



DRONACHARYA COLLEGE OF ENGINEERING

JUNE NEWSLETTER, 2009

VOL IV ISSUE XXXV

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ISSUE OF MECHANICAL ENGINEERING DEPARTMENT


From Editor's Desk :

This Editor, on one hand listened the friendly chat of young Engineering graduates who, on the eve of the **Convocation held on 24th May'2009**, seemed jubilant, even triumphant after receiving the degree after four long years of arduous sweat-tainted toil, on the other hand, more prone to emotion rather than the high sounding promotion, heard the afore-cited song echoing in the quiet corridors of the campus. The Dronacharyans of the 7th Batch had come to the campus after one long year of yearnings. It was yesterday once again. The clock had turned back and four unforgettable years began to whirl like the four wheels of the chariot of Time.



Dr. Atmanand a saint-scholar, the Chief Guest of the Convocation, was given a warm welcome. He happens to be a sterling scholar of Economics and myriad Branches of Management- and the Dean and Head of two Departments at the reputed MDI, Gurgaon. He led the ceremonial procession comprising of the Principal, HODs and Faculty members- all costumed in gorgeous academic gowns and crowned by hoods. This was followed by the lighting of the lamp, recitation of Saraswati Vandana, the Principal's emotional welcome speech. The Chief Guest's rhetorical, well-worded, motivating and most meaningful exhortation in chaste English was interspersed with sagacious Sanskrit shlokas. His oratory reminded the audience of Burke, Emerson and Vivekanand. His speech instilled genuine sparks of inspiration in the hearts, minds and souls of the young graduates.

Degrees were conferred on the engineering graduates. This was followed by the traditional ceremonial rituals from the '**Taitriya Upinishda**' recited in Sanskrit, along with its English translation, by this Editor. It was really heartening to see that the Dronacharyans are beautifully bonded with each other and with their Alma mater emotionally even in an age where relationships evaporate as fast as drops of rain falling on a hot plate.

 Editor, (Dr. R. C. Narula)

From HOD's Desk :

"Listen to what your students say. Often their ideas are like burning embers. We can kindle them into fires, or reduce them into ashes with cold water in the form of harsh judgements."

On the eve of the commencement of the new session every Department of the college takes stock of things and anxiously ascertains and assesses the progress on academic and other desirable fronts. The Department of Mechanical Engineering seizes the opportunity and in all earnestness makes an introspective review of its achievements like various other Departments.



The students of this Department made us proud by meritorious results, enthusiastic and successful participation in co-curricular activities and won laurels at Faridabad Industrial fair. As during yester years the stalwarts of the Mechanical Department, along with some active participants from the C.S.E. Department, made their presence felt and succeeded in sustaining the success story by bagging coveted top-ranking positions. This great endeavour is a source of excellent information among the fraternity of DCE Gurgaon.



We are proud to start some new ventures from the academic session 2009-10. The first one being '**Mechanical Department's' 'Innovation Club'**. It is said: "**Creativity is thinking up new things; innovation is doing new things. There is no shortage of creative ideas or creative people; the shortage is of innovators.**" Keeping this in mind, our Department is taking up the noble task of establishing a new faculty student relationship through 'Innovation Club' where fruitful ideas from the student-faculty interactive sessions would be screened to serve as potential subject theme of Project Work of Final Year students of Mechanical Engineering at DCE. This effort will be in tune with the philosophy that to stay in the arena of technical education and remain competitive, each Department needs to constantly evolve, innovate and adapt to environmental changes quickly. The Innovation Club will start its humble beginning with manufacturing of simple material handling equipment to relieve us of the monotonous labor of handling heavy physical loads manually. This is how the attribute "**ever green**" which fortunately clings to this Department finds a justification.

