
The Aims and Objectives of the 2nd Global Congress on Engineering Education*

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With rampant globalisation of engineering and technology education, it is imperative that international academics get together and continue the debate on the way in which education can be further developed and improved. It is widely recognised that certain discussions may be carried out using available electronic means. However, nothing can substitute for personal contacts between individuals. Therefore, the stream of *Global Congresses on Engineering Education* has been devised and implemented by the UNESCO International Centre for Engineering Education (UICEE) to cater for these needs. It is the real concern of the UICEE that the globalisation process, which we have experienced, has not, as yet, provided many opportunities for all worlds' cultures to contribute to this process. It is therefore paramount that the UICEE, which is not a reflection of exclusively Anglicised views, philosophy, ideas and concepts, facilitates the contribution from the other cultures into the process of global engineering and technology education.

INTRODUCTION

I am delighted, and indeed honoured, to have the opportunity of chairing this Opening Ceremony of the 2nd Global Congress on Engineering Education and to be able to offer my remarks in this introductory address.

First of all, it is my great honour and privilege to welcome all the distinguished Congress guests, colleagues and friends from over 30 countries worldwide who have contributed their precious time to this Congress in order to be with us today.

We have gathered here at Hochschule Wismar, Wismar, Federal Republic of Germany to consider and debate the importance and the future of engineering education in a time of changing societal needs, within a framework of increasing globalisation of engineering and technology education.

Although this Congress does not have a special theme, it is occurring within the context of the new

millennium, and has been preceded by many international conferences and seminars held in different regions of the world leading to this point, the 2nd Global Congress on Engineering Education.

THE HOST

We have come to Hochschule Wismar, the University of Technology, Business & Design, an academic institution that is in its 92nd year of operation. Since its inception in 1908, Hochschule Wismar has maintained a tradition of excellence, and as it looks to the 21st Century, its academic staff is committed to uncompromising excellence in teaching and research.

We have assembled here in the Town Hall of the lovely Hanseatic City of Wismar, which quite rightly uses the motto *Living where others spend their holidays*. Ever since Wismar was founded in the early 13th Century, this town on the Wismar Bay of the Baltic Sea has held a magnetic attraction for people with an enterprising spirit and has had a stimulating effect on the whole region. Wismar is the second largest seaport in Mecklenburg-Westernpommern, with about 50,000 inhabitants, and it is a place of great

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charm thanks to its beautiful Old Town with more than 300 historic buildings and monuments.

Wismar's cultural strength is the unique combination of cosmopolitan spirit and charming provinciality. Other positive factors offered by Wismar are an excellent strategic location in the economic growth region of Northern Europe, the University of Technology, Business & Design, the Technology and Trade Centre, the shipyard, as well as a highly trained and versatile workforce.

AIMS AND OBJECTIVES

The paramount objective of the Congress is to bring together engineers, educators, professional organisations, industry and government leaders from around the world to continue the dialogue about important issues and challenges in engineering and technology education for the 21st Century. It is anticipated that the Congress will address experiences and ideas within the international community in the context of rampant globalisation and rapid technological change.

However, we should not forget about our mission, nor should we reduce our effort in assisting education institutions in developing countries and countries in social, political and economic transition in their efforts to restructure and modernise their university engineering education. In particular, we have come here to consider ways in which global linkages between universities, exchanges of staff and students, and collaborative ventures can be developed and maintained.

THE UICEE

The UNESCO International Centre for Engineering Education (UICEE), the world's first and only such centre for engineering education, was established in 1994 and is hosted by the Faculty of Engineering at Monash University, Melbourne, Australia. The Centre is presently in its 7th year of operation.

The general brief for the Centre is to provide expertise in, and to improve the quality of, engineering education. The Centre's main objective is to facilitate an effective transfer of information on engineering education between developed and developing countries, a transfer that is essential for the development and advancement of the underdeveloped world, which is so vital for the world's peace and stability.

We are living in a time when establishing linkages and building bridges between different cultures are of paramount importance to any education institution. Global collaboration is essential for the efficient

operation of any university that aspires to be a good university.

UICEE'S NETWORK

Ever since its inception, the UNESCO International Centre for Engineering Education (UICEE) has been at the forefront of this process by opening up its membership to academic institutions and individuals involved in engineering education, in order to create a global platform for cooperation. We are proud to have been able to set up a global network of engineering educators, called simply, the *UICEE Family of Engineering Educators*. The UICEE is proud to announce that presently, there are five partner institutions, one sponsor institution, 11 supporter institutions and 20 contributing members of the UICEE.

