



MECHANICAL ENGINEERING DEPARTMENT
GOA COLLEGE OF ENGINEERING
FARMAGUDI, PONDA, GOA - 403401

NIRZER

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FOREWORD

The editors of Nirzer, struck upon an out of the box idea and set off for exploring the cover design of Nirzer. In their opinion it had to convey something deep into the hearts. It was decided to have an activity from the Department, a community based one, that would outreach to the society and this could be reflected upon by the engineering fraternity. With the support from Prof Vishwanath Joshi, Agnel Polytechnic we ventured to the Lok Vishwas Prathistan's School at Kapileshwari, Ponda, which caters to the needs of special children. We had very kind and motivating support from the Headmistress Madam Tendulkar, and her Team.

The students there are very talented in fine arts. We had the opportunity to see some of the beautiful sketches drawn by those students. The school agreed to conduct a painting competition and then provide us some of the paintings to be used for the front cover of our departmental newsletter.

Life follows statistics, and as in statistic any event is a random one. But the greatest mystery is that we believe that it can happen only to "others", and not to "us". Society has many facets, and the faculties gifted to us are just by chance. So we have to learn to be grateful of the gifted faculties and look for ways in utilizing them for noble causes. The importance of light is only in the darkness. Similarly the importance of food is seen only in the hunger. Students have to work hard with their faculties and make the best use of these. They would do so only when they know its importance.

PROFILE OF A FACULTY



Name: Prof J.J.GOLIWADEKAR

Designation: Associate Professor in Mechanical Engineering

Prof J.J.Goliwadekar joined the Mechanical Engineering department on 01/08/77 as Associate Lecturer in Mechanical Engineering. Prior to this he worked in M/S Ghatge Patil Industries, Kolhapur, for a period of about one year. He got regularized through UPSC as Lecturer on February 26, 1981 and got promoted to Senior Lecturer on January 01, 1986.

He took over the charge of Assistant Professor (Training and placement) on 07/9/92. He was transferred to the Mechanical Engineering department on 13/5/97. At present he holds the position of Associate Professor in Mechanical Engineering. He was deputed for MTech under QIP in the year 1983 to IIT Delhi and completed the course in Feb 1985, in the area of Production Engineering.

Teaching assignment: He has handled subjects in all the areas of Mechanical Engineering and in the recent past, he is mainly concerned with Production Engineering subjects.

Other Assignments:

1. Staff advisor and founder of SPIC-MACAY .
2. Chairman staff club, Farmagudi.
3. In charge of transport section.
4. Admission work.
5. Chairman & Member Board of Studies (BOS).
6. Staff advisor MESA.
7. Organised many activities in sports and Music.
8. Has interest in Indian classical music.
9. Won many prizes in table tennis, carom, chess at college level and represented university in chess at national level.

He has a pleasant and friendly personality with all the colleagues of the department.

PROFILE OF A TECHNICAL ASSISTANT



Name: Shri Shantaram G Priolkar

Designation: Technical assistant.

He joined the Mechanical Engineering department on 15/1/1982 as Diesel Mechanic. Prior to this he has worked with Descon, Chowgule and PWD.

He was initially in charge of I.C. Engine and Fuel Lubricants Laboratory. He assisted in providing training to all Goa RTO assistant directors and inspectors on pollution control of exhaust gases. He has coordinated with PWD for civil and electrical repairs pertaining to the department. He has also worked with industry engineers during the maintenance work of Heat and Mass transfer laboratory.

In 1992 he was promoted as Technical Assistant. He has helped install machinery in IC engine , Dynamics of Machinery and Automobile laboratory. He is also involved in the department IT related activities like supervising, maintaining IT books and IT records.

He was nominated for the GCET-2009 committee at directorate of Technical education. He was assigned the examination related work at the academic section for the Nov/Dec 2011 examination.

He has actively participated in the Goa State Civil Service sports competitions.

PROFILE OF A STUDENT

Name : Mr. Avinash Kavlekar

Instrument : Pakhawaj

It is a percussion instrument played by striking hands on both the sides. Pakhawaj is set in a horizontal position in front of the cross leg of pakhawaj player called "pakhavaji". Bass skin side is played by left hand and treble skin by right hand. It produces very deep and dense sound. Treble skin is similar to table, the only difference being there is no black part on other side. The treble skin and bass skin side acts as single unit. The pakhawaj is set into vertical position and with the help of a tuning hammer the treble skin is tuned. Since there is no black part on bass skin side, it is tuned by applying wheat (atta) at the center in the form of powder. The instrument is very widely popular in Goa and used in bhajan and classical program.

