39th INTERNATIONAL UNIVERSITIES POWER ENGINEERING CONFERENCE (UPEC 2004)[#]

6-8 September 2004, University of West England, Bristol, UK

T. J. Hammons, Chair, International Practices for Energy Development and Power Generation, University of Glasgow, UK

The 39th International Universities Power Engineering Conference (UPEC 2004) was held 6-8 September 2004 at University of West England (UWE), Bristol, UK. It excelled previous conferences by the quality of the presentations, the technical content of the papers, the number of delegates attending and the number of countries represented. As in the past, it had a broad theme, covering all aspects of electrical power engineering, and was attended by academics, research workers, and members of the power service and manufacturing organizations. During the sessions, 272 papers selected from 367 submitted Abstracts from 37 countries were debated. A plenary session, 48 technical sessions, and a closing session were held, where all technical papers were presented orally in five groups of parallel sessions. The high standard of the papers, presentations, and technical discussions was particularly gratifying.

Held annually, UPEC provides a forum for the exchange of ideas among practicing engineers from the universities, consultants, and in the manufacturing and supply industries. The first full conference was held at the University of Glasgow, UK, in 1967, following an inaugural meeting in Newcastle. Last year the conference was held at Aristotle University of Thessaloniki, Greece. The 40th (2005) conference will be hosted by University College, Cork, Ireland; and the 41st Conference will be held at the University of Northumbria, Newcastle-upon-Tyne, UK. Future venues under consideration by the International Steering Committee include Glasgow, UK (2007); Instituto Superior de Engenharia de Coimbra, Coimbra, Portugal (2008); and Universities in Germany and Italy. The working language at all meetings is English.

This year the technical co-sponsors included IEEE/PES, IEE, and CIGRE. Industrial co-sponsors included National Grid Transco (NGT), EDF Energy (UK), and WUHAN HI-TECH Electrical Engineering Company, China.

The conference was hosted by the School of Electrical and Computer Engineering University of the West of England, Bristol, UK. It provided engineers and academia with the opportunity to explore recent developments, current practices and future trends in power engineering. Young engineers and research students were particularly invited to contribute. It was residential lasting 3 full days with both en-suite and standard accommodation provided in the University Halls of Residence on the main campus, Bristol.

1. OPENING SESSION

Dr Hassan Nouri, Chairman of the Organizing Committee, welcomed delegates and accompanying persons to the conference, Bristol, and UK. He outlined the aims of the conference, summarized the detailed organization of the meeting, and reviewed the program. He said that 367 abstracts were received from all five continents and following a thorough review process by the International Steering Committee papers from 37 countries had been included in the Conference Proceedings (ISBN 1-86043-365-6). 272 papers

[#] This conference review article was prepared by T. J. Hammons, Chair, International Practices for Energy Development and Power Generation IEEE/PES, University of Glasgow, UK.

would be presented orally in five parallel groups of sessions. The full conference papers (1350 pages) were published in the three volumes of the Conference Proceedings hard copy and on CD-ROM.

He said the International Universities Power Engineering Conference or UPEC as it is more commonly known, with a history of 39 years, has provided and still provides engineers and academia with an opportunity to find and explore the newest trends in the development of Power Engineering and scientific methodology that is connected with it.

After a review carried out by the International Steering Committee and the local Organizing Committee, papers reflecting the effort and knowledge of engineers and allied scientists from 37 countries have been published in the Proceedings. All these papers, after being judged for their affinity to the subject of the conference in abstract form, were then reviewed in full form by a committee of competent scientists. Further, all the papers would be presented by their authors and discussed in the 48 oral sessions.

He then said that as is the custom of all the UPECs, besides being a scientific event helping engineers and allied scientists to get acquainted with state of the art in Power Engineering, UPEC has also a considerable social dimension not only in allowing personal contact and discussions with colleagues from various countries but also in helping them to know things about the country that hosts the conference. For this reason social events and technical visits had been organized.

Dr Nouri then thanked the institutions and the companies supporting the conference. The contributions of members of the International Steering Committee and the Local Organizing Committee, the reviewers, and the session chairpersons were highly appreciated. He thanked the Vice Chancellor and Council of the University, the Principal of the University and Dean of the Faculty of Engineering, Computing and Mathematical Sciences, National Grid Transco, EDF Energy, WUHAN HI_TECH Electrical Engineering Company China, the IEEE, CIGRE, and IEE for their support in bringing the Conference to fruition.

