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Technology/Science/Society

Mastering Global Energy Changes Through Technology

The current trend in global energy policy of lessening dependence on fossil fuels requires more than just political will – one of the key factors for successful implementation will be modern technology. A special panel at this year's IEEE Technology Time Machine Symposium will present approaches and strategies addressing these complex challenges.

- **Smart Power: a complex challenge for the future**
- **Masdar energy expert Steve Griffiths estimates: “The smart use of power cannot be achieved without new, energy efficient power electronics integrated into larger systems, such as smart grids.”**
- **IEEE conference “Technology Time Machine”, May 23 through May 25 in Dresden**

Dresden/New York, April 27, 2012. Offshore wind turbines, solar panels on roofs, combined heat and power stations – the future of energy supply via alternative energy is being implemented. But how can we achieve the most efficient use of energy on large scale and global scope? Modern and intelligent technology will be the deciding factor. Scientists and experts from around the world will discuss how exactly it can happen during this year's IEEE TTM Symposium – a gathering of the global technology elite. The upcoming forum will be held in Dresden, Germany in the heart of Europe's Silicon Valley.

Intelligent electricity networks or so-called smart grids will be the basis for grid operations in the future: generation, transmission, storage and distribution to consumers will be interconnected via communication networks that will enable a reliable and efficient energy supply. Successfully realizing this scenario will require several technological advances – such as energy efficient microchips and devices combined with storage media and intelligent infrastructure. During this year's conference “IEEE Technology Time Machine (TTM) – Symposium on Technology Beyond 2020”, international industry leaders and technology experts will discuss where we currently stand in the development of these technologies and what future power systems will look like.

“From Chip to Grid” – The Smart Power Panel at the IEEE TTM Symposium

Participants of the “Smart Power” panel at the IEEE TTM conference in Dresden will discuss these technological challenges. They will begin with the topic of energy efficient microchips for controlling and monitoring, and which can be integrated into applications and equipment, such as smart meter systems. The next topic is the development of energy efficient power electronics for industrial applications. In addition, the afore mentioned issue of small intelligent networks that supply single households and subsequently need to be integrated into larger networks, such as neighborhood-, city- and state networks will be addressed.

“Development of electronic devices and systems of electronic devices capable of efficiently meeting increasing performance demands is a major future challenge. From microchips to power grids, the convergence of information and interaction requires new low power systems with diverse capabilities and very small material and energy footprints. These combined characteristics will only be possible through new circuit, power electronic, and electrical grid system designs that simultaneously optimize the flow of both bits and atoms”, summarizes Dr. Steve Griffiths, Executive Director at Masdar Institute of Science and Technology the research task at hand. To meet this task, he will engage in conversations with other renowned international technology experts in Dresden.



Masdar works directly on Smart Building and Smart Grids research via several research collaborations, including a major industrial collaboration with Siemens. In fact, Siemens' Middle East Headquarters is being established in Masdar City. The Masdar technology experts have initiated a Power Electronics program that deals with innovation in power electronic devices and integration of distributed energy systems into the electrical power grid. Furthermore, Masdar's Computing and Information Science and Engineering Systems Program deals with research related to demand-response and overall mitigation of energy consumption.

Technological and infrastructural challenges: A global energy supply network

In order to continue the advancement of clean, reliable and efficient energy, intelligent systems at many scales will be essential. At the scale of the electrical power grid such systems pose one of the most complex challenges for the future, because energy supply does not end at city boundaries. Therefore regional solutions cannot be the answer. Globally valid technical standards must be implemented. Such an infrastructural challenge comes with comprehensive technological requirements: How can we simultaneously increase a chip's capability and energy efficiency? How can we manage to interconnect separate network systems? What information technology solutions will be required to monitor and control these networks? And, last but not least we will need storage media that can retain and later re-distribute excess energy from intermittent energy sources such as wind and solar. The difficulty of accomplishing these tasks is demonstrated by the well-known example of E-Mobility: electricity powered cars are still limited by the low storage capacity of their batteries.

The IEEE TTM Symposium in Dresden from May 23 to May 25, 2012, will bring 200 CEOs, CTOs, CIOs and leading scientists from around the world to Silicon Saxony, Europe's leading cluster for micro and nanoelectronics. All attendees share the same interest: to develop intelligent future technologies. During the panels they will engage in an interdisciplinary dialogue, discussing the consequences of these new technologies on human society and how those technologies can contribute to solving great global challenges. In addition to the future of energy supply they will address questions regarding intelligent transportation systems, the possibilities of collective intelligence and the future of information and entertainment media.

For more information and to register, please visit: <http://ttm.ieee.org>

Press Accreditation: <http://bit.ly/HzCcuV>

Key Topics: Collective Intelligence, Intelligent Energy Supply, Cyber Physical Systems, Future Medical Technologies, Intelligent Transportation and Logistics systems, Modern Communications Networks, Micro Electronics of the Future, Cloud Computing and Security

Top Actors: Google, IBM, DLR, NASA, Nokia Siemens Networks, Alcatel-Lucent, Telx, SAP, Actix, ZMDI, Nokia, Kofler Energies, Siemens, Enel, Associated Press, Vodafone, Infineon, Giesecke & Devrient, Sensys Networks, Oracle, EIT ICT Labs, Foster+Partners, Volkswagen, National Instruments, VDE und Fraunhofer HHI, FOKUS, IIS will be present in Dresden with management and technology forerunners.

For further information on the organization and sponsorship opportunities call or email:
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About IEEE:

The Institute of Electrical and Electronics Engineers (IEEE), headquartered in New York City and more than 400,000 members strong in more than 150 countries, is the world's largest technical association of engineers of the electro technology and informatics industries. The association, divided into various societies, covers the entire spectrum of electro and informatics technologies and focuses on developing and promoting standardized techniques, hardware and software worldwide. In addition, IEEE organizes professional symposia publishes several trade journals. IEEE regularly contributes high quality scientific articles to magazines and journals. The organization's own publication, IEEE Spectrum, promotes interdisciplinary information about new technologies and discussion of their consequences on society.



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IEEE Technology Time Machine (TTM) – Symposium on Technologies Beyond 2020

May 23 through May 25, 2012 in Dresden

Please send the completed form to:

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- We are interested in the symposium's topics and look forward to receiving additional information
- We are interested in an interview with Prof. Dr. Gerhard Fettweis, Vodafone Chair Mobile Communications Systems, Technical University Dresden
- We would like to request accreditation for the symposium

- Unfortunately we will not be able to attend, but would appreciate additional information and materials

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