Furthermore, there are many excellent examples of new initiatives undertaken by the UICEE to expand its network. Namely, a UICEE satellite centre, called *Caledonian Centre for Engineering Education* at Glasgow Caledonian University, Scotland, United Kingdom, was established in 1998. The *Centre for Engineering Educational Development* at the Technical University of Denmark, Denmark, was made a satellite centre of the UICEE in 1999. Plans for the establishment of the *Ryerson Centre for Engineering Education* at Ryerson Polytechnic University, Canada, and the *South Asia Centre for Engineering Education* at Anna University, India, are well underway.

It is our pleasure to welcome the largest delegation to the Congress from a single academic institution. This time again it is the Donetsk State Technical University (DonSTU), Donetsk, Ukraine, which is a Contributing Member of the UICEE. The DonSTU delegation to the Congress includes six academics. We wish to congratulate the DonSTU on this occasion and look forward to our close interaction during the Congress.

This Congress is a special occasion for the UNESCO International Centre for Engineering Education (UICEE), the Congress sponsor and organiser, as well as for Hochschule Wismar, principal co-sponsor and co-organiser of this Congress, and for the many German and international colleagues who have been collaborating with us to promote the UICEE and to foster the idea of global cooperation.

We are delighted by the fact that many distinguished international academics representing over 30 countries worldwide have responded to our call and have joined us today to participate in this exciting venture. In a time of globalisation of engineering and technology education, it is our duty, honour and

privilege to promote international achievements in higher engineering education on a global basis.

THE ILG-EE

I wish to draw your attention to the contribution of the International Liaison Group for Engineering Education (ILG-EE), which has strongly supported and promoted this Congress in the international arena, thereby strengthening international links and collaboration in the field of engineering education. Several members of the ILG-EE have joined us today to celebrate this important occasion.

It should be emphasised that one of the highlights of this Congress is to host the 13th Annual General Meeting of the ILG-EE.

UICEE'S INITIATIVES IN GERMANY

It should be stressed that the process of globalisation will never be complete without the involvement of, and the input from, all global cultures. It is absolutely unacceptable that this important process is being driven by one particular culture or nation, and for the benefit of one culture or nation. We have to make sure that there is equal contribution to, and participation in, this process by every nation.

Although the UNESCO International Centre for Engineering Education is based in Australia, its sphere of interest is global. It is the Centre's vision and mission to ensure equal participation from all nations in the globalisation process of engineering education. For example, it is hard to imagine that Germany would not play a prominent role in this process. Therefore, it has been one of the prime objectives of the Centre to bring German engineering education into the main stream of the UICEE's global activities.

The entire effort started with the idea of a one-day *Seminar on Engineering Education - a German Perspective*, which was organised by the METEOR-Zentrum (METEOR Centre) of Fachhochschule Mannheim, University of Applied Science Mannheim, in collaboration with the UICEE on 3 September 1997. Over 15 distinguished professors, representing a number of academic establishments in Germany attended the Seminar, which was chaired jointly by Professor Klaus-Jürgen Peschges and the UICEE's Director.

The Seminar had two basic objectives: first, to discuss the establishment of a network of German institutions (tentatively named a *German Consortium for Engineering Education*) to collaborate with the UICEE; and second, to formulate concrete actions and activities for the network. High on the agenda was the establishment of organisational structures

relevant to global cooperation between potential partners in Germany and the UICEE. It was decided that two international gatherings were going to be staged in Germany in 1998 in conjunction with the 1st *Global Congress on Engineering Education*, the 90th *Anniversary Jubilee Seminar on Engineering Education* in Wismar, and the 100th *Anniversary Jubilee Conference on Engineering Education* in Mannheim.

As one of the activities in celebration of the 90th anniversary of engineering education in Wismar, an extremely successful seminar entitled *90th Anniversary Jubilee Seminar on Engineering Education* was carried out at the Hochschule Wismar, Germany, between 6 and 9 May 1998.

The paramount objective of this important meeting was to set up a *German Network of Engineering Education* to operate in collaboration with the UICEE. The Seminar was attended by 60 delegates from 15 countries, and close to 40 paper presentations were made, a selection of which was published in the UICEE's *Global Journal of Engineering Education* (GJEE), Vol.2, No.2, with Professor Norbert Grünwald as Guest Editor.

