



UNESCO International Centre for Engineering Education



Newsletter

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From the Director

This issue of the UICEE Newsletter commences our reporting on the 11th year of the successful operation of the UICEE. I recall the first year of operation when, in September 1994, we produced the inaugural issue of the Newsletter with news items occupying only two double-column A4 pages. What were the issues of importance in those days?

Firstly, we were trying to present the role, nature and objectives of the then USICEE (the *S* stood for *Supported*), and most of our attention at that time was given to the Asia-Pacific region. Have we changed our attention over the last 10 years? Not at all!

Despite the economic meltdown in the late 1990s, the Asia-Pacific region is the most important region in the world in virtually every respect. China and India, with their huge populations, have created two large markets and, with the evolving political climate in China, these two markets will, in the future, influence the living standards for the entire world by generating new technological and economic opportunities. What is then the situation in engineering education in the region?

Because my knowledge of China goes back to the late 1980s, I will concentrate mostly on the situation in India, especially that last month we conducted our Annual Conference there. India, as the second most populous nation and the largest democracy in the world, is a very important provider of higher education, with 12,000 higher education institutions, and close to 2,500 institutions involved in technical professional and diploma education. The general population regards education as the most important component and a fantastic investment for the future of any individual. This is clearly reflected by the highest number of

UICEE partnerships already established with outstanding academic institutions in India, especially in the Maharashtra State, the third largest state and the prime state of India in terms of its economic activities. A similar *hunger* for higher education can be observed in many other developing nations in Asia.

We can hear and read stories about Indian engineers and engineering educators taking by storm important positions in science and technology in the USA, Canada and Australia. Some of us, more than the others, have already contributed to the preparation of engineering specialists for China and have witnessed the enormous expansion of the Chinese economy, as well as a total renewal of its technological infrastructure. These successes are all due to the importance of engineering education in those countries and their high regard for engineers. What is the present challenge and opportunity for us, and the UICEE in particular?

In building up new contacts with engineering education institutions in Asia, we should learn more how they enthuse bright young men and women to choose science, technology and engineering as a career, and promote this on a worldwide basis.



Her Excellency Penny Wensley AO, the Australian High Commissioner to India and Bhutan, delivering her address.

UICEE Annual Conference

Mumbai, and the *Taj President Hotel* in particular, provided the oriental settings for the successful 7th UICEE Annual Conference on Engineering Education, which was carried out by the UICEE in Mumbai, Maharashtra State, India, between 9 and 13 February 2004. The Conference was run in tandem with the 1st Annual Conference of the Monash Asia Institute (MAI),



based at Monash University, Melbourne, Australia.

Apart from several occasional addresses given by Prof. Marilyn Liddell, Pro Vice-Chancellor of Monash Malaysia; Prof. Bhalchandra L. Mungekar, Vice-Chancellor of the University of Mumbai, Mumbai, India; and Mr Niranjan Hiranandani, President of the Hyderabad (Sind) National Collegiate Board, Mumbai, India, the Launch of the two Conferences saw the presentation of a highly informative and extremely relevant address titled *Australia-India bilateral relations and the role of educational links* given by Her Excellency Penny Wensley AO, the Australian High Commissioner to India and Bhutan, based in New Delhi, India (pictured on the first page).

We were all very fortunate to have Prof. Russel C. Jones, Managing Partner of the World Expertise LLC, Falls Church, USA, and Prof. R. Natarajan, Chairman of the All India Council for Technical Education, New Delhi, India, two eminent international speakers, who presented their addresses at the Opening Ceremony of the UICEE Annual Conference. The first address, entitled *UNESCO-based efforts at capacity building from UNESCO's ICEE to WFEO*, gave a historical background to the establishment of the UICEE by the then UNESCO International Committee on Engineering Education (ICEE) and the future effort in promoting engineering education in the international arena. The second address, called *Current status and future directions for technical education in India*, provided participants with excellent information on technical and engineering education in India, the host country of the Conference. The pictures on this page show the two speakers.

Despite the global political and economic uncertainties, the constant threat of terrorist attacks



The photo shows the traditional lighting of the lamp at the Launch of the Conferences in Mumbai. Pictured are (l-r): Her Excellency Penny Wensley AO; Prof. Marilyn Liddell, Pro Vice-Chancellor, Monash Malaysia; Prof. Bhalchandra L. Mungekar, Vice-Chancellor, University of Mumbai; and Mr Niranjan Hiranandani, President, Hyderabad (Sind) National Collegiate Board, Mumbai.