He also expressed personal thanks to members of the Local Organizing Committee, the staff of the Department and especially to Clifton Ellis (Conference Secretary), Peter Jaeckel (Web Design) and Christophe Gailhouste (Software Support) and Staff of the School of Electrical and Computer Engineering without whose selfless dedication the conference would not have been able to take place.

Alfred Morris, Vice-Chancellor of the University, then addressed the Conference. He said the 39th International Universities Power Engineering Conference concerns Electrical Engineers that work on Energy subjects. It was a pleasure and an honour for him to welcome delegates to the 39th conference (UPEC 2004) here in Bristol. There were present a good number of scientists from many countries and this in a way reflects development of this particular branch of science and technology in UK. It is an unparalleled achievement to have 272 papers from 37 countries in the Conference Proceedings and he congratulated the 200 or so delegates who have contributed to make today happen. He wished all the participants a pleasant and fruitful stay in Bristol and hoped that besides the conference they would find time to visit the many tourist attractions of the city and region. On behalf of the University of West England, he wished all a successful conference and an enjoyable stay in England and it gave him great pleasure to declare the conference open.

Jean Kowal, Secretary General of CIGRE (France) then gave the Keynote Address. Cliff Walton, the EDF Special Plenary Speaker, followed this.

2. KEYNOTE ADDRESS

This followed the Opening Remarks and was given by Jean Kowal, Secretary General CIGRE, Paris.
It was entitled: 'Electric Power Engineering: Is there a Future?

The Address is summarized below:

In the preceding decades our industry experienced a clear shift in the interest in Electric Power Engineering. Electric Power no longer attracts students as it used to, for the benefit of Telecommunication and Data Processing disciplines. This is at least true in our developed countries.

The common feeling is that Power Electricity is a mature technique, with no real expectation of technical development. Everything has already been invented or discovered. At the same time the period of development of important infrastructures - power plants, main grid – has passed.

In summary, no more investment, either in hardware or in software, research, and technical development.

Is there a future for Electric Power Engineering?

I do not consider that I am able to provide a full answer: my idea is to look at a few important points, especially of interest for me:

- What is the place of Energy and Electricity in the world tomorrow?
- What could be the place of expertise and technical knowledge in the future of Electric Power, with a special attention as to the role of a Technical Organization like mine?

1) Electricity and its Place in the Development of Our World– The Facts:

Quoting statistics from the International Energy Agency (IEA) some 1.6 billion people have no access to electricity today. It is said that by the present trend 1.4 billion will still be in the same position by 2030.

Biomass is today used by 2.4 billion people for the basic needs of subsistence: it means that much time is spent to gather fuel, it has effects on health, deforestation; without mentioning that fuel competes with agriculture 's need for fertilizer. Get water also...There is no chance for them to start a productive activity: no time, no mechanical assistance. So no production of wealth, no participation to the economy even on the smallest scale.

Access to Electricity is Essential for Development

Looking at the consumption of energy and the nature of this consumption against the level of income:

- lowest income households use energy for vital needs: basically biomass for cooking and heating, candles or batteries for lighting
- when income increases, electricity starts being used for lighting, refrigeration and water pumping. Still biomass is dominant for cooking and heating, with the consequences on time spent, ecological consequences... Liquefied petroleum gas (LPG) can also be used, but it is a fact that its cost is higher than the equivalent biomass fuel. Not much time is saved for production of goods
- only with higher income does use of biomass and its negative effects decrease significantly.

At the same time the total use of energy scales up, with a change of pattern, where ICT and other appliances represent the largest share of electricity use. What is significant is that electricity appears as making almost all the difference in energy consumption when energy use increases in the higher income group.

Access to electricity- and other energy as well - is necessary for economic and social development. Obviously access to water, health care and education, widely governed by access to electricity, are also vital.

The challenge is therefore to provide people with electricity. Quoting IEA: "The transition from energy poverty to relative affluence is a complex and irregular process. In a general way it is a journey from nearly exclusive reliance on traditional biomass to the access and use of electricity with a range of other modern fuel. By 2030 about 2 billion people will have completed the trip, but more than a billion will still be stranded in primitive energy poverty".

