unifi consortium

universal interoperability for grid-forming inverters

The Universal Interoperability for Grid-forming Inverters (UNIFI) Consortium is a US Department of Energy (DOE) funded effort to advance research and development of grid-forming (GFM) inverter-based resources.

Annual Newsletter 2025

A look back at key developments in the Universal Interoperability of Grid-forming Inverters (UNIFI) Consortium in 2025

What's Inside?

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Front page: UNIFI group at the University of Wisconsin-Madison for the 2025 General Meeting. (Image credit: Todd Brown @ UW-Madison.)

Authors: Debjyoti Chatterjee, Nathan Baeckeland, Ben Kroposki, Andy Hoke, Andrew McEniry, & Sairaj Dhople

Foreword

It has been an incredible year for grid-forming (GFM) technologies around the world with rapid increases in deployments and pushes towards standardization. Across the industry, there is a recognition that ensuring electric assets (generation, transmission, loads, storage, transportation infrastructure) operate in an interoperable manner across technology generations and types will require reliance on GFM technology. Compared to legacy Inverter-based Resources (IBRs), GFM IBRs reduce reaction time to smooth out grid disturbances, improve grid stability, and provide the ability to help restore the grid from blackout conditions. As GFM starts to be deployed at scale across generating resources, storage, large loads, and in HVDC transmission, lessons learned from initial deployments will need to be integrated into standards and requirements in a replicable and scalable fashion. The worldwide push and interest in GFM technologies is reflected in UNIFI's growing membership. We stand at 49 members today, including 5+ national & industry-research labs and non-profits, 10+ universities, and 20+ industry partners. The back page of this newsletter lists all our member institutions. Of particular pride are exceptional graduate and undergraduate students at our member academic institutions, some of whom are highlighted below. This remarkable group will undoubtedly form next-generation leaders across academia and industry. There are several benefits to membership spanning participation in research and development working groups, education and workforce development activities, and a wide range of outreach and training efforts across academic institutions and industry. This newsletter recaps key accomplishments across the consortium in 2025, the fourth year of the UNIFI consortium operation. Particularly exciting ones attributable to consortium-wide efforts include

- *Specifications + Standards.* UNIFI released Version 3 of *Specifications for Grid-Forming Inverter-Based Resources*. This latest edition of the grid-forming specs is notable because it will form the basis of *IEEE standard P2800.1*, a new recommended practice for functional capabilities and performance of GFM resources. As the culmination of work to date, and following open input on Version 2 of the specifications, the Version 3 specifications provide a few important criteria updates to more rigorously define GFM capabilities. These include frequency-domain criteria and quantitative pass-fail tests. UNIFI members presented their progress on the specifications at conferences and gatherings throughout 2025, with the IEEE standard expected to start balloting in late 2026.

> UNIFI's *Version 3 of Specifications for Grid-Forming Inverter-Based Resources* will form the basis of *IEEE Standard P2800.1*, a new recommended practice for functional capabilities and performance of GFM resources.

Debjyoti Chatterjee
PhD candidate, UT Austin

Debjyoti specializes in grid-interfaced power electronics and control. His research focuses on fault ride-through and transient stability of power systems. Currently intern at Tesla, he previously interned at Hitachi Energy and NLR.

T.G. Roberts
PhD candidate, UIUC

T.G. works in the intersection of power systems, microgrids, and control. Her research focuses on system level controls for fully inverter based, and heterogeneous microgrids. Previously she has interned at Enphase and LLNL.

Siye Cen
PhD candidate, NC State

Siye works on power electronics converter design and control. Her research focuses on grid interface of energy storage systems, ride-through control and stability of GFM inverters. She previously interned at Danfoss.

Pranjal Gajare
PhD candidate, GaTech

Pranjal's research focuses on control and stabilization of power electronics-dominated power systems. He is also interested in MV-power electronics. He completed his B.Tech in Electrical Engineering from IIT Roorkee, India.

Fatemeh Sharifi
PhD, Virginia Tech

Fatemeh works in control theory application for power systems. Her research focuses on designing cyber-resilient control for synchronous condensers. After graduation, she joined Tesla Energy as Senior Power Systems Engineer.

UNIFI's strength builds from the ground up with exceptional students across our academic partners engaged in cutting-edge research & development in GFM technologies.