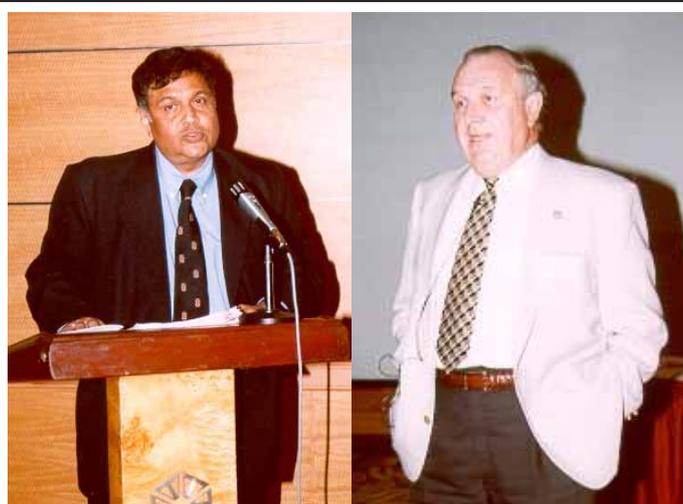
and the bird flu in Asia, the UICEE Conference alone attracted over 70 participants, including accompanying spouses. The Conference created an extremely friendly atmosphere, which permitted an efficient exchange of information, as well as personal interaction between participants, where several new initiatives and ventures were discussed. Moreover, the Conference produced a volume of Proceedings that collected 46 highly informative papers, representing 21 countries worldwide, which cover many important and critical issues in engineering and technology education and other fields presently associated with engineering.

The UICEE Annual Meeting, as well as the meeting of the UICEE Academic Advisory Committee, saw the presentation of the work and achievements of the UICEE in 2003, and identified

future directions, plans and activities. At the Conference Banquet, three international engineering educators were presented with the UICEE Silver Badge of Honour for their significant contribution to global engineering education and to the achievements of the UICEE, in particular. The awardees were: Prof. Khedidja Allia of the University of Science & Technology *Houari Boumediene*, Algiers, Algeria, and the Director of the *North Africa Centre for Engineering and Technology Education*

(NACETE), a satellite centre of the UICEE based at the University; Dr Leonard Tomczak of Gdynia Maritime University, Gdynia, Poland, a Partner Institution of the UICEE and the host of the *Centre for Maritime Engineering Education* (CMEE), a satellite centre of the UICEE; and Mr Arun S. Patil of the UICEE. The picture on the next page shows the proud awardees of the UICEE Silver Badges of Honour.

On behalf of the UICEE members, we wish to congratulate the awardees on their success.



The left photo shows Prof. R. Natarajan, Chairman of the AICTE, New Delhi, India, while the right photo shows Prof. R.C. Jones, World Expertise LLC, Falls Church, USA, delivering their Opening Addresses at the UICEE Annual Conference in Mumbai.

Best Paper Awards

Numerous exceptional papers were presented at the 7th UICEE Annual Conference on Engineering Education. As at prior UICEE conferences, participants were asked to select the top papers included in the Proceedings and presented at the Conference to receive the UICEE

best paper awards. Based on the highest frequency of votes, the chosen award papers were announced at the Conference Banquet.

The 2004 UICEE Diamond (First Place) Award for a distinguished contribution in delivering an outstanding paper to the 7th UICEE Annual Conference was won by Ö. Göl, A. Nafalski, Z. Nedic and K.J. McDermott, of the University of South Australia, Adelaide, Australia, for their paper titled: *Peer tutoring in high schools to increase engineering awareness*.

The Platinum (Second Place) Award was given to S.S. Mathew and J. Earnest of the Technical Teachers' Training Institute, Bhopal, India, for their paper entitled: *Innovations in the laboratory for competency development*.

The Gold (Third Place) Award was bestowed upon K.J. McDermott, A. Nafalski and Ö. Göl, of the University of South Australia, Adelaide, Australia, for their paper called: *The quality assurance of engineering programmes at the University of South Australia*.

Two papers received the same number of votes and both were awarded the 2004 UICEE Silver (Fourth Place) Award. The first paper, titled: *Defining, teaching and assessing problem solving skills*, was written by N.J. Mourtos, N. DeJong Okamoto and J. Rhee all of San José State University, San José, USA, whereas the second paper called: *The application of new simulation techniques in marine engineering education*, was a collaborative work of R. Cwilewicz and L. Tomczak, both of Gdynia Maritime University, Gdynia, Poland, and Z.J. Pudlowski of the UICEE. It should be mentioned that the latter, being the UICEE Director, did not accept the award.

Because two papers received the Silver Award, based on the same frequency of votes, the Award



The photo shows (l-r) Dr Leonard Tomczak, Prof. Khedidja Allia and Mr Arun S. Patil with their awards.