Kavlekar : "I got the inspiration and interest through my father as he is attached to the field of music. I have learnt under Pandit Somnath D Chari for eight years. I was fortunate enough to get valuable guidance from the master which helped in strengthening my base. Doing classical programmes with Sir Pravin Gaonkar has also helped me in a long way. I have performed at lot many program with my guru and have gained a lot of experience. I have participated in bhajan competition and have secured many prizes. Some of the places I have performed include Pune and Pandarpur in Maharashtra; Mysore, Bangalore, Mangalore and koteswar in Karnataka. I have also performed on Goa Doordarshan and All india Radio (AIR)".



MECHANICAL ENGINEERING STUDENTS' ACTIVITIES

By Sagar Kamat(BE)

The Department of Mechanical Engineering has always been known to host some of the most enriching, entertaining and innovative events on campus. This year is no different. With a host of activities planned, we are all set for another exciting year. And the activities so far in this academic year are a testament to that fact.

The year started off with the Installation of the new council of the Mechanical Engineering Students' Association. The main function was graced by Mr. Kiran Shirsat, Owner, Prachi Aqua Minerals Pvt Ltd and member of GCCI as the Chief Guest. The function also saw the Launch of the Inaugural issue of this magazine, NIRZER 01. The Biennial magazine, put together by a team of Faculty members of the department aims to be the outlet of the creative literary energies present in our department.

The inaugural function was followed by an interactive session with the chief guest, Mr. Shirsat, being an experienced man from the industry, shared valuable insight into what companies expect from their employees and how the students can make themselves more competitive for successful careers.

Many activities were also conducted. There were non-technical events such as Hook Up, Pot It, Penalty Shoot-out, and technical events such as Robocontrol, Quiz, and Aptitude test. The Final year students also conducted a short, hands-on session on SolidWorks for the benefit of the juniors. The session was well attended and helped initiate the juniors into the world of CAD.

In the month of Sept, all the students of the dept helped together to put up an excellent performance at the Inter-departmental Fest, Tandav 5.0, thus bringing back the trophy to the Mechanical Engineering Department for a 2nd time in a row. Co-ordinated by the MESA council, the students worked together as a team to win series of events that spanned across talents such as music, dance, art and sports.

In October, a team of Final year students from the Department—Keefe Moraes, Brian Rodrigues, Kingsley Paes and Ashton Menezes- won the 1st place at robocontrol event of ENGINEER 2011 organised by NITK, Surathkal.

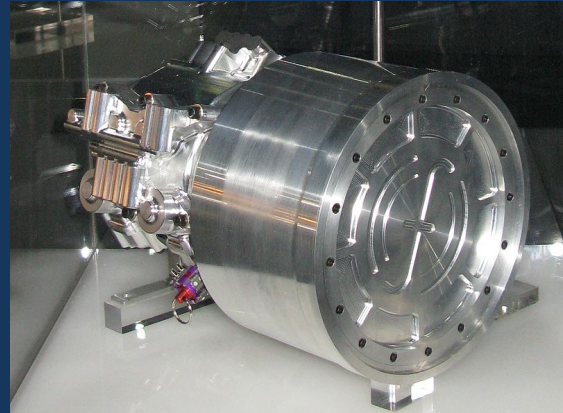
All in all, this has been another exciting semester for the Mechanical Engineering dept. We hope to carry on this momentum into the next semester and do events which will lead to the growth of the students within and outside our dept.

TECHNICAL ARTICLE

Kinetic Energy Recovery Systems by Manzil Kale (BE)

Kinetic Energy Recovery Systems (KERS) are automotive systems whereby the kinetic energy of a moving vehicle is recovered under braking and stored in a reservoir (for example a flywheel or a battery) for later use under acceleration.

Kinetic Energy Recovery Systems (KERS) were used for the motor sport Formula One's 2009 season, and are under development for road vehicles. KERS was abandoned for the 2010 Formula One season, but re-introduced for the 2011 season. One of the main reasons that not all cars use KERS is because it adds an extra 25 kilograms of weight. While not adding to the total car weight, it does incur a penalty particularly seen in the qualifying rounds, as it raises the car's center of gravity, and reduces the amount of ballast that is available to balance the car so that it is more predictable when turning. FIA rules also limit the exploitation of the system. The concept of transferring the vehicle's kinetic energy using flywheel energy storage was postulated by physicist Richard Feynman in the 1950s.