Also in 1998, Fachhochschule Mannheim celebrated its 100th anniversary as a distinguished German engineering education institution. To commemorate this anniversary, the University's METEOR Centre, in collaboration with the UICEE, staged an international conference called *100th Anniversary Jubilee Conference on Engineering Education*, which was held at Fachhochschule Mannheim between 17 and 19 September. The conference was attended by close to 100 academics from 15 countries and over 80 papers were presented. The academic programme was extremely strong, as was the organisation of the Conference. The University has established excellent links with local industry and the Conference took advantage of this relationship by presenting several keynote addresses from industrial organisations such as ABB AG, Pepperl + Fuchs GmbH, GMD Forschungszentrum Informationstechnik GmbH, and others.

In late 1998, it was decided that the 2nd *Global Congress on Engineering Education* was going to be staged on German soil in the year 2000, so that this new millennium of engineering education would start in Germany.

INVITATION TO GERMAN RECTORS

Back in May 1998, a letter was written to the Rectors of Universities and Fachhochschulen in Germany in which the UNESCO International Centre for

Engineering Education (UICEE) was introduced to them. Also, they were made aware about the *Global Journal of Engineering Education* (GJEE), which is a fully refereed journal published by the UICEE. The objective of the GJEE is to provide the global engineering education community with a forum for exchange of information and research achievement in engineering and technology education and industrial training.

This letter advocated a greater involvement of German academic institutions in the process of globalisation of engineering education by saying that:

...taking into account the enormous achievements of German engineering education, it is felt that Germany should not be left out of this process. With its economic, scientific, business, political and other positions in Europe, and indeed throughout the world, German academics must influence the globalisation of engineering education. This can be achieved in collaboration with the UICEE through its excellent position as UNESCO's only centre for engineering education, and through its wide range of activities.

The letter went on to say that:

We have initiated a so-called German Network of Engineering Education linked to the UICEE, which was instrumental in staging two successful conferences on engineering education in Germany.

The letter added that:

...we have decided to hold the 2nd Global Congress on Engineering Education at the University of Wismar between 2 and 7 July 2000.

It was our strong belief that the *German Network of Engineering Education* would be in a position to provide enough material to publish annually at least one extra issue of the GJEE entirely in the German language. The letter continued to say that:

This would provide Germany and German-speaking academics with tremendous opportunities to share their achievements in engineering education with other German-speaking academics worldwide.

GERMAN ISSUE OF THE GJEE

In September 1999, after discussions with several German academics, a decision was made to publish

the first Special Edition of the GJEE in the German language so that it would be launched at the 2nd *Global Congress on Engineering Education* as Vol.4, No.2. Professor Norbert Grünwald, Dean of the Faculty of Mechanical Engineering/Process and Environmental Engineering at the University of Wismar, and Member of the Editorial Board of the GJEE was asked to be the Guest Editor of this Special Edition. It was planned to include in this Special Edition about 15 articles, previously unpublished, with all the submitted articles to be fully refereed. An invitation letter to consider submitting a paper for this Special Edition of the GJEE was sent to members of the *German Network of Engineering Education* who were on the electronic mailing list of the UICEE.

We are delighted by the fact of the publication and launch of this Special Edition at this Congress. You will find a complementary copy in your satchel.

GERMAN NETWORK OF ENGINEERING EDUCATION

We are also pleased by the fact that a number of German institutions have already joined the Centre as Supporter Members, and that a few others are eager to join soon. Such a membership provides an institution with a wide range of benefits and at the same time gives the UICEE access to the excellent achievements in engineering education made at those institutions. Also, such membership of German academic institutions provides us with the opportunity to sponsor other several activities in engineering education. Moreover, it is our strong belief that the *German Network of Engineering Education* linked to the UICEE, through strong membership, will provide the opportunity to publish annually at least one extra issue of the GJEE entirely in the German language.

On the occasion of the publication of this first Special Edition of the GJEE entirely in the German language, we should express our sincere gratitude to Professor Norbert Grünwald, Guest Editor of this issue for his tremendous contribution to its emergence. Also, we wish to thank Professor Burckhard Simmen for his intellectual, moral and financial support of this issue. Last but not least, I wish to thank all of the paper contributors for their willingness to share their ideas and achievements with others.

The Centre is proud and privileged to be associated with so many outstanding German engineering schools and individual academics, and we are absolutely convinced that this Special Issue will turn out to be the first step in our effort to establishing this as a permanent venture. We are also confident that

other excellent German academic institutions will volunteer to continue the fine job initiated by my distinguished colleagues at Hochschule Wismar.

A special so-called *German Day* has been organised during the 2nd *Global Congress on Engineering Education* on Friday morning and the *German Network of Engineering Education* will hold its first official meeting, under the chairmanship of Professor N. Grünwald. It is envisaged that the Network will discuss a wide range of issues related to engineering and technology education in general, and to the UICEE, in particular.

