ENGINEERING AND TECHNOLOGY EDUCATION INNOVATING FOR GROWTH

Claudio da Rocha Brito[1], Melany M. Ciampi[2], Muthar Al-Ubaidi[3]

Abstract *— This work intends just to show a little of INTERTECH over its more than 20 years of existence and its contributions for engineering and technology education for more than two decades. Some interesting data about its history can be seen in the many papers that have been part of its great work as a Council with international perspectives.*

Index Terms — conference, engineering, global economy, challenging environment.

INTRODUCTION

For more than 20 years INTERTECH has provided a forum for the discussions about the engineering and technology education mainly in Americas where it has a wide range of institutions and professionals who have contributed for these discussions.

The International Council for Engineering and Technology – INTERTECH consists of scientists of engineering and technology areas, who believe in the development of science and technology as promoters of humanity welfare. The members belong to the several countries of North America, Europe and Latin America. The Council headquarter is in Cincinnati, Ohio in United States of America.

It is a council which works has the objective to foster and keep the relationship between University and Educational Institutions, the enterprises and society of the several countries, for the discussions about the future of science and technology. Its activities have contributed to the discussions and promotion of education worldwide under the challenging managerial environment of present world.

Due to its international members it can provide the academic community a wide range of actions and researches for the promotion of engineering and technology education. Its proposal is " to educate for future" because today is already now and yesterday is over.

HISTORY

INTERTECH - International Council for Engineering and Technology has a history that can be traced back in 1989, when it was created by scientists and researchers from USA and Mexico. From the first conference of 1990 (Mexico), 1992 (USA), 1994 (Brazil), 1996 (Venezuela), 1998 (Brazil), 2000 (USA), 2002 (Brazil), 2004 (Bahamas), 2006 (USA), 2008 (Brazil) planning activities in 1991,1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2008 and 2009.

Long before the discussions about globalization INTERTECH has been working to encourage and promote efforts to bring an international perspective for engineering and technology institutions, as well as to establish and maintain relationship between engineering and technology educators and institutions in countries throughout the world.

The last edition of INTERTECH conference was in 2008, in the Atlantic Forest Coast, in Brazil, organized by COPEC – Council of Researches in Education and Sciences and hosted by Catholic University of Santos. It had many participants from different Countries, from the 5 continents.

Fortunately in 2010 INTERTECH is back to Brazil where it has been always welcome and found a Brazilian audience that considers it a traditional conference that has brought many valuable contributions for the fostering of engineering education in the Country once it congregates the national and international professionals debating the latest topics of engineering and technology education.

Just to have an idea of the distribution of participants during INTERTECH in Brazil. The event had 347 participants from all the regions of Brazil and from abroad. It had 260 papers peer reviewed covering a wide range of topics, in 42 technical sessions and 3 Plenary Sessions. It was considered participants only those who had registered in the event. However the number of people that were present was more than the double. Figures 1, 2 and 3 show the distribution of participants by regions in Brazil and from other Countries.

SOME CONSIDERATIONS

The theme of the congress is: "Engineering and Technology Education Innovating for Growth", an issue that has been widely debated by professors and institutions in the search for the best way to prepare the future professional.

Along the years the discussions have always been about the most important topic not only for academia midst but mainly for enterprises and governments. Lately some topics can be pointed out as the key issue for the development of

1 Claudio da Rocha Brito, President of Council of Researches in Education and Sciences, Rua Frei Gaspar, 931, room 86, 11.310-061, São Vicente, SP, Brazil, cdrbrito@copec.org.br
2 Melany M. Ciampi, President of Brazilian Nucleus of Environmental Researches and Health, Rua Dom Pedro II, 54, room 310, 11.010-080, Santos, SP, Brazil, melany@copec.org.br
3 Muthar Al-Ubaidi, University of Cincinnati, College of Applied Science, Cincinnati, OH, USA, muthar.al-ubaidi@uc.edu