There are principally two types of system - battery (electrical) and flywheel (mechanical). Electrical systems use a motor-generator incorporated in the car's transmission which converts mechanical energy into electrical energy and vice versa. Once the energy has been harnessed, it is stored in a battery and released when required.



more

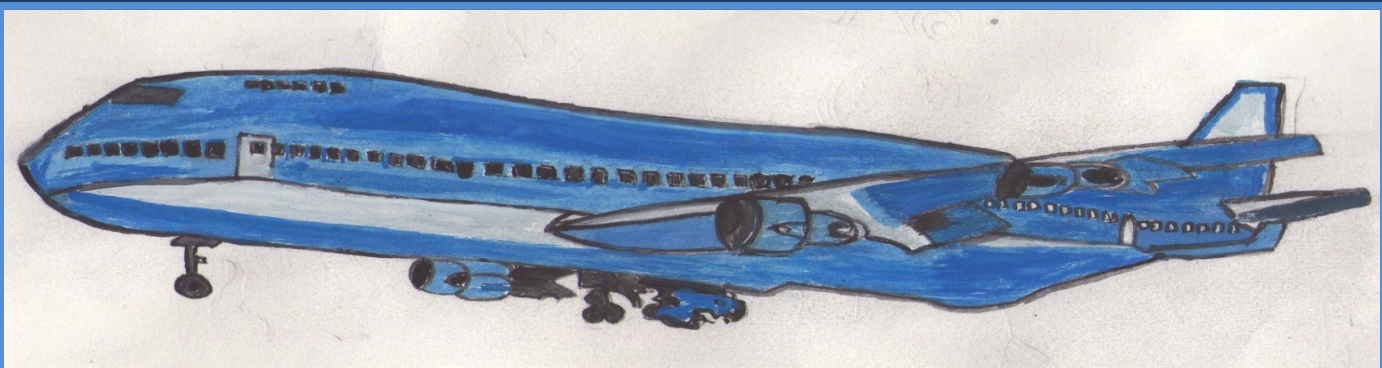
Mechanical systems capture braking energy and use it to turn a small flywheel which can spin at up to 80,000 rpm. When extra power is required, the flywheel is connected to the car's rear wheels. In contrast to an electrical KERS, the mechanical energy doesn't change state and is therefore more efficient.



There is one other option available - hydraulic KERS, where braking energy is used to accumulate hydraulic pressure which is then sent to the wheels when required.

Bosch Motorsport Service is developing a KERS for use in motor racing. These electricity storage systems for hybrid and engine functions include a lithium-ion battery with scalable capacity or a flywheel, a four to eight kilogram electric motor [with a maximum power level of 60 kW (81 hp)], as well as the KERS controller for power and battery management.

Some drawings by the students of Lok Vishwas Prathistan's School at Kapileshwari, Ponda.



MISSION GURUCOOL

@www.missiongurucool.in



Objective: Mission Gurucool is creating a learning environment using the soul of the teacher while not demanding the body. Mission Gurucool represents urge of a teacher to reach all the students at all the times . Mission Gurucool is about establishing renewed relationship between Guru and Shishya using computer as a media.

The mission is planned to design and produce several multi-media user-friendly Ebooks on various topics of importance to student community from technical field. The purpose is to stimulate and guide self-development of students.

So far, EBooks are launched and distributed among student on CDs and USB pen drives. Now, the mission takes the advantage of internet. Friends, take full advantage of the same. Mission Gurucool.... It's a cool way of learning.

Subjects

- ☐ Operation Research
- ☐ Non Linear Programming
- ☐ Engineering Statistics
- ☐ Quality Control
- ☐ C++
- ☐ Engineering Graphics
- ☐ Reliability

DEPARTMENTAL HIGHLIGHTS

- Dr. Rajesh S. Prabhu Gaonkar has been selected as ASSOCIATE EDITOR (editorial board member) of the International Journal of System Assurance Engineering and Management (a quarterly Journal published by SPRINGER).
- Dr. Rajesh S. Prabhu Gaonkar is handling the Placement Section of the college and also the charge of the Transport section of the college.
- Flt. Lt. B. R. Kulkarni has been appointed as the State Public Information Officer, of the college.
- Prof Akshay Nigalye attended a 2 days training program on “Conditioning Monitoring and Diagnostic Maintenance” organized by Mechanical Department of PCCE, Verna, Goa from 13th to 14th January 2012