- *1-MW Test Bed is Taking Partners.* The 1-MW multi-vendor GFM test bed at the National Laboratory of the Rockies (NLR) (formerly, the National Renewable Energy Laboratory (NREL)) is complete, having delivered on all project milestones, and is already instrumental in UNIFI investigations. It combines inverters from 5 different vendors together into a single integrated platform—a first of its kind—from which users can evaluate inverter interoperability and dynamics. To-date, the team has used it to study negative-sequence controllers, fault responses, and IEEE 2800 compliance. The test bed is a platform for utilities, system planners, and manufacturers to pilot solutions and discover near-term technology improvements for grid stability. Partners are lined up in 2026 to test their GFM inverter solutions with the test bed, and it is expected to be useful for validating solutions according to IEEE standard P2800.1 among other operational requirements.

- *ERCOT Uses UNIFI Findings for New Grid Rules.* In September 2025, the board of directors of ERCOT unanimously approved requirements that closely follow UNIFI's Version 3 Specifications. In ERCOT's phrasing, the two requirements pertain to advanced grid support: One establishes operational requirements for inverter-based resources to contribute grid strength in real time, such as providing support when they have available capacity/state of charge. The other requires that grid-support capabilities are represented in dynamic models, so that system planning is based on accurate models. Both of these requirements have clear roots in UNIFI: ERCOT's Reliability and Operations Subcommittee includes UNIFI members, who worked to adapt UNIFI's specifications to ERCOT's system. It is a timely change for ERCOT, which has identified lower system strength, and is anticipating greater inverter-based buildout. With its 90 gigawatts of IBRs already in operation, and up to 75% of power coming from these resources on an instantaneous basis, ERCOT is taking a stance to guarantee future system stability. ERCOT's leadership in this direction will nudge UNIFI's work into practice, especially among other Independent System Operators (ISOs).

- *Final Kauai Demo a Full Success.* The multi-year, many-partner SAPPHIRE project led by NLR has concluded with Kauai Island finding grid strength through GFM resources. Prior to the project, the Kauai Island Utility Cooperative saw sub-synchronous oscillations on their transmission system caused by a generator trip. The island is accustomed to 90% instantaneous inverter-based power for some periods of the day, and despite having synchronous condensers, was facing a shortage of grid strength. This project solved Kauai's issues with innovation on several fronts. First, the team built a scaled-down replica of Kauai's grid, including the same inverter model and complete EMT models. Using data from the oscillations, they reran the event and identified suitable control modes. Next, on a newly acquired battery plant, the team configured the GFM controls. During an identical generator trip, they witnessed the GFM plant withstand oscillatory activity. Lastly, after installing custom sensors on Kauai's transmission, the team tested a new method for estimating grid inertia in which pulses were issued from a battery plant and their modulation was analyzed on various grid points. Altogether, the SAPPHIRE project was a testament to the value of GFM inverters for stability on large isolated systems, and also delivered unique developments in inertia estimation and economics/stability-constrained resource scheduling.

- *Reference GFM Models Published, Ready to Use.* UNIFI has filled a large gap for GFM rollout by publishing a standard model library. The models are generic to manufacturer and generation technology type, and they deliver an accessible representation of GFM inverters' dynamics at a time when many GFM technologies are proprietary. In 2025, the team added a hybrid control IBR model—where GFM and grid-following (GFL) behaviors are represented in a single inverter simultaneously—which was validated by UNIFI industry members. This model, like others before it, is proving to be necessary for GFM development, and its circulation spurred by UNIFI has assisted long-term planning studies across the United States.

Reading on, you will learn more about our standardization efforts, an online widget that tracks in real time GFM projects and requirements around the world, two unique educational initiatives we undertook in 2025, and thoughts from two recognized experts in industry about the value of UNIFI. We end by highlighting individual accomplishments of members over the past year.

Specifying Performance

As grid operators begin to require that some IBRs be grid-forming, it becomes increasingly important to clearly and *UNIFormly* define the basic minimum performance requirements for GFM IBRs. This is one of UNIFI's core tasks and one of its primary opportunities to make an impact on industry. The UNIFI Specifications team recently passed two related key milestones:

- Completion of Version 3 of the *Specifications for Grid-forming Inverter-based Resources*.
- Formalization of a collaboration with IEEE to leverage UNIFI's GFM specifications in an IEEE standard.