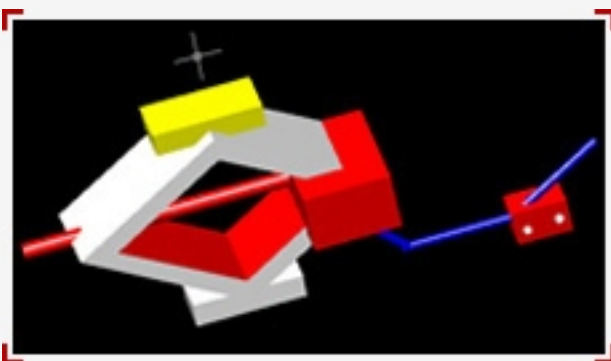
The other venture which we are planning to initiate is organizing classes on "**Personality Development**". The emphasis will be on preparing the students to effectively compete in various on-campus and off-campus interviews. We as a team have to undertake the mandatory responsibility of imbuing confidence in our students. The real barometer of measuring our performance is how the students of the Mechanical Department have fared in academics and sought suitable placements. We are fully aware of the Mechanical Department's social responsibility towards industry. We have moral duty to provide academic inputs to industry to enable them plan, integrate and execute product, design and development leading to production of goods and services and supplying them to customers at affordable price at right time. With a view to fulfill this obligation, we are organizing a **two days training programme in July, 2009 on "Value-Engineering for Mechanical Engineers and Executives"**. This has been planned with the all-out support from Top-Management of the College. Such endeavours hence forth will become regular features of our academic calendar. We, HOD-Mechanical Engineering, Faculty, Staff and Students rededicate ourselves to the holy task of building our college a role model for other colleges to emulate. We are sure that we shall attain our envisaged goal under the leadership and readily available guidance of **our Principal, Prof. (Dr.) B.M.K. Prasad and Dean Academics, Prof. Onkar Singh.**

 *Head of the Department, (Dr. D. S. Sharma)*




Live Projects Undertaken By Students :

EASY GO ELECTRIC SCREW JACK

Scissor jacks are simple mechanisms used to drive large loads for short distances. The power screw design of common scissor jack reduces the amount of force required by the user to drive the mechanism. Most scissor jacks are similar in design, consisting of four main members driven by a power screw. In this report, a unique design of a scissor jack is proposed which is very easy to manufacture. Each member, including the power screw sleeves, is made of the common c-shape. This eliminates the need for machined power screw sleeves, which connect the four members and the power screw together. The manufacturability of the proposed scissor jack lowers the cost of production. Scissor jacks allow to raise heavy loads using only a fraction of the force ordinarily needed. In this project the effort was to design an efficient Electric scissor Jack to be operated by Electric Power of cars' own battery & capable of raising a 1600 lbs load.



Team Members **Mechanical VIII Semester**

-  Amit Manocha (8215)
-  Saurabh Kaushik (8875)
-  Amit Saxena (8876)

EMERGENCY BRAKING SYSTEM (HAND BRAKE)

An emergency brake lock assembly that locks an emergency brake actuator in an engaged position to prevent the vehicle from moving while a lift assembly contained on the vehicle is being operated. The emergency brake lock assembly includes an emergency brake switch that is positioned to detect movement of the emergency brake actuator between an engaged position and a disengaged position. When the emergency brake actuator is in the engaged position, the emergency brake switch generates a brake engaged signal. An auxiliary door switch is positioned to detect the movement of an auxiliary door contained on the vehicle. When the auxiliary door opens, the auxiliary door switch generates a door open signal. Upon receiving both the door open signal and the brake engaged signal, a solenoid actuator moves a locking member to a locked position to retain the emergency brake actuator in the engaged position. The lift assembly positioned in the auxiliary door is energized only when the auxiliary door is open and the emergency brake actuator is locked in the engaged position, preventing the vehicle from moving during lift operations. An internal shoe brake, which is being used as a parking brake in a disc hub, is designed so that it can be preassembled in a ready-to-be-installed fashion. For that purpose, the anchor plate, serving as a cover plate, is mounted to a support by at least two fixing members. The fixing members are provided with heads which mesh free from play with bores provided in the axle support. Fixing of the support and the anchor plate to the axle support is effected through the intermediary of a screw. The screw and the fixing members jointly transmit the circumferential forces onto the axle support.

