gayatri Rajesh		
25		3) Jadhav Akhilesh Pradeep .		
26		4) Katote Prabhajan Loknath		
27	8	1) Katurde Suryakant Dilip	Design & Fabrication of Staircase Climbing Trolley.	Prof. B. P. Shinde
28		2) Kunjir Aditya Hanumant		
29		3) Taware Omkar Padmakar		
30		4) Zitre Shubhankar Laxman		

31	9	1) Yadav Shrikant Ashok	Design & Manufacturing Broom Brushing Automatically Machine.	Prof. S. S Suryavanshi
32		2) Gaikwad Prashant Suresh		
33		3) Sangle Vikrant Prashant		
34		4) Soratkar Rakesh Ramesh		
35	10	1) Burte Rutvik Mahendra	Solar Air Heater.	Prof. M. M. Deoghare
36		2) Chavan Siddharth Shivaji		
37		3) Shinde Tejas Dashrath		
38		4) Zade Pritesh Prasad		
39	11	1) Dolare Aniket Suryakant	Pneumatic Wood Cutting Machine By Using Hacksaw Blade.	Prof. E. S. Mehta
40		2) Ghadi Darshan Krushnaji		
41		3) Nalge Gaurav Ravannath		
42		4) Deshmukh Purshottam Ramraja		
43	12	1) Satpute Swapnil Ramesh	Power Less Auto Gate.	Prof. M. M. Deoghare
44		2) Kangare Vishwas Popat		
45		3) Sonwane Vishal Malik		
46		4) Uikey Rajesh Pramod		
47	13	1) Mate Neeraj Rajendra	Design Of Arm Mounted Hammer Drill Machine For Accurate Drilling.	Prof. A. C. Dhawale
48		2) Dafedar Irfan		
49		3) Goud Rohit		
50		4) Kadam Amulaya		
51	14	1) Pathak Pushkar Sunil	Rough Terrain 3 Wheel Electric Bike.	Prof. S. J. Shrivastava
52		2) Pawar Prajwal Manoj		
53		3) Devkar Rahul Jalinder		
54		4) Ohal Yash Kachor		
55	15	1) Agale Nikhil	Ultra-Small Water Power Generator.	Prof. S.S. Suryavanshi
56		2) Jadhav Omkar		
57		3) Landge Mahendra		
58		4) Sakunde Shubham		
59	16	1) Saralkar Vedant	Chainless Cycle.	Prof. V.D. Sakpal
60		2) Kumbhar Soham		
61		3) Kopade Dasharath		
62		4) Patil Hrutvij		
63		5) Madhukar Akshay		
64	17	1) Gurav Sneha	Electric Wheelchair.	Prof. V. S. Kshirsagar
65		2) Bendre Pushkar		
66		3) Kamble Vikas		
67		4) Pawar Omkar		
68	18	1) Bhadale Deep Ashok	Double Wheel Flour Mill Machine.	Prof. S.S. Suryavanshi
69		2) Kongari Kunal Ganesh		
70		3) Gawade Pratik Baban		
71		4) Narune Rushikesh Yuvraj		
72	19	1) Govekar Vivek Tanaji	Automatic MotorBike Stand Slider.	Prof. V.D. Sakpal
73		2) Chithale Mahesh Dilip		
74		3) Jadhav Suprit Sanjay		
75		4) Tamboli Riyaj Bandulal		

76	20	1) More Pawankumar Sandip	Eco Friendly Road Footpath Cleaner.	Prof. M. M. Deoghare
77		2) Shinde Vishwajeet Hemant		
78		3) Kumbhar Jaydeep Jalindhar		
79		4) Waje Shubham Chandrakant		
80	21	1) Shinde Akash Suhas	The Study on Design of Agriculture Cutter Using 4 Bar Mechanism.	Prof. A. C. Dhawale
81		2) Shinde Prasad Ramdas		
82		3) Sogam Ganesh Sanjay		
83		4) Sutar Vishal Shrikant		
84	22	1) Kerkar Raghavendra	Electrical Cylinder.	Prof. R. S. Khorane
85		2) Deore Chaitanya		
86		3) Durgad Shruti		
87		4) Ghanate Adarsh		
88	23	1) Jangid Suresh Prempakash	Design & Fabrication of Mechanical Footstep Power Generator.	Prof. A. N. Wakure
89		2) Kamble Rohit Navnath		
90	24	1) Badade Sahil Sameer	Scissor Lift With Lead Screw.	Prof. N. N. Kokare
91		2) Ballal Sanidhya Prashant		
92		3) Dhanne Chaitanya kapil		
93		4) Veer Dhiraj Anant		
94	25	1) Gorad Saurav Gorakshanath	Sieving Machine.	Prof. K. V. Sawant
95		2) Yenpure Siddharth Ganesh		
96		3) Madke Sahil Sambhaji		
97		4) Karanjkar Yash Santosh		
98	26	1) Kadu Suyash Sunil	Hybrid Vertical Axis Wind Turbine.	Prof. R. H. Tike
99		2) Zirpe Mahesh Narayan		
100		3) Yadav Sanket Kiran		
101		4) Andure Vinit Deepak		
102	27	1) Kadam Suyash Sanjay	Gearless Power Transmission.	Prof. B. P. Shinde
103		2) Jagdale Kalpesh Ramchandra		
104		3) Kamble Omkar Arvind		
105		4) Hinge Kiran Kalyan		
106	28	1) More Pratapsinh Ramesh	Tip dispensing unit for ARC welding Robot	Prof. B. P. Shinde
107		2) Lohar Prashant Dnyaneshwar		
108		3) Jadhav Purshottam Ashok		
109		4) Kale Rugved		
110	29	1) Yelgude Sachin Navnath	Design & Manufacturing of Cam Operated Spring less valve for IC Engine	Prof. V. S. Kshirsagar
111		2) Gaikwad Vaibhav Haribhau		
112		3) Damkondwar Mudgal Pramod		
113		4) Gogawale Vikrant Chandrakant		
114	30	1) Ingale Sambhaji Ramesh	Box Shifter Link Mechanism	Prof. V. S. Kshirsagar
115		2) Dalvi Shubham Harishchandra		
116		3) Nair Ajay Rupesh		
117		4) Paygude Ajinkya Ram		
118	31	1) Adsul Saurabh Maruti	Agriculture Robot Project.	Prof. S. J. Shrivastava
119		2) Adsul Sujit Shivaji		
120		3) Machale Shivam Somnath		
121		4) Yaladagi Rizwan Husen		

122	32	1) Alawane Vaibhav Vishwanath	Portable Spot Welding Machine	Prof. T. Y. Gadade
123		2) Paralkar Sushil Baliram		
124		3) Gole Siddhesh Pandurang		
125		4) Bhairat Shubham Nitin		
126	33	1) Naik Kiran Rajan	Automatic Reverse Braking System	Prof. E. S. Mehta
127		2) Ghadage Suraj Mahadev		
128		3) Bhagwat Shrinath Vijay		
129		4) Kakani Yash Jagdish		
130	34	1) Ubhe Atharva Prashant	Springless Car Suspension Using Bevel Gears	Prof. A. N. Wakure
131		2) Zende Shreyas Anand		
132		3) Kulkarni Shrikar Pravin		
133		4) Gujar Vikas Kaluram		
134		5) Chavan Prasad Raju		
135	35	1) Chavan Siddharth Shivaji	Solar Dryer	Prof. M. M. Deoghare
136		2) Zade Pritesh Prasad		
137		3) Burte Rutvik Mahendra		
138		4) Shinde Tejas Dashrath		
139	36	1) Chandanshive Abhishek	Affordable Mini Cooler	Prof. A. N. Wakure
140		2) Gaikwad Aniket		
141		3) Ahire Ashutosh		
142		4) Mohite Sweekar		
143	37	1) Singh Amit Ranjeet	Design & Fabrication Of Onion Cutting Machine	Prof. A. N. Wakure
144		2) Dhade Gaurav Ankush		
145		3) Hagwane Atharva Sunil		
146		4) Vedpathak Anand Dilip		
147	38	1) Kulkarni Prathamesh Manoj	Automatic Coil Winding Machine	Prof. R. S. Khorane
148		2) Kalbate Jayesh Anant		
149		3) Ilamkar Ashik Dilip		
150		4) Pardeshi Akshaykumar Balasaheb		
151		5) Manhore Pradip Vishwasrao		
152	39	1) Doiphode Rohit Dhanaji	Design and Fabrication of Pneumatic Cutter	Prof. K. V. Sawant
153		2) Desai Virendra Vijay		
154		3) Kadche Rahul Chandrakant		
155		4) Gore Nikhil Ramhari		
156	40	1) Sapkal Onkar	Automated Solar Grass Cutter	Prof. R. S. Khorane
157		2) Parmekar Digvijay		
158		3) Saste Siddhant		
159		4) Hangirkar Prathamesh		
160	41	1) Joshi Vishal Balkrishan	PLC Based 7 tank Process	Prof. R. S. Khorane
161		2) Manval Nandakumar Naresh		
162		3) Rajguru Rama Chandrakant		
163		4) Gaikwad Sanket Waman		

164	42	1) Jadhav Harshwardhan Rahul	Hybrid Wind Solar Energy System	Prof. R.H. Tike
165		2) Jadhav Mandar Balaso		
166		3) Kadam Chetan Raju		
167		4) Yewale Rahul Dattatray		
168	43	1) Dhawade Swapnil Laxman	Mini Cutting Tool	Prof. S.R. Kulkarni
169		2) Donhe Rohan Shankar		
170		3) Alane Yogesh Pandharinath		
171		4) Khade Parimal Namdeo		
172	44	1) Maske Sanket Suresh	Improving efficiency by Refurbishing of Pelton wheel experimental setup	Prof. V.D. Sakapal
173		2) Tupe Shivnath Gopinath		
174		3) Yeole Saurabh Rajendra		
175		4) Lendave Vivek Siddheshwar		
176	45	1) Thopate Akash Sandeep	Pneumatic Car	Prof. E. S. Mehta
177		2) Vairal Anand Sanjay		
178		3) Kazi Ajim Laikahamad		
179		4) Gavhad Vikas Kailas		



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PROJECT TITLE: - FAULTY PRODUCT DETECTION & SEPARATION MACHINE.


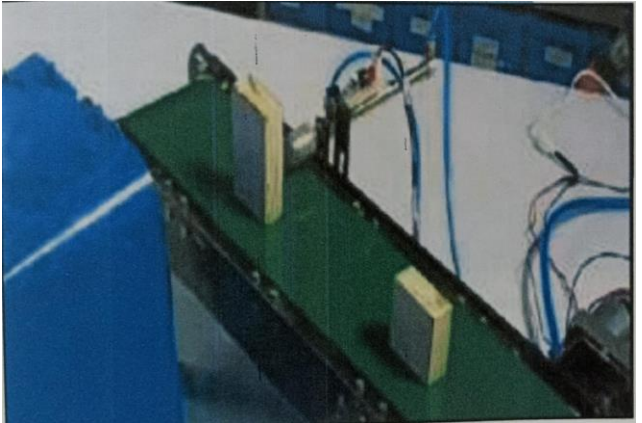
Abstract:-

Wireless Sensor Networks (WSNs) have become a new information collection and monitoring solution for a variety of applications. Faults occurring to sensor nodes are common due to the sensor device itself and the unfavorable environmental conditions where the sensor nodes are deployed. In order to ensure the network quality of service it is necessary for the WSN to be able to detect the faults and take necessary actions to avoid further degradation of the network or the system.

This paper presents a survey of various fault models developed for fault detection and diagnosis. We discussed various fault detection techniques mainly focused on the areas of cooling, temperature and sensor readings respectively. We also discussed the diagnosis techniques required for the recovery of the fault in the network.

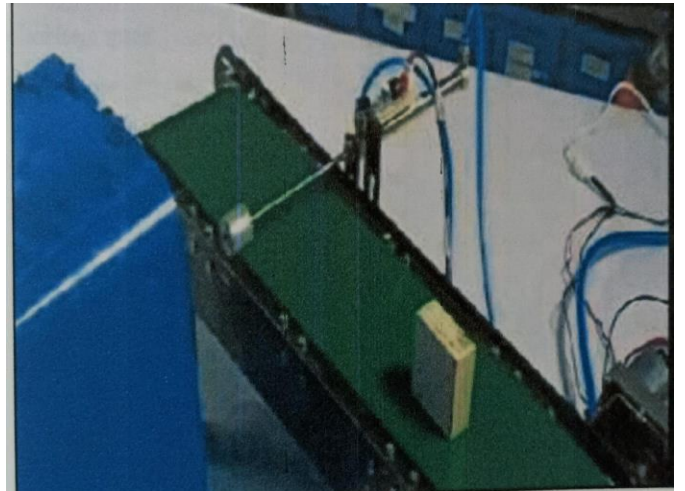
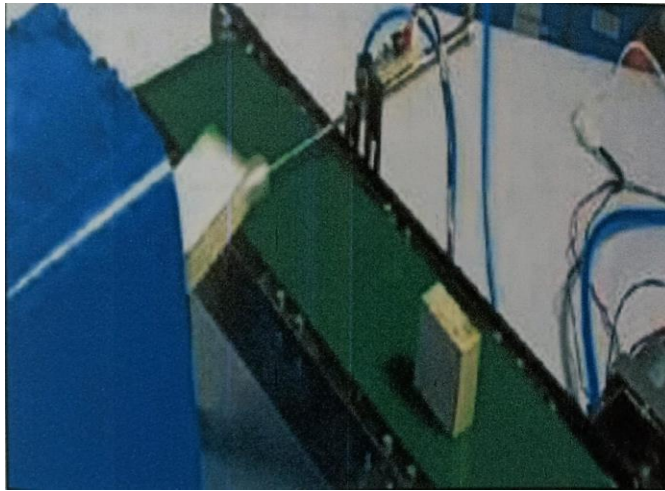
In this project, the wireless networking system is used in the form of sensors for the purpose to find out the variation in the dimensions of the product. These variations are calculated by using Ultrasonic Distance Sensor and the data has been calculated or diagnosis has been done by using Adriano. The infrared proximity sensor is used to detect the exact location of metal products. Also a pneumatic actuator helps for the sorting of faulty products.

Project Photo :-

	
Process Start with the Object	Getting Information about Faulty Product



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Excitation of Pneumatic Actuator

Shot to the faulty Product & moved to Trash box

Name of Students :-

- 1) Kulkarni Chinmay
- 2) Joshi Omkar
- 3) Poman Prathmesh
- 4) Devkate Abhijit

Guide Name :- Prof. R.H. Tike

PROJECT TITLE: - DESIGN FABRICATION OF HILL ASSIST SYSTEM USING RATCHET & PAWL MECHANISM.