Version 3 of UNIFI's *Specifications for Grid-forming Inverter-based Resources* addresses 140 comments from 24 commenters representing 15 organizations (grid operators, inverter/-converter manufacturers, IBR plant developers, and researchers). Version 3 goes far beyond UNIFI's latest public Version 2 of the same document by including tests with quantitative pass-fail criteria in both the time domain and the frequency domain in response to industry's demand for quantifiable GFM criteria. Meanwhile, the UNIFI Specifications Working Group has been working with the IEEE standards group responsible for the IEEE 2800 series, called the IBR Interconnection Working Group (IBRI WG), to leverage UNIFI's work. The UNIFI team and the IBRI WG agreed that the UNIFI Specs should form the basis for a new IEEE standard defining basic minimum requirements for GFM IBR equipment. That standard will be called *IEEE P2800.1* and formally titled *IEEE Recommended Practice for Functional Capabilities and Performance of Grid Forming Equipment in Inverter-Based Resources (IBRs) / Converter-Based Resources (CBRs)*. The IEEE P2800.1 standards development project kicked off in December 2025 and has adopted Version 3 of the UNIFI Specifications as its starting point. In parallel, the IBRI WG will also leverage UNIFI's analysis of potential barriers to GFM IBRs in IEEE 2800-2022 to create an amendment called *IEEE P2800a*, which will contain targeted edits to IEEE 2800-2022 to ensure compatibility of IEEE 2800 with GFM IBRs. (IEEE 2800 is already largely compatible with GFM IBRs, but a few edits are needed to avoid unintentional barriers while keeping in mind grid reliability needs.)

The IEEE P2800.1 project is being coordinated with a proposed IEC Technical Specification for GFM IBR equipment in hopes of producing a dual-logo IEEE-IEC standard for GFM IBRs with even broader global reach. If this ambitious goal runs into obstacles, the UNIFI Specification will nevertheless be leveraged in IEEE P2800.1, which we hope will be published next year.

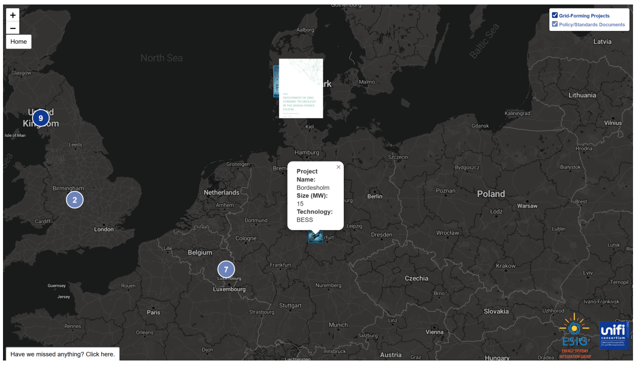
Key contributions of the UNIFI Specifications for GFM IBRs (Version 3) include:

- Enumeration of basic minimum requirements for GFM IBRs.
- Definition of four GFM performance tiers that accommodate the full range of GFM converters, from GFM STATCOMs and E-STATCOMs through GFM PV inverters and wind turbines to GFM battery energy storage. (See table below.)
- Time-domain tests to quantify GFM performance based on test plans proposed by grid operators such as ERCOT, MISO, AEMO, and Hawaiian Electric.
- Newly developed frequency-domain criteria for each of the four GFM tiers.

Tier	Key Function(s)	Examples of Resource Types
1	Voltage magnitude support	GFM STATCOM
2	Tier 1 + voltage angle/frequency support & minimum islanding capability	GFM E-STATCOM; GFM wind turbine (Type 3 & Type 4); GFM PV
3	Tier 2 + extended islanding capability	GFM BESS
4	Tier 3 + black start	GFM BESS with black start

Several members of the UNIFI Specifications team have taken on leadership roles in the IEEE IBRI Working Group to help realize the impact of UNIFI's work on industry. The first meeting of the IEEE group had over 250 attendees including many grid operators, inverter and converter manufacturers, and IBR plant developers, indicating a strong industry interest in standardizing baseline GFM capability requirements.

> Reach out to Andy Hoke, Principal Engineer at the National Laboratory of the Rockies (Andy.Hoke@NLR.gov), to get involved in the IEEE-related standardization projects.



Snapshot of the GFM Around-the-World widget illustrating the ability to zoom and restore default home display (top left), toggle display of reports & projects (top right), submit recommendations for projects we have missed (bottom left), and examples of how reports & projects are reported.

