

March 2019

Event

Rock River Valley Section

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Sense

The Institute of Electrical and Electronic Engineers, Inc.

IEEE RRV Section, Young Professional, Women in Engineering, Life Member Meeting  
SERVING IEEE MEMBERS OF NORTH CENTRAL ILLINOIS AND SOUTH CENTRAL WISCONSIN

**WHEN** Thursday, March 28, 2019

**WHERE**

Rock Valley College  
Woodward Tech Center  
Room: WTC1308  
3301 North Mulford Road  
Rockford, IL 61114

**AGENDA**

6:00 PM Networking  
6:30 PM Dinner  
7:15 PM Presentation

**Power Dissipation Optimization for Solid State Power Control Modules in the Aircraft Secondary Power Distribution System**

**Milorad Manojlovic**  
Collins Aerospace

In the last two decades, an aerospace industry trend in the secondary power distribution concept has been dominated by power electronics technology which includes power converters and Power Control Modules based on Solid State Power Control (SSPC) switching elements. These Power Control Modules, grouped around microprocessor based controllers and combined in a single electronic chassis, have become a backbone of electrical power distribution systems on all major commercial and military transport aircraft. Due to the resistive properties of the semiconductor based SSPC devices, whose behaviors can be described as nonlinear functions of ambient operating temperature, power distribution system integration with SSPCs is challenged and heavily affected by operating temperatures and power dissipation limits. With the emergence of more electric aircraft, where a significant number of AC and DC type aircraft electrical loads have been connected to Power Control Modules, total power dissipation limitation with additional hardware has been creating significant impact on total equipment weight and cost. This presentation will present a unique systems integration concept based on power management and electrical load shed as a function of critical ambient operating temperatures. The presented concept is scalable and can be implemented with no effect on aircraft performances and critical system functions.

Milorad Manojlovic is an Engineering Manager in the Power Conversion and Distribution product engineering organization at the Collins Aerospace in Rockford, Illinois. He leads a group of systems engineers developing secondary power distribution products for various commercial and military programs. He has joined Hamilton Sundstrand in 2006 as a system engineer to work on the development of the secondary power distribution system for the Boeing 787 airplane. Prior to that, he was with Bombardier Aerospace as electrical system integrator. Milorad has a Master degree in Electrical Engineering from University of Nis in Serbia.

**MEAL INFORMATION**

Dinner entrée will feature your choice of Vegetarian or Non-Vegetarian meals.

Members & Student Members: FREE,  
Non-members: \$10,  
Student non-members: \$5  
Presentation only: FREE

Please register online at

<https://events.vtools.ieee.org/m/196009>

or by emailing Diane Sennebogen at [diane.brock@utas.utc.com](mailto:diane.brock@utas.utc.com) by Thursday, Mar 28 at 1 pm. Please include the following: name, phone number, email address, and IEEE member number. The meeting is open to the general public.

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## IEEE Chicago/Rockford Consultants' Network March Meeting

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**WHEN** Monday, March 25, 2019

**WHERE**

**Harper College**

**Building H**

Room: H130

1200 Algonquin Rd

Palatine, IL 60067

[Click here for parking information and a map of Harper College](#)



**AGENDA**

6:30 PM Networking

6:45 PM Presentation

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### **IEEE1451: A Universal Standard for Sensors, or, How to Easily Make Everything Just Work**

**Robert Stamp, P.E.**

NGC Technologies, LLC

With the revolution in the Internet of Things, smart everything, and data fusion, data from sensors is needed everywhere. This means that interfaces converting between the physical and virtual worlds are more and more vital. There are methods out there, from industrial standards of OPC, MODBUS, HART, Fieldbus, to custom interfaces on not-quite-standard I2C buses, and that's before you get online. These interfaces that make things "smart" require a lot of work which seems kind of dumb. So, are there any grand unifying standards that make it so you can just plug a device in and have it work? IEEE's 1451 family of standards, which have been around since the late 90's, do just that.

Robert Stemp is a licensed professional electronics engineer with 10 years of experience in the design of embedded and wireless sensor systems and new product development. After obtaining master's degrees in electrical engineering and systems engineering, he worked for several companies developing new technologies in a variety of fields from satellite, autonomous vehicles, medical devices, and industrial automation.