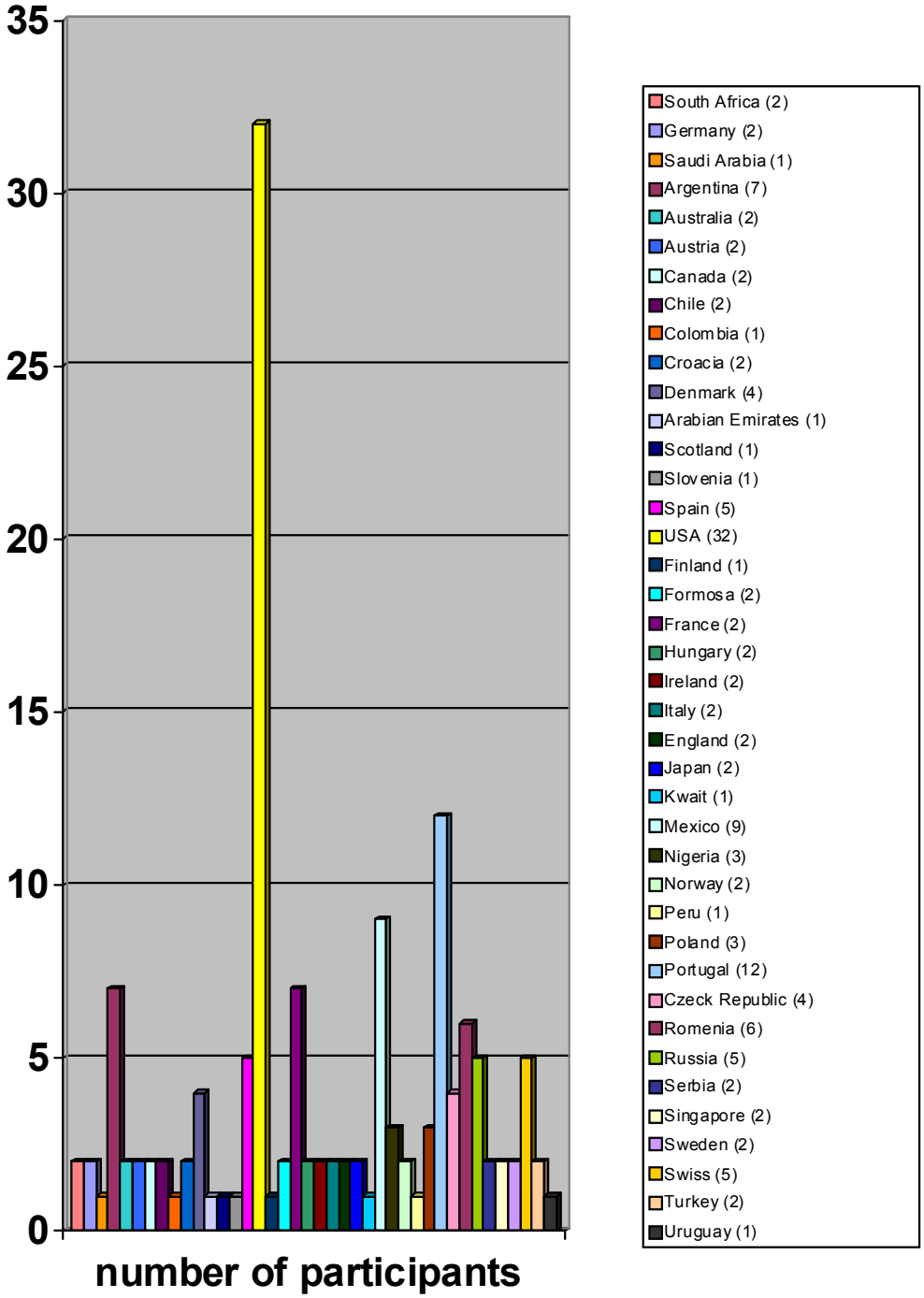

Fig. 1 – Participants from other Countries (except Brazil)

