Power Electronics – The Present Status and Future Challenges

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Visitor Parking Available at the Havener Center
Lecture at 1:30 pm
Refreshments Provided
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Abstract
Power electronics today plays an important role in industrial applications. Variable speed motor drive technology is well established in HVAC, pumps and compressor applications. Factory automation and robotics are fundamentally based on power electronics and motor control. More and more traction and transportation vehicles rely on power electronics. Rail, cranes, ships and recently cars, trucks and airplanes are increasingly making use of electric power and power electronics to improve efficiency and lower cost. More modern medical devices and communication equipment rely on power electronics today than ever.

As global resources of oil and gas become scarcer and more difficult to reach, while the global demand for energy and climate change concerns grow, the electric power is expected to play a pivotal role in the 21st century’s energy revolution. Improvements on energy efficiency and electricity production from renewable sources of energy like wind and solar power heavily rely on power electronic conversion.

With the demand for power electronics continuing to grow, the power electronics itself has been under continuous change. Advancements in power devices technology, power components like capacitor and magnetics, controls and communication combined with the advancements in thermal management not only have fulfilled the needs of the industry applications today, but they have established a strong basis for further development in the future. Still the expectations for newer and better technologies are expected to grow. To sustain the growth and the technological advancements in the field of power electronics a continuous influx of new engineering graduates is needed. This is demanded on only by the business growth, but it is also a social responsibility for the prosperity of this country and the future of our planet.

Orges Gjini is a senior product development engineer with Danfoss Power Electronics Division in Loves Park, IL. He has a bachelor’s degree from the Polytechnic University of Tirana and a Masters of Engineering degree from the University of Tokyo, both in electrical engineering.

Mr. Gjini has more than 17 yrs working experience in the field of motor drives, power electronics and power systems. He previously worked as a research and development engineer for General Electric Global Research Center in Schenectady NY, and before that he was with Fuji Electric Research and Development in Tokyo, Japan. Mr. Gjini holds three patents and is author of several papers published in IEEE, IEEJ transactions and conferences.