He is currently the President and Co-founder of NGC Technologies LLC, which helps clients develop their ideas, focusing on designing full product platforms that will grow with their businesses.

Guests are welcome. Attendees may earn 1 PDH.

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**IEEE Chicago/Rockford Consultants' Network:** <https://ewh.ieee.org/r4/chicago/cn/>

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## April IEEE RRV Section, Power Electronics, and EMC Society Meeting

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**WHEN** Thursday, April 25, 2019

**WHERE**

Rock Valley College  
Woodward Tech Center  
Room: WTC1308  
3301 North Mulford Road  
Rockford, IL 61114

**AGENDA**

6:00 PM Networking  
6:30 PM Dinner  
7:15 PM Presentation



### Measurements and Analysis for Switchmode Design

**Mike Hertz**

Field Applications Engineer, Teledyne LeCroy

The presentation covers the measurements of interest for designers of switchmode power conversion circuits and devices. With the goal of high efficiency and reliable designs, we review the acquisition of voltage and current, their relationship in switchmode power conversion circuits, and the analysis of power device switching losses, conduction losses, safe operating area, and dynamic on-resistance. The challenge is to perform accurate analysis while the power transistor or diode is operating in the non-ground referenced primary circuit of an off-line switchmode power supply. Instrumentation requirements such as overdrive recovery, high frequency common mode rejection, and channel to channel time delay matching will be covered. A unique technique will be covered for using information contained in the pulse width modulation signal to find a power circuit's step response and soft start performance. Testing line current harmonics against industry standard EN61000 3-2 and measurements of real power, apparent power, and power factor are included.

Mike Hertz has been a Field Applications Engineer with Teledyne LeCroy in Michigan for 18 years. Before joining Teledyne LeCroy, he worked in Applications and Marketing with both Agilent Technologies and Hewlett-Packard in Colorado. He holds a BSEE from Iowa State University and an MSEE from the University of Arizona. Hertz is an Eta Kappa Nu electrical engineering honorary recipient, has published over 50 articles in the field of test and measurement, and has been awarded 6 U.S. patents in oscilloscope measurement design.

**MEAL INFORMATION**

Dinner entrée will feature your choice of Vegetarian or Non-Vegetarian meals.

Members & Student Members: FREE,  
Non-members: \$10,  
Student non-members: \$5  
Presentation only: FREE

Please register online at

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or by emailing Diane Sennebogen at [diane.brock@utas.utc.com](mailto:diane.brock@utas.utc.com) by Thursday, April 25 at 1 pm. Please include the following: name, phone number, email address, and IEEE member number. The meeting is open to the general public.

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## IEEE Rock River Valley Section 2019 Calendar of Events

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March 25: Chicago Rockford Consultants' Network Meeting at Harper College, Palatine, IL

March 28: RRVS Section Meeting, YP, WIE, Life Members

April 19: NIU Student Branch Networking Social at Northern Illinois University

April 25: RRVS Section Meeting, PELS Chapter, EMC Chapter

May 2: Chicago Rockford Consultants' Network Meeting at Rock Valley College, Rockford, IL

May 30: RRVS Section Meeting, PELS Chapter

June 11: EMC Seminar

June 27: RRVS Section Meeting, Annual Picnic and Officer Elections at Hamilton Sundstrand Park

August 29: RRVS Section Meeting

September 26: RRVS Section Meeting

October 31: RRVS Section Meeting

November 14: RRVS Section Meeting at NIU

\*Dates and locations are subject to change

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IEEE Collabratec: <https://ieee-collabratec.ieee.org/>

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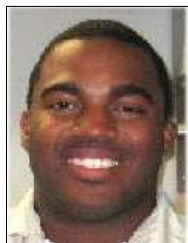
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# Rock River Valley Section Chapters

**Industry Applications Society Chapter**  
*Established 1992*

**Joint Computer/Control Systems Society Chapter**  
*Established 1995*

**Power Electronics Society Chapter**  
*Established 1996*

**Electromagnetic Compatibility Society Chapter**  
*Established 2007*

*The Rock River Valley Section gratefully acknowledges the following companies and colleges for supporting Section Officers:*

[Collins Aerospace](#) • [Northern Illinois University](#) • [Rock Valley College](#) • [River North Solutions](#)