ISPSD 2020 – PLENARY KEYNOTES

Date **Monday, September 14, 2020**
Venue **Virtual Festsaal**

14:00 Opening

14:30 Novel IEGT based Modular Multilevel Converter for New Hokkaido-Honshu HVDC Power Transmission

Dr. Yoshimasa Sato
Toshiba Energy Systems & Solutions Corporation

15:10 Break & Exhibition

15:50 Power Semiconductors – the Key for a Future Green Mobility

Dr. Patrick Leteinturier
Fellow Automotive Systems, Infineon Technologies

16:30 Mixed signal and power semiconductor technology for industrial and automotive electronics

Mr. Sameer Pendharkar
Senior Fellow & VP Technology, Texas Instruments

17:10 Session End

PLENARY KEYNOTE 1

Dr. Yoshimasa Sato - Toshiba Energy Systems & Solutions Corporation

Novel IEGT based Modular Multilevel Converter for New Hokkaido-Honshu HVDC Power Transmission

Abstract: The electric power grid in Japan is unique, because Japan is one of the typical island countries. For example, most of these islands are isolated by the sea, but large electric power grids in 4 major islands are interconnected each other. In addition, commercial frequency in the east area is 50Hz, but one in the west area is 60Hz. The power electronics technology is quite useful for such complex condition, and it realizes high reliability and good efficiency. Thyristor rectifiers / inverters have been applied to the power grid system, as High Voltage Direct Current transmission system, Frequency Convertor system, and so on. In March 2019, the first large capacity voltage sourced convertor HVDC system started its operation. In this paper, we introduce its configuration and function. In addition, we mention about forthcoming power electronics technology applications for electric power grid in near future, and about expected function and performance by this technology as well.

Biography:

Yoshimasa Sato received his M.S. degree from Tokyo Institute of Technology in 1994. In 1994, he joined Toshiba Corporation in Tokyo, Japan, where he was engaged in transmission and distribution engineering. From 2018, he has been engaged in engineering of power electronics systems for power grids.

PLENARY KEYNOTE 2

Dr. Patrick Leteinturier – Fellow Automotive Systems, Infineon Technologies

Power Semiconductors – the Key for a Future Green Mobility

Abstract:

The mobility industry is living the most disruptive period since the invention of the internal combustion engine. The society is looking for carbon-neutral as well as de-carbonization of transportation.

This keynote will address the fundamental changes in the vehicle architecture and the EE (electric electronic) architecture to address the CO2 challenges with electro-mobility. It will review the main building blocks: batteries, inverters, and converters among others. The digital transformation and the IoT are strongly modifying the way we design power electronics (MOSFET, IGBT, SiC and GaN).

More than the cars and the complete automotive value chain, the announced changes will affect the energy infrastructure. The first will the electricity-charging infrastructure with charging at home, at destination, and on the way. The next step could go into new energy carriers such as hydrogen or other synthetic fuels.

Biography:

Patrick Leteinturier has 30 years of experience in automotive electronics. He started his career working at Lucas (UK) and SAGEM (France) developing powertrain electronic systems for PSA and Renault. He is working since 1997 at Infineon Technologies AG (Germany). He is currently technical fellow responsible for system architecture for hybrid & electric powertrain applications in the context of designing silicon sensors, microcontrollers, and power components.

A member of SAE International since 1998, Mr. Leteinturier received the SAE International Forest R. McFarland Award (2008). Since 2010, he is SAE International Fellow. In addition, since 2006 he is Guest Professor at Tianjin University in China.

Mr. Leteinturier received his Mechanical Engineering degree from ENSAM: Ecole Nationale Supérieure des Arts et Métiers (France) in 1987, his Master of Advanced Studies in Internal Combustion Engines (DEA) at the University Paris 6 (France), and his Electric & Electronic Engineering degree from ESE: Ecole Supérieure d'Electricité (France) in 1990.

PLENARY KEYNOTE 3

Mr. Sameer Pendharkar – Senior Fellow & VP Technology, Texas Instruments

Mixed signal and power semiconductor technology for industrial and automotive electronics

Abstract:

New process, circuit, packaging technologies and material advances over the last decade have been critical in fueling increased electronics adoption in industrial and automotive systems. Innovations in multi-domain mixed signal integration are driving Industry 4.0 whereas significant improvements in power density and high voltage technology is enabling automotive systems like the 48V battery as well as EV/HEV.

Though silicon is still the dominant semiconductor material, recent advances in wide band gap semiconductor technology have opened up the possibilities of more optimal system partition to achieve even higher power conversion efficiencies and densities with superior system reliability and diagnostics.

The paper will talk about the trends and performance improvements in both the silicon and GaN power semiconductor and IC technologies targeted for various industrial and automotive applications with emphasis on how each technology can be optimized to achieve an overall optimal performance.

Biography:

Sameer completed his undergraduate studies and graduate studies in Electrical Engineering from the Indian Institute of Technology, Bombay and the University of Wisconsin-Madison respectively.

He joined TI in 1996 and is currently Vice President of Technology Development and TI Senior Fellow. Sameer and his team are responsible for setting and executing the overall technology development strategy for TI. Over the last 23 years, Sameer has worked on several generations of power BCD technologies with primary focus on technology definition and power device engineering. More recently, he has helped TI to enter and compete in high voltage market space through the definition and development of TI-first high voltage and gallium nitride technologies.

He has published over 90 technical papers and given numerous short courses and tutorial presentations in power technology and has been granted more than 170 U.S. patents. For his work on power device architecture and technology, he was awarded the prestigious Edith and Peter O'Donnell Award for Technology Innovation by The Academy of Medicine and Science of Texas (TAMEST).