Abstract :-

In this project work the design and construction of a model of automatic braking System for vehicles in hill stations is to be developed. The mechanism has been developed to stop the vehicle from rolling backward when the vehicle is moving in the hill roads.

This construction made of two phases in the first designs of ratchet and pawl mechanism, frame, shaft, etc. is done and in second sensor selection and interference is done. Ratchet and pawl mechanism has been fabricated and assembled with a sensor interface tested. The proposed

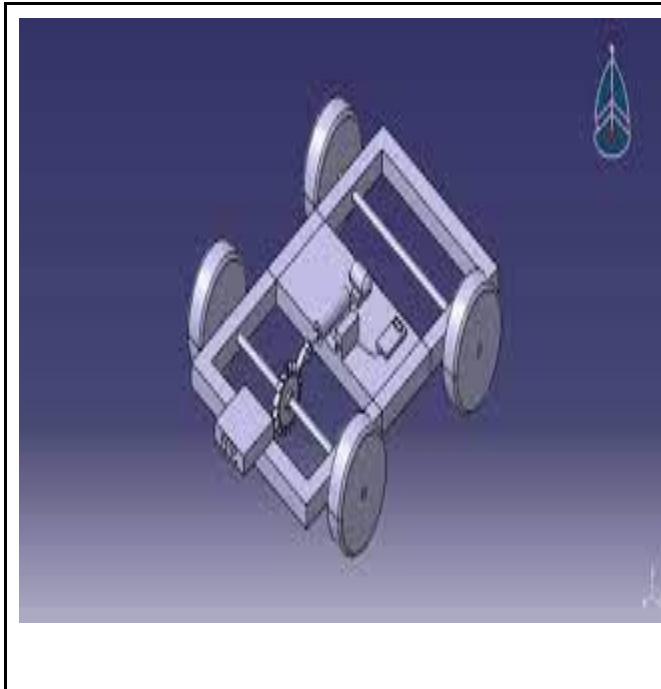


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mechanism is to lock reverse brakes using ratchet gear. By reverse locking the differential is disengaged from the axle. Thus the power is directly transmitted to the axle and hence to the wheels.

Project Photo :-



- Name of Students :-**
- 1) Pedde Mukesh Shivraj
 - 2) Shinde Ganesh Balaji
 - 3) Sonkar Sahil Shankar
 - 4) Singh Anmol Shyam

Guide Name :- Prof. T. Y. Gadade



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PROJECT TITLE: - STUDY OF RICE THRESHER MACHINE USING BICYCLE.

Abstract:-

The main objective of this project was to design and fabricate a Rice thresher Machine for threshing, separating, and cleaning rice paddies. The major components of the machine include threshing, separation and cleaning units. Threshing operation is achieved by rotational motion of a cylinder fitted with beater spikes above the stationary grid which results in the removal of paddies from bulk straws. After being beaten out, the grains fall into the cleaning unit which consists of a sieve that undergoes a reciprocating motion. The machine is simple, less bulky and the ergonomic consideration in the design allows comfortable use and can easily be operated by either male or female. The designed and fabricated thresher machine fitted with winnowing equipment substantially reduces human drudgery in threshing at an affordable cost and also reduces the time used for threshing operation on small and medium scale farms.

Project Photo :-



Name of Students :-

- 1) Salunke Anup Jagannath
- 2) Dhabale Omkar Prakash



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- 3) Pawa Hemant Prashant
- 4) Takale Pankaj Ganesh

Guide Name :- Prof. M. M. Deoghare

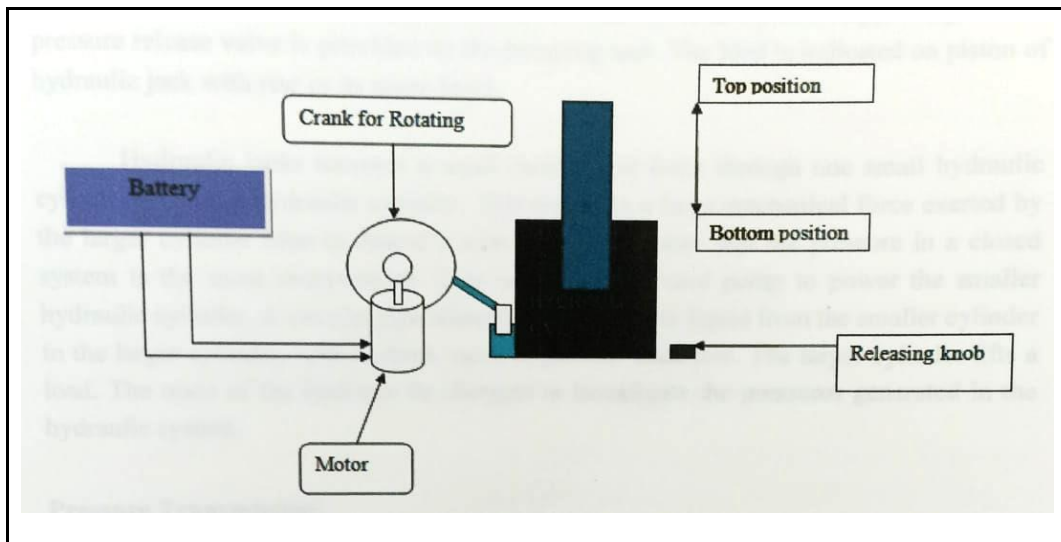
PROJECT TITLE: - MOTORIZED HYDRAULIC JACK.

Abstract:-

This project work titled "MOTORIZED HYDRAULIC JACK" has been conceived having studied the difficulty in lifting any type of light vehicle. Our survey in the regard in several automobile garages, revealed the facts that mostly some difficult methods were adopted in lifting the vehicles for reconditioning.

Now the project has mainly concentrated on this difficulty, and hence a suitable electronic control unit has been designed. Such that the vehicles can be lifted from the floor land without application of any impact force. By pressing the button in the dashboard, the electronic control unit activates the hydraulic jack automatically.

The fabrication part of it has been considered almost the case for its simplicity and economy, such that this can be accommodated as one of the essential tools on automobile garages.



Project Photo :-



Name of Students :-

- 1) Balkawade Akshay Dattatray
- 2) Sangodkar Atharva Dhananjay

Guide Name :- Prof. R. S. Khorane

PROJECT TITLE: - RECIPROCATING AIR COMPRESSOR FOR EMERGENCY IN HEAVY DUTY VEHICLES.

Abstract :-

An air compressor is a pneumatic device that converts power (using an electric motor, diesel or gasoline engine, etc.) into potential energy stored in pressurized air (i.e., compressed air). By one of several methods, an air compressor forces more and more air into a storage tank, increasing the pressure.

The purpose of the compressor is to circulate the system under pressure, this concentrates the heat it contains. At the compressor, the low-pressure is changed to high pressure gas. Air



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compressors function based on a very simple principle. When the air is compressed, its volume decreases whereas the pressure increases. The most common way to achieve this is with the help of a reciprocating actuator. We are adding an extra small reserve wire tank to heavy automobiles (vehicles) for emergency refilling of tires.

Name of Students :-

- 1) Mahagaonkar Aasawari Madhukar
- 2) Yadav Omkar Nilesh
- 3) Taslim M. D.
- 4) Kachare Vishal Balu

Guide Name :- Prof. R. H. Tike

PROJECT TITLE: - MODIFYING EXISTING DESIGN OF SMALL HAND LEVER OPERATED PLASTIC INJECTION MOULDING MACHINE

Abstract :-

Injection molding is a method to obtain molded products by injecting plastic materials molten by heat into a mold, and then cooling and solidifying them. The method is suitable for the mass production of products with complicated shapes, and takes a large part in the area of plastic processing. Hand lever operated machine which consists of rack & pinion. Which converts rotary motion of hand lever into linear motion of plunger. It causes injection pressure injection velocity.

Defects of components like - Flow Lines, Sink Marks, Weld Lines, Short Shots, Warpage, Burn Marks, Flash. Making wise and efficient use of your materials is another key tip for improving your injection molding process and the quality of your finished product.

The use of plastics is increasing nowadays in small to heavy items industries. Injection moulding machine is the one of the most usable machines to manufacture the different plastic items, The main aim of this paper is to study the effect of parameters of design in plastic injection molding machine manufacturing processes that influence the quality and cost of the product. During the



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product development phase, a functional prototype is required to observe mechanical and functional tests on a machine. The various parts of Plastic injection moulding machine design using Pro E and that function is observed experimentally. The result showed that prototypes for vertical moulding machines have similar mechanical characteristics that give better results and good alternatives for plastic items manufacturing as small-scale industries.

- Name of Students :-**
- 1) Darwatkar Rohit R.
 - 2) Gunbhairat Siddhi V.
 - 3) Duddoo Parth P.
 - 4) Shinde Aditi S.

Guide Name :- Prof. S. R. Kulkarni

PROJECT TITLE: - DESIGN & MANUFACTURING OF ROLLER BURNISHING TOOL.

Abstract :-

In this project, we are going to study, Design and Manufacture the Roller Burnishing Tool, basically it is a study based project. Roller burnishing is a surface finishing technique or cold forming process in which the tool reduces the imperfections of surface roughness. The main goal is to achieve a high-quality surface finish for many engineering applications, the finish on a surface can have a big effect on the performance and durability of parts. Rough surfaces generally wear more rapidly and have greater friction coefficients than smooth surfaces. There are many processes to increase surface finish of workpiece but Roller burnishing allows for more regularity of surfaces which can provide a mirror-like finish.

- Name of Students :-**
- 1) Kuril Abhishek Shivdas
 - 2) Deshmukh Gayatri Rajesh
 - 3) Jadhav Akhilesh Pradeep .
 - 4) Katote Prabhajan Loknath

Guide Name :- Prof. T. Y. Gadade



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PROJECT TITLE: - DESIGN & FABRICATION OF STAIRCASE CLIMBING TROLLEY.

Abstract :-

Generally, trolleys are used to transport loads on even surfaces. Stair climbing trolleys are an extension of general trolleys. These are used to transport loads on stairs and uneven surfaces like holes, speed breakers. These trolleys are very economical as the initial and maintenance costs are low. It is used to transport loads with less effort. There need not be heavy mechanisms for stair climbing trolleys.

The machine is so portable that we can carry it easily to different places.

Project Photo :-





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Name of Students :-

- 1) Katurde Suryakant Dilip
- 2) Kunjir Aditya Hanumant
- 3) Taware Omkar Padmakar
- 4) Zitre Shubhankar Laxman

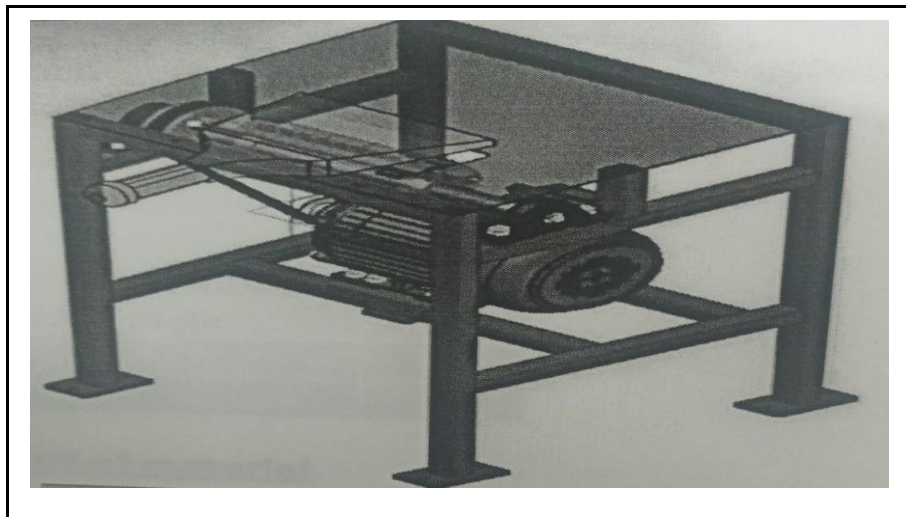
Guide Name :- Prof. B. P. Shinde

**PROJECT TITLE: - DESIGN & MANUFACTURING BROOM BRUSHING
AUTOMATICALLY MACHINE.**

Abstract :-

Brooms have been used for centuries to sweep up, in, and around the home and workplace. Natural-material brooms may be constructed of a variety of materials, including brush, but generally include stiff grasses such as broom corn and/or sotol fiber and shindi. Broom production technical process is simple and the project can be initiated with proper planning and moderate capital investment, The production is a wide and vast industry as per the types of the products. It has many advantages. Used this product in your offices, your Home, Laxmi puja Diwali.

Project Photo:-





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Name of Students :-

- 1) Yadav Shrikant Ashok
- 2) Gaikwad Prashant Suresh
- 3) Sangle Vikrant Prashant
- 4) Soratkar Rakesh Ramesh

Guide Name :- Prof. S. S Suryavanshi

PROJECT TITLE: - SOLAR AIR HEATER.

Abstract :-

The future of our planet depends on the energy sources which are used economically. Exploitation of energy sources increases our needs for energy. Energy sources such as fossil fuels are dangerous for the environment and cannot be used for a long time. That's why we need a renewable energy source. In this context, solar energy is being seen as a suitable source for saving the energy sources and development of countries which can receive rays from the sun. Carried out some experiments proves that solar air heaters can provide high thermal performance in heating systems. According to different Solar Air Heater designs, efficiencies of solar collectors can be increased.

Project Photo :-





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Name of Students :-

- 1) Burte Rutvik Mahendra
- 2) Chavan Siddharth Shivaji
- 3) Shinde Tejas Dashrath
- 4) Zade Pritesh Prasad

Guide Name :- Prof. M. M. Deoghare

PROJECT TITLE: - PNEUMATIC WOOD CUTTING MACHINE BY USING HACKSAW BLADE.

