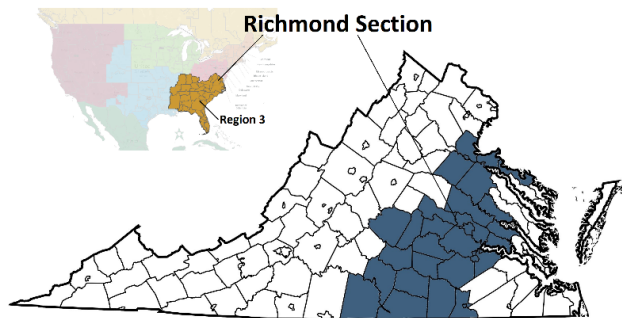# IEEE RICHMOND SECTION
LOCAL NEWS

www.ieee.org/richmond

Thank you for your continued membership in IEEE and the IEEE Richmond Section.

The Richmond Section covers the portion of Virginia shown in the adjacent map. If you live in this part of the state, you are automatically a member of the Richmond Section. 65% of the members in the Richmond Section live in the Greater Richmond area, 28% of the members live in the Greater Fredericksburg area, and the remaining 7% of the members are spread throughout the remainder of the Section.

Geographically, IEEE splits the world into ten Regions. The Richmond Section is a part of Region 3 which covers the southeastern US plus Jamaica.

Due to the pandemic, IEEE has forgone in-person events for this year. This means that many organizations from all over the world are hosting events Online. Please check out http://bit.ly/ieeevirtual to see a list of events from around the world that you can attend!

Note, if you would like to contact any chapter or group, please use the Officer Information at the end of this newsletter.

A SAMPLING OF INTERESTING UPCOMING EVENTS

- Near-Zero Power Microcontrollers for Self Powered IOT Sensing Nodes – Dec 11, https://meetings.vtools.ieee.org/m/249030
- Remote Islanding for Power Independence Micro Grids – Dec 11, https://meetings.vtools.ieee.org/m/249703
- Quantum Assured Precision Navigation and Timing – Dec 14, https://meetings.vtools.ieee.org/m/247414
- Role Model Event for Women In Engineering Switzerland – Dec 15, https://meetings.vtools.ieee.org/m/249368
- And hundreds more at http://bit.ly/ieeevirtual

Organizations Within the Richmond Section

The Richmond Section contains the following Chapters, Affinity Groups, and Student Branches:

- Power & Energy Society
- Computer Society
- Magnetics & EMB Societies
- Industry Applications Society
- Education Society

Affinity Groups:

- Young Professionals
- Women in Engineering

Student Branches:

- Virginia Commonwealth University
- Virginia State University

Chair's Note

T hank you for your continued membership in IEEE. Because of members like you, the Richmond Section ranked in the top 10% of sections globally for member retention this past year. An important part of retaining members is staying relevant to their needs. As part of our efforts to do this, we are continuing to add new Society Chapters that can more closely address the interests of our various members. The meetings of all of these Chapters have moved online since early spring when the COVID-19 pandemic first started to impact us all. You can find links to any upcoming virtual meetings by checking the calendar at http://bit.ly/ieeevirtual. You can also check the calendar at the Richmond Section's website, https://ieee.org/richmond, for any locally hosted meetings.

