

ESIC CURRENTS

January 23, 2025



ENERGY SYSTEMS INNOVATION CENTER

**An Energy Center Focused
On Education, Outreach,
and Research**

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ESIC, memberships and how you can
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**ESIC Research Excellence Partnership
Membership (REP)** – Enabling
excellence in research

**ESIC Power Education Partnership
Membership (PEP)** – Supporting
power education

UPCOMING EVENTS ...

AGI SEMINAR, WEDNESDAY, 1/29/25

Our next AGI seminar will be **Wednesday, Jan. 29 10am-11am**, featuring our own **Dr. Rahul Gupta** from ESIC. Dr. Rahul will be presenting on **Dispatching Active Distribution Networks by Using Distributed Energy**.

To join us virtually, please follow this [TEAMS](#) link. If you are on campus, please feel free to drop by EME 26 to join us in-person for the seminar.

Missed out on a seminar? All ESIC seminars are recorded and posted to our website, click [HERE](#) to go back and watch videos from earlier seminars.



2025 ESIC PRACTICUM UPDATE ...

STUDENT PRACTICUM APPLICATION UPDATE

The Energy Systems Innovation Center has completed our 2025 Spring Practicum recruitment drive with final applications being submitted to us on Friday (Jan. 17th).

We are incredibly excited about this year's applicant pool and have received applications from many fantastic students. ESIC will begin the selection process this week.

Participating industry partners will be sent student information in the coming weeks as we select the most qualified applicants.

INTERESTED IN TAKING PART IN ESIC PRACTICUM?

We welcome all our industry partners to participate in the ESIC Practicum held every year during the WSU Spring Break. This is a great opportunity to meet the next generation of engineers and show them the ins and outs of the industry while searching for new employees for your organization.

If you are not currently a participant of the ESIC Practicum Program but would like to know more, please contact Jake Baumgartner (jacob.baumgartner1@wsu.edu) and he would be happy to discuss this opportunity with you.

STUDENT ENGAGEMENT ...

ANNOUNCING OUR NEXT “STUDENT SPOTLIGHT” FEATURE ON LINKEDIN

We invite you to view our [Student Spotlight on LinkedIn](#). Each week, Pearl Miglani, our intrepid communications coordinator, interviews ESIC students to provide a glimpse into their experiences, goals, and personal insights on the future of power engineering! This week’s featured student is **Charlotte Wertz**.



GUIDING STUDENTS TO POWER ENGINEERING

As academics, fellow students, and industry stakeholders, you all have the potential to guide and mentor high school students and college undergraduates interested in working towards a power engineering degree. If you know of such a student, please encourage them to visit our [ESIC website](#) to find out more or ask them to contact us at esic.center@wsu.edu.

FOLLOW US ON LINKEDIN

To stay up-to-date on all things concerning ESIC and power engineering, follow us on our [LinkedIn](#) page where we post seminar updates, scholarships, job openings, and so much more!

DISPATCHING ACTIVE DISTRIBUTION NETWORKS BY USING DISTRIBUTED ENERGY RESOURCES

~ by ~

RAHUL GUPTA

Energy Systems Innovation Center, WSU

Wednesday, January 29 • 10 AM - 11 AM • [Join TEAMS Meeting](#)

ABSTRACT

Modern power systems face significant operational challenges due to the accelerated and much-needed deployment of decentralized renewable generation. Such deployment has increased power imbalances leading to increased reserve requirements in power transmission grids and is causing operational issues in power distribution grids associated with the delivered quality-of-service (especially concerning voltage quality) as well as lines and transformers congestions. A potential solution to tackle these challenges is to define efficient and scalable control frameworks in active distribution networks (ADNs) capable of: (i) satisfying the local ADNs' constraints and (ii) aggregating heterogeneous resources at different timescales to provide ancillary services to the transmission network. This work proposes a control and scheduling framework that tracks a pre-defined power profile (*dispatch plan*) at the grid connection point (GCP) of an ADN while ensuring that the grid states (i.e., the nodal voltages and lines/transformer power/current flows) remain within the prescribed limits. We demonstrate the effectiveness of the algorithm by field experiments on real distribution systems installed with controllable energy storage systems and photovoltaic plants as well as fast EV charging stations.

BIO

Dr. Rahul Gupta earned his M.Sc. and Ph.D. degrees in Electrical Engineering from the Swiss Federal Institute of Technology Lausanne (EPFL) in 2018 and 2023, respectively. His doctoral research earned him the EPFL PhD Thesis Distinction in Electrical Engineering in 2023. Following his Ph.D., he served as a postdoctoral researcher at the School of Electrical and Computer Engineering, Georgia Institute of Technology, from Oct. 2023 to Dec. 2024, supported by a grant from the Swiss National Science Foundation (SNSF). Since January 2025, Dr. Gupta has been an Assistant Professor at the School of Electrical Engineering and Computer Science (EECS), Washington State University (WSU). His research focuses on the operation and planning of active distribution networks addressing various kinds of uncertainties, measurement and model-less control schemes, power system parameter estimation and synthetic network generation.