In front of this challenge we cannot stay indifferent. The challenge is also control of demography, which calls for education and minimal welfare. Either we contribute to provide the world with a civilized answer or we let nature control. You can guess the result.

100,000,000 people should be connected to electricity every year: a technical and a financial challenge, when you take into account that most of these people live in rather isolated zones where our conventional answers are not really relevant.

2) Developed Countries and Electric Power Engineering

Our countries have experienced until the eighties a tremendous development of electrical infrastructures, which resulted in rather reliable electricity supply.

The pattern has changed dramatically.

- The system, ageing, under-maintained, is today used in a way it was not designed for; electricity markets have been organized without taking into account properly the existing infrastructures.
- The industry is experiencing a very low level of investment on infrastructure and research: the lowest possible short-term cost is the objective.
- It happens at a time when society is requesting higher standards from electricity, as a condition for its development, towards the digital society.
- There appears a growing divorce between the needs of consumers and their environmental aspirations.
- The challenge for the Electricity Industry is multifold: political, technical and financial.

Political and Economic

Electricity because of its universal presence in life presents a real political dimension. There will not be economic growth without electricity supply: the challenge is therefore to explain to citizens the consequences of their choices and importance of the electric industry, basically how to meet the needs for a reliable environmentally friendly electricity, in other words the 3 **A's**: **A**vailable, **A**cceptable and **A**ffordable electricity.

Technology is the Second Side

- Develop acceptable generation tools.

We experienced this move in the immediate past with combined-cycle turbines, wind-power and other dispersed generation.

The main questions for tomorrow are about nuclear power obviously – can we do without it – with which technology – and about the integration of dispersed generation and the control issues it entails.

- Transmission Infrastructures

Different tracks are already open: GIL (Gas Insulated Lines), High Temperature Superconductor Cables, but also new conductors for overhead lines.

Power Electronics and the derived devices are already seeing many applications.

- Improve Control Capabilities in the System

Digitalization of vital control functions, like line protection that emerged in the eighties. Combination of telecommunication techniques, protection algorithms and global positioning capabilities result in "wide –area protection schemes".

- At customer level develop the conventional meter in a "portal" which allows bi-directional exchanges; develop different brands of electricity – electricity with different "octane" grades...
- Combine telecommunication and power media, with the use of optical fibers and PLC.
- And perhaps the most important increase efficiency of the use of electricity

To sum up: improve reliability and vulnerability of the power system and increase the quality of the product to reach the standards expected from a digital society.

Finance

Even if figures depend on numerous factors - economical development, electricity demand, life extension of existing infrastructure – it is interesting to quote them.

Eurelectric, which is the association of European utilities, made projections up to year 2030:

For the 15 historic countries of the European Union the needs for new generation is half for replacement of obsolete equipment, half for increase of demand: this represents a figure of 430 billion euros, to which we ought to add 120 billion euros and 370 billion euros for transmission and distribution networks, respectively.

To conclude on this picture of electricity paysage I will quote one sentence written by the Director of EPRI, addressing the evolution of the power system of the developed countries: *"will the bulk electricity systems evolve to become the critical infrastructure supporting the digital society of the 21st century, or be left behind as an industrial relic of the 20th century."*

3) <u>Our Contribution. Cooperation and Networking</u>

Answer is for the largest part in your hands, or more precisely in your brains.

But it is also in the cooperation practice, which always existed in the Electricity Supply Industry. May I remind you that Europe existed as Europe of Electricity before it existed politically. The UCTE network is now the largest interconnected synchronous system.

But cooperation works also through Associations as in the case of the one I represent. This Organization deserves to be better known.

- **What is CIGRE ?**

CIGRE (International Council on Large Electric Systems), is one of the leading worldwide Organizations on Electric Power Systems, covering their technical, economic, environmental, organizational and regulatory aspects.

It is a permanent, non-governmental and non-profit International Association, based in France. CIGRE was founded in 1921 and aims to:

- facilitate and develop the exchange of engineering knowledge and information between engineering personnel and technical specialists in all countries as regards generation and high voltage transmission of electricity
- add value to the knowledge and information exchanged by synthesizing state-of-the-art- and world practices
- make managers, decision-makers and regulators aware of the synthesis of CIGRE's work in the area of electric power.