Abstract:-

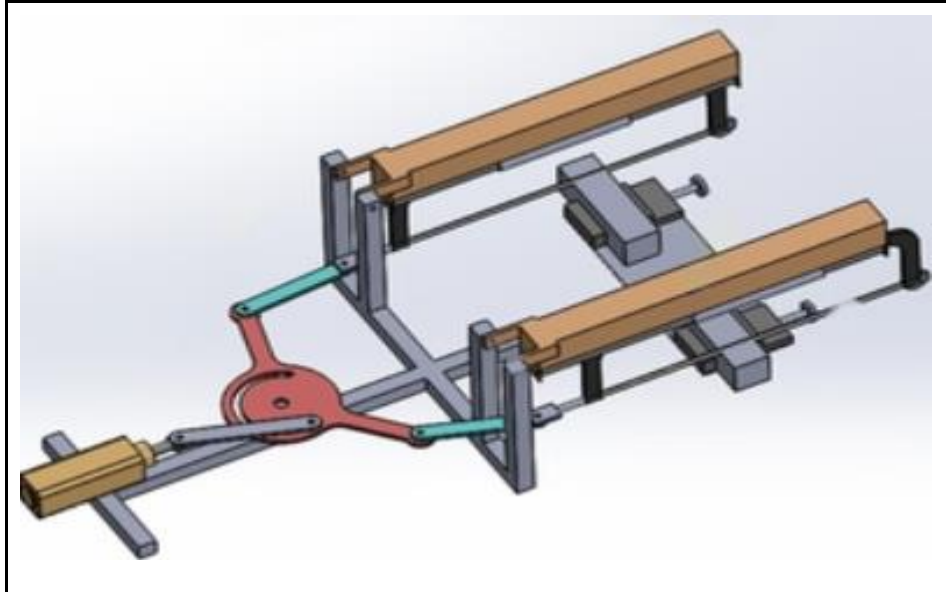
When we examine existing pneumatic cutting machines it is reviewed for high investment cost additional shortcoming such as cost of manpower and due to manual processing. Normally wood cutting machines are manually separated for medium and small scale industries. We are using scissors for simple wood cutting. The setup includes a roller conveyor system operated using the reciprocating piston cylinder and chain. The cutter is placed in front of the roller system. The air supply to the cylinder is controlled by 5/2 DCV which is driven by a lever. The wood is fed through a roller system. Double acting reciprocating cylinder is used for both feeding and cutting purposes. The wood placed in the roller is pushed forward then it comes in contact with the cutter. Then air supply is supplied to the actuator via DCV and the wood cut by a cutter. A tray is placed at the end of the cutter and the cutting pieces of wood fall down in the tray. The system has advantages due to the fact that the cost for automation is high and power consumption is more. In manual method wood is the scrap sometime because of wrong dimensions, improper cutting etc., and also even a simple cutting may take a long time. The proposed work benefits from pneumatic force, which is abundant. Hydraulic machines are also available for wood cutting. But this method is used only for heavy metal cutting and its cost is high. We are using a pneumatic system for wood cutting in an easy way. It is operated by a pneumatic hand lever of a two way control valve. Control valve is operated by a compressor.



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Project Photo :-



Name of Students :-

- 1) Dolare Aniket Suryakant
- 2) Ghadi Darshan Krushnaji
- 3) Nalge Gaurav Ravannath
- 4) Deshmukh Purshottam Ramraja

Guide Name :- Prof. E. S. Mehta

PROJECT TITLE: - POWER LESS AUTO GATE.

Abstract:-

This project is to design and develop a low cost auto gate system for houses. Automatic gate is one of the most preferable domestic intended to provide easy access to gate homes. There are three types of automatic gate mechanism, such as sliding, screw drive piston and swing cubic underground. Designs available today are limited only to the three types mentioned. Products available in the market are quite pricey, even when installation and maintenance cost is not yet been considered. Most of the



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products available in our country are imported from foreign countries. In this final year project work, we attempt to construct a small and simple model of low cost Automatic Gate System, which uses a power motor, circuitry and arduino to move the gate. The primary aim of this project is to learn in details about how the automatic gate system works and to understand the concepts involved. The secondary aim is to fabricate a simple model to show how the system works. The main activities involved in this project are the research done on how the automatic gate works, sketching a detailed plan of the gates, welding (Arc Welding) the metal pieces together to form the gate, purchasing the correct power motor and circuit and gate together and finally the test run.

Project Photo:-





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Name of Students :-

- 1) Satpute Swapnil Ramesh
- 2) Kangare Vishwas Popat
- 3) Sonwane Vishal Malik
- 4) Uikey Rajesh Pramod

Guide Name :- Prof. M. M. Deoghare

PROJECT TITLE: - DESIGN OF ARM MOUNTED HAMMER DRILL MACHINE FOR ACCURATE DRILLING.

Abstract :-

Drilling is a process having recurring use in fabrication as well as civil work. Drills allow for making holes in various materials using drill bits. Manual drills are slow and occupy a hand while working continuously, slowing down the work. So here we design an arm attached hammer drill for instant drilling along with drill hole measurement for high accuracy drilling.

The drill system we propose makes use of an arm attachment frame so as to keep the hand free to hold nails or nail plugs that are to be inserted into the hole. The drill machine is powered by a high torque motor for drilling operation. Another geared DC motor is used with a shaft attached to the wheel. This is used to provide a hammering motion to the drill bit.

The connecting rod between drillbit and the drilling motor is used to deliver perpendicular force to the drillbit which increases the drilling efficiency by over 60%. This reduces the effort required for drilling operation and also increases the drill speed. Moreover the machine also consists of a drill hole depth measurement rod. The rod can be adjusted to ensure the exact hole depth to be drilled.

The mechanism gives the following advantages to the arm attached hammer drill:

- Drilling operation speed increases.
- It requires less human effort for drilling.
- All holes will be accurate and of the same depth as set by the user.



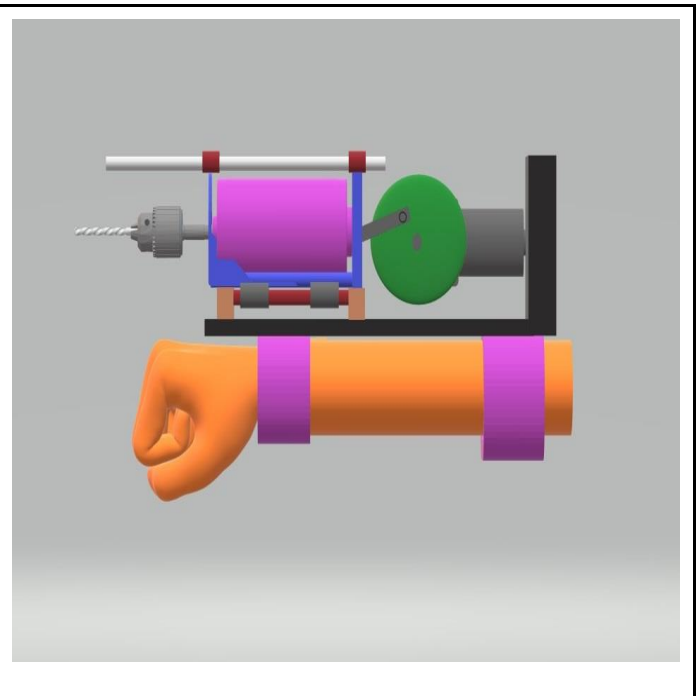
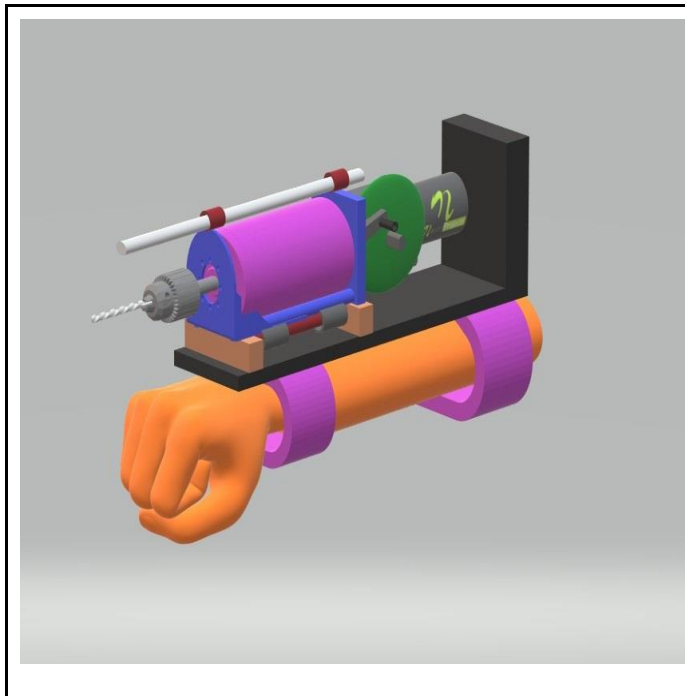
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- The hand is free to hold nail plugs or nails for mounting in the hole.
- This makes for fabrication or civil work more efficient and fast.

Thus our hammer drill machine allows for fast and easy drilling using smartly designed mechanisms to improve work efficiency.

Project Photo :-



Name of Students :-

- 1) Mate Neeraj Rajendra
- 2) Dafedar Irfan
- 3) Goud Rohit
- 4) Kadam Amulaya

Guide Name :- Prof. A. C. Dhawale



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PROJECT TITLE: - ROUGH TERRAIN 3 WHEEL ELECTRIC BIKE.

Abstract:-

We design a smart 3 wheeled geared bike with double suspension for rough terrain as well as high speed riding. Our ebike is designed using a unique innovative 3 wheel design where the front 2 wheels are connected in a separate frame and the bike handle and body rest on the mechanism through a unique suspension joint linkage setting.

This ensures the body is isolated from the front wheel jerks. Also the front wheels can adjust over rough terrains or puddles by slanting their angles. When one wheel adjusts its angle the body weight is transferred over the other front wheel thus ensuring minimum jerks.

The back wheel is driven by an electric motor attached through a gearbox. The gearbox allows the user to choose the right gear as per the terrain/slope. This ensures the bike provides enough power while climbing or rough terrains and does not stall. At higher gears the bike can speed up on normal roads to reach high speeds.

It is powered by a lithium battery and a controller circuitry to drive the motor as per the throttle provided by the user. The back wheel is also attached to the seat and body of the bike through a suspension in order to avoid heavy jerks to riders. Apart from this the e bike is integrated with unique headlights and comfortable seat to provide a good riding experience.

Name of Students :-

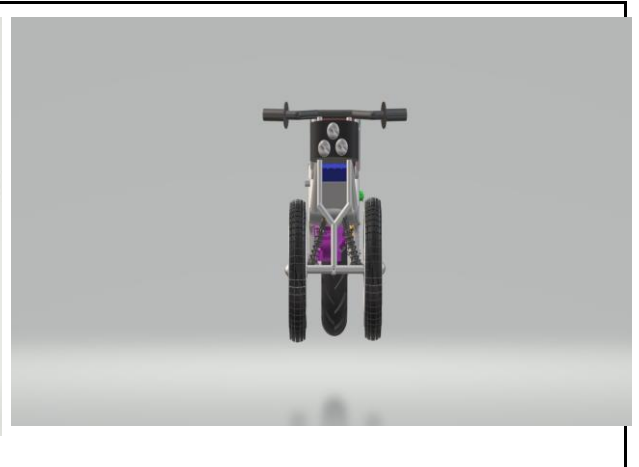
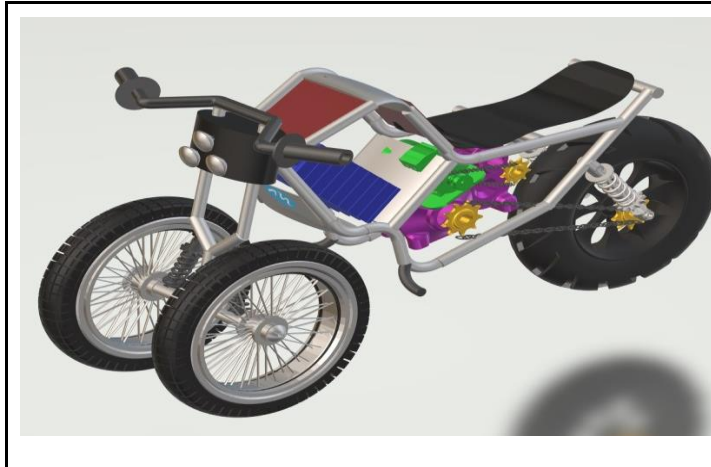
- 1) Pathak Pushkar Sunil
- 2) Pawar Prajwal Manoj
- 3) Devkar Rahul Jalinder
- 4) Ohal Yash Kachor

Guide Name :- Prof. S. J. Shrivastava

Project Photo:-



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PROJECT TITLE: - ULTRA-SMALL WATER POWER GENERATOR.

Abstract :-

To design a prototype of a screw turbine for power generation using principles of velocity vector. The conception of a screw turbine rotor for remote area electricity production. It has a great potential to be used for remote areas to generate power by using low head water source as this research is developed. Energy crisis around the world encourage researchers to pay attention in finding alternate sources of green energy these days.

A lot of research has been conducted by using natural energy sources such as solar, wind, wave and water. According to sources of energy from water to run a turbine, there is a rapid change of technology in using such turbines which are suitable for a certain kind of flow river, much of them are used for high head (differences) to produce electricity. Micro-hydro power plant based on Archimedes Screw turbine is a type of renewable energy power plant that is easy to function and operates on low costs, etc. The micro-hydro project is designed to be a run-of-river type, because it requires no reservoir in order to power the turbine.