Committee, under the chairmanship of Prof. Krzysztof Wawryn, Rector of the Technical University of Koszalin, Koszalin, Poland, decided to award the next paper with the highest number of votes with the 2004 UICEE Bronze (Fifth Place) Award. The lucky recipients of this award were Mr A.S. Patil and Mr M.J. Riemer, both of the UICEE, for their paper entitled: *English and communication skills in engineering undergraduate*

courses in the Indian State of Maharashtra.

The UICEE members, staff, students and associates congratulate the awardees for their noteworthy efforts. It is envisaged that these papers will be expanded and published in a future issue of the *Global Journal of Engineering Education*.

New UICEE Partner

A Memorandum of Agreement on Partnership between the Maharashtra Academy of Engineering and Educational Research (MAEER), Pune, India, and the UICEE was signed on 12 February 2004 during the 7th UICEE Annual Conference on Engineering Education, held in Mumbai, by Prof. Mangesh T. Karad, Executive Director of the MAEER, and the UICEE Director, Prof. Zenon J. Pudlowski.

Under this Agreement, a *Centre for Information Technologies and Multimedia (CITM)* will be established within the MAEER in Pune, India, as a satellite centre of the UICEE.

The Centre will be engaged in academic and research activities related to the work on engineering and technical education, especially in the area of information technologies and multimedia, and will facilitate the transfer of information

in this area of academic endeavour between developed and developing countries worldwide.

The picture shows the two signatories to the Agreement on Partnership.



The photo shows (l-r) Prof. Z.J. Pudlowski of the UICEE and Prof. M.T. Karad of the MAEER, Pune, India, signing the Agreement on Partnership at the UICEE Annual Conference in Mumbai.

GJEE Special Edition

A Special Edition of the *Global Journal of Engineering Education (GJEE)*, Vol.8,

No.1, consisting of articles concerning the role, status, achievements and future plans of the UNESCO International Centre for Engineering Education (UICEE) and some of its sub-centres, the so-called *satellite* centres of the UICEE, is presently in circulation.

The publication of this Edition marks a special occasion for the UICEE, which has completed its first 10 years of vigorous operation, with the most appropriate and relevant motto: *Serving the international engineering community*. It should be mentioned at this point that a wide range of research and development activities in engineering and technology education have been carried out by staff, students and associates of the UICEE over the last ten years, and some of these efforts and achievements are presented in the opening article.

In 1997, a crucial decision was made to open up the Centre in order to allow other academic institutions to become members of the UICEE. As a consequence, the UICEE presently enjoys partnerships with 20 academic institutions worldwide. Under these partnerships, the satellite centres of the UICEE have been established or are presently in the process of being established. The paramount objective of these satellite centres is to promote and carry out research and development activities in engineering education and, where appropriate, to further enhance the work of the so-called *UICEE Global Family of Engineering Educators*. This effort is very well documented in the 11 articles concerning the satellite centres included in this Special Edition.

In establishing this journal, the name, *Global Journal of Engineering Education*, was chosen to reinforce the process of globalisation through engineering education and to emphasise the global nature, interest and operation of the UICEE. Hence, a special and critical role of the GJEE is to identify, present and promote best projects, programmes and examples in engineering education; address issues of concern; and discuss the status and quality of global engineering education. As such, the GJEE has become a useful source of information on research and development activities in engineering and technology education, seen within the context of educating future engineers for the global community.

This latest Edition also includes the brief *Foreword* by Prof. Richard Larkins AO, Vice-Chancellor and President of Monash University, the host institution of the UICEE, that portrays the global climate and environment in which the UICEE operates, as well as the role of engineering education in order to help solve existing and emerging global problems.

Masters Award

In its commitment and efforts to cultivating research and development activities in engineering education, the UICEE has been persistent in carrying out postgraduate programmes for the award of higher degrees in engineering education.

After the successful award of a Masters in Engineering Science (Research) in June 2000 to Ms Duyen Q. Nguyen,

another successful completion of an MEng (Res), within the UICEE, has been achieved by Mr Arun S. Patil, a project officer employed by the UICEE. Mr Patil was the recipient of a UICEE scholarship between 2001 and 2003, which enabled him to pursue a postgraduate research project in the application of multimedia in engineering education.

Mr Patil's project concerned the design and investigation of the effectiveness of a hypermedia knowledge base for comprehensive self-study procedures in electrical engineering education. A thesis, entitled *Issues in the design and development of Web-based computer-assisted tutorial and laboratory procedures in Basic Electrical Engineering*, was submitted in October 2003, and the degree of MEng was awarded in February 2004.