GFM Around-the-World Widget

An exciting product we have launched this past year is a live map of GFM projects and reports around the world. This lives on the front page of the UNIFI website, and a dedicated link is here. The Energy Systems Integration Group (ESIG) had previously compiled a list of GFM projects globally. However, a visual interpretation of this list was lacking. Mapping GFM projects provides a new perspective on GFM activity in different geographic regions. It also enables users to efficiently find projects with a visual tool. This mapping project is meant to provide scale to a critical part of the modern and future power grid. Using ESIG's data as a reference, the GFM interactive map plots known GFM projects and reports across the globe.

The map displays icons for both projects and reports. These icons are interactive, and provide links to their respective sources. The user has the freedom to zoom in at any scale and view any region, giving a broad picture of the state of GFM activity. A user can toggle whether they want to see projects, reports, or both. While the map is extensive, it is not exhaustive, and there is a button in the bottom left corner of the map for individuals to submit missing projects or reports.

The map provides detailed information on the technologies and locations of GFM projects. There is heightened construction and implementation of GFM technology in Australia, Hawaii, China, and northern Europe. The prevailing technology recently has been battery energy storage systems (BESS). Such projects tend to range from 25 MW to 500 MW. Fewer in number, but larger in MW magnitude are HVDC technologies. For example, an HVDC system in Heibei, China is expected to be rated at 4500 MW.