The water will run straight through the turbine and back into the river or stream to use it for the other purposes. This has a minimal environmental impact on the local ecosystem. The choice of the turbine type depends mainly on the site head and flow rate. The turbine power and speed were directly proportional with the site head, but there were specific points for maximum turbine power and speed

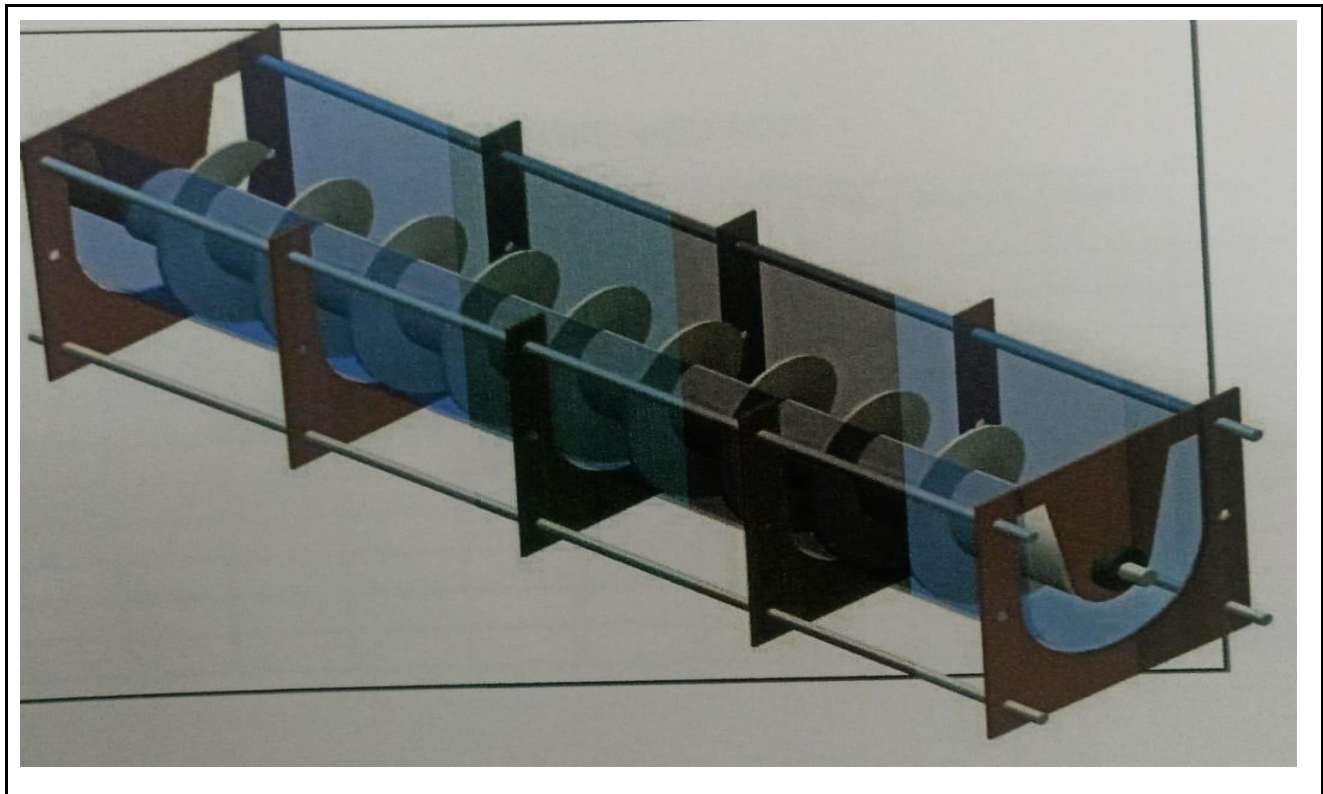


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with the variation of the site water flow rate. The turbine efficiency could range from 80 to 95 percent and the generator efficiency about 90 percent.

Project Photo :-



Name of Students :-

- 1) Agale Nikhil
- 2) Jadhav Omkar
- 3) Landge Mahendra
- 4) Sakunde Shubham

Guide Name :-

Prof. S.S. Suryavanshi



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PROJECT TITLE: - CHAINLESS CYCLE.

Abstract :-

Shaft drives were introduced over a century ago, but were mostly supplanted by chain driven bicycles due to gear range possible with sprockets and derailleurs. Recently, due to advancements in internal gear technology, a small number of modern shaft driven bicycles have been introduced.

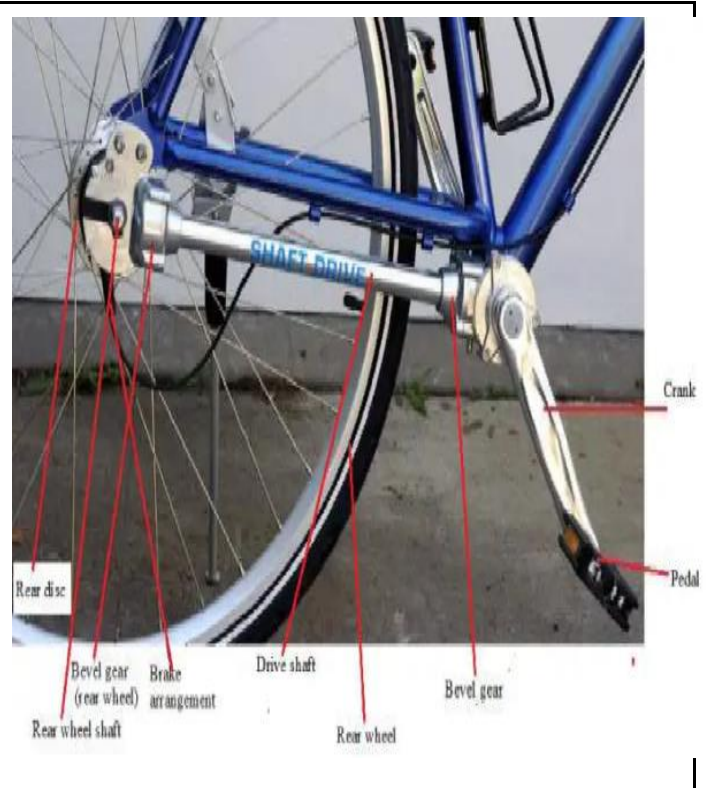
Shaft drive bikes have been where a conventional bike would have its chain ring. This meshes with another bevel gear mounted on the drive shaft. It is attractive in look compared with chain drive bicycle it replaces the traditional method Chainless Bicycle System (CBS) is a setup which makes bicycles run on the road without chains. CBS uses a shaft-driven concept; it uses a drive-shaft for the transmission of the pedals to the wheels in place of chains. In the present era, development in internal gear technology produces various advantages. So, I decided to construct a bicycle using the shaft-driven system rather than using chain-driven. In this system, I use bevel gears, shaft rod and another two bevel gears and the hub assembly. The rider pushes the pedal which rotates the shaft rod using bevel gears at the front end.

This rotating shaft has a bevel gear on the rear hub along with the rear wheel and drives the rear wheel of the bicycle. CBS is fully enclosed, requires less maintenance and periodic lubrication through grease gun. The Chainless Bicycle system is very comfortable and produces efficient transmission of power from the rider's foot to the rear wheel. The rider's footwear, pants do not get accidental damage. Cyclists of this chainless bicycle system are not injured because chain bites in this system chain are not present.

Name of Students :-

- 1) Saralkar Vedant
- 2) Kumbhar Soham
- 3) Kopade Dasharath
- 4) Patil Hrutvij
- 5) Madhukar Akshay

Guide Name :- Prof. V.D. Sakapal



PROJECT TITLE: - ELECTRIC WHEELCHAIR.

Abstract :-

Smart Wheel Chair are mechanically controlled devices designed to have self and force to drive the wheels for wheelchairs Furthermore it also provides an opportunity for visually or physically impaired persons to move from one place to another. The wheelchair is also provided with an obstacle detection system which reduces the chance of collision while on the journey. Smart wheelchairs have gained a lot of interest in recent times. These devices are useful especially in transportation from one place to another. The machines can also be used in old age homes where the elderly have difficulty in their movements. The devices serve as a boon for those who have lost their mobility.

Different types of smart wheelchairs have been developed in the past but the new generations of wheelchairs are being developed and used which feature the use of artificial intelligence and hence leaves a little to think about to the user who uses the wheel chair. The project also aims to build a



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similar wheelchair which would have a sort of intelligence and hence helps the user on his/her movement.

Project Photo :-



Name of Students :-

- 1) Gurav Sneha
- 2) Bendre Pushkar
- 3) Kamble Vikas
- 4) Pawar Omkar

Guide Name :- Prof. V. S. Kshirsagar



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PROJECT TITLE: - DOUBLE WHEEL FLOUR MILL MACHINE.

Abstract :-

Generally, a Double wheel flour mill machine is used to grind small grains like wheat, oats, rice, corn, barley, rye, etc.. The mill machine is a technology, the marrying of food science with the art of the practical miller, both of which have evolved over many years. Some may say that science will eventually overcome the art of milling and consign the practical miller to the flour bin of history, but with the variety of baking products still expanding daily and new wheat varieties being developed that event should still be quite a long time off. This chapter aims to help define the science and the art of a process which produces one of the most versatile of bakery raw materials and aims to provide a background to the link between wheat, the milling process and the properties of the final flour.

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- 1) Bhadale Deep Ashok
- 2) Kongari Kunal Ganesh
- 3) Gawade Pratik Baban
- 4) Narune Rushikesh Yuvraj

Guide Name :- Prof. S.S. Suryavanshi

PROJECT TITLE: - AUTOMATIC MOTORBIKE STAND SLIDER.

Abstract:-

In modern developing world, automobile plays an important role especially two-wheeler i.e. (motorcycles & bikes) plays a major role. Even though they are helpful there are some sad events like accidents due to carelessness of the rider. Major accidents occur due to forgetting to lift the side stand. To rectify this problem many advanced measures have been taken, but they are least helpful. So, to make a system that has a practical application which can be used on any type of two-wheeler this project was undertaken. To reduce the mishaps, we have designed a new system with automatic stand retrieval.



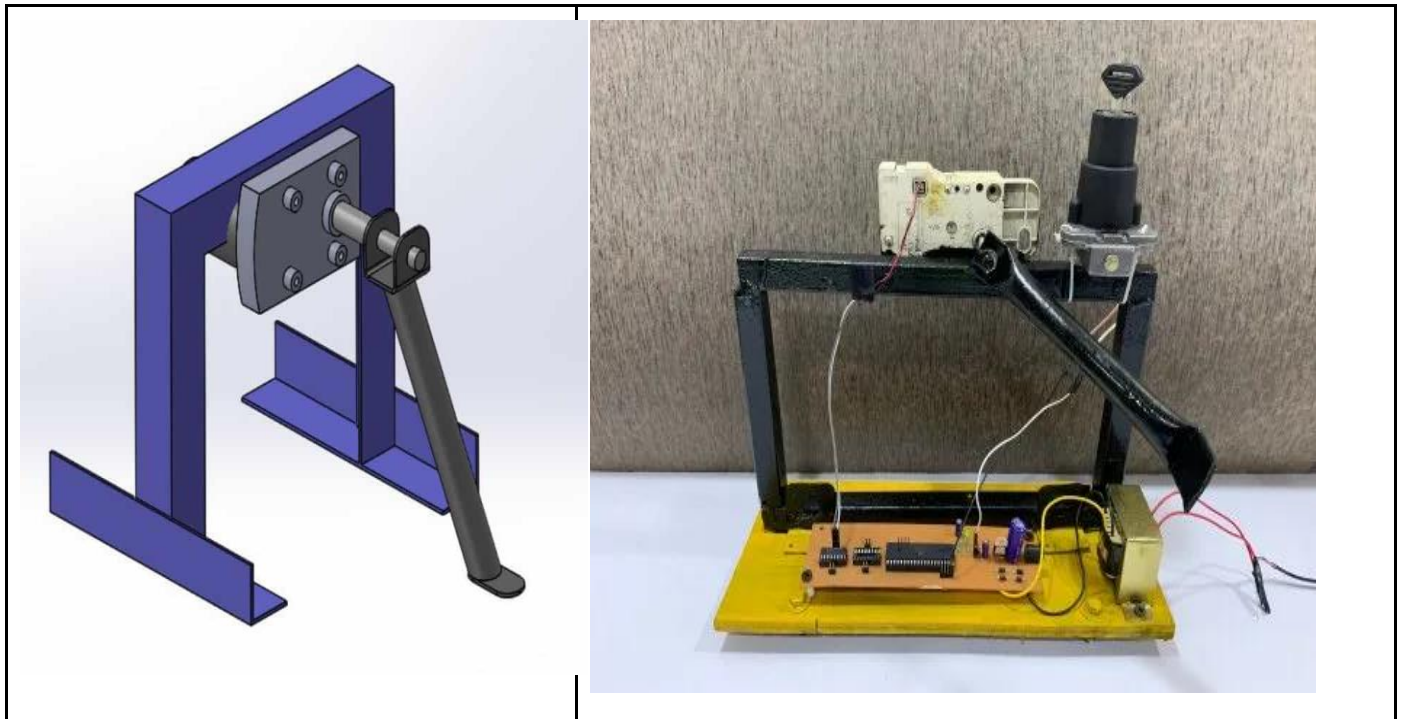
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The new system “AUTOMATIC SIDE-STAND SLIDER SYSTEM has been designed based on the working principle of bikes. The system works on electronic circuits in the bike with the help of electronic components such as Servo motor, motor driver, Arduino for the retrieval of stand and to apply it.

In this system we make a demonstration model with a demo starter for the bike and a frame used to hold the starter, demo bike and side-stand in position. The frame is used to mount the bike upright using the frame. The starter consists of a circuit used to monitor the starter and then operate the stand sliding mechanism. The stand consists of a motorized system used to operate the microcontroller. The Circuit monitors the starter. On starting the bike the side-stand is operated by the motor using a shaft to slide from a vertical position to a horizontal position. On turning off the key in another direction to lock bike the system moves the motorized stand shaft in opposite direction so as to move the stand in a direction perpendicular to the bottom frame rod which rests the motor bike on the side stand. Thus we have a fully automated side-stand system for motor bikes.

Project Photo :-





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Name of Students :-

- 1) Govekar Vivek Tanaji
- 2) Chithale Mahesh Dilip
- 3) Jadhav Suprit Sanjay
- 4) Tamboli Riyaj Bandulal

Guide Name :- Prof. V.D. Sakapal

PROJECT TITLE: - ECO FRIENDLY ROAD FOOTPATH CLEANER.

Abstract:-

Cleaning is a necessary factor of daily routine. Effective cleaning and sanitizing help and protect the health of human beings directly and indirectly. The Road cleaner is used to keep our surroundings clean. So that we feel fresh while walking on the streets. Generally, in the era of modern technology, different devices such as electric motors, diesel engines, and robots are being used to clean the floor, road. But such processes create abundant pollution, maintenance and are very tough to carry out. So, in order to save energy and save nature, there is a need to develop, user-friendly road and floor cleaning machine. A machine which should be operated manually so that it can be used as an alternative for conventional electric cleaning machines. The dust cleaning machine system is fixed with a pair of wheels which are connected with the help of a shaft. The shaft makes the wheels connected to one another. The wheels are moved to the desired position with the help of manual force, which can be provided to move.