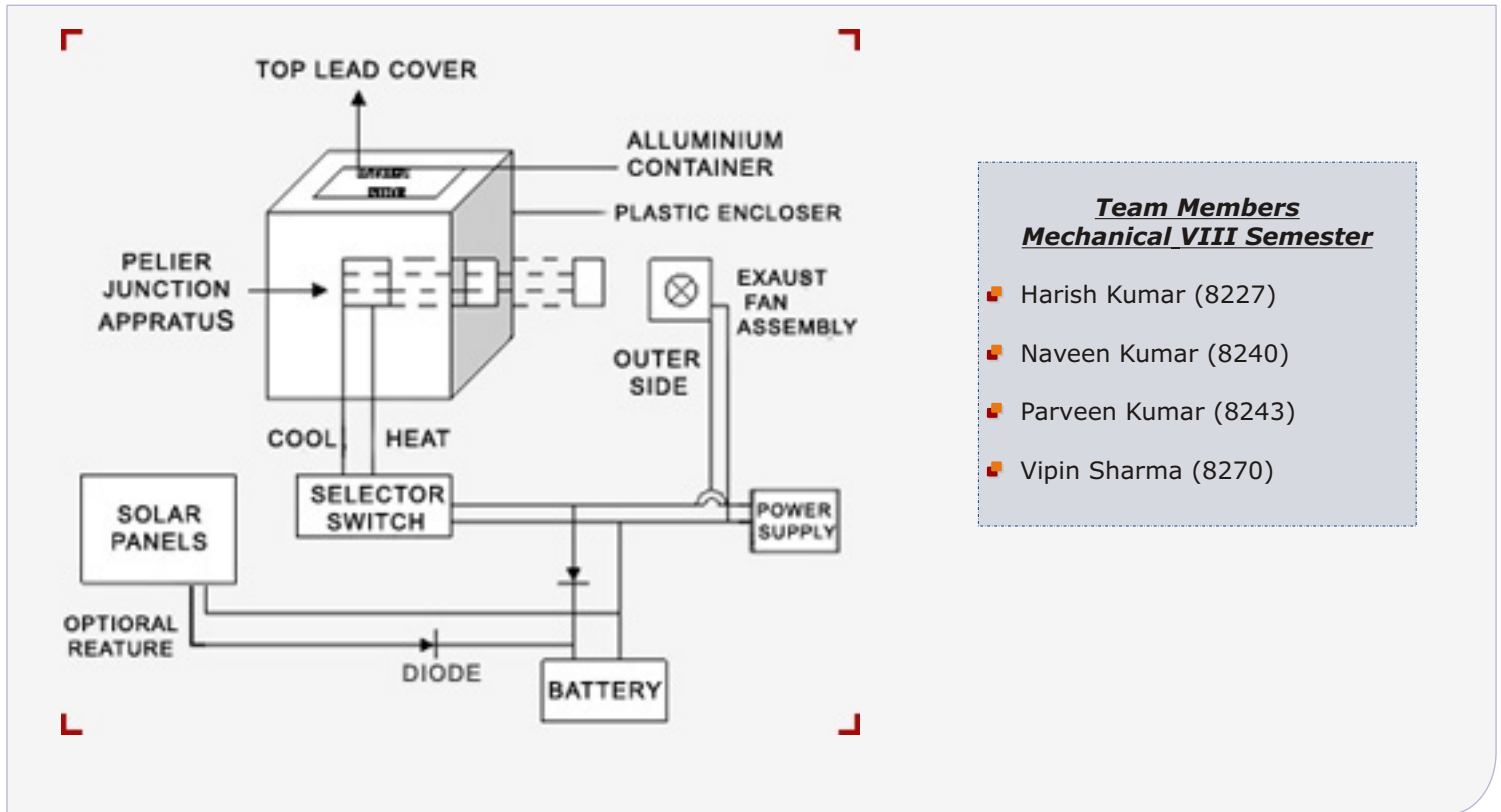


Team Members Mechanical VIII Semester

- Puran Singh (8248)
- Saurabh Kumar (8257)
- Saurabh Kumar (8258)
- Vikram Wadhera (8269)