2020 Outstanding Section Membership Retention Performance

Richmond Section

The movement to virtual meetings, classrooms, and offices would not be possible without the contributions of many of the fields that IEEE and many of our members are heavily involved in. This is true whether you work in the fields of power generation and distribution, computers and programming, communications, or numerous other IEEE-related fields. It is in our nature as engineers to solve hard problems. With this in mind, the Richmond Section is planning to have a COVID-19 related virtual Hack-a-thon early next year. The details are still being worked out, but the general plan is to identify actual COVID-19 related problems that could use an engineering solution. Virtual teams would then form and attempt to solve these problems over a period of several weeks. Teams would consist of groups of volunteers including high school students, college students, young professionals, and more senior professionals with the more senior professionals often serving as mentors. The Richmond Section, with assistance from IEEE Region 3 (Southeast US), will provide limited financial assistance. It will also provide training for some of the less experienced team members to help them understand how engineers work to solve problems. Non IEEE members will be welcome to join in these teams.
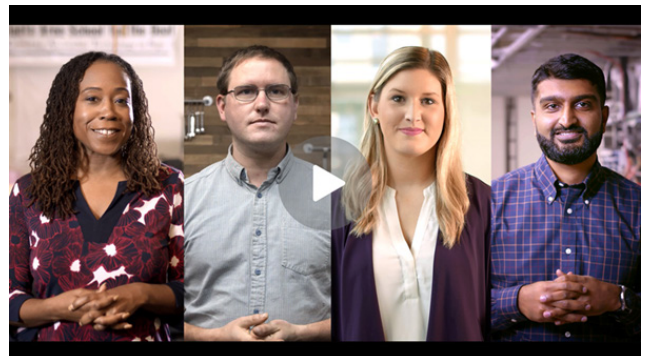
Do you know of some real-life COVID-19 related problems that could use a good engineering solution? Are you interested in working on a team either in a participant role or as a mentor? Do you know of any companies or groups that could provide assistance with this project? If the answer is yes to any of these questions, then we want to hear from you. Please contact us at richmond_covid@ieee.org.

Thank you for all you do to support our profession and your communities.

Allen Jones

Section Chair, IEEE Richmond
allen.jones@ieee.org

P.S. Click on the picture to the right to learn how some IEEE members are using IEEE as their competitive edge.

Confused about all of the terms like "Society," "Chapter," "Affinity Group," and "Student Branch?" See the [Societies? Chapters? Affinity Groups? Student Branches? What does it all mean?](#) explanation near the end of this newsletter.

Power and Energy Society

Twice every year, IEEE Richmond Section Power & Energy Society (PES) hosts whole-day seminars on various topics related to energy and the power grid. This coming year, the seminars will be hosted online due to Covic-19 until further notice.
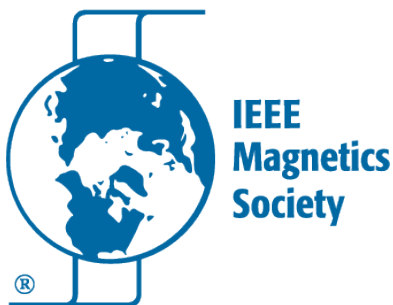
Last year, the Richmond Section PES hosted a seminar on Power Quality. In this seminar, the experts are the industry and academia were invited. IEEE distinguished lecturer, Dr. Surya Santoso, professor from the University of Texas at Austin, David Mueller, director of Power System studies with EnerNex and Chris Mullins, executive vice president at Power Monitors, Inc. gave presentations covering power quality theory, industry and consulting experience and monitoring device.On October 22nd, 2020, a seminar on battery technology and application in Power Grids will be hosted. Dr. Babak Enayati from National Grid will talk about the benefits and challenges of distributed energy resources and batter application. James H Kenney from Mitsubishi Electric Power Products will talk about the battery energy technology overview and application.

The next seminar will be related to data center. For more information, please go to https://ewh.ieee.org/r3/richmond/pes/.

Magnetics Society

Every year, the Richmond Chapter of IEEE Magnetics Society (PES) hosts a seminar series featuring four talks centered on various fundamental and applied topics related to magnetic materials and devices. The lectures promote information exchange among its members and within the global technical community, including education and training of young engineers and scientists. The Fall 2020 online seminar featured Dr. Alen Horn III of Rogers Corporation. His talk on, "Methods for Permittivity, Permeability, and Loss Measurements of Polymer Composite Magneto-dielectric Laminates", was held on Nov 17th and was co-hosted by the IEEE Mag. Soc. Chapter in Boston.

In the Spring, we will be hosting two IEEE Distinguished Lecturers: (i) Dr. Tim Mews (Topic: Magnetization Dynamics and Damping) and (ii) Dr. Mathias Kläui (Topic: Antiferromagnetic Insulatronics: Spintronics without magnetic fields and moving electrons). Be on the lookout for more information regarding event details.

Computer Society

The Computer Society has hosted several events this year. The first event was an all-day Signal Integrity, Power Integrity, and EMC Technical Seminar at Diversey/Intellibot's Richmond office on Wednesday, January 15th. Links to the training slides can be found at https://events.vtools.ieee.org/m/218897. The local Chapter also arranged for its members to get free registration for the Embedded Online Conference that was held on May 20th.

