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SUMMER 2016

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Department of Mechanical Engineering  
**NEWSLETTER**



Shanti Education Society's  
**A G PATIL POLYTECHNIC  
INSTITUTE**



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## Find us....

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## Welcome



We are glad to bring out the next issue of our newsletter of Mechanical Engineering Department.

The issue presents notable advances the department has made in the last two semesters in academic, co curricular, extracurricular, industrial visit, expert lectures as well as overall development of the department.

This newsletter will surely motivate the teachers and students of sharing their creativity and new ideas and will help in their overall development.

We also encourage students to organize events such as engineers day, traditional day, participate in different events organized by other colleges and also get involved in activities of social relevance. Department also maintained the reputation in academic performance with placing the student in different organizations by training and placement cells.

I welcome you all to be a part of our department journey towards being a successful department in technical education field.

I wish that the coming year will also fill the department with energetic academic environment and bring more technical activities and achievements by students and faculty

Best of luck to all the students!

Mr. N.D. Mundhe.  
Head of the Department

## Vision

To provide technical knowledge to students in areas of Mechanical Engineering to meet the needs of industry, business and society.

## Mission


- 1.To provide skilled professionals to the global industry
- 2.To educate and enhance students to be Entrepreneurs and Team leaders in the field of Engineering
- 3.To motivate students for research and innovation; aimed at well being of society

## Program Educational Objectives (PEOs)

- 1.To develop ability to apply engineering knowledge, techniques and resources to solve Mechanical Engineering problems
2. To present themselves as responsible professionals with ethics
3. To inculcate ability to design and develop mechanical product and processes to meet the desired needs; considering public health, safety, cultural, social and environmental aspects



# Rankers

1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
					
Ajay Nichare	Navindagi Shah	Amol Kamble	Samarth Kulkarni	Rushikesh Jirge	Siddhi Kulkarni
THIRD YEAR			SECOND YEAR		

1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
		
Amit Kshirsagar	Vandana Sakhare	Nikhil Honkhambe
FIRST YEAR		

## Co curricular and Extracurricular Activities

- Samarth Kulkarni won second prize in Technowave - state level technical paper presentation held at SPM Ploytechnic, Kumthe, Solapur.
- Samarth Kulkarni also won first prize in Accretion state level Cad Expert competition.
- Vandana Sakhare won first prize in Hair style and second prize in nail art in Diploma Youth Festival at Govt. Poly. Solapur.
- Shruti Sangnure won second prize in Tug of war in Diploma Youth Festival.
- Omkar Deshmukh won second prize in cartoon making in Diploma Youth Festival.
- Onkar Maske won second prize in Table tennis in Diploma Youth Festival and first in college sport.
- Pavan Ande, Rushikesh Waghmare, Nikhil Honkhambe, Abhishek Gunje and Shrikant Chavan selected in state team and got fourth place in national level cricket competition held at Saharanpur, Uttar Pradesh.
- Abhishek Jogdankar won first prize in chess competition in college sports.
- Second year team is the winner of cricket in college sports.
- Anjana Kotali won second prize in Carrom in Diploma Youth Festival.
- Samarth Kulkarni and Sourabh Ankam won third prize in Autocad in Diploma Youth Festival.
- Adil Chiniwar and Vandana Sakhare won third prize in debate competition in Diploma Youth Festival.
- Vandana Sakhare and Radhika Adhatrao won second prize in Dandiya competition in Jagruti.





## Industrial Visits

Many Industrial visits were carried out during this academic year. Third year students visited the following industries.

- Industrial Tour to SUMIKO Enterprises, MIDC, Satara
- Shree Industries, Hotgi Road MIDC, Solapur
- Baba Ice Factory, Hotgi Road MIDC, Solapur
- Laxmi Oil Pumps and Systems Pvt. Ltd. , Hotgi Road MIDC, Solapur
- Superbright Electroplastics, , Hotgi Road MIDC, Solapur
- Lenna Engineering Works, , Hotgi Road MIDC, Solapur
- Chavan Motors, Akkalkot Road, Solapur



While our second year students visited following industries during their academic year.

- Rohit Engineering Works, Hotgi Road MIDC, Solapur
- Lenna Engineering Works, , Hotgi Road MIDC, Solapur
- Shree Siddheshwar Sugar Facotry, Hotgi Road, Solapur
- Irshad Industries, Hotgi Road MIDC, Solapur



## Staff Achievements

- Mr. S. K. Mohite & Mr. R. S. Motgi attended 3 days industrial training at Suzlon Energy Ltd. Pune.
- 2 days Workshop on Faculty Development on “PLC- Robotics & Automation” are attended by Mr. N.D, Mundhe Mr. S.K.. Mohite, Mr. R.S. Motgi , Mr. G.M. Kulkarni, Mr. J.G. Dhalait, Mr. S.B. Rathod, Mr. A.G. Bartakke, Mr. J.G. Mulla, Mr. S.R. Dawankar, Mr. J.P. Pinjar, Mr. V.G. Ambigar, Mr. C.P. Jadhav.
- Mr. R.S. Motgi, attended 1 day Workshop on ANSYS held at V.V.P Solapur.
- Mr. G.M. Kulkarni, attended 3 days industrial training at Accurate Group, Pune.
- Mr. N.D. Mundhe, Mr. G.M. Kulkarni & Mr. J.P. Pinjar, attended 1 day Workshop on “Soft Lithography” arranged by SVERI’S College of Engineering, Pandharpur.
- Mr. G.M. Kulkarni worked as a Co ordinator for Entrepreneur Awareness Camp.