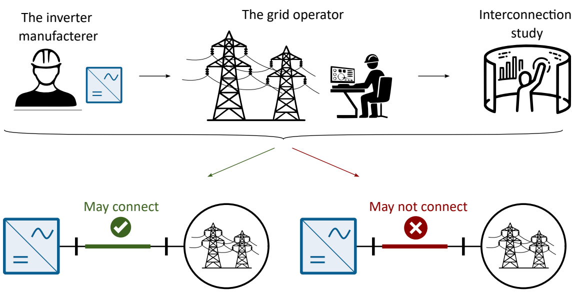
Educational Efforts

GFM 101: Fundamentals

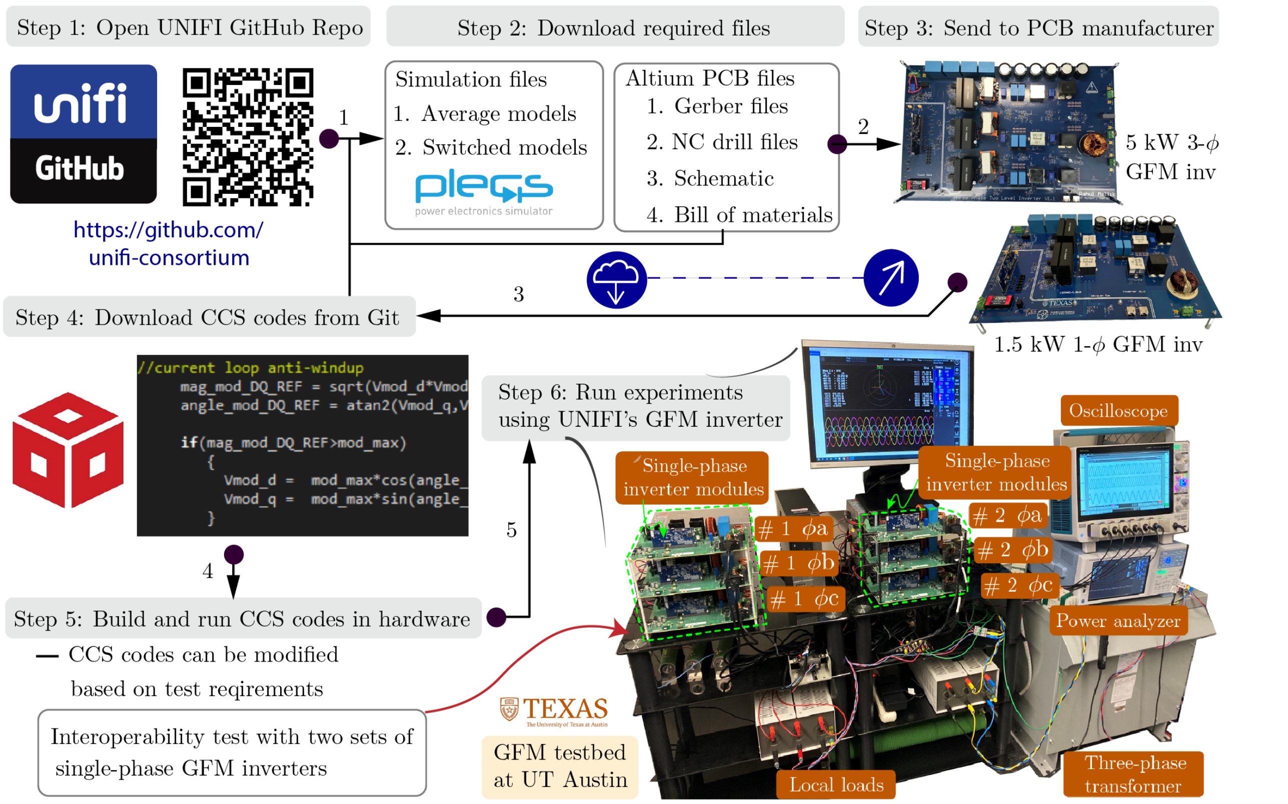
A Short Course, and First of Many

Over the course of the UNIFI project, the team has organized and facilitated numerous UNIFI webinars, general meetings, discussions, tutorials and more. These educational efforts have been successful and impactful. Even so, we continued to notice a knowledge gap between power-electronics and power systems engineers, between theory and practice, between industry and academia.

The advanced grid-forming methods and theories that are discussed in webinars and other learning materials are often beyond early career academics and operational professionals; the theoretical details often obscure the operational value of grid-forming technology; the practical touch with engineering reality gets diluted. As the UNIFI consortium, we wanted to address this concern; we realized we needed to lay the groundwork at a more fundamental level—a level accessible to a broader audience of interested stakeholders from across academia and industry.



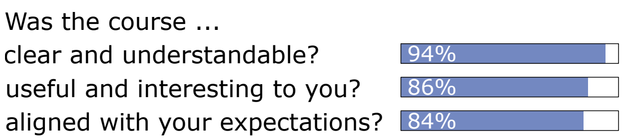
The short course touched upon the principles of an interconnection study, and demonstrated typical electromagnetic transient (EMT) simulations performed during such studies. This was one of several included modules.



End-to-end workflow for building and deploying a grid-forming inverter using UNIFI's open-source GitHub repository, from simulation and PCB design to firmware deployment and experimental validation.

With those reflections in mind, the UNIFI consortium organized a week-long short course on the fundamentals of grid-forming inverter technology in the first week of November, 2025. Unlike our webinar series, this course dives much deeper into the fundamental basics of grid-forming technology, explores why we need grid-forming inverters, and how they interact with practical grids.

During 10 hours of lecture, the course provided classroom-type presentations combined with interactive EMT simulation exercises in MATLAB/Simulink. The course was a success: 42 participants from across industry and academia joined the course. Feedback shows that the interactive style of the course, and the open discussion were very well received. The positive feedback from the participants illustrates the need for foundational courses in this space, and the value of the UNIFI consortium as a resource for educational and workforce development materials and activities on all things GFM.



Snapshot of the feedback received from the participants of the short course.

GFM Reference Design

Simulation-2-Experiment in a Flash

As part of its educational initiative, UNIFI has released a comprehensive open-source GFM inverter platform designed to support researchers, students, and engineers in building and experimenting with real GFM systems. The platform is hosted in UNIFI's public GitHub repository and provides a comprehensive, end-to-end set of resources for designing, simulating, and implementing a GFM inverter from scratch. The repository includes detailed simulation models, enabling users to study GFM dynamics across different levels of modeling fidelity. It also provides complete PCB design files for both single-phase and three-phase GFM hardware, along with embedded control code that can be directly deployed on real hardware. Together, these resources allow users to move seamlessly from simulation to hardware implementation within a unified, open framework.

In addition to the technical assets, the repository contains extensive documentation covering all critical aspects of inverter design and deployment, including component selection, thermal considerations, sensing-circuit design, signal conditioning, and system integration. A step-by-step tutorial is also provided to guide new users through the control architecture of GFM inverters, practical selection of voltage and current control gains, filter design basics, and the role of current limiters in ensuring stable and safe operation.

Developing a fully functional GFM inverter platform typically requires years of effort across modeling, control design, hardware development, and validation. By making all design files, models, and firmware openly available in a single repository, UNIFI enables the community to bypass much of this foundational work and directly focus on research, experimentation, and innovation—saving years of development time.