The handle can be adjusted for a required height and is provided with three adjusting holes for it. A chain drive is connected to the wheels and gear at each side. The chain is moved according to the wheel and gear. The brush moves the alternative direction of the wheels move and the brush brooms the waste present on the road also it dumps the waste into the waste-collecting box. The waste collection box is removed to dump the waste into desired places



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Project Photo :-



Name of Students :-

- 1) More Pawankumar Sandip
- 2) Shinde Vishwajeet Hemant
- 3) Kumbhar Jaydeep Jalindhar
- 4) Waje Shubham Chandrakant

Guide Name :-

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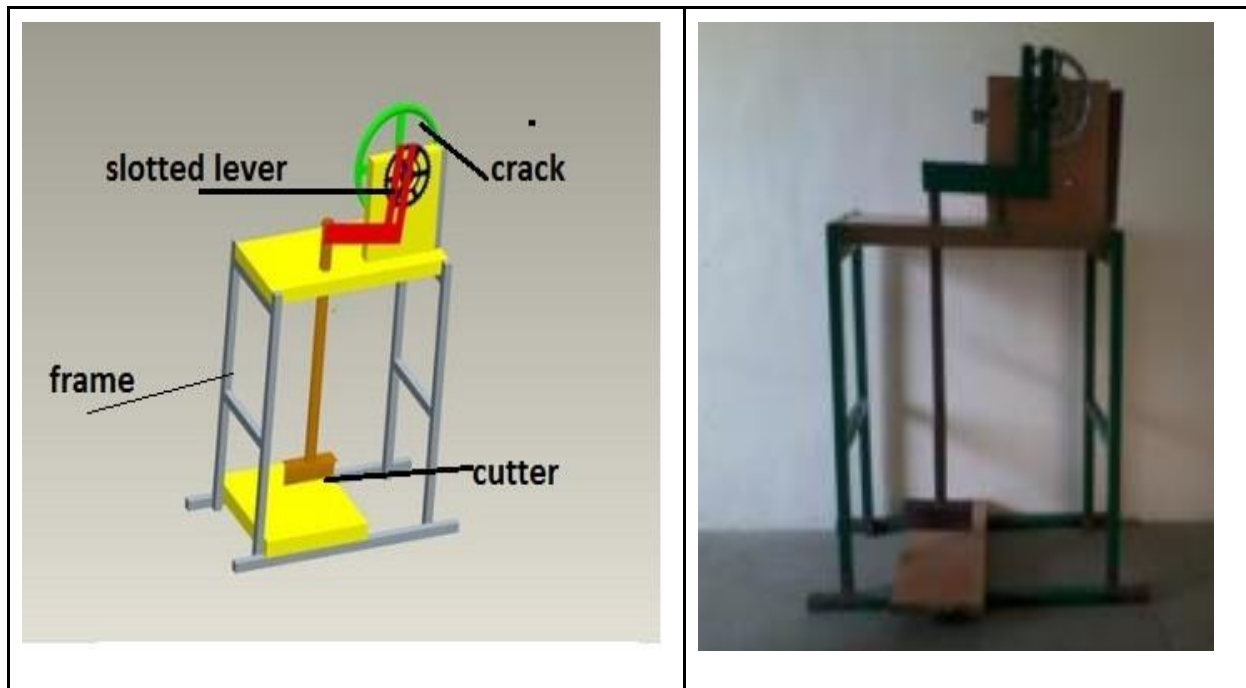


PROJECT TITLE: - THE STUDY ON DESIGN OF AGRICULTURE CUTTER USING 4 BAR MECHANISM.

Abstract :-

Agriculture is one of the oldest professions but the development and use of machinery has made the job title of farmer a rarity. Instead of every person having to work to provide food for themselves, a smaller portion of our population today works in agriculture, the smaller portion provides considerably more food than the other can eat. The basic technology of agricultural machines has changed little in the last century with the coming of the Industrial Revolution and the development of more complicated machines. In this work design and fabricate the automatic mechanical cutter by using crank and slotted lever mechanism, for cutting agricultural products like sugarcane for cultivation. The present work to fabricate a machine which is simpler in construction than the existing machines. The equipment makes use of a crank and slotted lever mechanism with one slider to couple with an electric motor using pulley and belt drive.

Project Photo:-





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Name of Students :-

- 1) Shinde Akash Suhas
- 2) Shinde Prasad Ramdas
- 3) Sogam Ganesh Sanjay
- 4) Sutar Vishal Shrikant

Guide Name :- Prof. A. C. Dhawale

PROJECT TITLE: - ELECTRICAL CYLINDER.

Abstract :-

An electric linear actuator includes a linear array of poloidal electrical coils. The central openings of each of the coils are coaxially aligned to define a central bore for the linear array. A shaft is received within and is movable along the central bore of the linear array. Magnets are affixed at spaced intervals along the shaft. A power source provides power to each of the coils of the linear array. Position sensors are provided for determining the axial position of the shaft along the central bore. A control processor receives position data from the position sensors and Controls the application of power from the power Source to each of the coils in the linear array. The control processor selectively activates the electrical coils to cause variable application of force on the Shaft through electro-magnet attraction or repulsion.

Name of Students :-

- 1) Kerkar Raghavendra
- 2) Deore Chaitanya
- 3) Durgad Shruti
- 4) Ghanate Adarsh

Guide Name :- Prof. R. S. Khorane



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PROJECT TITLE: - DESIGN & FABRICATION OF MECHANICAL FOOTSTEP POWER GENERATOR.

Abstract :-

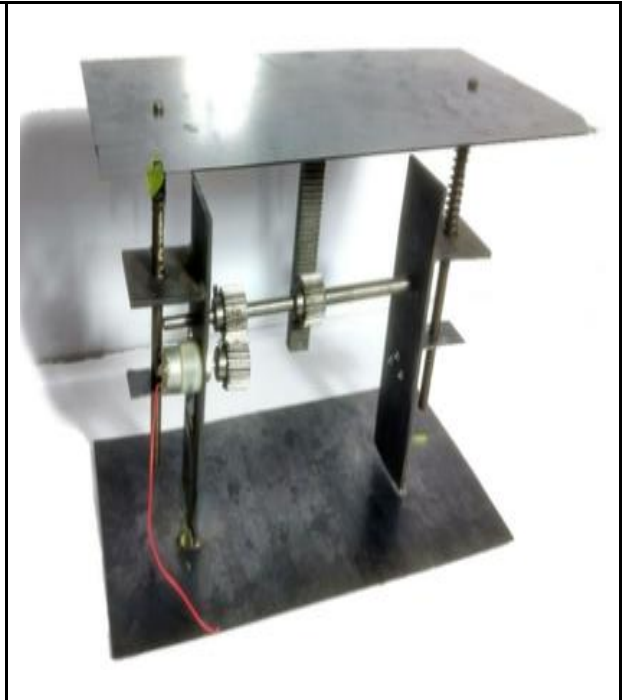
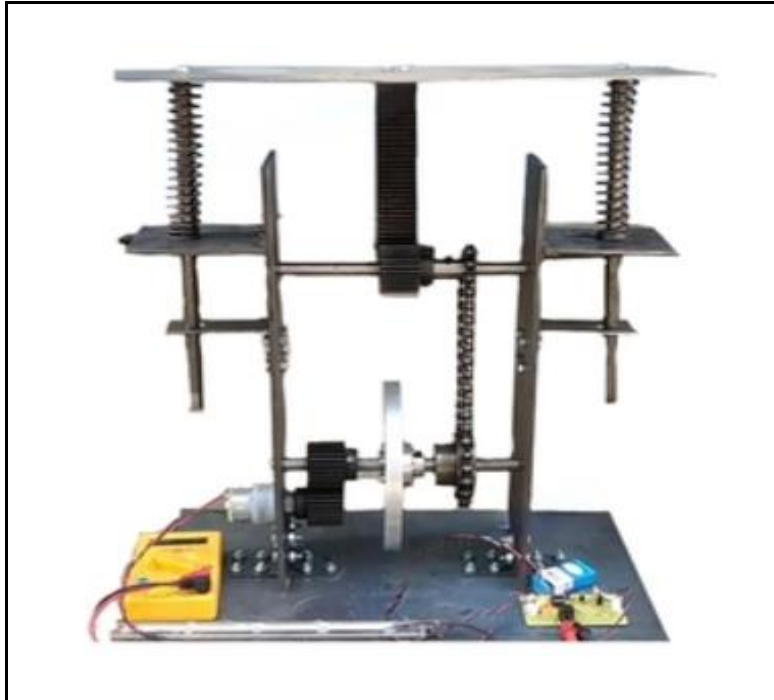
Here we propose the design and fabrication of a footstep power generator system. Apart from solar and wind energy systems which rely on external factors like rain and sun, the footstep power generator does not rely on any such factors and is a source of renewable energy free of cost and generated through human motion. This system can prove very effective in crowded public places like railway stations as a source to generate renewable power free of cost. Multiple footstep power generators at such places can be used to increase the yield of power generated. Our proposed system uses rack and pinion arrangement along with gears and spring based arrangement to generate power from footsteps. The system allows for an efficient power generator medium. We use a rack to transfer power from human footsteps to a gear attached to a shaft, the power is then transferred to another gear through a gear based arrangement. Now we attach a generator motor/dynamo to another gear in order to run the dynamo and generate electricity. We now use a multimeter to measure the voltage generated.

Project Photo :-





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Name of Students :-

- 1) Jangid Suresh Premprakash
- 2) Kamble Rohit Navnath

Guide Name :- Prof. A. N. Wakure

PROJECT TITLE: - SCISSOR LIFT WITH LEAD SCREW.

Abstract :-

A Scissors lift is a mechanical device used for various applications for lifting of the loads to a height or level. A lift table is defined as a scissor lift used to stack, raise or lower, convey and/or transfer material between two or more elevations. The main objective of the devices used for lifting purposes is to make the table adjustable to a desired height. A scissor lift provides the most economically dependable & versatile methods of lifting loads; it has few moving parts which may only require lubrication. This lift table raises load smoothly to any desired height. The scissor lift can be



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used in combination with any of applications such as pneumatic, hydraulic, mechanical, etc. Lift tables may incorporate rotating platforms (manual or powered): tilt platforms, etc, as a part of the design. Scissor lift design is used because of its ergonomics as compared to other heavy lifting devices available in the market. The frame is very sturdy & strong enough with an increase in structural integrity. A multiple height scissor lift is made up of two or more leg sets.

Its portability can enable the workers to use it at various working areas whenever needed. Considering the cost of lift, it is suitable and more productive than making temporary platforms at construction sites with the help of bamboo sticks or other materials. Maintenance cost is almost negligible as only lubrication is required for components.

Project Photo :-



- Name of Students :-**
- 1) Badade Sahil
 - 2) Ballal Sanidhy
 - 3) Dhanne Chaitanya
 - 4) Veer Dhiraj

Guide Name :- Prof. N. N. Kokare



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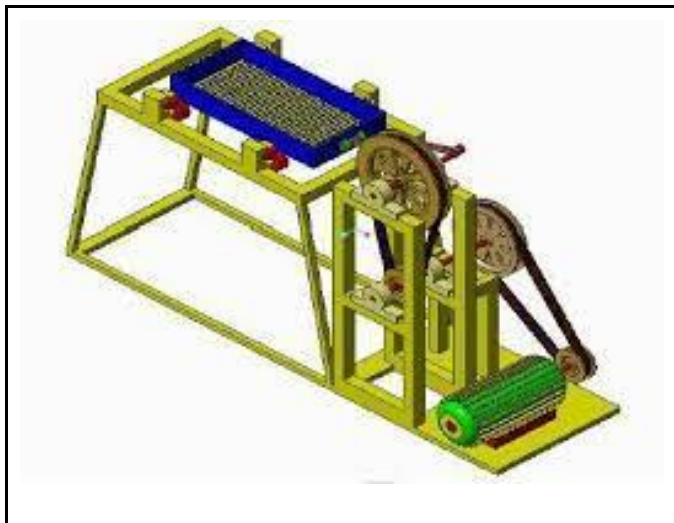
PROJECT TITLE: - SIEVING MACHINE.

Abstract :-

Construction of buildings requires sand as an important ingredient. Sand is used at different stages in construction right from the foundation to the finishing work i.e. plaster. This sand needs to be screened properly for various stages in construction, i.e. size of sand for construction work is slightly coarse whereas that used for plaster work is fine. Conventionally screening is normally done manually using fixed screens or machines. This manual process is time consuming and laborious and takes a lot of time and cost. It is also observed that the conventional machine proves of no or little help as the sand needs to be manually transported and material handling takes place twice to get different sizes of sand.

These processes are carried out manually. Sieving of sand is carried out using a rectangular mesh which is inclined at a certain angle. This causes a relative motion between the particles and the sieve. Depending on their size the individual particles either pass through the sieve mesh or retained on the sieve surface. There are different machines that are being used for sand sieving processes. In our project the process will take place automatically. Thus the time consumed during the whole process of preparing the concrete is reduced.

Project Photo:-





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Name of Students :-

- 1) Gorad Saurav Gorakshanath
- 2) Yenpure Siddharth Ganesh
- 3) Madke Sahil Sambhaji
- 4) Karanjkar Yash Santosh

Guide Name :- Prof. K. V. Sawant

PROJECT TITLE: - HYBRID VERTICAL AXIS WIND TURBINE.

Abstract:-

The ultimate aim of this project is to construct a savonius type of vertical axis wind turbine that will be combined with a solar panel to create direct current (DC) electricity that will be used to charge a battery. This system will meet the house's basic electrical needs. A variety of designs were examined in terms of wind turbine type, and a savonius type wind turbine was selected based on literature study. The final outcome of the project was a 40W vertical axis wind turbine. When combined with a solar panel, the device may generate up to 25 watts of electricity. The major goals of this project are to decrease pollution and preserve the environment by reducing the use of fossil fuels, increasing windmill power output, and developing hybrid machines to create more electricity with zero emissions.

