



EE VISION

IEEE — UAE SECTION NEWSLETTER

Chairman's Message

I would like to welcome you all to our first issue of IEEE, UAE Section's newsletter "EE Vision." This is the start of new beginning to new ideas and concepts. It is the inception of new ways of communications between Electrical Engineers. This newsletter is for you and from you. This is our story.

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Well, it all happened on the 2nd of December 1971, when a nation was born. The **United Arab Emirates** was formed as a Federation of Emirates that was declared by the leaders of all the Emirates. Shaikh Zayed Bin Sultan Al-Nahayan, the late Shaikh Rashed Bin Saeed Al-Maktoum and the rulers of the other Emirates had a **vision**. This **vision** was to place this newly born federation at the level of developed nations. The **vision** was clear, the mission was accomplished and the goal was reached. One of the main tasks was to improve engineering services, develop engineering products, and build engineering infrastructure. **IEEE, UAE Section** was established in 1987 to participate in the development of **U.A.E.** and fulfill the **vision** perceived by the nation's leaders. It has played an essential role in widening the scope of techno-electrical and computing awareness in the society.

Through technical seminars conducted by prominent electrical engineers worldwide, **IEEE** has participated in the process of technology transfer. Several conferences, held in **U.A.E.**, were organized and sponsored by **IEEE**, which attracted many distinguished speakers. Their contributions were recognized by the society and were considered the keystone to the advancement of engineering sciences in **U.A.E.** **IEEE, UAE Section** is here to build the technological infrastructure, to develop techno-electrical industry and improve life-styles of individuals. The Executive Committee of **IEEE, UAE Section** have tried their best to increase the technical and social activities and improve the Electrical Engineering profession in **U.A.E.**

IEEE, UAE Section needs support from all electrical engineers and **IEEE** members to maintain the quality of services offered by **IEEE** and sustain the high-level standards of technical seminars and conferences. Every participation is appreciated, so please don't hesitate to contact us and provide us with your valuable input, opinion and contribution. We'll meet again in the second issue of "**EE Vision**."

Dr. Eesa Bastaki, Chairman, IEEE UAE Section (*Dept of Elect Engg, UAE University*)

From the Editor's Desk:



This Newsletter is a major step envisaged to bridge the communication gap among the fast growing mass of IEEE community in UAE. Under Dr. Bastaki's leadership, the IEEE UAE Section has recorded impressive growth in the recent years. There are presently about 450 members spread over different Emirates of UAE. Two student branches are functioning in UAE University and American University of Sharjah respectively. If we look into the growth of higher education centres, industries and IT sectors in the country, the potential for membership growth is much higher. By providing more local activities, UAE Section hopes to bring more members to its roll.

Considering the sweeping changes in the field of electrical, communication and information technology, IEEE has a significant role to help the academics and practicing engineers fight obsolescence and assist them to stay ahead of the technology. The Section intends to plan several programmes in the coming years to serve the need and interests of the members. Meetings can also be conducted in different locations of UAE. In a world of e-commerce and net meetings, we should also explore sharing and exchanging ideas through modern conferencing techniques. We look forward to hearing your views.

Eng. Abdulkadir Suhair

(*Head of Technical Support Unit, Planning Division, Transco*)

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www.ewh.ieee.org/r8/uae

IEEE UAE Section Activities -2001

Solar Photovoltaic for Off-Grid and Grid-Connected Applications

Professor Chem Nayar, Director of the *Centre for Renewable Energy and Sustainable Technologies Australia (CRESTA), Curtin University, Perth*. Australia gave an interesting lecture on the above topic on 9th May 2001 . The meeting was held at the premises of Society of Engineers, Al Kasba, Sharjah. on a topic which is very relevant to this part of the world where solar energy is abundantly available throughout the year. The gist of the lecture is given below.

Photovoltaic power generation is reliable, modular and involves no moving parts. There are many applications where photovoltaics provide a viable means for power generation. The extension of power lines from centralised power stations to remote rural areas experiences a number of problems. Traditionally stand-alone diesel generators are used to supply electrical power for remote areas. Such systems are often characterised by high running costs, low efficiency and maintenance costs. Hybrid power systems integrating renewable energy technologies with diesel generators, batteries and inverters are becoming popular for remote areas in many parts of the world. The parallel configuration proposed by the author allows all energy sources to supply the load separately at low or medium load demand, as well as supplying peak loads from combined sources by synchronizing the inverter with the alternator output waveform. The bi-directional inverter can charge the battery bank (rectifier operation) when excess energy is available from the engine-driven generator, as well as act as a dc-ac converter (inverter operation). The bi-directional inverter may provide "peak shaving" as part of the control strategy when the engine-driven generator is overloaded. Several systems based on this principle have been installed in many parts of the world. Another application for hybrid power systems is in electrical utilities experiencing frequent power failures and poor voltage and frequency stability. The author has been involved in implementing several projects in India to provide continuous, conditioned and regulated uninterrupted power in urban areas suffering from poor quality power.