On July 29th the local Computer Society Chapter hosted a (virtual) talk about quantum computers and how to program them. No prior quantum experience was required. Attendees learned how they could get free limited access to a quantum computer, how to formulate a problem for a quantum computer, how to write the program, and how to tune the program.

The recording of the presentation along with links to the accompanying slides and documents can be found at https://events.vtools.ieee.org/m/236286.The Computer Society is also planning to have a panel session on "What should every software developer know about cybersecurity?" early next year. Details will be sent to all Computer Society members and posted on the Richmond Section website (www.ieee.org/richmond) once the plans are finalized.

Finally, the Computer Society is planning to hold elections in the next several months. An email has been sent to all Computer Society members seeking nominations for people to run for office. (Self nominations are accepted.) If you are interested in running for election or would like to nominate someone, please contact Jamie Imanian, the Nominations Committee Chair, at james.imanian@ieee.org.

Education Society

The IEEE Education society was founded in 1957 and is one of the oldest technical societies in IEEE (https://ieee-edusociety.org). It is an international society of professionals who work diligently to ensure engineering education is at the forefront in the field of learning science and innovative classroom practice.

Education is an ever-evolving art that directly impacts our viability as a nation; educators are engaged not only in a career but also a calling. To be effectively engaged in teaching, one must be extremely knowledgeable about one's subject matter, and also be able to convey how that subject matter is part of a holistic system. Engineering is a creative science that pulls from both parts of the brain and impacts human existence in a very significant way. Students in engineering should understand this first and foremost, so they learn to love and fear their discipline and be very intentional in designing for good.

A good educator learns how the mind works, and is able to teach a group of students in a consistent way while allowing each student to maintain their individuality. By setting an example of active inclusion of all students, appreciation of new ideas, and a focus on the benefit of engaging diverse people, learning and working styles, and cultures in the classroom, we produce better people and better engineers while

simultaneously evolving into better versions of ourselves.

If you are engaged in science or engineering education, and would like to learn more about best teaching and learning practices, or would like to publish your own research on this important initiative, please join our society.

Industry Applications Society

IAS Richmond took a great leap this year with support from new and existing IEEE membership around the Central Virginia area. Starting at the beginning of the year, we were fortunate to gather for a kick-off meet and greet event at Postbellum near VCU. The interested members agreed to a mission statement, started our petition on that day, and began to gather signatures. With the help of new and existing IAS membership, we were approved to formally organize in August. Over the past few months, we have formed an executive committee with the following members taking leadership roles through 2021:

- Chuck Niedermayer - Chair
- Christopher Kelley - Secretary
- Cody Voight - Treasurer
- Joe Woermer - Vice Chair
- Laurence Jones - Event Organization Officer
- Josh Rosato - Recruiting Officer

During the summer, we hosted a virtual forum on how COVID has impacted the industry. Gathering speakers from local companies, we discussed the impact of teleworking on production, the feasibility of virtual factory witness testing, and where we see the world landing on the other side of everything. Heading into the spring, we plan to organize outdoor events, virtual meetups, and other networking events so we can keep the momentum going. Even with all the uncertainty out there, one thing we are certain of is that after the pandemic is over, our local industry will grow stronger as our section does.

The recent IEEE Section Congress identified the need for providing resources to serve industry professionals and engage with local industries. This aligns perfectly with the motivating factor to organize this chapter :

The Richmond metro area, including Petersburg, Fredericksburg, and surrounding counties has a significant amount of industry growth in multiple sectors relating to IEEE work. For many of us there is a need for more technical education, professional networking,and a desire to find ways to educate and support our community. There are many challenges for the younger generation and a desire for experienced professionals to pass along a wealth of knowledge in many ways that build companionship and community.

We recognize that all industry from mining facilities, to industrial plants, and commercial office buildings have had to make many adjustments, while continuing to learn, collaborate, and support our community. We welcome you to join us as we continue to discover ways to support our membership. Our goal for IAS Richmond is to become a great chapter for our professionals.

Young Professionals

IEEE YP Richmond / Fredricksburg is a 120+ member Affinity Group focused on making meaningful professional connections with recent grads, and those who are new to the workforce.

In the coming year, YP would like to focus on outreach and growth. If you or anyone you know has recently graduated, or have been in industry for less than 15 years. Please reach out to us. We are looking to expand our Richmond / Fredricksburg network, while hosting engaging activities.