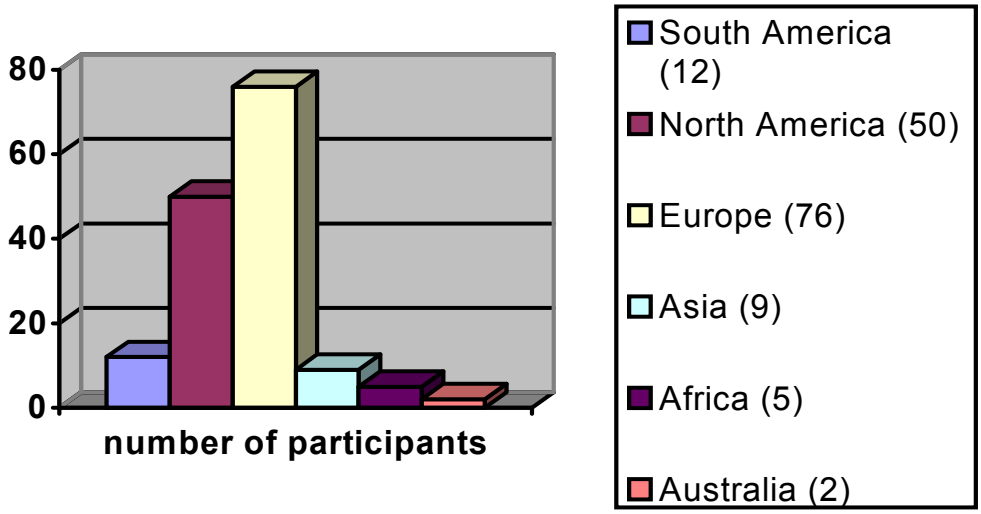

Fig. 2 – Participants from other continents (except Brazil)