# Foldable Bicycle



**Conventional bicycles occupy sufficient space and hence providing one at work place or at home are quite difficult. They are probable to be exposed to the weather outside and do require frequent maintenance .With all such issues in the conventional bicycles, the next possible solution is the usage of foldable bicycle**

In the present day lifestyle man is not able to dedicate specific time for his health, importance is least given to exercise and body fitness due to time shortage and stressful life. Transport has been one of the major issues in developing cities such as Bangalore since commuting from one place to another has become tedious and expensive. With the petrol and diesel prices increasing day by day, almost all the modes of transport are becoming expensive. With such issues in health, transport, space for parking, etc. one solution that comes to mind is bicycle.

Conventional bicycles occupy sufficient space and hence providing one at work place or at home are quite difficult. They are probable to be exposed to the weather outside and do require frequent maintenance. With all such issues in the conventional bicycles, the next possible solution is the usage of foldable bicycle. With foldable bicycles, there is no issue since the bicycle can be folded and carried around to the work place or even it can be used to reach the nearest public transport facility and then folded and carried along. Since it is

being folded, it occupies very less space and doesn't require any special parking space. There are very few recognized foldable bicycle manufactures in India.

Generally, folding bicycle is a type of bicycle that incorporates hinges or joints in the frame and handlebar stem that permit it to be broken down into a more compact size.

From all the hinges available in market the suitable hinge is Butt hinge which is lighter in weight, simple in construction, less costly and it is compact in size so it is preferred in this project.

Properties determine the usefulness of the engineering material. Therefore, it is important to know properties of the materials before any decision on a particular design. With some survey it is found that the titanium alloy is more suitable for this particular application out of selected materials those are suitable for folding bicycle frame. For this, properties of cold worked titanium, carbon fiber composite and aluminium are observed. By observing these properties titanium alloy is selected as material for bicycle frame.

So the real purpose of folding a bike is to increase its portability. This is so that it may be more easily transported and stored, and thus allow greater flexibility. Therefore to achieve this purpose the study on the aspects of materials properties and design of folding bicycle frame was performed. In conclusion, the folding bicycle is an important design in human history, thus it brings benefits to make life easier than before. The fatigue problem is always considered as main problem regarding the properties of the materials. The coated swing hinge in folding bicycle is considered as a better joint technique in the design and carries benefits to the user to fold the bicycle since it overcome the limited lifecycle and moreover is simple and cost effective.

Samarth Kulkarni

Shabad Shaikh

Rohan Yadwad

Ajay Sutar

Mr. Motgi R. S.





## Segway Self Balancing Scooter

# Self Balancing Scooter



**The Self balancing scooter is based on the principle of Segway Human Transporter where the velocity is controlled by the tilt of the driver. When the driver leans forward and backward, the scooter is running forward and backward. It is an intelligent vehicle which uses gyroscopic sensors detects the motion of rider, so that rider can accelerate, steer or brake the vehicle.**

The Segway Personal Transporter (PT) is a two-wheeled, self balancing, battery- powered electric vehicle invented by Dean Kamen. (the first and only self balancing vehicle to be commercially available). It is produced by Segway Inc. of New Hampshire. The Segway PT was known by the names Ginger and IT before it was unveiled.

Many attempts were made to build a self balancing vehicle in different forms.

Blackwell made an attempt to build a self balancing unicycle which uses a computer control system similar to one used by Segway HT that serves its wheel to balance itself by keeping the contact point of the wheel below the center of mass of the vehicle in the front to back direction.

Beckwith describes a two wheeled coaxial scooter based around the Segway HT design. It uses data from a gyroscope and an accelerometer directed to a microcontroller in order to balance.

Larson presents a detailed description of the process used to build an autonomous, self balancing

robot. It was a simple mechanical design that incorporated an aluminium frame, which housed the motors and drive systems and PVC plastic tiers to provide height and stability. This made the design not only strong, but lightweight as well. This Scooter consists of following components.

### - Iron Frame or chassis:

Chassis is made up of iron to sustain the load of driver and to get the sufficient strength. But weight of the scooter increases. Iron square tubes were cut and welded to required shape. Angles were produced to the square tubes. The square tubes were secured together and welded together. A shorter iron pipe was welded on to a longer iron pipe. The pipes were bent and formed into a handlebar shape.

### - Motors:

2 DC-motors were mounted on to the iron frame. The motors have associated wheels and gear arrangement. Motor is fixed to the chassis and it is driven by separate 12V battery.