2003 Annual Report

The Annual Report of the UICEE for 2003 is now available on the UICEE Web site under *Reports*. This details achievements of the past year for the UICEE, such as the burgeoning collaboration between UICEE member institutions. The Report also lists the various UICEE publications for 2003, plus the research activities undertaken by UICEE staff and students in the previous year.

UICEE Polish Network

Last November, we informed our readers, members of the UICEE, that a UICEE Polish Network (UICEE-PN) was established, based mostly on the present three Partner institutions of the UICEE in Poland. The prime objectives of the Network are to establish collaboration between the UICEE institutions and individual members in Poland, to coordinate existing activities, and to recruit new members to the UICEE.

Professor Prof. Boleslaw Pochopień, formerly Rector of Silesian University of Technology (SUT), Gliwice, Poland, a Partner institution of the UICEE, is the Coordinator of the Network. He visited the UICEE at Monash University, Melbourne, Australia, after attending the 7th *UICEE Annual Conference on Engineering Education*, held in Mumbai, India. The aim of this visit was to work on a programme for the UICEE-PN, to discuss current activities and formulate new ventures for collaboration.

The visit also permitted Prof. Pochopień to learn more about the work and operations of Monash University, and the UICEE in particular, as well as generate sharper insight and greater appreciation for the scientific, cultural and academic differences and similarities between Poland and Australia. This enhanced knowledge and understanding would serve to bring the two nations *closer together* in the work of the UICEE-PN and, indeed, many Polish engineering academics, despite the actual physical distance.

It was discussed that the Network would consider running an annual seminar on engineering education in Poland in the future. Also high on the agenda was the possibility to produce joint publications, including the likely

production of an occasional Special Edition of the *Global Journal of Engineering Education* (GJEE) entirely in the Polish language.

We should emphasise at this point that Prof. Pochopień, while Rector of the SUT, was instrumental in establishing the partnership between the SUT and the UICEE, as well as setting up the *Centre for Engineering in Mechatronics* (CEM), a satellite centre of the UICEE at the SUT.

The picture shows Prof. B. Pochopień (r), a visitor from Poland, and Prof. Z.J. Pudlowski working in the UICEE at Monash University.

Taiwanese Visitors

A delegation of senior academics, industry leaders and university administrators, representing the *Human Resources Development Association of Taiwan* (HRDAT), under the chairmanship of David W.S. Tai of the National Changhua University of Education (NCUE), Changhua, Taiwan, visited the UICEE at Monash University, Melbourne, Australia, on 1 March 2004.

The visit to the UICEE commenced a tour of Australia, which included universities in Melbourne and Sydney. The objective of the visit was to learn more about the UICEE and become familiar with its wide range of activities and ventures.

The UICEE Director and Prof. Tai both introduced their respective organisations, pointing out areas of common interest and opportunities for bilateral cooperation.

Participants were particularly interested in the publications produced by the UICEE, such as the *Global Journal of Engineering Education* (GJEE) and the *World Transactions on Engineering and Technology Education* (WTE&TE). It was evident that, with the involvement of the UICEE in the human resources development in engineering, the HRDAT has found a common ground for future interaction and an ally in its efforts to develop this area of academic endeavour in Taiwan. The UICEE Director put forward an invitation to the HRDAT to contribute to future UICEE conferences and, indeed, its publications.

To complete the visit, before leaving Monash University, the delegation also toured various key buildings and facilities at the University.

It should be emphasised that collaboration with Prof. David Tai extends to the partnership of the NCUE with the UICEE, and the directorship of the *North-East Asia Centre for Technology and Vocational Education* (NEACTIVE), a satellite centre of the UICEE.

Global Congress

Preparations are in progress for the 4th *Global Congress on Engineering Education*, to be held at *Menam Riverside Hotel*, Bangkok, Thailand, between 5 and 9 July 2004, with King Mongkut's University of Technology Thonburi, Bangkok, as the principal co-sponsor.

The UICEE has received close to 100 paper proposals, and papers continue to come in steadily. Indeed, it looks that, despite the past difficulties in Asia, and Thailand in particular, the Congress will have a good level of participation and should have a solid turnout in terms of papers submitted. This will warrant an effective debate on current and burning issues in engineering and technology education. It is envisaged that, as at any UICEE conference, we will be able to develop a friendly atmosphere in which to debate engineering education and potential collaborative ventures.

The submissions received thus far indicate that there will be several eminent speakers, representing well-known international academic institutions, addressing the Congress.

