Volume 2, Issue 1 (Jan, 2007)

AMEN

The Association of Mechanical Engineers

NEWSLETTER

Published by the Association of Mechanical Engineers, IIT Kanpur

"Whenever you are confronted with an opponent, conquer him with love."

– Mahatma Gandhi

From The Department

Prof. Durst from Erlangen University Germany, on his academic tour to India, came to IIT Kanpur on 5th December 2006. He visited fluid and thermal science labs of our department and appreciated the facilities and research work. And later in the day, he presented a talk on "**Fluid Mechanics -Do we solve the right equations?"** The talk called for the changes in Navier-Stokes equations that improve the numerical predictions to a better accuracy. AME team interviewed him at the end of the talk and here are some excerpts of the discussion.

Q: What are the prosperous research areas in thermal and fluid sciences?

In my view point, heat pipes, electronic cooling, combustion and porous media studies are a few major thrust areas. To overcome the heat transfer problems associated with the next generation silicon processors, diamond processor seems to be the solution. I am fascinated with the kind of research work going on in heat pipes in your department.

Q: What's your view point on Indian research?

In India, people are more fascinated about publishing paper. My emphasis is on economy and utility of the end product while dealing with applied research. The ultimate essence of engineering is to have economic and safe design for the end product whatever it is. I also stress that creativity should never be suppressed at any level because it necessitates a newer product.

Q: Comment on the quality of Indian students who have worked with you?

Without doubt the Indian students are very talented and hard working. But too much competition and comparison among peers can be destructive for team work which is the case sometime in India.

Q: In your opinion what are the responsibilities of a master student and a doctoral student?

Master degree is a transition from already established knowledge to independent thinking in terms of research. One must be equipped with research tools first to stand with contemporary researchers and the M.S/M.Tech programme are aimed for that only.

And PhD is the right time and age to create new things/ideas. Einstein published his Nobel winning work at the age of 27. Heisenberg at 26 and many others and this age is same as that of present PhD student and hence the right time for the best output. It is the time to widen one's approaches and push the boundaries.

Students from different countries possess different skills depending upon from where they are. For example, French people are technically strong but could not excel very well in experiments, but people from Poland are good in experiments.

Thus Prof. Durst touched upon many issues and concerns of the student at all levels and enlightened many minds with his deep thoughts and views. The talk was surely etched into the glory memory of AME team.

AME Team

So, who invented the paperclip?

When Johann Vaaler patented his paper clip in 1901, there already were similar designs on the books. William Middlebrook of Waterbury, Connecticut patented his design in 1899. Cornelius Brosnan of Springfield, Massachusetts patented his Konaclip in 1900.

So, who was first? Well, it is thought to be Johann Vaaler. Drawings of his design date to early 1899, but since Norway had no patent law at the time, he had to seek patent rights in Germany and the US in the following years.

Johann Vaaler was born on 15 March 1866 in Aurskog, Norway. Known as an innovator in his youth, he graduated in electronics, science and mathematics. He was employed by the owner of an invention office when he invented the paperclip in 1899.

Nilanjan Saha
Y4261

THE WINTER INDUSTRIAL TRIP

The AME organised an industrial trip for the third year undergraduate students to Mumbai, Pune and Goa during the winter vacations. The students were accompanied by Mr. B.S Bhadauria and Mr. G Srinivas.

The trip started on 5th of December when we left Kanpur. Pune was the first destination and on the first day, we visited two engineering software firms; Fluent India Inc. and Geometric Softwares respectively. Here we got a brief insight into how and what goes behind any engineering software of Design or CFD like Fluent, Adams etc. Both the programming as well as the practical application aspects of the software were told which excited many students. Even the working environment especially at ANSYS campus impressed everyone. Students got to meet some of the IITK alumni there and discussed the future possibilities in the area. The next day we visited Tata Motors which was probably the best part of the trip. We saw and understood the assembly lines of trucks, cars and SUVs along with the welding, forging and casting shops. It was really amazing to see the use of CNC machines and robotic arms on such a large scale.

Next on the itinerary was Goa where we visited Western Indian Shipyard and National Institute of Oceanography. Working of docks, mounting and repairing of the ships were explained in the shipyard while in the NIO we were shown a documentary on ocean science followed by a tour of their museum and the manufacturing lab. The last station was Mumbai where we visited Mazagaon Dock Ltd.- a defence PSU. We were explained the working mechanisms of ships and other related machinery.

Apart from the serious stuff, there was ample time for sightseeing - the beaches of Goa, tourist destinations of Pune and Mumbai and the beautiful Konkan railway route of Pune to Goa added to the trip. Looking back, the trip was a lifetime experience in terms of exposure to different work atmospheres in different kinds of firms. Another thing which was amazing to see was the respect we had there being IITians. In Mazagaon Dock Ltd., we were allowed to go inside and look at the interiors of the ship machinery which was strictly banned for visitors only because we were IIT students and at some other firms we were frequently reminded that the IITians there were their most valuable asset. Finally we left for Kanpur on 17th December with some wonderful memories we'll always cherish.

Prashant Saxena
Y4296

History of Mechanical Engineering

The words engine and "ingenious" are derived from the same Latin root, "ingenerate", which means "to create". The early English verb engine meant "to contrive". Thus the early "engineers" were the people who contrived (i.e. invented) new things.

The history of mechanical engineering can be traced directly to the ancient world, to the designers and inventors of the first mechanisms which were powered by human or animal labor, water or wind energy, or a combination of these.

Although many of the mechanisms had a purely peaceful application, such as for flight, irrigation or building, the word "engineer" originally meant "military engineer" because it was derived from the term "engines of war". These were machines such as catapults, floating bridges and assault towers. The invention of the steam engine in the latter part of the 18th century provided a key source of power for the Industrial Revolution and gave enormous impetus to the development of machinery of all types. As a result, a new major classification of engineering dealing with tools and machines, namely mechanical engineering, received formal recognition in 1847.

Today's mechanical engineer is heavily involved in the development and use of new materials and technologies, especially in computer aided engineering. A rapidly growing field for mechanical engineers is environmental control, comprising the development of machines and processes that will produce fewer pollutants, as well as the development of new equipment and techniques to reduce or remove existing pollution. Although mechanical engineers may occasionally work alone on a small project, they are more likely to be working on large, multi-disciplinary projects, liaising with specialists from other areas.

In almost every sphere of modern life, from the air-conditioned office or home to the modern industrial plant or mode of transport, one sees the work of mechanical engineers who continue to develop and apply new knowledge and technology to improve the quality of life for society as a whole.

V.Ketan Kumar
Y4469

Bluetooth

'Bluetooth' is a wireless technology that connects various electronics devices together.
Do you know how it gets this name?
Harold Bluetooth was the King of Denmark in the late 900s. He managed to unite Denmark and part of Norway into a single kingdom and then introduced Christianity to Denmark. Choosing this name for the standard indicates how important companies from the Baltic region (nations including Denmark, Sweden, Norway and Finland) are to the communications industry, even if it says little about how the technology works.

Shuabhankar Gosh
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