Name of Students :-

- 1) Kadu Suyash Sunil
- 2) Zirpe Mahesh Narayan
- 3) Yadav Sanket Kiran
- 4) Andure Vinit Deepak

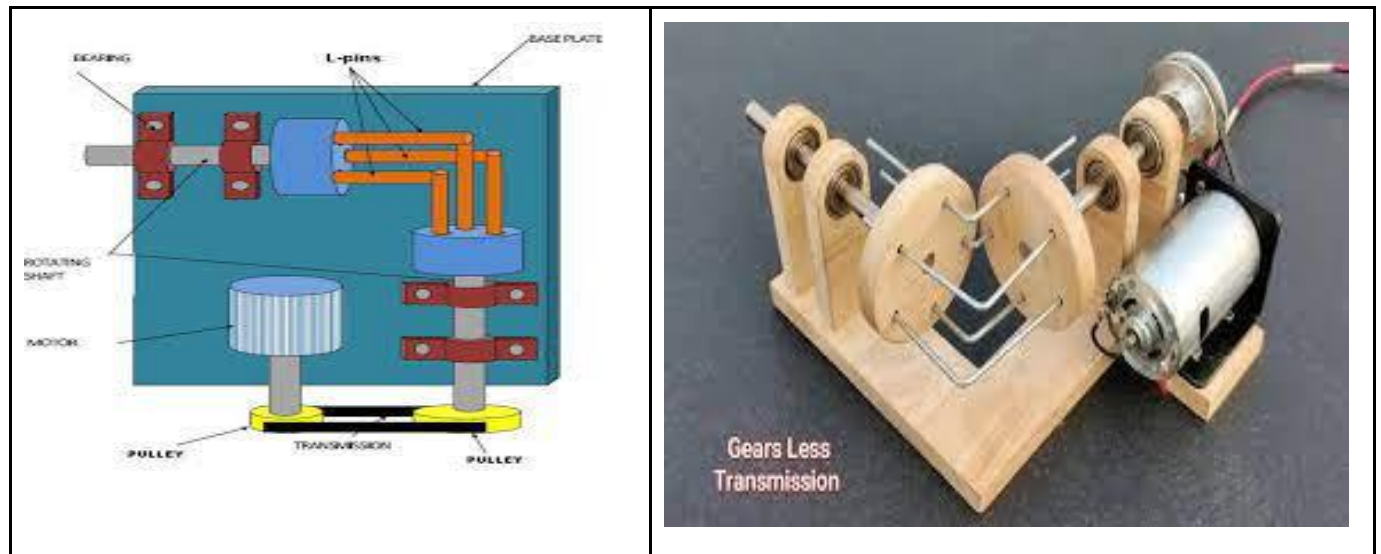
Guide Name :- Prof. R. H. Tike

PROJECT TITLE: - GEARLESS POWER TRANSMISSION.

Abstract :-

A Gearless Mechanical transmission includes a housing which supports a high speed shaft and a low speed shaft along a main rotational axis. It includes a plurality of identical linkages, each having an off-center center of rotation, an input end and an output end. It is provided for transmitting rotational velocity from input shaft to an output shaft without gears. The transmission includes an input shaft connected to a wedge. Both the input shaft and the wedge have rotational axes. The rotational axis of the input shaft is disposed at an angle with respect to the rotational axis of the wedge.

Project Photo :-



Name of Students :-

- 1) Kadam Suyash Sanjay
- 2) Jagdale Kalpesh Ramchandra
- 3) Kamble Omkar Arvind
- 4) Hinge Kiran Kalyan

Guide Name :- Prof. B. P. Shinde



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PROJECT TITLE: - TIP DISPENSING UNIT FOR ARC WELDING ROBOT.

Abstract :-

For the welding cell in the manufacturing process of large excavation motor arm workpieces, a system framework, based on a digital twin welding robot cell, is proposed and constructed in order to optimize the robotic collaboration process of the welding workstation with digital twin technology. For the automated welding cell, combined with the actual robotic welding process, the physical entity was digitally modeled in 3D, and the twin welding robot operating posture process beats and other data were updated in real time, through real-time interactive data drive, to achieve real-time synchronization and faithful mapping of the virtual twin as well as 3D visualization and monitoring of the system. For the robot welding process in the arc welding operation process, a mathematical model of the kinematics of the welding robot was established, and an optimization method for the placement planning of the initial welding position of the robot base was proposed, with the goal of smooth operation of the robot arm joints, which assist in the process simulation verification of the welding process through the virtual twin scenario. The implementation and validation process of welding process optimization, based on this digital twin framework, is introduced with a moving arm robot welding example.

Name of Students :-

- 1) More Pratapsinh Ramesh
- 2) Lohar Prashant Dnyaneshwar
- 3) Jadhav Purshottam Ashok
- 4) Kale Rugved

Guide Name :- Prof. B. P. Shinde



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PROJECT TITLE: - DESIGN & MANUFACTURING OF CAM OPERATED SPRING LESS VALVE FOR IC ENGINE

Abstract :-

This project presents the springless valve system used in the IC engines. Unlike the conventional valve system, the springless valve system uses two cams for each valve with absence of spring. This mechanism has a closing cam which does not allow cam jump as conventional valve systems. In this work first we are going to discuss conventional valve mechanism and its advantages and disadvantages and then we are going to discuss springless valve systems along with its advantages and disadvantages. It will help us to find out how springless valve systems are better than conventional valve systems. We are also going to find the real importance of this springless system at higher rpm of the engine and the need of this system at higher rpm. This system improves the performance of the IC engine by reducing power consumption for overcoming spring stiffness and avoid cam jump at high speed.

Name of Students :-

- 1) Yelgude Sachin Navnath
- 2) Gaikwad Vaibhav Haribhau
- 3) Damkondwar Mudgal Pramod
- 4) Gogawale Vikrant Chandrakant

Guide Name :- Prof. V. S. Kshirsagr

PROJECT TITLE: - BOX SHIFTER LINK MECHANISM.

Abstract :-

This Box Transport Mechanism Project task utilizes a system for moving stuffed merchandise one by one among which some action can be conveyed like examination, shutting, naming and so forth among the travel and will move the products one by one by the bar linkages. This entire box shifting mechanism project consists of gentle steel material. Numerous connections are used to move the case forward, the fundamental connection is associated with the engine which changes over the turning

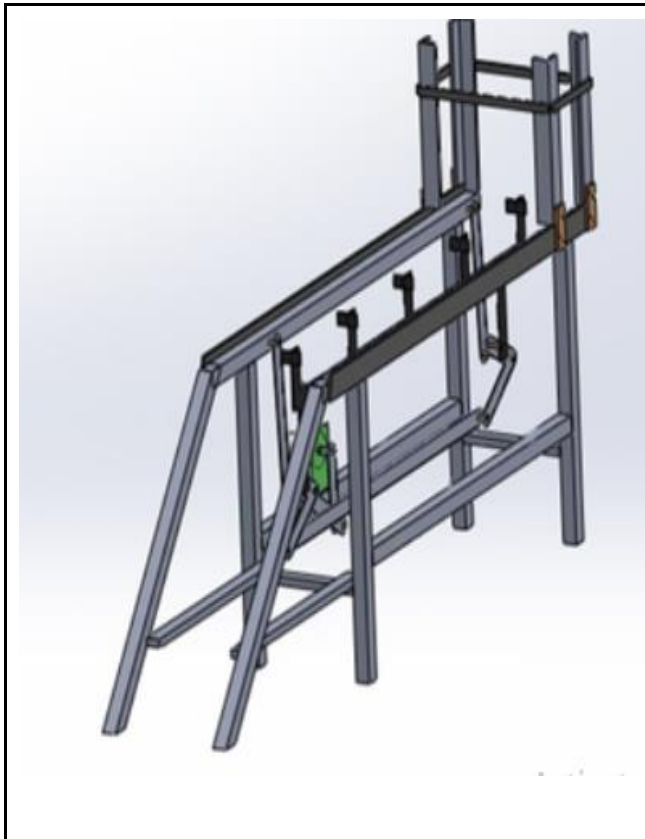


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movement into liner, which responds to movement for the shifter joins. Thus, this project can be used in many industrial purposes, the box shifting mechanism has a time delay between moving packages and this delay can be used to introduce any alterations in the package or help in moving the package for any other purpose. We can use this mechanism in medical production fields, bottle filling processes and many more.

Project Photo :-



Name of Students :-

- 1) Ingale Sambhaji Ramesh
- 2) Dalvi Shubham Harishchandra
- 3) Nair Ajay Rupesh
- 4) Paygude Ajinkya Ram

Guide Name :- Prof. V. S. Kshirsagar



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PROJECT TITLE: - AGRICULTURE ROBOT PROJECT.

Abstract :-

Well agriculture has always been the backbone of India for a long time. The project we put forth has been designed to automate the work of a farmer so that he can tirelessly perform his farming tasks. We intend to automate the most common and frequent tasks of the farmer. Our project focuses on remote controlling and slightly automating the tractor with sensors so as to get dairy farming tasks done with ease. Here we try to automate some farming tasks such as remote controlled tractor and water spraying.

The farmer will be provided with a wireless remote control using which he may start or turn off the tractor robot and control its movement. Moreover the robot is also embedded with obstacle sensors using which it can detect oncoming obstacles such as cattle, children, big trees, rocks etc. Also it is fitted with a sprayer and water tank so farmers do not need to manually spray water over fields. The robotic vehicle automatically sprays water when the farmer sends a sprayer on command. Thus this agricultural robot is aimed to improve, automate tractor farming and make the work of a farmer easy.

Name of Students :-

- 1) Adsul Saurabh Maruti
- 2) Adsul Sujit Shivaji
- 3) Machale Shivam Somnath
- 4) Yaladagi Rizwan Husen

Guide Name :- Prof. S. J. Shrivastava

PROJECT TITLE: - PORTABLE SPOT WELDING MACHINE.

Abstract :-

Spot welding machines require a lot of space, are heavy, restricted by height and do not weld at any angle. In this project, we have tried to overcome the above problems by recreating the design. We made it a simpler, lighter, portable, compact and flexible machine which will be able to weld at any angle and can be easily operated by even a non-skilled Labor with much ease and required accuracy. We studied various research papers and concluded that a portable spot welding machine is



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required. For creating this machine we used modeling software such as solid works and created a prototype based on its design. In this project we made our own transformer according to Requirements of specifications for welding as a general transformer used in electronic appliances was costly and as well as Bulky.

Project Photo :-



Name of Students :-

- 1) Alawane Vaibhav Vishwanath
- 2) Paralkar Sushil Baliram
- 3) Gole Siddhesh Pandurang
- 4) Bhairat Shubham Nitin

Guide Name :- Prof. T. Y. Gadade

PROJECT TITLE: - AUTOMATIC REVERSE BRAKING SYSTEM.

Abstract :-

At present scenarios safety is an important feature in the automotive industry. In automobiles, the braking system plays a major role for the driver and passenger safety. In which our project mainly concentrates on the braking system The intelligent braking system is the next step to automation. Presently cars have the alarm system where when the car gets too close to an object an alarm is triggered which warns the driver about an object close. But this feature has produced a lot of problems and are prone to human error. We have enhanced the facility by using the same system but we have



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altered it so that the car brakes automatically when an obstacle is close to our automobile. This project mainly to design and develop a control system based on an intelligent electronically controlled automotive braking system is called “AUTOMATIC REVERSE BRAKING SYSTEM”. Sensor Operated Pneumatic Brake consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic braking system. The IR sensor is used to detect the obstacle. There is any obstacle in the path, the IR sensor senses the obstacle and gives the control signal to the braking system. The pneumatic braking system is used to break the system. So basically here the car brakes on its own by determining the distance from the object.

Project Photo :-



Name of Students :-

- 1) Naik Kiran Rajan
- 2) Ghadage Suraj Mahadev
- 3) Bhagwat Shrinath Vijay



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4) Kakani Yash Jagdish

Guide Name :- Prof. E. S. Mehta

PROJECT TITLE: - SOLAR DRYER.

Abstract :-

The application of solar thermal systems to preserve and process agricultural products like fruits and vegetables has found a prominent scope in recent years. In the present research paper, the performance analysis of solar dryers is investigated on the basis of temperature, moisture content (%) and relative humidity. The experiments were performed on onion and garlic. For the complete drying of 1 kg of onion took around 36 h, while it took 188 h for complete drying of 300 gm of garlic in an indirect solar dryer. The results were compared with the conventional open sun drying (OSD) method. In the solar dryer, the maximum temperature recorded was 47.6°C. In the open sun drying (OSD) method, the onion and garlic were exposed to direct sunlight that diminished the sensory properties (aroma, color, taste and nutrients). While in the case of indirect solar dryers, products were not exposed to direct sunlight and hence retained sensory properties. It is found that within a span of 24 h of experimentation on onion and garlic, the moisture content reduced to 25 % and 60 % while in case of OSD it was recorded 67 % and 63 % respectively. It envisaged that a solar dryer is more efficient than the conventional OSD method.

Name of Students :-

- 1) Chavan Siddharth Shivaji
- 2) Zade Pritesh Prasad
- 3) Burte Rutvik Mahendra
- 4) Shinde Tejas Dashrath

Guide Name :- Prof. M. M. Deoghare



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Project Photo:-



PROJECT TITLE: - AFFORDABLE MINI COOLER.

Abstract :-

The air conditioner and air cooler are widely used in the world. These electrical devices consume more electrical power and it is not beneficial for the poor people. In practice power shortage also occurred. These problems are rectified by modification of ordinary table fans. In the summer season, the ordinary table fan gives a small amount of cold air in the room. So the table fan is modified by using a copper tube with fins and a special design Cooling Chamber. In this project the cooling of air by using cold water or any other refrigerant which is circulated in the copper tube for the purpose of reducing the heat in the surrounding environment, where it is of great importance in widely distributed villages with little or no rural electrification and also in the urban areas where power shortage is often in practice.

Name of Students :-

- 1) Chandanshive Abhishek
- 2) Gaikwad Aniket
- 3) Ahire Ashutosh



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4) Mohite Sweekar

Guide Name :- Prof. A. N. Wakure

PROJECT TITLE: - DESIGN & FABRICATION OF ONION CUTTING MACHINE.

Abstract :-

Onion cutting machine is based on reduction in effort required for cutting of onion as well as for saving cost required in cutting, specially for small scale farming. There purpose of designing and fabrication of such small equipment is that it fulfill requirements of cutting and reduce the cost of it. Onion cutting machine contains simple mechanisms with effective manually handling system that need only human efforts for operations. The purpose behind this is to just reduce production cost of onion manufacturing . By that farmer can get more output & income especially considering small scale farming. This project is intended to discuss the design of leaf cutting machines. This machine can be used for agricultural purposes and it can be also employed in the food industries. Leaf cutting machines work on conveyor belt and cutter arrangement. Onions are fed through a conveyor belt into the machine. India is world's second largest Onion harvested. But yet Farmers processes onion by hand labor after harvest to remove the leaves and roots. This operation is referred to as topping which is time consuming and They Can't afford New Techniques Because of the cost of Appraisal Our Motive is to supply them with effective and efficient method for harvesting to reduce human effort Efforts to date have all been in the direction of large and expensive machinery and none of these has as yet been perfected so as to reach the market.