More specifically, issues related to planning and operation of power systems, as well as design, construction, maintenance and disposal of HV equipment and plants are at the core CIGRE's mission. Problems related to protection of power systems, telecontrol, telecommunication equipment and information systems are also part of CIGRE's area of concern.

- **How it Works?**

CIGRE develops technical knowledge using two methods: conferences and meetings, where papers are produced and discussed, and continuous work on technical subjects, conducted by its permanent Study Committees.

The Biennial Session held in Paris every even numbered year is the most important CIGRE event: it brings together more than 2,000 delegates from all the parts of the world and more than 300 papers covering all the fields of CIGRE are discussed.

Symposia are usually held in Paris in odd numbered years, in different countries: attendance is smaller and these events focus on a limited number of topics.

Other meetings are held at country level or at region level.

Presently 16 Study Committees are active, each dealing with a technical field of the Power Industry. The work, carried out by Working Groups and Task Forces, is coordinated by the Technical Committee of CIGRE. Altogether more than 1 000 experts from all parts of the world are involved in these working bodies.

The work is managed by the SC Chairman, who is supported by the SC members. They comprise "advisory" Groups which assist the Chairman in the definition of orientations of the work, the choice of subjects and other relevant matters, and Working Bodies – Working Groups and bodies are created to achieve a specific objective, defined by Terms of Reference, and are disbanded after they have completed their Study and issued their report a comprehensive "Technical Brochure" or a Report.

More information on " www.cigre.org "

- **CIGRE and Education**

Education has grown a concern for our industry and CIGRE tackled the topic with an initiative called EPEE for "Electric Power Engineering Education".

In 2004 the fourth EPEE Panel was held and looked at the following issues:

- Challenges for the Electricity Supply Industry in the next decade and beyond
- Competencies and skills of a power engineer
- An effective program for meeting the manpower requirements of the restructured Electric Power Industry
- Role of University in training and continuous education of engineers / economists
- Role of CIGRE in facilitating the formation of good EPEE programs.

4) Concluding Words

Development will depend on access to electricity, in an interdependent scheme:

- Productivity increase is vital for developed countries – 2% a year is a minimal target for maintaining the standard of living
- Involve poorest countries in the process is also vital: they have to be partners in the world economy.

We need to:

- develop the power systems of the 21st century
- give access to electricity to the world
- restore and protect the environment
- eliminate poverty
- stabilize population.

A lot of work for Electric Power Engineer! And a wish:

"The vast networks of electrification are the greatest engineering achievement of the 20th century" according to the US National Academy of Engineering. I wish that Electric Power Engineering will deserve the same honors at the end of our century.

3. SPECIAL PLENARY ADDRESS BY CLIFF WALTON, EDF ENERGY (UK)

This followed the Keynote Address and was entitled *Academic and Industry Partnerships* and was presented by Cliff Walton, EDF Energy (UK). The presentation is summarized below.

The Power Engineering industry is beginning to recognize that there is an immediate need to focus their efforts towards an ever-increasing skills shortage.

Industry studies such as the Electricity Training Association (ETA) study in 2001 presented a global picture which suggests that the industry workforce has declined by 59% since 1990, 38% of the employees are aged between 45 and 59, and over the next 2 years 77% of companies anticipate difficulties in recruiting.

Other more prominent figures such as Mr. Colin Labouchere (Technical Director of the MARCO Project with The Woodhouse Partnership Ltd.) in a letter to IMechE spent time considering the mismatch between modern engineering job requirements and the education provided to become an engineer. He stated in his letter that:

"The great majority of content in a traditional engineering degree is only relevant if you are going to design and build something. Yet over 80% of all graduate engineers are employed to look after something that has already been designed and built by someone else".