### - Battery:

The battery is placed securely on the iron frame. Angles were welded to stay the battery in place.

### Wheels:

Two small bicycle wheels are taken.

### - Chain Drives:

Chain drives are used to transmit power between motor and wheel. Bicycle type chain with sprocket is used.

This paper used the reference of Segway invented by Dean Kamen and tried to develop basic self balancing scooter by incorporating the above mentioned components in simple ways.

Zaid Shaikh

Faizan Shaikh

Gaus Shaikh

Kayyum Shaikh

Mr. Dawankar S. R.

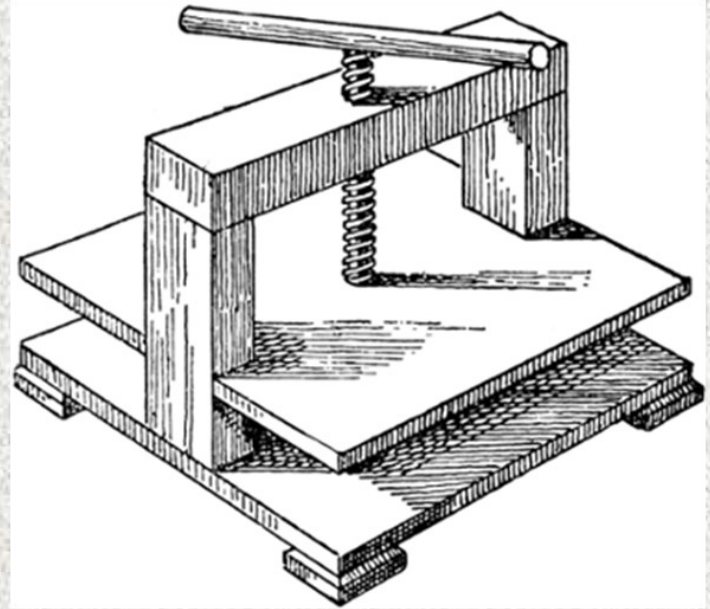






## Screw Mechanism

# Plastic Recycling Machine



**Plastic is a light weight durable substance used for various applications such as plastic goods, plastic bottles. But because of its large scale use it becomes pollutant of earth's natural environment due to its non degradable property. Hence plastic recycling is the need of today's world.**

Plastic recycling is the process of recovering scrap or waste plastic and reprocessing the material into useful products, sometimes completely different in form from its original state. Since plastic is not normally biodegradable, recycling it is part of global efforts to reduce plastic in the waste stream, especially the approximately eight million metric tonnes of waste plastic that enter the earth's ocean every year. This helps to reduce the high rates of plastic pollution.

Plastic recycling includes melting down soft drink bottles and then casting them as plastic chairs and tables. However, this kind of "recycling" is rather a misnomer since plastic beverage bottles (soda, juice, milk) are never truly reformed into new beverage bottles, as this requires virgin plastic. So there is actually no true cycle in the "recycling" of plastic beverage containers, which actually and more precisely should be referred to as "down cycling". Plastics are also recycled during the manufacturing process of plastic goods such as polyethylene film and bags. A percentage of the recycled pellets are then re-introduced into the main production operation.

Following components are used in plastic recycling machine-

- Screw Mechanism
- Press Mechanism
- Stainless Steel Tray
- Heating Coil
- Mica Sheet

It consists of stainless steel tray which is placed on heating coil of 1500 W power. Press mechanism is used for pressing purpose; pressing mechanism is supported by screw. Press plate is supported by two bars. Plastic which is to be recycled is placed inside a tray. Then punching action is performed by the punch. Heating action is performed by the heating coil, and then the waste plastic is converted into thin sheet of plastic.

This above arrangement is called press molding where molding material, generally preheated, is first placed in an open, heated mold cavity. The mold is closed with a top force or plug member, pressure is applied to force the material into contact with all mold areas, while heat and pressure are maintained until the molding material has cured. The process has thermosetting resins in a partially cured stage, either in the

the form of granules, putty-like masses, or preforms.

Compression molding is a high volume, high-pressure method suitable for molding complex, high-strength fiberglass reinforcements. Composite thermoplastics can also be compression molded with unidirectional tapes, woven fabrics, randomly oriented fiber mat or chopped strand. The advantage of compression molding is its ability to mold large, fairly intricate parts. Also, it is one of the lowest cost molding methods compared with other methods such as transfer and injection molding; moreover it wastes relatively little material, giving it an advantage when working with expensive compounds. However, compression molding often provides poor product consistency and difficulty in controlling flashing, and it is not suitable for some types of parts.

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Vinit Belamkar Vipul Belamkar

Shubham Dulange Yogesh Mahamuni

Mr. Dhalait J. G.



Shanti Education Society's

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## COURSES OFFERED IN DIPLOMA ENGINEERING

Discipline	Intake Capacity	Duration of Course
Mechanical Engineering	180	3 years
Electronics and Telecom. Engineering	60	3 years
Civil Engineering	60	3 years
Computer Engineering	60	3 years
Information Technology	60	3 years
Total Intake	420	