Technology Transfer with Emphasis on IT in Organisations



Dr. Khaled Kamel, Dean of the College of Information Technology at the UAE University delivered a lecture on the above subject on 13th June 2001 at the premises of Society of Engineers, Sharjah . Excerpts of the talk is given below.

As we enter the second millennium we experience one of the most important changes in our lives, the move to an Internet-based society. Almost everything will be changed at home, in school, at work, in the government, and even in our leisure activities. Some changes are already here and they are spreading around the globe. Others are just beginning. One of the most significant changes is in the manner we conduct business especially in how we manage the business organization, marketplace and commerce.

Electronic commerce (EC) describes the manner in which transactions take place over networks, mostly the Internet. It is the process of electronically buying and selling goods, services, and information sharing. Certain EC applications, such as buying and selling stocks or books on the Internet, are growing at a rate of several hundred percent every year. Electronic commerce could have an impact on a significant portion of the world, on businesses, professions, organizations, and of course on people.

An Enterprise IT Organization is all about improving the productivity and value of the end user. By integrating workflow within the business, enterprises can expect their employees, customers, and suppliers to be both more efficient and more productive. This presentation details the major issues involved in creating an enterprise IT organization. It also highlights what is needed to sustain such development.

Soft Computing Techniques in Power Systems



Dr. Abdulla Ismail Abdullah, Associate Professor, Dept of Electrical Engineering, UAE University presented the new trends in computing techniques and tools in a seminar held on 14th November at Ramada Inn, Dubai. The meeting was held under the joint auspices of IEEE UAE Section and PES Chapter.

Soft computing differs from conventional (hard) computing in that, unlike hard computing, it is tolerant of imprecision, uncertainty, partial truth, and approximation.

The guiding principle of soft computing is: Exploit the tolerance for imprecision, uncertainty, partial truth, and approximation to achieve tractability, robustness and low solution cost.

Soft Computing mimics human (linguistic) reasoning. The main tools are Expert Systems, Neural Networks, Fuzzy logic and Genetic algorithms. ES is a computer software with an extensive set of organized data that emulates a human expert in a particular domain of knowledge. It is a knowledge based intelligent software for solving complex problems in medical and industrial fields.

Neural Networks (NN) are computational models that attempt to simulate the human brain. Finds extensive application in forecasting, optimization , control engineering and power industry. Fuzzy Logic (FL) is an information processing system which deals with data that is approximate rather than exact. GA is a probabilistic optimization algorithm guided by the mechanics of natural evolution .

The lecture explained in detail the trends in applications and commercial packages available for use.



Get-Together of UAE Engineering Fraternity

A large number of electrical, communication and computer engineers responded to the IEEE invitation for a social get-together at Ramada Inn, Dubai on 14th November Senior professionals from the universities, industries and utilities found time to share ideas, thoughts and information related to their sphere of working.. Welcoming the distinguished gathering, Dr. Easa Bastaki, Section Chairman told that IEEE would strive to bring together electrical engineers working in diverse fields in the country to contribute to the development of the UAE society. The following dignitaries spoke on the occasion.

Prof. Essam Zaabalawi, Chancellor, Sharjah University , -Prof. Robert Milne, Academic Director, Etisalat Engineering College , Dr. Khaled Kamel, Dean, IT Faculty, UAE University , Mr. Farid Mohammed Ahmed, Ducab, General Manager, Sales & Marketing , Mr. Jonathan Vail, Ducab, General Manager, Technical, Dr. Nasser Qaddoumi, American University of Sharjah , Dr. Sager from Al Ghurair University and Mr. Mohammed Bin Ghaleb, Bin Ghaleb Engineering Enterprises .

Other distinguished guests present in the function were Dr. Kamal Ali, Director of Computer Systems Engineering, UAE University , Dr. Mohammed Samaka, Director of Computer Science Program, UAE University, Prof. Hussain Al-Ahmed, Head of Electronic Engineering Dept, Etisalat Engineering College and Mr. Hisham Al-Shirawi, JVC Sole Agent, General Manager (Oasis Enterprises).

M/s Bin Ghaleb Engineering Enterprises was the sponsor of the event. The meeting ended with a grand dinner.

Pot Pourri

In the USA, everything that is not prohibited by law is permitted.

In Germany, everything that is not permitted by law is prohibited.

In Russia, everything is prohibited, even if permitted by law.

A statistician can have his head in an oven and his feet in ice, and he will say that on the average he feels fine.

In earlier times, they had no statistics, and so they had to fall back on lies. - Stephen Leacock.

Mathematicians....don't sin, they sine....always have a nice tan.are always going off on a tangent.

A census taker is a man who goes from house to house increasing the population.