Since the last newsletter, YP conducted a Membership Social with around ~20 young engineers in the Richmond / Fredricksburg area. In case you missed out on the fun, please check in with us and see when we will be having our next event!

Early next year, YP in collaboration with IEEE IAS Society is planning to assist with the VCU Career Fair. If you are interested in Volunteering, or learning more, please reach out!

ELECTIONS

We are planning to have elections in the first half of 2021. Please reach out if you are interested in any of the following roles: Chair, Vice Chair, Treasurer, Secretary, Event Coordinator, Corporate Outreach Officer, and Recruitment Officer.

Contact information for YP can be found at the end of the newsletter.

Check out our global community on the Web - https://yp.ieee.org/

Check out our local page on Facebook - https://www.facebook.com/IEEEYPRichmond/

Women in Engineering

Despite the high priority placed on STEAM in schools, efforts to expand female interest and employment in technology and engineering are not working as well as intended. The reasons range from peer pressure to a lack of role models and support from parents and teachers to a general misperception of what engineering careers look like in the real world. To address these issues, the IEEE Women in Engineering (WIE) Affinity Group (Richmond Section) is committed to reaching out to young school girls on a personal level.

This year, WIE has participated in two outreach workshops – one for high school teachers and the other for middle school students. In the workshops, teachers and students used "eggs" to explore complex engineering physics concepts to understand the operating principle of NASA's Rotation and Interior Structure Experiment (RISE) - a radio science experiment onboard the InSight Mars lander. RISE precisely tracks the lander's location to measure how much Mars' axis wobbles as it orbits the Sun. These observations help determine whether the core of a planet is mostly liquid and which other elements, besides iron, may be present. It also explains why the gravitational force of Mars is lesser than that of Earth. Indeed, there is more to an egg than meets the eye!!!

Societies? Chapters? Affinity Groups? Student Branches? What does it all mean?

In addition to their regular IEEE membership, members can also choose to belong to Societies, which cover various IEEE-related technical specializations. The IEEE has 39 technical societies (https://www.ieee.org/communities/societies/index.html). The Richmond Section has members in all but two of these Societies.

Groups of members in a Society can choose to form a local Chapter. Local Chapters have the advantage of being able to offer talks and activities that are more closely related to their field of specialization than what the larger Section could provide. It is also possible to form Joint Chapters that include members from two or more related Societies or from two or more nearby Sections. The Richmond Section has five local Chapters and Joint Chapters:

- Power & Energy Society Richmond Section Chapter
- Computer Society Richmond Section Chapter
- Industry Applications Society Richmond Section Chapter
- Magnetics & Engineering in Medicine and Biology Societies Richmond Section Joint Chapter
- Education Society Northern Va/Central Va/Hampton Roads/Richmond Sections Joint Chapter

If you are a member of any of these Societies, then you are automatically a member of the local Chapter.

We also have enough Society members to form six more local Chapters. It takes at least 12 members who have a member grade of Graduate Student Member or higher (Graduate Student Member, Member, Life Member, Senior Member, Life Senior Member, Fellow, or Life Fellow) to petition to form a new Chapter. The additional Societies that meet this requirement (along with the number of eligible petitioners) are:

- IEEE Communications Society (35)
- IEEE Signal Processing Society (20)
- IEEE Aerospace and Electronic Systems Society (17)
- IEEE Microwave Theory and Techniques Society (14)
- IEEE Control Systems Society (13)
- IEEE Technology and Engineering Management Society (12)

If you belong to any of these Societies and wish to start a petition drive to form a local Chapter, please contact Steve Kemp (email skemp@ieee.org with a subject tag of "[Chapter Formation]") and he can help you with the petition process. The Richmond Section provides a grant to new Chapters to assist them with getting started. IEEE also provides funds to each Chapter that meets the minimum requirements for the number of technical meetings and submits their required reports on time.

Four more Societies are very close to having enough eligible petitioners to start a new Chapter:

- IEEE Antennas and Propagation Society (11)
- IEEE Robotics and Automation Society (11)
- IEEE Computational Intelligence Society (10)
- IEEE Power Electronics Society (10)

If you are a member of one of these Societies and are interested in starting a new Chapter, please consider recruiting a few more members to join your Society or speak with Steve Kemp about possibly forming a Joint Chapter.

