

AMEN

The Association of Mechanical Engineers

NEWSLETTER

Published by the Association of Mechanical Engineers, IIT Kanpur

“The best way to have a good idea is to have lots of ideas.”

– Linus Pauling

With this issue of AMEN, AME has reached another milestone. It is time to hand over the charge of the affairs of AME to the new Council. Our Council tried it's very best to make AME more vibrant and active. As far as the newsletter was concerned, I must thank all those who contributed and also those who came forward with suggestions to improve the newsletter. But I must mention that it was difficult to keep the flow of contributions continuous.

The newsletter not only provides space to display your literary skills but also to express yourself on anything you feel strongly about. So I urge all and sundry to come forward and help realize the true potential of AMEN.

Editor

REMINISCENCES

Four years; a yet another chapter approaches its conclusion. The reminiscences of these four years being so vivid and fresh, seems as though it was just yesterday when we stepped into this campus. And they say it is now time to bid farewell, even sand in an hourglass does not slip that fast! At this stage, what's really important is to retrospect what we have gained from this place. We surely studied engineering, sciences and technology. We have learnt time management bundled with procrastination. And the most important, we have learnt to socialize.

Personally, I am indebted heavily to IIT Kanpur for most of my personality. The first year had been the year of exploring the new freedom in this place of enormous opportunities. But this tide of enormous opportunities probably rose too high in the second year when my quest for exploring these came in direct conflict with academics (a lot of Y2 would share being a part of that disaster though!). But life continued at its never slowing pace. At this stage we got more and more exposed to Mechanical Engineering, sometimes in an interesting way and at other times in a not-so-remarkable way too. It was also the time when people start to choose their paths and definitely the time when our outgoing mail server begins to register new records each day – the quest for a summer internship. And then one enters the final phase, the most vital one too. This phase is thick with anticipations: jobs, scholarships, B-schools, IAS and what not. When we look at the bigger picture, IITK seems to be an inn where each one of us prepares oneself to take the chosen path, coupled with an interaction that changes us all irreversibly.

Aiyush Saxena (Y2028)

FROM THE DEPARTMENT

▪ The Association of Mechanical Engineers bade adieu to the final year batch in a simple ceremony at the Type-II Community Hall. The show began with a sweet rendition of “Kabhie Alvida Na Kehna” which was followed by a melodious “Papa Kehte Hain”. Thereafter, Dr. K. Muralidhar, the Head of Department shared a few words of wisdom with the departing batch. He emphasized on the importance of being driven by passion and excitement in work. He particularly appreciated the efforts of AME for successfully conducting industrial trips and guest lectures and for active circulation of the AME newsletter in the department. The audience was then left spellbound by the magic Dr. P. Venkitanarayan created with his violin. The next performance, was delivered by Mrs. Khandekar (professional vocalist), wife of Dr. Sameer Khandekar, with her six-year old son on the tabla. The most awaited attraction of the evening came up next--The distribution of titles. There were many other amusing titles which were awarded to the deserving candidates. This was where the cultural show came to an end. The next item on the agenda was dinner. With this the AME said goodbye to the graduating batch with a word that their memories will live in our hearts forever.

▪ The new AME Office bearers have been appointed. The new AME team is as follows,
AME UG: President - Prashant Saxena, General Secy - Sumeet Kale, Treasurer - Shreyansh Jain, Web Secy - Shyam Sunder Nishad, Chief Editor - Shubham Goel, P.R. Secy - Nikhil Padhey, Cultural Secy - Shahdab Anwar, Joint Editor - Shubankar Ghosh
AME PG: President- Deepshikha Priyadarshini, Secretary - Bhavesh Kumar Sharma, Treasurer- B.R.B. Vijayakumar

Due to the Summer Vacations the next Issue of AMEN will be published in August. Wish you all a great Vacation!