Name of Students :-

- 1) Singh Amit Ranjeet
- 2) Dhade Gaurav Ankush
- 3) Hagwane Atharva Sunil
- 4) Vedpathak Anand Dilip

Guide Name :- Prof. A. N. Wakure



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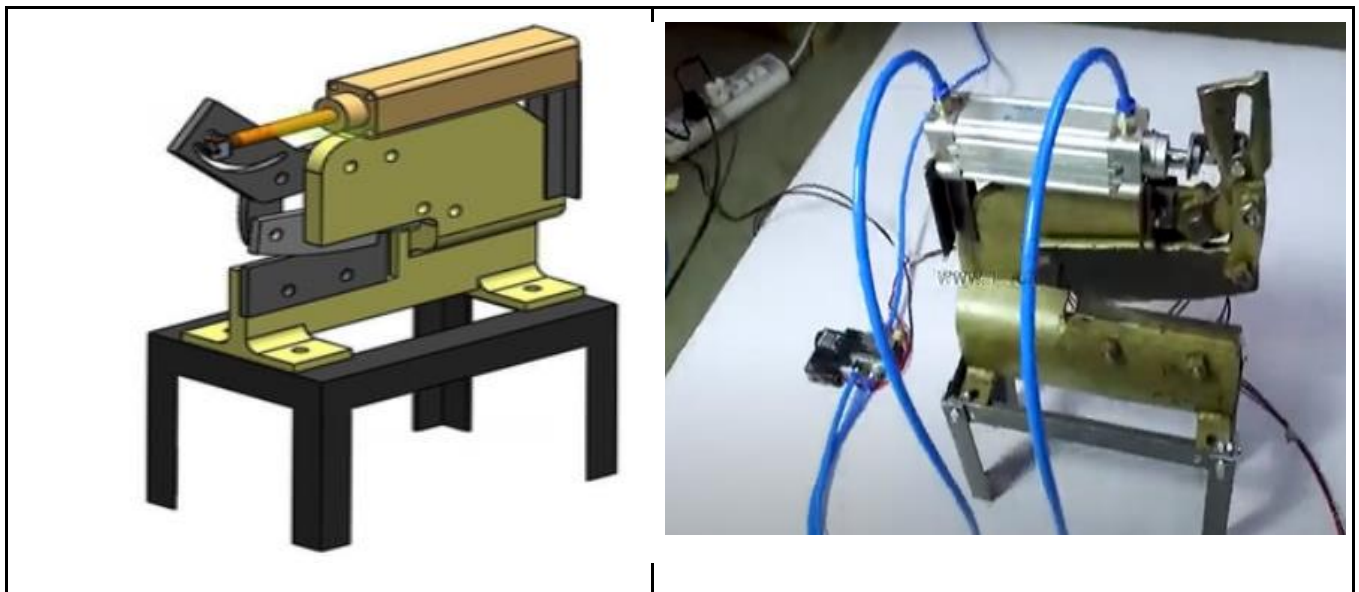


PROJECT TITLE: - DESIGN AND FABRICATION OF PNEUMATIC CUTTER.

Abstract:-

Cutting process is involved in almost every industrial process. So here we propose a pneumatic based cutting machine that uses pneumatic strength for instant cutting of small sheets and pipes. Manual cutting machines require a lot of manual effort and also are not suitable for bulk cutting processes with accuracy. The pneumatic cutting machine ensures exact cutting speed each time to get the consistent cutting result without any break. The machine consists of a pneumatic cylinder fabricated with a linking joint attached to it. This joint is assembled with a cutter blade. We now have a bed to support the material horizontally positioned in front of the cutter. These parts are fitted together in position using a metallic frame. We use pipes and valves to connect the pneumatic cylinder with a compressor through valve arrangement controlled by an electronic circuit. The circuit has 2 push buttons. One button allows for a single cut when pushed and another allows for automatic cutting at 1 second intervals and continues operation as long as the button is not pressed again to stop the machine. Thus we demonstrate the pneumatic cutting machine for automating the industrial cutting process.

Project Photo :-





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Name of Students :- 1) Doiphode Rohit Dhanaji
2) Desai Virendra Vijay
3) Kadche Rahul Chandrakant
4) Gore Nikhil Ramhari

Guide Name :- Prof. K. V. Sawant

PROJECT TITLE: - AUTOMATED SOLAR GRASS CUTTER.

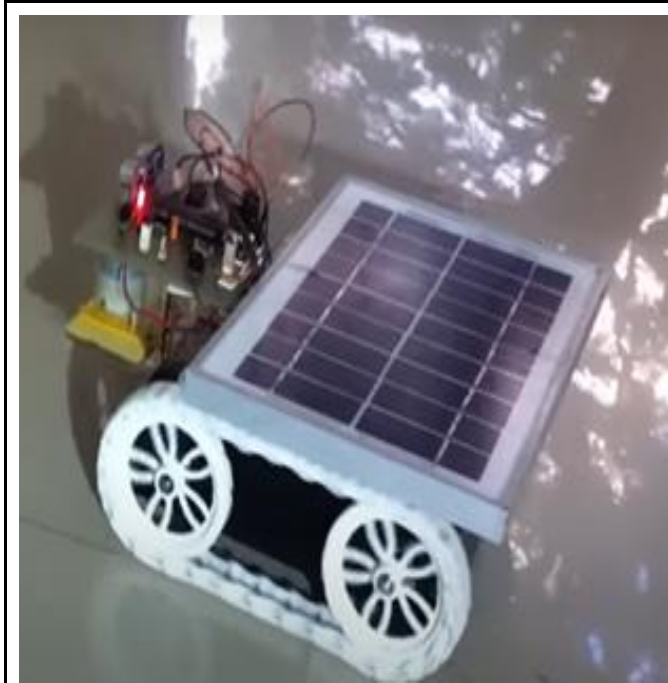
Abstract :-

The fully automated solar grass cutter is a fully automated grass cutting robotic vehicle powered by solar energy that also avoids obstacles and is capable of fully automated grass cutting without the need of any human interaction. The system uses 6V batteries to power the vehicle movement motors as well as the grass cutter motor. We also use a solar panel to charge the battery so that there is no need to charge it externally. The grass cutter and vehicle motors are interfaced to an 8051 family microcontroller that controls the working of all the motors. It is also interfaced to an ultrasonic sensor for object detection. The microcontroller moves the vehicle motors in forward direction in case no obstacle is detected. On obstacle detection the ultrasonic sensor monitors it and the microcontroller thus stops the grass cutter motor to avoid any damage to the object/human/animal whatever it is. Microcontroller then turns the robot as long as it gets clear of the object and then moves the grass cutter in forward direction again.

Name of Students :- 1) Sapkal Onkar
2) Parmekar Digvijay
3) Saste Siddhant
4) Hangirkar Prathamesh

Guide Name :- Prof. R. S. Khorane

Project Photo:-



PROJECT TITLE: - PLC BASED 7 TANK PROCESS.

Abstract:-

Powder coating is a finishing process in which dry, free flowing, thermoplastic or thermoset powder material is applied to a surface, melted, and hardened into an even coating. Pretreatment means surface preparation. Here by pretreatment, we mean metal pretreatment as the powder coating is predominantly applied to metals. Surface preparation includes: Cleaning – mechanical or chemical. Mechanical cleaning includes methods like scratch brushing and sandblasting. The process of pretreatment of a material is currently totally dependent upon manual labor and thus increases the cost of the project. By making the process automatic, the cost of the project can be substantially reduced. The conventional 7 tank process contains Degreasing, Derusting, Phosphating, Passivation and three water baths. The same process will be adopted in our process but instead PLC will be used to control



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and automate the entire project. The setup charges are considerable but it will be a one time investment to the client.

Name of Students :-

- 1) Joshi Vishal Balkrishan
- 2) Manval Nandakumar Naresh
- 3) Rajguru Rama Chandrakant
- 4) Gaikwad Sanket Waman

Guide Name :- Prof. R. S. Khorane

PROJECT TITLE: - HYBRID WIND SOLAR ENERGY SYSTEM.

Abstract :-

Renewable energy has been on an increasing demand in the recent past due to over stress on non-renewable resources and their increasing cost. Thus producing electricity with the use of renewable resources like Wind and Solar has been taken up in this project. A Windmill, which rotates when there is enough wind, generates electricity owing to magnetic coupling between the rotating and stationary coil. A horizontally rotating prototype of Windmill is being used in this project. Silicon based wafers which are cascaded together to form a Solar Panel is being used in this project to generate electricity. Dual Power Generation Solar + Windmill System harnesses both the Solar and Windmill i.e, Wind Turbine Generator to charge a 12V Battery. The System is based on the Atmega328 microcontroller which smartly senses and charges the battery while displaying the voltage on the LCD. The Windmill, when in enough wind to drive it, generates power enough to charge a battery. Similarly, the Solar Panel which is mounted on a rotating panel which sets itself to maximum exposure of the daylight to generate energy enough to charge the battery. Since both of them simultaneously can work in favorable natural conditions, both can charge the battery at a faster pace than they would have individually. Thus this project is an example of how natural resources can be efficiently harnessed to produce electricity at a faster pace and cheaper rate.



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Project Photo :-



- Name of Students :-**
- 1) Jadhav Harshwardhan Rahul
 - 2) Jadhav Mandar Balaso
 - 3) Kadam Chetan Raju
 - 4) Yewale Rahul Dattatray

Guide Name :- Prof. R.H. Tike

PROJECT TITLE: - MINI CUTTING TOOL.

Abstract :-

A bench saw or table saw has long been used for woodworks and metal works. It can be used with a variety of blades to achieve various fabrication applications like cutting, polishing, and dust cleaning. Table saw consist of electric motors that are used to drive rotating saw blades. The saw blade is mounted on an arm that can be moved to achieve desired cutting. Our system demonstrates the

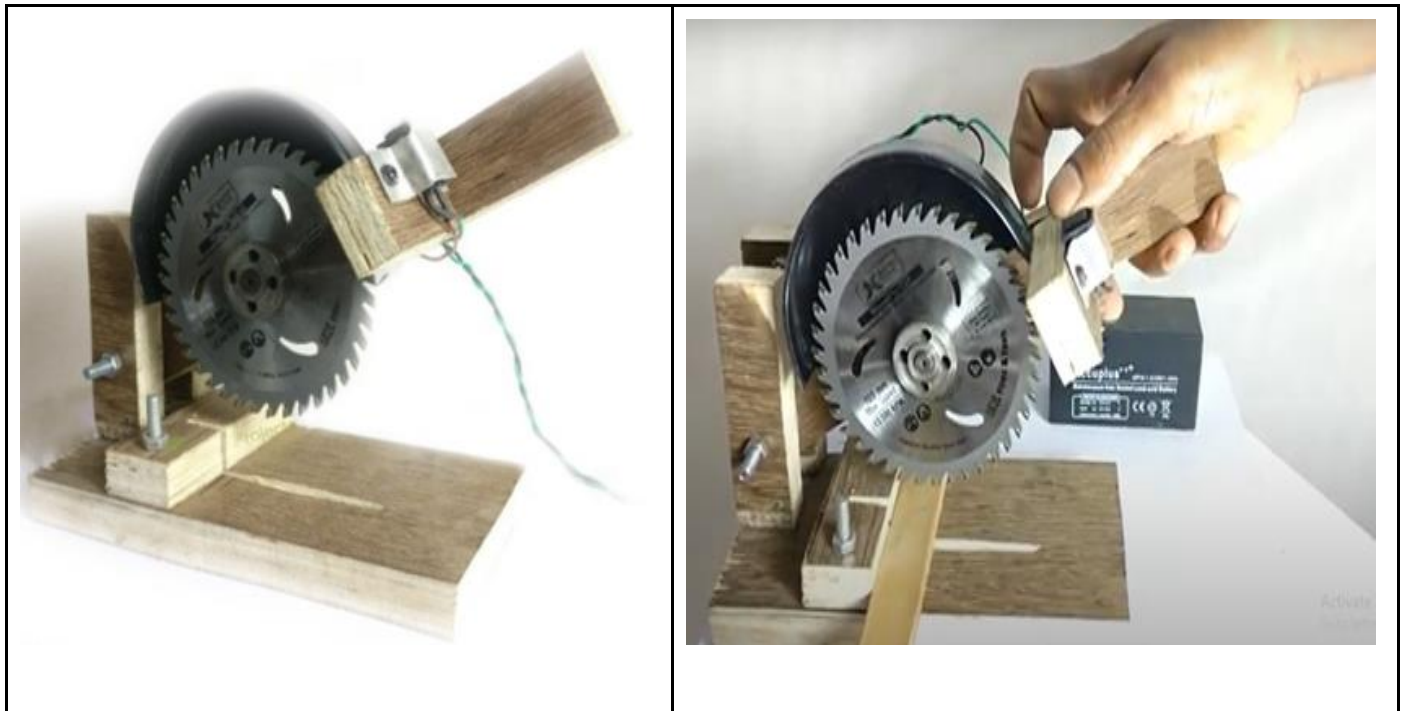


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design and fabrication of a bench saw using our mini bench saw model that uses an electric motor with a shaft to mount various blades and achieve efficient cutting. We use an arm with spring mounted pull back system for instant pullback when pressure is not applied. We design the motor shaft to achieve desired cutting by mounting various types of blades on the machine. The machine has a frame bed with a cavity parallel to the blade in order to achieve full cutting when blade passes through the work piece. The entire system is integrated and fabricated accordingly to achieve the required mechanism.

