

by Andreas Wagener


Meeting of Joint IEEE IAS/PELS/IES German and Austrian Chapters in Innsbruck, Austria

For the last few years, the joint IEEE Industry Applications Society (IAS)/Power Electronics Society (PELS)/Industrial Electronics Society (IES) German and Austrian Chapters have been holding joint meetings in Austria. In 2011, they met in Timelkam, and in 2013, they came together in Graz. In late October 2019, the power electronics communities of the joint German and Austrian Chapters met once again in Innsbruck,



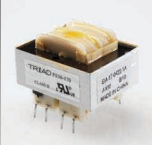











FIG 1 A visit to the i-PEL of Prof. Petar J. Grbovic.

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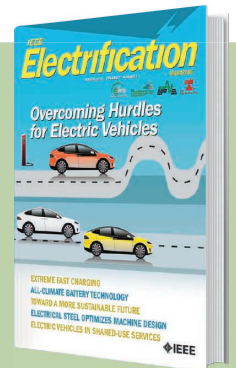
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taking advantage of some warm and sunny fall days. Attendees were invited to visit the newly established Innsbruck Power Electronics Lab (i-PEL) of Prof. Petar J. Grbovic, the University of Innsbruck (Figure 1).

On the first day, the group visited Innio Jenbacher GmbH and Co. KG, a leading manufacturer of gas-powered heat and power units. At Jenbacher, the visitors could see the production of the engines, which may have up to 24 cylinders and generate up to 10-MW power. Most of the components are finished manually, to achieve the high accuracy required for long-term reliable operation. These units are used for decentralized and very flexible power generation, including uninterruptible power systems, for data centers. Later in the evening, the participants met at the restaurant Stiftskeller in downtown Innsbruck for socializing.

The second day included a visit to the University of Innsbruck Institute of Mechatronics, where several speakers, including members from i-PEL, gave different presentations. First, Prof. Clemens Zierhofer, head of the institute, presented the Faculty of Technical Sciences, its fields of competences, and the recent investment into electric engineering. A number of new professorships have been established, and new degree programs in electric engineering have been recently started.

Next, Prof. Krishna Shenai, Distinguished Lecturer (DL) of PEELS, gave an inspiring lecture, "Field-Reliability of Compact Power Systems." The lecture began with Prof. Shenai reviewing different technology drivers of the information economy of the 20th century and the ever-increasing energy economy. He emphasized the need to develop miniaturized efficient power systems with end-of-life field reliability to sustain the energy economy. Prof. Shenai then discussed the history and evolution of wide-bandgap (WBG) semiconductor devices, their potential impact on the development of high-density power conversion systems, the state of the

art of reliability assessment of power semiconductor devices by device manufacturers, and the expectations of end-use customers.

He illustrated the design and manufacturing of reliable compact computer/telecom power supplies using advanced silicon and WBG power electronics switching devices with a

mean time between failures of 1 million hours, the requirement of today's reliable Internet infrastructure. Prof. Shenai emphasized the need to develop future power systems with similar reliability performances, especially when used for smart grid and electric vehicle applications that demand robust power system infrastructures.

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The International Technology Roadmap for Wide Bandgap Power Semiconductors (ITRW)

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About

The International Technology Roadmap for Wide Bandgap Power Semiconductors (ITRW) was co-initiated by IEEE PELS and organizations representing the USA, China, Japan, Europe, and UK in 2015. Wide Bandgap (WBG) material-based power devices are becoming available to engineers for many years. SiC and GaN devices have superior characteristics compared to silicon and will eventually become pervasive the major application areas of power electronics. However, displacing an existing technology with a new, better technology is never easy and is disruptive.

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