What's in it for Industry?

by **Ulrich Muenz**
Principal Research Scientist
Siemens Foundational Technology

UNIFI is an excellent forum for grid-forming (GFM) inverter-based resource (IBR) vendors, utilities, and consultants to exchange, get insights, and influence R&D for GFM IBRs. The increase of GFM IBRs requires joined effort in three main areas: GFM standardization and validation processes, generic simulation models, and system-level impact. UNIFI addresses all these areas.

Ulrich Muenz is Principal Research Scientist for Advanced Control and Optimization of power systems and industrial automation at Siemens' Research and Predevelopment hub in Princeton, NJ. In this role, he orchestrates research and innovation projects for Siemens globally across teams in the US, in Europe, and in Asia.

First, the increase of GFM IBRs requires standardization of GFM features and capabilities. UNIFI develops GFM IBR specifications which provide input into GFM IBR standards and grid codes around the world. This work also includes validation processes for IBRs to ensure that they comply with these specifications. For vendors, this is very important to ensure that their IBRs will comply with these standards. For utilities, this is very relevant to understand future standards and where the requirements come from. For both parties, it is also crucial to influence these specifications to include their respective perspectives and concerns. Second, the increase of GFM IBRs requires to move from user-defined to generic GFM IBR models. Such generic model will increase simulation efficiency as well as allow for better tuning of GFM IBR settings to improve system stability and performance in critical situations like faults.

UNIFI is developing generic GFM IBR models which have become part of the WECC standard models and are now also integrated in standard simulation tools like PSS/E and PSCAD. This is crucial for utilities to allow for faster system studies and better insights into critical situations. IBR vendors benefit from insights into and influence on the development of these generic models as well as the compliance of their IBRs to these models. Consultants benefit from faster and more convenient system studies compared to user-defined models. All parties can also influence the development of such generic GFM IBRs models through participation in UNIFI. Third, large-scale integration of GFM IBRs still poses very fundamental questions about system stability and protection schemes. UNIFI is investigating tools to assess such system-level KPIs. This assessment also includes design rules for GFM IBRs to improve those KPIs. Naturally, such system-level KPIs are most relevant for utilities and consultants. Yet, also vendors are interested in them to ensure their IBRs do not cause any system-level challenges. Their participation in UNIFI ensure that UNIFI's work towards the assessment of such KPIs are most relevant for practical challenges and applications.

by **Phil Hart**
Senior Engineer–Electric Power Systems
GE Vernova Advanced Research Center

Today's power system faces several converging megatrends, including accelerating electrification, an increasingly diverse and dynamic mix of new generation, and rapid datacenter load growth—all of which contribute to the unprecedented proliferation of new, highly-dynamic power-electronics-based generation and load. As an employee of GE Vernova, an original equipment manufacturer and founding member of UNIFI, I believe that the UNIFI consortium is excelling in its mission to address the technical challenges that arise from this evolution, and that this consortium, in fact, represents one of the most timely and critical initiatives in the power systems industry today.

By bringing together academic experts and power system professionals from all segments of the power systems community, UNIFI serves as one of the leading industry forums in which forward-thinking and ground-breaking solutions to emerging grid-related challenges are first introduced. UNIFI also serves as a hub of cutting-edge power systems research and development, leveraging world-class academic talent to catalyze solutions to the most pressing research problems concerning power systems stability and grid-tied power electronics.

UNIFI is fortunate to have cleared-eyed leadership that recognizes the critical role that grid-forming power electronics resources will play in reinforcing the stability of the future power grid. Over the past several years, I have witnessed first-hand how UNIFI's dedicated focus on the advancement of grid-forming control has accelerated industry acceptance of this promising technology. UNIFI has successfully developed WECC MVS-approved generic models, some of which have already been used by grid operators and utilities to quantify the stabilizing benefit that grid-forming control will bring to their system. The generic models have also begun to facilitate information transfer between equipment vendors, utilities, grid operators, and developers, promising to streamline the interconnection process and accelerate the deployment of grid-forming power electronics. UNIFI's demonstrations, hardware and software prototyping efforts, educational seminars, and tutorials have also helped to demystify grid-forming control, increase awareness of its various advantages, break down barriers to its deployment, and build acceptance around its use.

Phil Hart is currently a Senior Power Systems Engineer at the GE Vernova Advanced Research Center, in Niskayuna, NY, where he has served as PI or Project Lead for various business- and DOE-funded projects relating to next-generation power systems. His primary research focus has been on grid-forming control of inverter- based renewable resources.