Project Photo :-



Name of Students :-

- 1) Dhawade Swapnil Laxman
- 2) Donhe Rohan Shankar
- 3) Alane Yogesh Pandharinath
- 4) Khade Parimal Namdeo

Guide Name :- Prof. S.R. Kulkarni



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**PROJECT TITLE: - IMPROVING EFFICIENCY BY REFURBISHING PELTON WHEEL
EXPERIMENTAL SETUP.**

Abstract :-

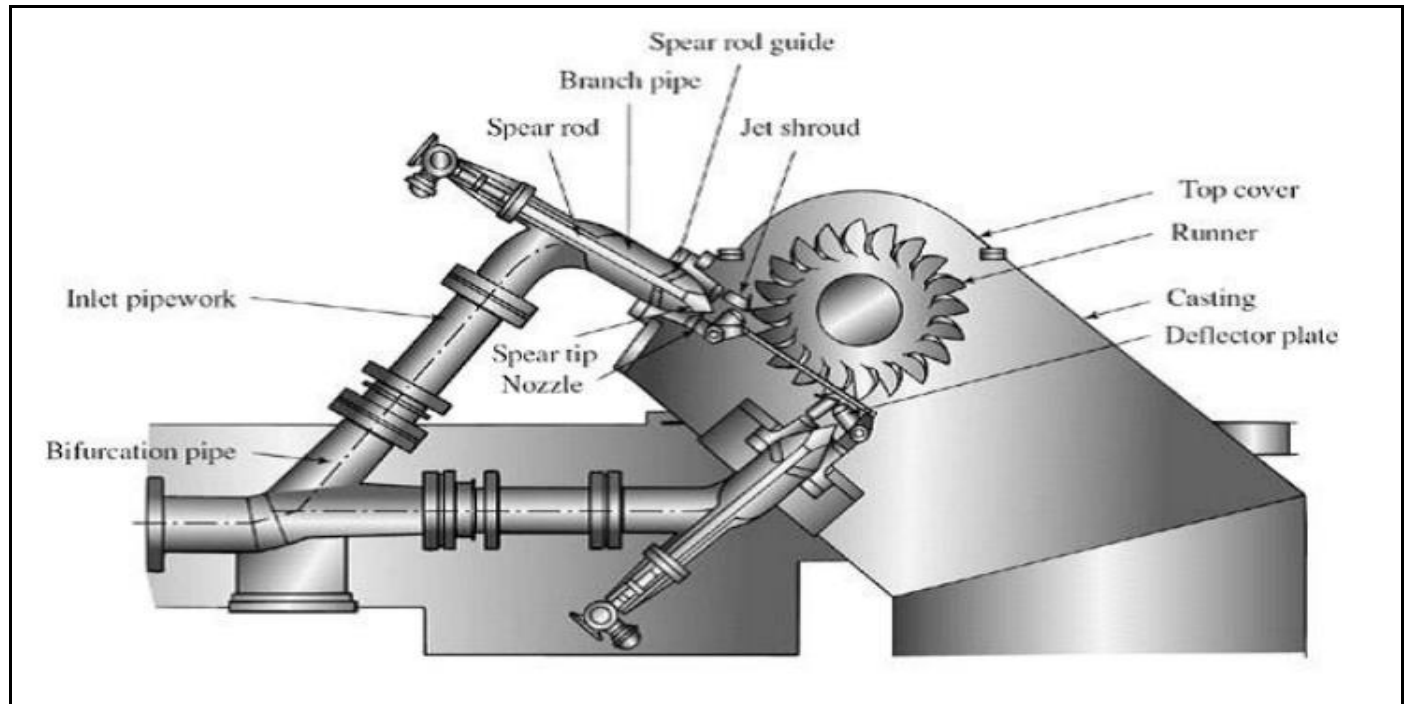
In this paper an approach to improve the performance of a Pelton wheel impulse turbine at very low energy head was investigated for efficient and stable power generation during electrical power generation. During operation, gravitational energy of the elevated water into mechanical energy is converted into electrical energy by water that strikes the vanes which rotate the runner for an electromagnetic force (emf) to be generated which produces electricity. This requires a process of kinetic energy produced by the water jet which is directed tangentially to the buckets of the Pelton wheel and usually the jet energy is used to propel the rim of the buckets for power generation. Usually this process is more convenient for high water head application as it requires high kinetic and potential energy from the source during operation due to high energy heads during operation.

Over the year's hydroelectric power generation is reported to have low energy and efficiency during low heads since the bucket's speed is very low and the kinetic energy is very low to power the wheel. Most often materials used to design the vanes and runners are very heavy which increases the weight of the vanes and the runner during operation. For the runner and the vanes to rotate faster even at low head the weight of the vanes and runner must be minimized for the runner and vanes to have the desired high speed even at very low energy head during operation. In the current study the weight of the runner and vanes are reduced to test the energy produced at low head and the strength of the vanes and runner tested if it was carrying the load at the reduced weight during operation. The discharge produced by the jets was able to power the vanes and the runner at very low head. Consequently, this designed Pelton wheel turbine will open a new horizon for hydro power plants in central and West Africa during dry season when energy generation is very low, since sufficient energy can be generated even at very low energy head due to the low weight of the vanes and runner.

Name of Students :- 1) Maske Sanket Suresh
2) Tupe Shivnath Gopinath
3) Yeole Saurabh Rajendra

4) Lendave Vivek Siddheshwar

Guide Name :- Prof. V.D. Sakapal



PROJECT TITLE: - PNEUMATIC CAR.

Abstract:-

Light utility vehicles are ending up exceptionally well-known methods for autonomous transportation for short separations. Cost and contamination with petroleum and diesel are driving vehicle producers to create vehicles energized by elective energies. Designers are guiding their endeavors to make utilization of air as a vitality source to run the light utility vehicles. This air powered vehicle project uses a pneumatic vehicle which consists of two pneumatic cylinders for continuous motion, with four free wheel sprockets and also a metallic chassis. This pneumatic car project is based on pneumatic power. It has two pneumatic cylinders which transform linear motion into rotary motion. The vehicle consists of a chain drive which transmits mechanical power from one

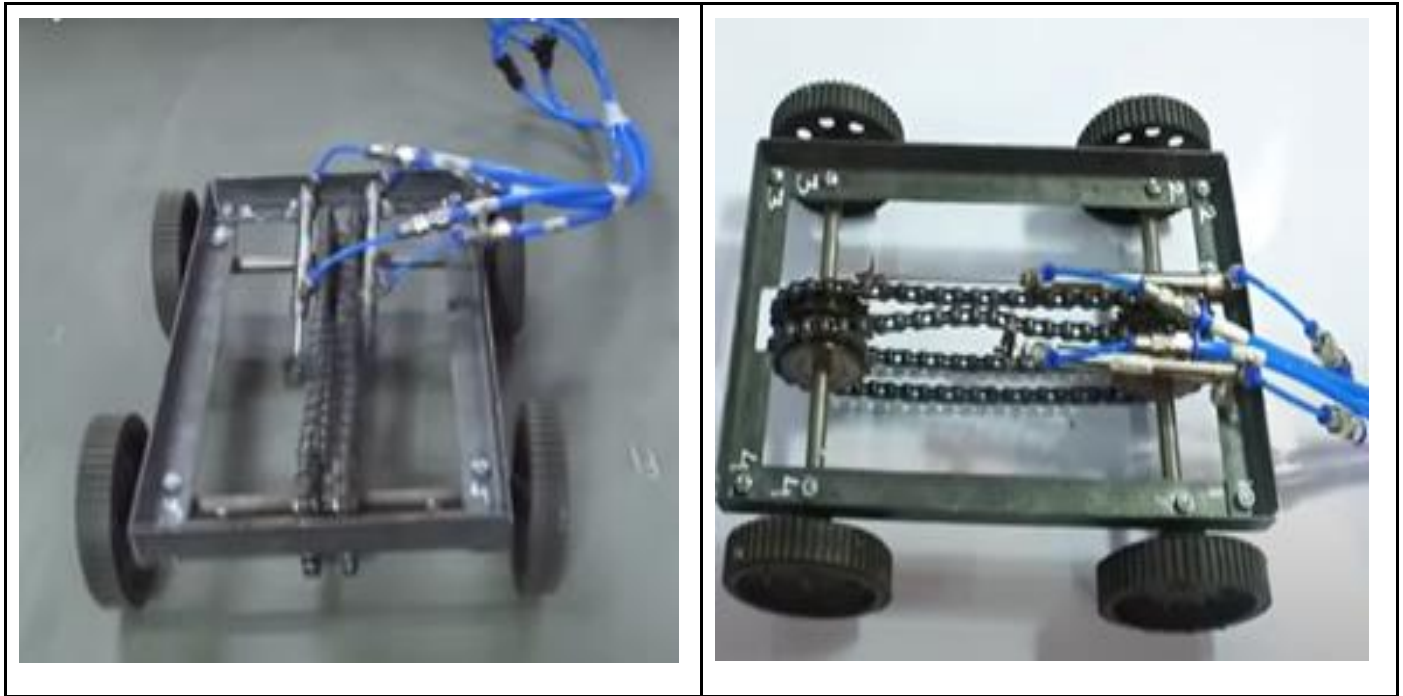


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place to another. There is a point of interest in utilizing compacted air as a wellspring of vitality to run vehicles.

Project Photo :-



Name of Students :-

- 1) Thopate Akash Sandeep
- 2) Vairal Anand Sanjay
- 3) Kazi Ajim Laikahamad
- 4) Gavhad Vikas Kailas

Guide Name :- Prof. E. S. Mehta



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PROJECT TITLE: - SPRINGLESS CAR SUSPENSION USING BEVEL GEARS.

Abstract:-

Suspension systems must support both road holding/handling and ride quality, which are at odds with each other. The tuning of suspensions involves finding the right compromise. It is important for the suspension to keep the road wheel in contact with the road surface as much as possible, because all the road or ground forces acting on the vehicle do so through the contact patches of the tires. The suspension also protects the vehicle itself and any cargo or luggage from damage and wear.

Our Project, The Springless Suspension System Combines a differential mechanism and an oscillating system. A differential is a gear train with three drive shafts that has a property such that the rotational speed of one shaft is the average speed of the others, or a fixed multiple of that average and Oscillation is the repetitive or periodic variation of an object. The Frame of the system is mostly made of Mild steel. The frame that holds the tires oscillates freely. The same frame is connected to the differential. A motor is connected to a gear in the differential mechanism, thereby making it the driving gear. The driving gear is connected by bevel gear on both sides. Each gear is connected to two wheels on each side. Each wheel is driven by an individual motor. The motor makes sure that the gears and the wheels are in motion and the oscillating property makes sure that the vehicle is moving forward even in rough terrain.

Project Photo :-





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Name of Students :-

- 1) Ubhe Atharva Prashant
- 2) Zende Shreyas Anand
- 3) Kulkarni Shrikar Pravin
- 4) Gujar Vikas Kaluram
- 5) Chavan Prasad Raju

Guide Name :- Prof. A. N. Wakure

PROJECT TITLE: - AUTOMATIC COIL WINDING MACHINE.

Abstract :-

Coils are used for winding to make motors, transformers and other similar applications. But the winding process is a tricky process as it requires accuracy and becomes a very laborious process if done manually. Well here we propose an automatic coil winding machine that can automate this process completely.

The 2 major factors that are necessary are the no of turns needed and the winding tightness. Loosely wound coils do not perform as intended hence this is also an important factor. The Auto oil winder machine automates this task using a dual motor arrangement. The system makes use of a DC motor and stepper motor to drive this system. The DC motor is used to drive the coiling wheel while the stepper motor is used to drive the toroid core to be wound.

The system allows the user to input the number of turns along with the outer dimension of the core along with the amount of core to be wound. This data is now used by the system to achieve desired output.

The rotating wheel driven by a DC motor is integrated with IR Based RPM sensors to record the number of turns. This allows the system to ensure the number of completed coil turns on the core. A stepper motor is used to accurately turn the core at 90° perpendicular motion to the rotation direction of the coiling wheel.

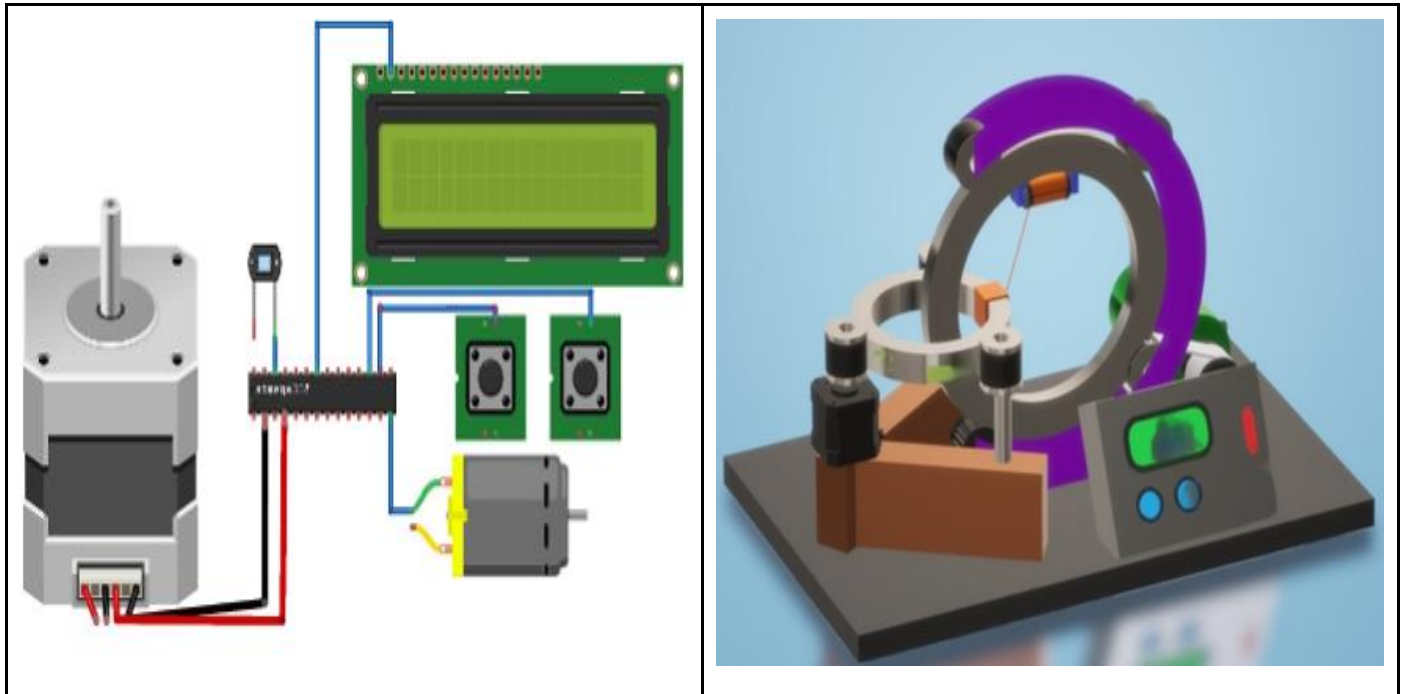


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The core is driven by a stepper motor roller and we use 2 more rollers to hold and rotate the core ring in the machine. Thus the system provides a fully automated mechanism for coil winding using motorized arrangement.

Project Photo :-



- Name of Students :-**
- 1) Kulkarni Prathamesh Manoj
 - 2) Kalbate Jayesh Anant
 - 3) Ilamkar Ashik Dilip
 - 4) Pardeshi Akshaykumar Balasaheb
 - 5) Manhore Pradip Vishwasrao

Guide Name :- Prof. R. S. Khorane