To try to combat such a progressive decline and harness the appropriate skills to meet the ever increasing gaps, various industry bodies such as the Department of Trade and Industry (DTI), and the IEE are promoting industry activities such as Business Partnerships (IEE) and Knowledge Transfer Partnerships (DTI). Initial indications suggest that these partnership activities focuses upon knowledge transfer (e.g.) utilizing resource availability and expertise on a short-term project basis (1-3 years) with a view of producing tangible demonstrators through the construction of innovative ideas and or concepts. However, whilst these activities are important for promoting innovation through partner-shipping and are a means for encouraging new and radical ideas to be brought into the industry these partnership arrangements only go part way to supporting the skills gap we are currently focused with.

Cliff Walton then considered how the Power Engineering Industry in partnership with the academic world could better encourage new entrants to form a more rounded approach to Power Engineering and Asset Management.

4 TECHNICAL PAPER SESSIONS

Topics debated in the five parallel groups of technical paper sessions on the first day included: transmission and distribution systems; high voltage engineering; electrical machines and drives; renewable energy sources; power system protection and control; ANN, fuzzy, genetic algorithms and expert system applications; power generation, utilization, and transformers; power system harmonics and power quality; power systems operation, reliability, optimization and stability; power system planning and load management; circuit breakers; FACTS: power electronic applications; power systems modeling and analysis; power engineering education; and power systems planning and load management.

On the second day, there were further parallel groups of sessions on transmission and distribution systems; ANN, fuzzy, genetic algorithms and expert system applications; electrical machines and drives; power system protection and control; power systems operation, reliability, optimization and stability; high voltage engineering; FACTS: power electronic applications; renewable energy sources; power system harmonics and power quality; power systems operation, reliability, optimization and stability; power systems modeling and analysis; and power systems harmonics and power quality..

Topics debated in parallel groups of technical paper sessions on the third day included topics debated on the first two days together with electromechanical identity recognition as alternatives to the coherency identification.

5. OTHER CONFERENCE HIGHLIGHTS

Highlights of the conference included:

- Welcome Buffet Refreshments at the Main University Campus on the Sunday before the Conference.
- The Civic Reception on the Monday evening at the Council House, Bristol Civic Hall, at which Simon Cook, the Lord Mayor hosted delegates and guests at the Conference. Coaches took participants and guests to the Reception.
- Two Technical Excursions on the Tuesday afternoon to National Grid Transco (NGT) and British Air Bus Company, and two Cultural Tours to the Roman City of Bath and the Bristol Industrial Museum, where attendees were taken in coaches.
- Conference Banquet on the Tuesday evening at the Conference Room of the Marriott Hotel in Bristol, where attendees were taken in coaches.

6. TECHNICAL AND CULTURAL VISITS

Technical and cultural visits were arranged for UPEC 2004 participants on the afternoon of the second day of the conference.

Technical Visits; delegates and accompanying persons visited the National Grid Transco (NGT) substation in Iron Acton and the British Air Bus Company in Bristol. Both companies provided a presentation, talks and refreshments.

Cultural Visits; delegates and accompanying persons visited the Roman City of Bath for an open top bus tour followed by refreshments at the Bath Pump rooms, and the Bristol Industrial Museum followed by refreshments at the Riverside Café.

7. CONFERENCE BANQUET

This took place on the Tuesday evening at the Conference Room of the Marriott Hotel in Bristol. Towards the end of the Banquet, Hassan Nouri (Chairman of the Organizing Committee) introduced and thanked staff at his University and helpers for their effort for the success of the Conference. Noel Barry (UPEC 2005 Conference Organizer, Department of Electrical and Electronic Engineering, Cork Institute of Technology, Bishopstown, Cork, Ireland) then highlighted the main events and proposed program for the 2005 Conference in Ireland. Delegates and accompanying persons that attended were very pleased with the delightful traditional live music that was played during the Banquet.

8. EXHIBITION

Exhibitions by National Grid Transco (NGT) and EDF Energy (UK) were organized in parallel with the Conference in the Conference Lobby, where the latest technology in electrical power engineering was presented

9. AWARDS

The main conference award ‘for Services in Electrical Power Engineering Education and UPEC’ was awarded to Professor Al-Tai, of Staffordshire University, UK.

Prizes were awarded by UPEC for the Best Technical Paper and for the Best Technical Presentation by a Young Engineer under the age of 30.

EDF Energy (UK) awarded a total of six prizes; three cash prizes of £250, £150, and £100, respectively, (with certificates) for the best papers, and three cash prizes of £250, £150, and £100, respectively, (with certificates) for the most innovative solutions.