If I would be a young man again and had to decide how to make my living, I would not try to become a scientist or scholar or teacher. I would rather choose to be a plumber or a peddler in the hope to find that modest degree of independence still available under present circumstances. -- Albert Einstein

Mile Stones in the Discovery and Harnessing of Electricity

- Modern milestones in the discovery and harnessing of electricity began in 1729 with Stephen Gray's discovery of the conduction of electricity.
- In October of 1745, Georg Von Kleist discovered that electricity was controllable and invented what came to be called the "Leyden Jar"
- Starting in 1747, Benjamin Franklin worked with static charges in the air and noted that that their existence suggested the existence of an *electrical fluid* that could possibly be composed of particles.
- In 1750 Franklin discovered that lightning was the same as electrical discharges, and proposed the idea of lightning rods that would draw this charge away from homes, making them safer and less prone to fires
- In 1799 , Alessandro Volta proved that electricity could be created using "dissimilar metals separated by a salt solution.
- In 1820, Hans Christian Oersted discovered the magnetic effects of a current, by observing that electrical currents effected the needle on a compass
- A few weeks later, Marie Ampere discovered that a coil of wires acts like a magnet when a current is passed through it.
- In 1827 Joseph Henry began a series of electromagnetic experiments and discovered the concept of electrical inductance. He also built one of the first electrical motors.
- That same year, Georg Simon Ohm working in the field of current electricity discovered the "conduction law that relates potential, current, and circuit resistance..
- In 1831 Michael Faraday discovered electromagnetic induction..
- These milestones marked the beginning of the field of electricity and electrical engineering that are continuously being further developed.

Source: IEEE History Centre

What Is the IEEE?

The IEEE ("eye-triple-E") helps advance global prosperity by promoting the engineering process of **creating, developing, integrating, sharing, and applying knowledge** about electrical and information technologies and sciences for the benefit of humanity and the profession. The IEEE is a non-profit, technical professional association of more than 350,000 individual members in 150 countries. Through its members, the IEEE is a leading authority in technical areas ranging from computer engineering, biomedical technology and telecommunications, to electric power, aerospace and consumer electronics, among others.

Through its technical publishing, conferences and consensus-based standards activities, the IEEE

- produces 30 percent of the world's published literature in electrical engineering, computers and control technology,
- holds annually more than 300 major conferences and
- has more than 800 active standards with 700 under development.

The benefits of IEEE membership include these offerings:

- Membership in one or more of 36 IEEE Societies and four Technical Councils spanning the range of electro technologies and information technologies
- More than 300 local organizations worldwide for member networking and information sharing
- Educational opportunities to ensure engineers' technical vitality
- More than 1,000 student branches at universities worldwide
- Public advocacy for U.S. member interests, and for women in engineering and ethics
- Special cost-saving and value-added benefits for MEMBERS ONLY
- Prestigious awards and recognition of technical and professional achievements
- Opportunities for volunteering, leadership and participation in a variety of IEEE activities
- Electronic commerce with the IEEE through a variety of Web-based Services

MDC NEWS

Who can become a Senior Member?

Anyone with 10 years in the profession (not 10 years of IEEE membership.) Your educational experience is counted towards this 10-year requirement as follows: 3 years for a BS Degree 4 years for an MS Degree 5 years for a Ph.D. Show 5 years of significant performance. Significant performance can be one or more of the following: Substantial engineering responsibility or achievement. Publication of engineering or scientific papers, books or inventions. Technical direction or management of important scientific or engineering work with evidence of accomplishment. Reference contributions to the welfare of the Scientific or Engineering Profession. Development or furtherance of important Scientific or Engineering courses in a "Reference Educational Program" or contributions equivalent to those of a) to d) above in areas such as Technical Editing, Patent Prosecution or Patent Law, provided these contributions serve to advance progress substantially in IEEE designated fields. Have three IEEE Senior Member or Fellow references. Be nominated by a Senior Member or Fellow from a Section or Society which counts as one of the required references.

Membership Renewal

You can renew the membership online through www.ieee.org/renewal

A.G.Hareendralal

Chairman, Membership Development Committee

IEEE UAE Section News

Formation of a Power System Chapter

IEEE HQ accorded sanction for the formation of a Power Engineering Society Chapter under the Section. Eng. Hareendralal is the Chairman of the new Chapter. It is hoped that Power Engineering activities will get a boost with the formation of this Chapter.

Members wishing to form more Chapters (Computers & Communications), please contact Eng.Lal for official procedures.

Region 8 Meeting at Edinburg

The 77th Region 8 Committee meeting was held on 1-2 September 2001 at Edinburgh. Eng.Joseph Peter and Eng K.S.Taj participated. Among various issues discussed, the difficulty for online registration of students in UAE was taken up. This will be resolved soon.

Annual General Meeting

The Annual General Meeting (AGM) of IEEE UAE Section will be held on 27th December 2001. The time and venue will be communicated later. Nomination Committee submitted the slate for office bearers for 2002.

Attention Members

MDC is preparing a database of expertise of UAE Section. Those interested may please send address, willingness to give talks, field of interest, areas of expertise to aghla@emirates.net.ae

Contributions to the Newsletter are welcome.

Please send your proposals/suggestions to improve the local activities in serving your needs and interests.

We also look forward to your active participation in the IEEE Section activities