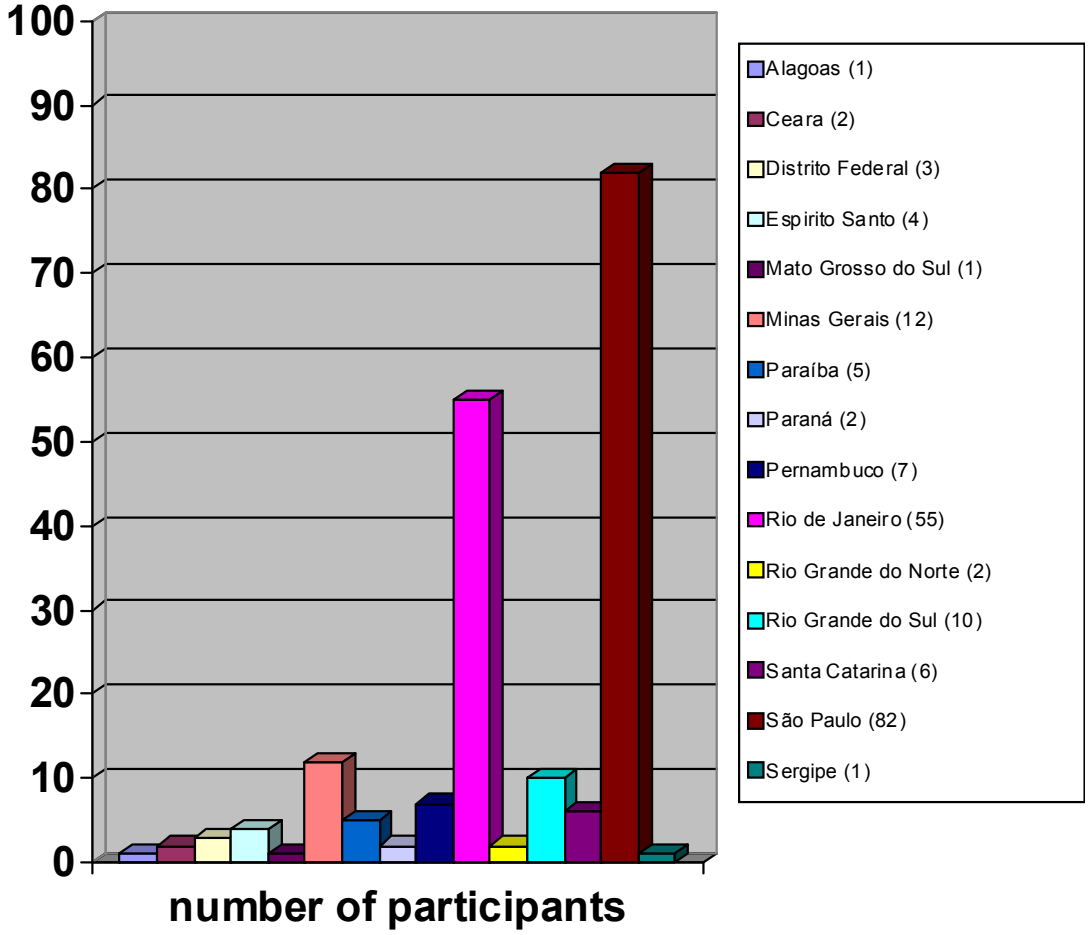

Fig. 3 – Participants of Brazil per state

science and technology, such as: global economy awareness, development of communication skills, career opportunities, project management, sustainability, etc. Lately the target problem that needs to be solved is to provide practicing engineers ways to identify the skills, knowledge, values, and ways of thinking that engineers need for professional success and satisfaction.

In a competitive global economy, skills in science, technology, engineering and math are becoming increasingly important. Governments, institutions and communities are working for the reform of K12 in order to reframe the curriculums and make them a set of developmental experiences that could attract more people into the engineering and technology profession.

Good teachers have been always the best way to motivate students to pursue this or that career. In this case the good teacher needs to be prepared even in universities where the final product is the professional ready to contribute for the betterment of humanity. So the theme of the congress is an inspirational topic for engineering and technology teachers and professionals to advocate innovative proposals for the formation of future engineer or computer scientists, etc.

It is interesting to point out the present trends in engineering education are more related to the needs of today's geo-political and economics scenario such as:

- traditional approaches to curriculum designed to develop only subject specific skills are no longer appropriate and adequate to satisfy the new work market demand;
- engineering curriculum must be designed in terms of developing both human capital and social capital;
- engineering students must acquire some positive aptitudes and behaviors as well as to be willing to learn all life long;
- above all to adopt strong ethics as a parameter for any action as a professional.

This year due to the COPEC organization INTERTECH can count with the technical cooperation of the most important education and cultural organizations in the world like (in alphabetical order): AAMP (Fishing Museum Friends Society), ABENGE (Brazilian Society for Engineering Education), AENUI (Asociación de Enseñantes Universitarios de la Informática), ASEE (American Society for Engineering Education), ASIBEI (Iberian-American Association of Engineering Education Institutions), GCMM (Global Congress on Manufacturing and Management), IEEE-Ed.Soc. (Education Society of the Institute of Electrical and Electronics Engineers), IFEES (International Federation of Engineering Education Societies), IGIP (Internationale Gesellschaft für Ingenieurpädagogik), IPN (Ingeniøruddannelsernes Pædagogiske Netværk), OPASS (Organization of Researches in Environment, Health and Safety), PortFolk, RBE (Brazilian Network of Engineering), RCI (Réseau Carthagène d'Ingénierie) and SEFI (Société Européenne pour la Formation des Ingénieurs) as well as the support of Brazilian Agencies: FAPESP (State of São Paulo Research Foundation), CNPq (National Council for Scientific and Technological Development) and CAPES (Coordination for Improvement of Personnel of Superior Level) and our partners University of Cincinnati, SEESP (State of São Paulo Engineers Union), FNE (National Federation of Engineers) and CNTU (National Confederation of Superior Level Professionals).

STRUCTURE OF INTERTECH'2010

INTERTECH'2010 is an event that has been organized with the goal to provide the best environment for discussions and experience exchange among teachers, researchers and professionals of engineering and technology who work for the enhancement of education.