. WUHANHI-TECH Electrical Engineering Company of China provided a prize of £100 for the best-presented paper in Electrical Power Engineering.

The recipient of the UPEC Best Technical Paper Prize was: Prof. Naoto Nagaoka of Doshisha University, Japan for the paper entitled: 'NEW EDLC CHARGING SYSTEM FOR PHOTOVOLTAIC GENERATION PART I: NUMERICAL SIMULATION'. The paper was presented in a Session on Renewable Energy Sources Part III

The recipient of the UPEC Best Technical Presentation by a Young Engineer under the Age of 30 was Mr Steven Wilkinson of Bristol University, UK for the paper entitled: 'DESIGN OF A MAGNETIC BEARING FOR HIGH SPEED ROTATING MACHINES'. This paper was presented in a Session on Electrical Machines and Drives.

The recipients of the EDF Energy (UK) prizes were:

Best Papers:

- First Prize: Hassan Khorashadi-Zadeh. "AN ANN BASED ALGORITHM FOR CORRECTION OF SATURATED CT SECONDARY CURRENT", IRAN
- Second Prize: Vladimir V Terzija, Rade M Ciric, Hassan Nouri "FAULT CURRENTS CALCULATION USING HYBRID COMPENSATION METHOD AND NEW ARC RESISTANCE FORMULA", UK
- Third Prize: K L Lo and Zuhaina Zakaria. "ELECTRICITY CONSUMER CLASSIFICATION USING ARTIFICIAL INTELLIGENCE", UK

Most Innovative Solutions:

- First Prize: Juan Antonio Talavera, Madrid University, SPAIN
- Second Prize: A Haddad, Cardiff University, UK
- Third Prize: Z O Bo, Stafford, UK

The WUHANHI-TECH prize for the best presentation was awarded to Mr Q Y Jiang of Zhejiang University, China for the paper entitled: "INVESTIGATION OF INTERACTIONS AMONG THE MULTI-CONTROL CHANNELS OF UPFC USING NORMAL FORMS OF VECTOR FIELDS".

10. CONFERENCE PROCEEDINGS

All technical papers were incorporated in the UPEC 2004 1350-page Proceedings in Hard Copy and CD-ROM that was distributed to delegates at the conference. UPEC 2004 Proceedings may be purchased (Hard Copy and CD-ROM) for 80 pounds Sterling (plus postage), until supplies are exhausted, from Dr Hassan Nouri, UPEC 2004 Conference Chairman, School of Electrical and Computer Engineering, The University of West England, Frenchay Campus, Coldharbour Lane, Bristol BS16 1QY, UK, Tel: +44 117 32 82631, Fax: +44 117 32 83800, E-mail: Hassan.Nouri@uwe.ac.uk

11. UPEC 2005

In closing the conference, Dr Nouri stated that the 40th International Universities Power Engineering Conference (UPEC 2005) will be held September 7-9 2005 at the historical campus of University College Cork in Southern Ireland and will be hosted jointly by the Department of Electrical and Electronic Engineering, University College Cork and the School of Electrical and Electronic Engineering, Cork Institute of Technology. It will be co-sponsored by IEEE, IEE, and CIGRE.

Its aim will be to provide professional engineers from the universities, consultants, and in the manufacturing and supply industries opportunities to explore recent developments, current practices and future trends in Power Engineering. Young engineers and research students are especially invited to attend. The conference will have the theme Renewable Energy Engineering and will cover all aspects of power engineering. It will be residential for three nights. The working language will be English. Accepted papers will be presented in oral sessions.

For more information on UPEC 2005, contact: UPEC 2005 Secretariat or the Program Chair (Dr Gordon Lightbody), Department of Electrical and Electronic Engineering, University College Cork, Western Road, Cork, Ireland, E-mail Gordon@rennes.ucc.ie, Tel: +353 21 490 2255; or the Conference Organizer, Dr. Noel Barry, Department of Electrical and Electronic Engineering, Cork Institute of Technology, Bishopstown, Cork, Ireland, E-mail: nbarry@cit.ie, Tel: +353 21 432 6384, Fax: +353 21 432 6625, www.upec2005.org

Abstracts are to be submitted by February 14, 2005; notification of acceptance of papers will be by April 4 2005; and receipt of full papers for review will be required by May 17, 2005.

