

# Report on Seminar by Dr. K.Rajashekhara

**Speaker:** Dr.Kaushik Rajshekhara

**Brief Introduction about the Speaker:**

Dr.Kaushik Rajshekhara has wide Industrial experience as he has worked with several companies in India and abroad like Delphi (USA) as a Chief Scientist. He has done extensive work in the field of Hybrid Electrical Vehicles. He has also served the IISC, Bangalore as a professor. Currently he is working with Rolls Royce, USA as a chief engineer. He is a distinguished fellow member of IEEE, that itself is an achievement as very few people from India have the honour .

**Topic:**

**Energy Challenges, Research, Education and future strategies**

**Date and time:**

18<sup>th</sup> December, 2006 / 3 PM to 4:30 PM

**Attended by:**

Prof.Z.C.Bendale (Dean of MAE, Pune)

Dr.Viren.K.Sharma (HOD-E&TC Dept. MAE, Pune)

15-20 lecturers from various departments of MAE, Pune

1 Lecturer from some other college

IEEE-MAE Students Branch Secretary: Mr. Amit Kumar Chaudhary (BE-ETX, MAE)

Student Members: Parth P.Mehta (TE-E&TC, MAE) and one student of final year Electrical Engineering from Bharati Vidyapeeth College of Engineering, Pune

**Organized by:**

IEEE-MAE students branch at MAE, Alandi-Pune

**Seminar Briefings:**

The Seminar with inaguration and brief introduction about the speaker by Dr.V.K.Sharma. Initially the topic of the lecture was decided as “Hybrid Electrical Vehicles” but Dr.Kaushik felt better to give speech on “Energy challenges, Research, Education and Future strategies” as energy is the major problem of the world. Mostly faculty members were present there and he felt that it is very important for the faculty members to know about this and create awareness among students. That is why he delivered speech on this topic. Initially Dr.Kaushik discussed about energy crisis. He showed various statical analysis published by Universities and standard sources. From statical analysis he informed us that energy is the world’s third biggest problem. Most people even in USA are worried about their food and shelter first. Very few percentage of people worry about pollution, increasing CO2 emission, green house problems, ozone layer problems and other issues regarding our environment. He informed us that USA and China are the biggest energy consuming countries. These countries together alone consume more than 50% energy of the world. In USA blackouts are taken very seriously than in India. It becomes a serious issue if electricity failure occurs there. Electric cars in USA cost about 500\$ more than petrol/diesel car. So, people do not purchase electric cars. They buy normal cars as it is comparatively cheaper. Very few people worry about environment even in USA.He showed the statical analysis of currently utilized energy sources. A big part of energy comes from crude oil. Very few percentage of energy comes from alternative energy resources. He informed that currently Pune is much hotter in this winter season than it was in winter season 20 years back. Same condition is there in the USA.So, global temperature is drastically increasing. Crude oil source will come to an end within 40-50 years. We frequently read in news papers that

XYZ company has discovered new big source of oil. But generally this big source would provide energy to the world maximum for 40-50 days. So, we should keep in mind that this resource of energy is very limited. Recently USA has approached various countries of the world for an agreement about maximum CO2 emission and pollution created by various countries. As per the agreement participating countries will not pollute the environment more than prescribed amount. But many developing countries like India denied for participating (Probably they feel that USA is now developed because of its industries and they have polluted environment very much, now it is our turn to pollute the environment and grow! ).

Then Dr.Kaushik talked in short about various techniques used for obtaining energy from non polluting alternative sources of energy like wind, geothermal, tidal, solar energy etc.He explained role of nanotechnology for making less pollution and obtaining pure platinum etc.He explained the role of hydrogen fuel cell and hydrogen as an energy carrier. He explained techniques used in energy and electricity distribution and making minimum energy loss while distribution. He informed us about Netherlands who has set an example by utilizing wind energy. He told us that in many universities research on hydrogen fuel cells, nanotechnology, highly efficient and cheaper solar panel and other similar research are going on. He also said that a single alternative is not the complete solution. All alternative resources together will generate energy to substitute crude oil and other conventional energy sources. Each alternative has it's own advantages and disadvantages. Some are suitable in some conditions and some are suitable in some other conditions. Electric energy is definitely a good alternative to oil. But generation of this much electricity is itself a problem. He said that now-a-days almost every university in India and world offer courses on energy.

In this way Dr.Kaushik came to an end of his lecture. He invited the queries. Prof.Gaudar asked him about current scenario of research in this field and nanotechnology in India and at what place in India it's research is going on.Dr.Kaushik said that he is aware of this in USA only. He is not aware about the current scenario in India. In past BHEL was working on it.

One another question was asked by other professor. He said that solar water heaters' black panels have very limited life of about 4 to 5 years. What should we do to increase It's life? People in Karnataka cover this panel with a wooden cover to protect it when it is not in use. In this manner it's life gets increased by double amount.Dr.Kaushik replied that he is not the right person to answer this question. A material scientist can answer this question truly.But the thing regarding to wooden cover for increasing black panel's life is quiet interesting.Infact, it is a topic for research.

Another question was asked by Mr.Amit Kumar Chaudhary "As a graduate engineer how can one take up a career in this challenging field?"Dr.Kaushik replied that to be a part of these research activities as a graduate engineer is very difficult. For doing this one has to do Masters or Ph.D. in this subject.

After the end of the query session, Prof.Z.C.Bendale honoured Dr.Kaushik Rajshekhara with a shawl, memento and a photo frame of Saint Dyaneshwar.

**Report prepared by:**

Mehta Parth Paresbhai

TE-E&TC

Roll No.:43

Date: 2<sup>nd</sup> March, 2007