- Key note speakers: specialists will be speaking about their area of expertise and will answer questions of the audience;
- Round Tables and Panels: A meeting with invited specialists to debate with the audience themes that are important for engineering and technology education;
- Technical Sessions: professionals and researchers will be presenting papers of relevance, specially selected by the international committee. These papers present the top researches and experiences;
- The Open Session: It counts with the presence of congress organizers, members of the committee as well as participants and authorities of the host cities and University;
- During the event attendees can participate of cultural and social activities specially organized for the conference.

PLANNING

The planning for the organization of an event comprehends a number of activities developed in phases that requires human resources and material, which works are the result of a lot of efforts and dedication. The development of the activities has 4 phases:

- 1st - Conception of the Project INTERTECH'2010, in this phase there were discussions about the estimate date, necessary resources, establishment of goals and the elaboration of the Project.
- 2nd - Pre-Event that involves the establishment of the necessary activities for the accomplishment of the event:
    - Operational team;
    - Basic Budget;
    - Basic Chronogram;
    - Services to be hired;
    - Establishment of organogram.
- 3rd - Event, which is the accomplishment of the Project taking into account the realities that present at the moment. It is the congress happening with all the

activities that are necessary to develop during this phase that are basically the reception of attendees, accompaniment of all the sessions.

- 4th - After the event when the congress finishes a report is made with all the information about the congress and send to the Council, to be in the databases of the organization, to the Foment Agencies and etc.

COPEC team has around 4 people working directly and exclusively to accomplish INTERTECH'2010 plus 3 others for some time, 5 days per week, 6 hours per day. During the congress more people is hired for reception and technical issues as well as transportation, feeding, cultural activities and others when they are necessary.

COPEC team has:

- widely spread call for papers, electronically and folders;
- advertisements in international Journals;
- made and maintained the homepage in two languages English and Portuguese;
- a secretariat telephone and fax number for questions and information;
- managed the reception and reviewing process of papers;
- as well as organized the cultural and social activities of the conference.

It took twelve months of hard work and dedication.

PUBLICATIONS

INTERTECH'2010 publishes a collection of papers that were approved by the Technical Program Committee in a CD-Rom as well as a Book of Abstract and Program that has all the abstracts of papers presented in the congress. Both publications the Proceedings in CD-Rom and the Book of Abstract and Program have ISBN being valid internationally.

FINAL COMMENTS

It is very important to acknowledge the tenacity and hard work of the man who has started INTERTECH: Prof. Muthar Al-Ubaidi a professor and mentor of thousands of students and colleagues who has been the main beam in promoting Engineering and Technology Education discussions far before globalization phenomenon happened.

COPEC – Council of Researches in Education and Sciences is very glad to organize the 11th Edition of INTERTECH in Brazil mainly because it is a great opportunity for our scientists and professionals to attend a conference that is already traditional and well known world wide.

May be the best accomplishment of this conference is that it has become recognized internationally for its quality and large number of participants even now during hard times for world economy when academic midst is suffering with cuts in budgets. The hard work of this group of engineer and researchers shows a successful accomplishment of conferences and the future shows to be exciting and challenging.

The mutant and challenging engineering education midst has a space for debates and discussions as well as proposal of solutions in INTERTECH conferences. It is a pleasure for its community to invite and welcome those who would like to enroll next INTERTECH edition in 2012!

BIBLIOGRAPHY

[1] S. Brown, L. Flick, K. Williamson Social Capital in Engineering Education; Frontiers in Education, 2005. FIE Proceedings 35th Annual Conference 19-22 Oct. 2005 Page(s): S3D-10 - S3D-16.

[2] C. da R. Brito; M. M. Ciampi; V. G. Zakharov; I. A. Avenarius The importance of Collaborative work among Countries in Engineering Education. In: American Society for Engineering Education Annual Conference, 113, Chicago, 2006. Advancing Scholarship in Engineering Education. Chicago: ASEE, 2006. (in CD-ROM).

[3] D. Budny; C. da R. Brito; M. M. Ciampi Designing a Study Abroad Program for Freshman in Brazil. In: World Congress on Computer Science, Engineering and Technology Education, Itanhaém, 2006. New Engineering to a New World. Itanhaém: WCCSETE, 2006. p. 14-18.