FABRICATION OF COMPRESSORLESS SOLAR ENERGY REFRIGERATOR

Refrigerator is the machine used to produce and maintain temp below that of the ambient temperature. The compressor less solar energy refrigerator works on the peltier effect by using photovoltaic cells. The photovoltaic module in the array converts sunlight into the electricity which helps in the charging of the battery. The rechargeable batteries are used to store electric energy for use during unavailability of the sunlight in the night or during poor weather. Peltier effect creates a heat difference from an electric voltage. It occurs when a current is passed through two dissimilar metals that are connected to each other by two junctions (peltier junction). The current derives a transfer of heat from one junction to the other, one junction cools off while the other heats up. The cooling junction can be used as refrigerator which will absorb the heat from the desired space.



Technology Update :

ENHANCING FATIGUE LIFE OF SURFACES USING A NEW LPB TOOL

A new technological field "**Engineering Surfaces**" would be a more effective and economic route to the successful manufacture. Low plasticity burnishing (LPB) is state-of-the-art method of surface enhancement, which increases the burnishing to the next level of sophistication. LPB can provide deep, stable, surface compression for improved surface integrity characteristics. The field of surface engineering is highly important and has demonstrated many developments that have improved the operational life of engineering components. Engineers who want to improve the fatigue life of a component will eventually have to take into consideration the surface of the component. The ability of the surface in resisting failure depends upon several characteristics including finish, residual stress and cold working. LPB provides high magnitude, deep, thermally and mechanically stable compression and is performed on conventional / CNC machine tools. Improving fatigue performance by introducing deep, stable layers of compressive residual stress avoids generally the cost of modifying either material or design. There is a number of methods of surface enhancement that can produce required surface roughness, surface hardness and residual compressive stresses into the surface of components. Low plasticity burnishing (LPB) is a new method of surface enhancement, which raised the burnishing to the next level. The basic LPB tool comprises of a ball that is supported in a spherical hydrostatic bearing. LPB can be performed in conjunction with chip forming machining operations in the same machine tool. As the ball rolls over the component, the pressure from the ball causes plastic deformation to occur in the surface of the material. Since, the bulk of the material constrains the deformed area, the deformed zone is left in compression after the ball passes. No material is removed during the process. The surface is permanently displaced inward. LPB smoothens surface asperities leaving an improved surface finish and fatigue life.

Student's Viewpoint About The Department :



"It is better to know some of the questions than all of answers"

I am Happy to express my views about the Mechanical Engineering Branch where I not only earned value based engineering education but also shaped my character and personality through the synthesis of science and spirituality. After crediting these qualities **JBM Ltd. has selected me through campus placement.** I wish to be associated with the HOD, faculty, staff and college for any kind of service in the future.

Divyank Mathur
(Roll No. 8224)



"Single minded focus, always being to move ahead successfully."

It gives me immense pleasure to be associated with the Department of Mechanical Engineering where I gained not only the technical knowledge but also improve my communication skills and speaking power. I am really thankful to my **HOD, Prof. D. S. Sharma** for grooming and nurturing me overall.

Akash Gautam
(Roll No. 8212)



"There is no top, there are always further heights to reach."

I take pride on being a Student of Mechanical Engineering in Dronacharya College of Engineering. The faculty grooms us for personality development, motivation, communication skills attitude and behavior, self esteem and confidence building etc. to enable us to have good jobs in reputed organizations.

I wish to be associated with the faculty of this Department for building my career in years to come.

Sunit Shukla
(Roll No. 8263)



"It is much easier to be critical than it is to be correct"

Dronacharya College of Engineering is one of the prestigious institute in Haryana and its Department of Mechanical Engineering has produced Technocrats who have proved their worth. The faculty not only impart technical knowledge but also groom us for personality development, communication, speaking power and group discussion.

I am really very happy to be associated with the Department and the college.

Saurabh Kaushik
(Roll No. 8875)