Additionally, the IEEE has non-technical groups at the local level called "Affinity Groups." These groups are united

by some IEEE-related non-technical bond. The Richmond Section currently has two such groups – the Young Professionals Affinity Group and the Women in Engineering Affinity Group.

The IEEE also has affinity groups for Life Members and for Consultants. It takes at least six petitioners to form an Affinity Group. The Richmond Section has enough eligible petitioners to form one of each of these groups. If you are interested in starting a petition drive to form one of these groups, please contact Steve Kemp (email skemp@ieee.org with a subject tag of "[Affinity Group Formation]") and he can help you with the petition process.

Finally, IEEE has Student Branches. Student Branches allow Student Members and Graduate Student Members to connect with IEEE through their local college, university, or technical institute. Student Branches provide opportunities to meet and learn from fellow IEEE Student and Graduate Student Members and engage with professional IEEE members locally. The Richmond Section currently has Student Branches at Virginia Commonwealth University (VCU) and Virginia State University (VSU).

The Richmond Section is also interested in starting Student Branches at other area colleges, universities, and technical institutions. It takes at least 12 Student Members and/or Graduate Student Members and three regular IEEE members to start a Student Branch. At least two of the regular IEEE members need to be faculty members at the school. Under certain circumstances, it is possible to start a Student Branch with fewer than 12 Student or Graduate Student Members or with fewer than two faculty who are IEEE members. Dr. Dale Herdegen (dherdegen@mitre.org) is currently working to set up a Student Branch at the University of Mary Washington (UMW). If you are interested in starting a petition drive to form a Student Branch at another school, please contact Steve Kemp (email skemp@ieee.org with a subject tag of "[Student Branch Formation]") and he can help you with the petition process.

Special Thanks

IEEE Richmond Section is an organization run by volunteers. We are very appreciative of all of our officers that contribute to making our societies, chapters and affinity groups within the section successful. Our volunteers help drive our overall success. We would also like to stretch out a special thanks to someone who has stepped up and created value within our organization over the past few years.

Special Thanks to Steve Kemp for outstanding service in supporting our community. Without Steve's dedicated service to our society, we would not have nearly the community we do today.

Officers & Contacts

If you are interested in getting in contact with the different groups, use the information below. If someone that you are interested in contacting is not listed with contact information, get in contact with the closest officer to that group or Allen Jones.

Section:	Power & Energy Society Chapter:	Computer Society Chapter:

Allen Jones – Chair
    allen.jones@ieee.org
Shellie Lundquist – Vice Chair
Marian Do – Secretary/Treasurer
	Alan Ott – Chair
	    alan.ott@DominionEnergy.com
	Hung-Ming Chou – Vice Chair
	Brian King – Secretary
	Dev Walia – Treasurer
	Dan Ward –Past Chair
		Allen Jones – Chair
		    allen.jones@ieee.org
		Johnny Johnson – Vice Chair
		Heath Muchmore – Secretary
		Wray Mills – Treasurer

Magnetics & EMB Societies Joint Chapter:
 	
Radhika Barua – Magnetics Chair
    rbarua@ieee.org
Ravi Hadimani – EMB Chair
	IAS Society Chapter:
	
	Chuck Niedermayer – Chair
	    cniedermayer@mooreselectric.com
	Joe Woermer – Vice Chair
	Christopher Kelley – Secretary
	Cody Voight – Treasurer
	Laurence Jones – Event Organization
	    Officer
	Josh Rosato – Recruiting Officer
		Education Society Joint Chapter:
		
		Vennie Filippas – Chair
		    filippas@ieee.org
		Rosalyn Hobson – Vice Chair

Young Professionals Affinity Group:
 	
Shellie Lundquist – Chair
    slundquist@ieee.org
David Choe – Vice Chair
John Moody – Secretary
    john.moody@ieee.org
Marian Do – Treasurer
	Women in Engineering Affinity Group:
	
	Radhika Barua – Chair
	    rbarua@ieee.org
	Catie Hunt – Secretary
	Marian Do – Treasurer
		VCU Student Branch:
		
		Counselor – Dr. Carl Elks
		    crelks@vcu.edu