12 CONFERENCE WRAP-UP

Papers were well thought out and benefited from the 15 minutes allowed for presentation and discussion of each paper. The general level of the discussions was extraordinarily high and stimulating. Of particular note was the high standard of the presentations by the younger members of the profession. The pleasure the participants experienced in meeting colleagues with similar interests from so many countries should be particularly noted

Gratitude is expressed to Dr Hassan Nouri, UPEC 2004 Conference Chairman, Members of UPEC Steering Committee, and colleagues at The University of the West of England for the detailed organization of the meeting.

The conference closed with a unanimous vote of thanks to Dr Hassan Nouri for organizing one of the most successful events ever.

T. J. Hammons
September 30, 2004

40TH INTERNATIONAL UNIVERSITIES POWER ENGINEERING CONFERENCE (UPEC 2005)

UNIVERSITY COLLEGE CORK, CORK, IRELAND

SEPTEMBER 7-9, 2005

Call for Papers

Abstract Deadline: February 14, 2005

The 40th International Universities Power Engineering Conference (UPEC 2005) will be organized jointly by the Department of Electrical and Electronic Engineering, University College Cork and the School of Electrical and Electronic Engineering, Cork Institute of Technology, Cork, Ireland, September 7-9, 2005. It will be based at the historical campus of University College Cork in Southern Ireland. It will be co-sponsored by IEEE, IEE, and CIGRE. Its aim will be to provide professional engineers from the universities, consultants, and in the manufacturing and supply industries opportunities to explore recent developments, current practices and future trends in Power Engineering. Young engineers and research students are especially invited to attend. The conference will have the theme Renewable Energy Engineering and will cover all aspects of power engineering. It will be residential for three nights. The working language will be English. Accepted papers will be presented in oral sessions.

UPEC 2005 seeks papers in all aspects of power engineering, including the following topics:

1) Renewable Energy Engineering
2) Transmission and Distribution
3) System Integrity and Protection
4) High Voltage Engineering
5) Power Utilization
6) Power Transformers
7) Electrical Machines and Drives
8) Power Conversion
9) Power Generation
10) Power Systems Operation and Control
11) Power Electronics and Devices
12) Power Engineering Education
13) Power System Simulation and Analysis
14) Power Quality and Harmonics

Prospective Authors are invited to submit an abstract or paper to the UPEC 2005 Secretariat or to the Program Chair (Dr Gordon Lightbody, Department of Electrical and Electronic Engineering, University College Cork, Western Road, Cork, Ireland, E-mail Gordon@rennes.ucc.ie, Tel: +353 21 490 2255, before February 14 2005. On the front page they should give the address and e-mail of the author to communicate with and the number of the

area the paper is from taken from the list above. Notification of acceptance will be by April 4, 2005. Final camera-ready papers are to be received by May 17 2005 for final review. Style of submission is available on the conference web site (www.upec2005.org) One of the authors will be required to register and attend the conference. Registration will be available at: www.upec2005.org

Conference Highlights will include:

- 200-300 technical papers to be presented
- A welcoming reception on the evening of Tuesday September 6 at University College, Cork
- Civic reception hosted by the Lord Mayor of Cork on September 7
- Cultural tours on the afternoon of September 8
- Banquet Dinner on the evening of September 8
- Conference Keynote Address on the morning of September 9 (Charles Elachi, Director Jet Propulsion Laboratory, NASA on Future of Electrical Engineering in the Space Industry)
- Prizes for the best technical paper and the best paper presented by a student delegate

For more information on UPEC 2005, contact: UPEC 2005 Secretariat, Department of Electrical Engineering, Cork Institute of Technology, Bishopstown, Cork, Ireland. E-mail: upec2005@cit.ie, Tel: +353 21 432 6206, Fax: +353 21 432 6625 or the Conference Organizer, Dr. Noel Barry, Department of Electrical and Electronic Engineering, Cork Institute of Technology, Bishopstown, Cork, Ireland, E-mail: nbarry@cit.ie, Tel: +353 21 432 6384, Fax: +353 21 432 6625, www.upec2005.org