Paper Presentation : International Conference

- Manohar Shankar, Mahesh Caisucar, “Application of Electropneumatics for life Testing of a Lock”, *Proceedings of the International Conference on “Modern Trends in Instrumentation & Control”*, PSG college of Technology, Coimbatore, 2-3 Sept 2011, pp.19
- Mahesh Caisucar, “Viscosity Monitoring & Control of Lubricating Oil of Journal Bearings using Labview”, *Proceedings of the International Conference on “Modern Trends in Instrumentation & Control”*, PSG college of Technology, Coimbatore, 2-3 Sept 2011, pp.19
- Mahesh Caisucar, “Investigation of Critical Parameters Desired for Tactile Sensing of a Kidney Stone in Remote Palpation using ANSYS”, *“Proceedings of the International Conference on Advances in Mechanical Engineering-ICDAAME 2011”*, SKP Engineering College, Tiruvannamalai, 16-17 Dec 2011
- Manohar Shankar, Mahesh Caisucar, “Pneumatic Robot Arm”, *“Proceedings of the International Conference on Advances in Mechanical and Building Sciences in the 3rd Millennium -ICAMB 2011”*, Vellore Institute of Technology, Vellore, 9-11 Jan 2012
- Mahesh Caisucar, “Robotic Dust Control system”, *“Proceedings of the International Conference on Advances in Mechanical and Building Sciences in the 3rd Millennium -ICAMB 2011”*, Vellore Institute of Technology, Vellore, 9-11 Jan 2012

Lectures Conducted:

- Prof Mahesh Dhawalikar was invited as a resource person for the training of Industrial personnel in the area of “Network Technique for Project Management”, held at Institute of Ship Building Technology, Vasco on 26th July, 28th July and 2nd August, 2011.
- Prof Mahesh Caisucar was invited as resource person for the training of Faculties from various technical colleges from the state of Goa and Industrial personnel in the area of “Fluid Power Control and Application”, held at PCCE, Verna, Goa on 10th Nov, 2011
- Prof Manohar Shankar delivered a talk on “Robotics” for the students of St Xaviers high school at Velim on 19th November 2011.

Courses Conducted:

As a part of celebration of 50 years of Goa Liberation, The Department organized a one day workshop on “Electrical Engineering for Mechanical Engineers”. The objective of the workshop was to provide practical inputs on use of Electrical Engineering concepts for Mechanical Engineers. The workshop was attended by staff and students of Mechanical Engineering from various technical institutions of Goa. Quality inputs were given by a highly experienced professional having over 20 years experience in continuous process industries.



SPONSORED PROJECT

BY ASTON MENEZES

Project Title: Design and Fabrication of Fire Extinguishing Robot.



| Project members | ROLL NO | REGISTRATION NO |
|---------------------|---------|-----------------|
| Mr. Ashton Menezes | 08228 | 200800853 |
| Mr. Brian Rodrigues | 08242 | 200801001 |
| Mr. Kingsley Paes | 08235 | 200801322 |
| Mr. Keefe Moraes | 08230 | 200801151 |

Project Guide: Mr. Akshay Nigalye
(Asst. Professor, Department of Mechanical Engineering)

Abstract:

The purpose of this project is to reduce the threat to the fire-fighter's life. It involves the building of a robot that will be connected to the hose of the fire fighting truck using a hydraulic coupling. The nozzle will be carried by the robot which will be provided three degrees of freedom using a mechanical arm. The robot is remote controlled using wireless technology from a remotely handled laptop. The robot shall also carry an on-board thermographic camera which will stream live video feed to the laptop and will act as the eyes of the robot. Thus the controller (firefighter) can be placed approximately 30 meters away from the place on fire.

Hardware required:

DC wiper motor, temperature sensors, 12 Channel RF modules, dc geared motors, nozzle, angle channels(20x20) mild steel, camera, wires, relays, transistors, couplings, clamps, pipes, wheels

Software required:

CATIA V5R20, ANSYS, SOLIDWORKS

The department wishes to thank Shri Michael D'Souza, Director, Dept of Science and Technology, for sponsoring the project which estimates to around Rs 48000.



Mr. Anil D'Souza is seen donating the softwares to Mech Engg Dept and books for the college library. He is an alumni of 1997 batch and an entrepreneur engaged in the processing and export of seafood products. He is a certified marine engineer with an MBA in General Management.

Utkarsh U.Shet Tilve, working with VEAB(vivekanand environment awareness brigade).UWA(union of wild life activists).Canopy-Goa



Utkarsh U. Shet Tilve, Works towards wildlife conservation and awareness. He has worked with Goa Forest Dept.and NGOs like VEAB(vivekanand environment awareness brigade), UWA(union of wildlife activists), Canopy-Goa, MFG(mineral foundation of Goa),GBCN(Goa Bird Conservation

GLIMPSES OF TANDAY by Sagar kamat



Mech Students making the winning Video



Mr. & Miss. Mechanical



The Tug Of War Team



The Mech Crowd



Duet Singing



The Mechanical Band



Winning Moments

REMEMBRANCE



MR. JOSEPH MOSSANG

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Prof U. J. Amonkar

Head , Mech Engg Dept.

Editors:-

Prof B. S. Manohar Shankar

Prof Mahesh Caisucar