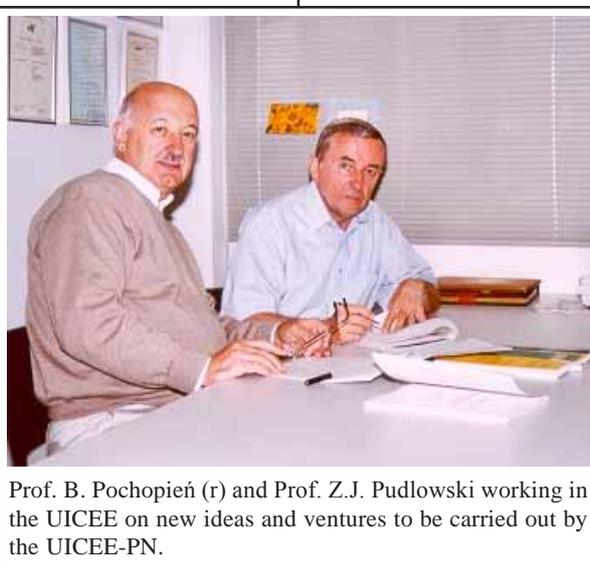
It is envisaged that there will also be a series of auxiliary meetings associated with the Congress, such as the UICEE Partners' Meeting, and the 16th *General Meeting of the International Liaison Group on Engineering Education* (ILG-EE), plus others. More information can be found on the UICEE Web site under *Conferences and Meetings*.

Further, there will be opportunities for relaxation and the potential for participants to extend their stay for a holiday. Those UICEE members who wish to propose a last minute paper should contact the UICEE regarding their submissions. The UICEE would really encourage our members to take part in this *flagship* meeting.

World Transactions

The deadline of 31 March 2004 for the next issue of the UICEE's *World Transactions on Engineering and Technology Education* (WTE&TE), Vol.3, No.1, looms ever closer. Many original article submissions have already been received from all around the world, defining the World Transactions as a truly global enterprise.

UICEE members are encouraged to take up this opportunity and publish their works in the World Transactions. The electronic kit for authors can be obtained on request from Mr Marc Riemer of the UICEE on: marc.riemer@eng.monash.edu.au.



Prof. B. Pochopień (r) and Prof. Z.J. Pudlowski working in the UICEE on new ideas and ventures to be carried out by the UICEE-PN.

Further information can also be found on the UICEE's Web site.

Mechatronics Workshop

The *Centre for Education in Mechatronics* (CEM), a satellite centre of the UICEE based at Silesian University of Technology (SUT), Gliwice, Poland, is one of the co-sponsors and co-organisers of the 5th *International Workshop on Research and Education* (REM2004), to be held in Kielce-Cedzyna, Poland, between 1 and 2 October 2004.

Prof. Krzysztof Kluszczyński, Director of the CEM, is the prime mover and one of the organisers of this Workshop and should be able to provide more information on this exciting event. The Workshop Web site gives comprehensive information and can be accessed at the following Web address: www.tu.kielce.pl/REM2004

A link has also been created for the Workshop on the UICEE Web site under *Conferences and Meetings*.

8th Baltic Seminar

Preparations are already underway for the 8th *Baltic Region Seminar on Engineering Education*, to be held in Kaunas, Lithuania, between 2 and 4 September 2004, with Kaunas University of Technology (KUT), a Contributing Member of the UICEE, being the host of the Seminar and involved in arranging the Seminar venue.

This event is a continuation of discussions and a forum for exchange of information on engineering education, specifically relevant to the Baltic Sea region, and promises to be an important gathering of engineering educators, not

only from universities in the region, but also other parts of the world.

It is envisaged that the Call for Papers will be circulated electronically and available on the UICEE Web site in the most immediate future.

Technical English Text

Late last year, the UICEE Director received an important textbook for engineering students in Poland, titled *Technical English for Students of Geology*, which was authored by Dr Krzysztof Pasierbiewicz from the Faculty of Geology at the University of Mining and Metallurgy (UM&M), Kraków, Poland.

This manual for students studying geology at the UM&M was published by the University in Kraków in 2003 in both the English and Polish languages. It should be considered an important text for the promotion of English and communication skills, specifically designed for engineering students for whom English is a second language.

With the admission of Poland into the European Union (EU) on 1 May 2004, English will become really and truly the second language used in the country, which will facilitate the further mobility of staff and students, as well as future graduates, throughout the Continent and beyond.

Dr K. Pasierbiewicz, in his teaching efforts at the UM&M, is particularly enthusiastic about equipping his students with the requisite professional skills, notably in communication and international language proficiency, for the modern global engineer.

Additionally, the manual features part of a paper presented at a UICEE Conference, being taken as a sample professional text.