BEST PAPER AWARDS

Once again, the UICEE will present awards to the authors of those papers included in the Congress Proceedings that are considered to offer the most significant contribution to the field of engineering education. Registered Congress participants in a popular vote will select the award-winning papers. There will be five award categories: Diamond, Platinum, Gold, Silver and Bronze, selected on the basis of the greatest frequency of recognition.

You will find a voting paper included in your satchel. I encourage you to take some time to fill out this form. It will be collected on Friday morning, and the awards will be presented at the Closing Ceremony of the Congress on Friday.

CONCLUSIONS

We have been indeed very fortunate to have Professor Simmen and Professor Grünwald involved in the Congress. They were able to attract several sponsors to the Congress. We would like to acknowledge the financial support received from the Wismar City Council, the State Government of Mecklenburg-Westernpomerania, Hochschule Wismar, Sparkasse, Klausner Nordic Timber Wismar and others. The Congress organisers are grateful for this support, as it has allowed us to subsidise the Congress registration fees of many colleagues from less privileged countries.

We are indeed indebted to the Chairman of the local Organising Committee, Professor Norbert Grünwald for his tremendous assistance in the preparation of the Congress.

As General Chairman, may I convey on behalf of the Congress Committee, and indeed myself, our sincere gratitude to all authors for their contribution to this Congress, and in particular for their willingness to share their ideas with others. I wish to extend our special thanks to the referees who dedicated their time

and effort to refereeing the papers included in the Congress Proceedings.

The Congress program has been structured so that as well as having a strong academic program, it will also provide participants, guests and accompanying persons with an exciting social program. Also, Wismar and its surroundings will provide you with the excellent opportunity for relaxation and enjoyment.

In concluding these opening remarks, I have the real pleasure to cordially welcome you all to this Congress and wish you not only successful formal activities, but also a pleasant and enjoyable stay in Wismar, a beautiful Hanseatic town.

I warmly welcome all of you to this 2nd *Global Congress on Engineering Education* and wish to thank you very much for your attention.

BIOGRAPHY



Zenon Jan Pudlowski graduated Master of Electrical Engineering from the Academy of Mining and Metallurgy (Cracow, Poland), and Doctor of Philosophy from Jagiellonian University (Cracow), in 1968 and 1979 respectively. From 1969 to 1976 he was a lecturer in the Institute of

Technology within the University of Pedagogy (Cracow). Between 1976 and 1979 he was a researcher at the Institute of Vocational Education (Warsaw), and from 1979 to 1981 was an Adjunct Professor at the Institute of Pedagogy within Jagiellonian University. From 1981 to 1993 he was with the Department of Electrical Engineering at The University of Sydney where, in recent years, he was a Senior Lecturer.

He is presently Professor and Director of the UNESCO International Centre for Engineering Education (UICEE) in the Faculty of Engineering at Monash University, Clayton, Melbourne, Australia. He was Associate Dean (Engineering Education) of the Faculty of Engineering between 1994 and 1998. His achievements to date have been published in books and manuals and in over 250 scientific papers, in refereed journals and conference proceedings.

In 1992, he was instrumental in establishing an International Faculty of Engineering at the Technical University of Lodz, Poland, of which he is the Foundation Dean and Professor (in absentia) (1992-99). He was also appointed Honorary Dean of the English

Engineering Faculty at the Donetsk State Technical University (DonSTU) in the Ukraine in 1995.

Professor Pudlowski is a Fellow of the Institution of Engineers, Australia. He is a member of the editorial advisory boards of many international journals. He was the 1st Vice-President and Executive Director of the AAEE and the Editor-in-Chief of the AJEE since its inception in 1989 until 1997. Currently he is the Editor-in-Chief of the *Global Journal of Engineering Education*, and is the Foundation Secretary of the International Liaison Group for Engineering Education (ILG-EE).

Professor Pudlowski has chaired and organised several international conferences and meetings. He received the inaugural AAEE Medal for Distin-

guished Contributions to Engineering Education (Australasia) in 1991 and was awarded the Order of the Egyptian Syndicate of Engineers *for Contributions to the Development of Engineering Education on both National and International Levels* in 1994.

In June 1996, Professor Pudlowski received an honorary doctorate from the Donetsk State Technical University in the Ukraine in recognition of his contributions to international engineering education, and in July 1998 he was awarded an honorary Doctorate of Technology from Glasgow Caledonian University, Glasgow, Scotland, United Kingdom. In 1997, he was elected a member of the Ukrainian Academy of Engineering Sciences.