

INTELEC 2018 Highlights The Challenges Of Powering 5G ICT

by Donovan Davidson, INTELEC Conference Steering Committee Chair

The 40th anniversary INTELEC 2018 conference was held in the beautiful and historic city of Torino, Italy at the Lingotto Conference Centre on October 7-11. The theme of this conference was 40 years of Inspiration, Research and Exploration in Power and Energy for ICT (information and communications technology). The conference informed upon and debated the growing issues facing society in powering information and communications systems.

The conference opened with a special presentation by Alan Mantooth, president of the conferences' sponsor PELS, the Power Electronics Society of the IEEE. Mantooth talked about the importance of power electronics in today's society and the role that wide-bandgap power devices will play in the future expansion of power electronics into more areas including increasingly higher voltage and higher power applications. The percentage of the world's electrical energy that is processed by power electronics is increasing dramatically!



The first conference keynote speaker was Giovanni Colombo, conference general chair and former research chief of Telecom Italia and the European Institute of Innovation and Technology. In his presentation "Energy and ICT, a Reciprocal Transformative Challenge," Colombo highlighted the increasing need for engineers to be sensitive to the effects of our work on the environment and our society.

In particular he talked about the increasing amount of energy being consumed by information and communications technology, the positive and negative effects of this technology on society and the very real negative effects on the environment. He noted that this is a challenge that engineers should be aware of and work towards resolving.

In keeping with the conference theme Norbert Grass, of Ohm University and Grass Power Electronics, presented the second keynote on "The 40 Years History of INTELEC," highlighting the first conference in Washington, D.C. and noting the issues in power systems, power conversion, and energy storage for telecommunications that were discussed in the technical papers of the first INTELEC. Grass observed how little the topics have changed since then despite the great changes in technologies.



Norbert Grass's keynote focused on "The 40 Years History of INTELEC".

He also talked about the people such as Joe Suozzi and Nicolas Osifchin that conceived the idea of an international conference on communications energy systems in 1975 and others such as Gunther Vau, Robert Jurewicz and Christopher Riddleberger who contributed greatly to INTELEC. Grass additionally pointed out the influence that INTELEC has had on the development of communications power and energy components and systems over the years.

The conference plenaries included an informative presentation on 5G cellular communications systems and 5G powering by Tao Hongming of Huawei that discussed the huge amount of power that will be needed to operate the vastly expanded network of cell sites required to fully implement the upcoming 5G systems.

Hongming also addressed issues in assuring that this power is reliable to allow 5G communications to meet its potential, for example, of reliable machine-to-machine communications. The plenaries also included an interesting presentation on the "Challenges and Opportunities of Battery Technologies" by Noshin Omar of Vrije Universiteit in Belgium. He gave a high level overview of the various technologies and their possibilities.

Workshops are also a very important part of INTELEC and 2018 did not disappoint in this area. A workshop on "Remote Line Powering of Telecommunications Equipment" hosted by Victor Goncalves of Alpha Technologies and an international panel of five other experts educated the audience on the various remote line powering standards, issues, methods and applications. It appears this technology is catching on and is a candidate for powering smaller 5G cell sites.

In addition, a workshop on the "5G network, the Powering (R)evolution" was hosted by Favio Cucchietti, an independent consultant in Italy. He indicated that 5G is still evolving and that there are still a lot of unknowns. Among the limiting factors are concerns about powering 5G networks.

On the Sunday prior to the opening of the conference, there were four tutorials. Once the conference was in session there were three parallel technical sessions with about 100 oral presentations on power systems, power electronics, energy storage and renewable energy generation and poster presentations. Meanwhile, INTELEC also hosted an industry exhibition featuring 25 exhibits on communication power and energy systems equipment.

As always, the conference featured a substantial social program, which included a welcome reception at the conference hotel on Sunday evening, an exhibition reception on Monday evening and an afternoon social bus and walking tour of the city. Of particular interest was a banquet on Wednesday evening at the magnificent MAUTO National Car Museum. In this special setting, attendees were treated to an extensive display of cars ranging from the first steam driven ones to the latest Ferraris, while also enjoying the excellent entertainment provided by a local youth orchestral ensemble.

Finally, on the Thursday afternoon after the conference closing session, there were two optional technical tours to choose from. One was a visit to TILabs, TIMs Development and Innovation Center. Another was a visit to INRIM, Italy's national metrology institute. Both tours were well received by those that attended.

The attendees greatly enjoyed the host city Torino. The hospitality was great and all enjoyed the local Italian food and wines very much. Many thanks go to the Local Organizing Committee headed by professor Michele Pastorelli and Mariapia Martino and to the sponsor IEEE PELS, The Politecnico Di Turino, the supporters and exhibitors, and all attendees for assuring the success of the conference.

The next INTELEC conference will be held in Singapore, October 13-17, 2019. One can join the mailing list for the conference and look for announcements on the conference website at www.intelec2019.org.