The Wall Climbing Robot: ADAM-I

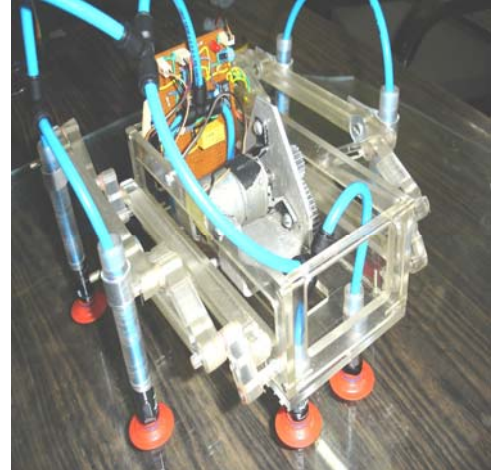
The wall climbing robot: ADAM-I was developed by me along with Anil Rathi and Deepak Sachan as our B.Tech Project under the guidance of Prof. A.K.Mallik. ADAM-I is capable of traversing vertical smooth walls with the use of vacuum grippers whose operation is synchronized with the movement of the mechanism. It consists of an eight-link mechanism based on a modified parallelogram four bar linkage. ADAM-I can be thought of as a practical application of ME352 - Theory of Mechanisms which was taught to us in the 5th semester by Prof A.K.Mallik. The beauty of the mechanism used is that it just uses a single permanent magnet DC motor which gives rise to a gait pattern in which the body and the legs alternately stick to the wall in a single cycle. The main challenge for us was to synchronize the operation of the vacuum grippers with this sticking of the legs and the body alternately which was based on the gait pattern.

To synchronize these two independent events, we used an optical sensor and a black strip mounted on the main shaft to send a signal that at what angle of the crank, the body hits the wall. The vacuum grippers were operated by two pneumatic vacuum pumps which generate vacuum only when a compressed air supply is passed to them.

To control the compressed air supply to these pumps we used solenoid valves which supply compressed air only when a voltage is supplied to them. Thus, the input from the optical sensor controlled the operation of the solenoid valves and thus, of the vacuum grippers.

We plan to take ADAM-I for participation in a robotics competition to be held in June 2006 and hope that our design would be appreciated.

Ankit Raj (Y2071)



THE FIRST CAR

Several Italians recorded designs for wind driven vehicles. The first was Guido da Vigevano in 1335. It was a windmill type drive to gears and thus to wheels. Vaturio designed a similar vehicle which was also never built. Later Leonardo da Vinci designed a clockwork driven tricycle with tiller steering and a differential mechanism between the rear wheels.

A Catholic priest named Father Ferdinand Verbiest has been said to have built a steam powered vehicle for the Chinese Emperor Chien Lung in about 1678. There is no information about the vehicle, only the event. Since Thomas Newcomen didn't build his first steam engine until 1712 we can guess that this was possibly a model vehicle powered by a mechanism like Hero's steam engine, a spinning wheel with jets on the periphery. Newcomen's engine had a cylinder and a piston and was the first of this kind, and it used steam as a condensing agent to form a vacuum and with an overhead walking beam, pull on a rod to lift water. It was an enormous thing and was strictly stationary. The steam was not under pressure, just an open boiler piped to the cylinder. In 1765 James Watt developed the first pressurized steam engine which proved to be much more efficient and compact than the Newcomen engine.

The first vehicle to move under its own power for which there is a record was designed by Nicholas Joseph Cugnot and constructed by M. Brezin in 1769. A second unit was built in 1770 which weighed 8000 pounds and had a top speed on 2 miles per hour and on the cobble stone streets of Paris this was probably as fast as anyone wanted it to go. It had a tendency to tip over forward unless it was counterweighted with a canon in the rear. The purpose of the vehicle was to haul canons around town.

The early steam powered vehicles were so heavy that they were only practical on a perfectly flat surface as strong as iron. A road thus made out of iron rails became the norm for the next hundred and twenty five years. The vehicles got bigger and heavier and more powerful and as such they were eventually capable of pulling a train of many cars filled with freight and passengers.

SPEAK UP

When I heard about a proposal of 27% increase in reservation in 20 central universities including IITs, IIMs, NITs and AIIMS, I was not shocked until someone told me that this would lead to a reduction of 1330 seats in IITs and 210 Seats in IIM A,B,C alone for the general category students. This is nothing but vote bank politics. The only difference is that this time it is being done more shamelessly. The basis of the reservation is the "Mandal Commission Report". This commission (following the Supreme Court injunction that overall reservation should not exceed 50%) had in fact proposed only 27% reservation - 27% for people who constitute 52% of the population. It is well worth noting that the OBC and SC/ST together constitute 74.5% of the population. This report mainly focused on the fact that a large majority of the OBCs live in villages and that they are poor farmers. The Commission wanted a change in the private ownership of the means of production both in industry and agriculture. Towards this goal it also recommended that the Ceiling Act and other land reform statutes should be vigorously enforced. Upliftment of these backward classes cannot be brought about by merely reservations. Both time and money needs to be spent by the government. But the political establishment, looking for a short term advantage, almost murdered the soul of Mandal Commission. How can such measures improve the condition of the poor and the backward? How can one expect that a more capable person can work peacefully under a less capable person? In this age of tough competition, can the people belonging to the reserved category get the same respect as the rest?

If we want a society where all are equal then we must everyone equal. The choice is ours

Abhishek Kothari (Y4019)



