

August 2020

Event

Rock River Valley Section  
[www.ieee.org/rrvs](http://www.ieee.org/rrvs)

Sense

The Institute of Electrical and Electronic Engineers, Inc.

IEEE RRV Section, EMC Chapter Meeting

SERVING IEEE MEMBERS OF NORTH CENTRAL ILLINOIS AND SOUTH CENTRAL WISCONSIN

**WHEN** Thursday, August 27, 2020

**WHERE** <https://ieeemeetings.webex.com/ieeemeetings/j.php?MTID=m256de229889261f6a80aedf5a282d3c0>

Meeting number (access code): 130 107 6073

Meeting password: wSBYVMk8J22

**AGENDA**

7:00 PM Dial in

7:15 PM Introductions

7:30 PM Presentation



**Facility/Building Electromagnetic Shielding and Grounding**

**Michael K. McInerney, U.S. Army Corps of Engineers**

Modern electronic devices and equipment are susceptible to EMI, RFI, electrical transients, and especially high-power EM pulses. Sources of EM interference and pulses can be natural or manmade. Lightning and solar flares are natural sources, while EMP from a nuclear blast and intentional EM interference (IEMI) are manmade. The detrimental effects of these phenomena have been known for many years, and in the case of lightning and EMP, protection methods have been developed. Devices and equipment can be individually protected but it is more effective and economical to house in an enclosure, especially when there are multiple interconnected devices to be protected. The presentation provides an overview of EMI, RFI, and EMP sources, an introduction to the theory of EM protection, and tailored protection methods. Protection topics include shielding, transient protection, grounding, bonding, standards (IEEE, IEC, and military), specifications, and best practices. The severity of destructive effects will vary depending on the EM pulse source. This is because pulse characteristics differ, such as frequency band and energy. These pulse differences will affect the design of EM protection. There are three basic approaches to reducing the impact of an EM pulse: reflect, redirect, and absorb. Design of a protective barrier includes the overall shield and any penetrations through it. To protect from EM infiltration, penetrations, such as doors, HVAC, wires, and antennas, can be modified using transient surge protectors, filters, and waveguides below cutoff.

**Michael K. McInerney** is with the U.S. Army Corps of Engineers (USACE), Engineer Research Development Center, Construction Engineering Research Laboratory (ERDC-CERL), in Champaign, Illinois. He has more than 35 years of experience in the measurement and modeling of electric and magnetic properties of materials and skilled in the use of acoustic and EM techniques to nondestructively inspect materials. He is also skilled in the use of EM remote-sensing techniques to characterize infrastructure. He has been a registered Professional Engineer since 1990, an iNARTE Certified EMC Engineer since 1996, and holds two FCC radio licenses. Mr. McInerney has more than 60 technical publications in the areas of EMC, corrosion prevention, and electrokinetics. He also holds seven US patents, and has won several prestigious awards, including the 2010 USACE Researcher of the Year. Since 2005, Mr. McInerney has been co-chair of the EMC Society's TC5 on High-Power Electromagnetics. He participates in many IEEE standards technical committees, including IEEE Std-1302 and IEEE Std-299. Mr. McInerney serves as a subject-matter expert for the USACE in lightning protection and High-Altitude Electromagnetic Pulse (HEMP). He serves on EMC-related Department of Defense technical criteria committees such as MIL-HDBK-423 and MIL-STD-188-125. He has an MS degree in Electrical and Computer Engineering from the University of Illinois (1984), a BS in Electrical Engineering, and a BS in Mathematics and Physics from Iowa State University (both 1978).

Event number (access code): 130 107 6073

Meeting password: wSBYVMk8J22

[https://ieeemeetings.webex.com/ieeemeetings/j.php?](https://ieeemeetings.webex.com/ieeemeetings/j.php?MTID=m256de229889261f6a80aedf5a282d3c0)

[ieeemeetings/j.php?](https://ieeemeetings.webex.com/ieeemeetings/j.php?MTID=m256de229889261f6a80aedf5a282d3c0)

[MTID=m256de229889261f6a80aedf5a282d](https://ieeemeetings.webex.com/ieeemeetings/j.php?MTID=m256de229889261f6a80aedf5a282d3c0)

[3c0](https://ieeemeetings.webex.com/ieeemeetings/j.php?MTID=m256de229889261f6a80aedf5a282d3c0)

Please register online at:

<https://meetings.vtools.ieee.org/m/237886>

**Section News:**

Thank you for participating online election! Here are 2021 Election Results:

<b>Position</b>	<b>2021 Officers (winning candidates)</b>
<i>Chair</i>	Rakesh Vasudevan
<i>Vice Chair</i>	Alkesh Patel
<i>Treasurer</i>	Adrian Vandergrift
<i>Secretary</i>	Patrick Conner
<i>Life Members Chair</i>	Lawrence Wachowiak
<i>Young Professionals Chair</i>	Eduardo Vasquez
<i>WIE Chair</i>	Marjan Shirani
<i>EMC Chapter Chair</i>	Jamal Shafii
<i>EMC Chapter Vice Chair</i>	Steven Davidson
<i>IAS Chapter Chair</i>	Jalil Etminan
<i>PELS Chapter Chair</i>	Dr. Don Zinger
<i>Computer/Controls Chapter Chair</i>	Terry Johnson