Importantly, UNIFI has also been remarkably effective in marshalling a diverse mix of industry representatives and academic talent to shape next-generation grid standards, serving as an engine of consensus around functional performance specifications for new types of power electronics resource control behavior. Firmly grounded in state-of-the-art power systems stability theory, and tempered by feedback from grid operators, utilities and vendors, UNIFI's specifications document should be heralded as a singular achievement. The UNIFI specifications document trailblazes an audacious path forward, promising not just to forestall the threat of instability posed by the grids ongoing evolution, but also to leverage the flexibility of power electronics-based resources to bolster grid stability and resilience to unprecedented levels. Grid operators, utilities, developers, and vendors around the world have been tracking UNIFI's development of functional performance specifications for grid-tied inverter-based resources, and in many cases have already adopted the UNIFI specifications document in their grid code or tender requirements. Finally, UNIFI's specifications document is being proposed as the starting point for modifications to the highly-influential IEEE 2800 standard, as well as a new IEEE standard, 2800.1. Given the remarkable achievements UNIFI has already accomplished to-date, I'm excited to continue to collaborate with this consortium as it continues to chart a path forward in this rapidly evolving, increasingly dynamic, power and energy ecosystem.

Points of Pride

- Dominic Groß, Dugald C. Jackson Associate Professor in Electrical and Computer Engineering at UW-Madison, was one of 12 recipients of the 2025 Vilas Faculty Early Career Investigator Award.

- Ali Mehrizi-Sani, Professor & Director, Power and Energy Center (PEC) at Virginia Tech, received the 2025: Virginia Tech College of Engineering Excellence in Research Award. He was also awarded a Bradley Senior Faculty Fellowship by the Virginia Tech Board of Visitors and selected as VT College of Engineering's 2025 Dean's Fellow.

- Iqbal Husain, Director, FREEDM Center & ABB Distinguished Professor at North Carolina State University, served as General Chair and Xiaonan Lu, Associate Professor at Purdue, served as Lead Technical Program Chair of the 2025 IEEE Energy Conversion Congress & Exposition (ECCE) held in Philadelphia, PA.

- Xiaonan Lu was one of six faculty members who received Purdue Polytechnic's Acorn Award for securing major research funding in 2025.
- Brian Johnson, Fellow of the Jack Kilby/-Texas Instruments Fellowship in Computer Engineering at UT-Austin, was promoted to Associate Professor.
- Deepak Ramasubramanian, as Secretary, and Ali Mehrizi-Sani, Anderson Hoke, Jose Daniel Lara, Mariko Shirazi, Rodrigo Henriquez-Auba, and Shuan Dong, as contributors received the 2025 IEEE PES Working Group Recognition Award for Outstanding Technical Report for their report: PES-TR113, Simulation methods, models, and analysis techniques to represent the behavior of bulk power system connected inverter-based resources.
- Eduardo I Ortiz Rivera, Professor of Electrical and Computer Engineering, University of Puerto Rico-Mayaguez, will serve in the IEEE Power and Energy Society's Distinguished Lecturer Program (DLP) for the 2026-2027 cycle.
- Julia Matevosyan was elevated to IEEE Fellow for contributions in the planning and design of power systems with inverter-based resources
- Nathan Baeckeland, Debjyoti Chaterjee, Brian Johnson, and Gab-Su Seo received the 2024 IEEE Power Elecrtronics Society First Place Prize-paper Award for paper

  N. Baeckeland, D. Chatterjee, M. Lu, B. Johnson, and G.-S. Seo, "Overcurrent Limiting in Grid-Forming Inverters: A Comprehensive Review and Discussion", *IEEE Transactions on Power Electronics*, Volume 39, Issue 11, November 2024, pp. 14493-14517
- Debjyoti Chatterjee (UT Austin) presented the paper, "Is Equal Area Criterion Applicable for Transient Stability Assessment of Grid-Forming Inverters?," at the Best Paper Session at the 2025 IEEE PES General Meeting.
- Sairaj Dhople, Oscar A. Schott Professor at the University of Minnesota, was appointed Senior Editor for the IEEE Transactions on Power Systems.
- Deepak Divan, Professor Emeritus (2004-2025) & Georgia Research Alliance Eminent Scholar at Georgia Tech, was inducted as Fellow of the National Academy of Inventors.
- Ulrich Muenz, Principal Research Scientist for Advanced Control & Optimization at Siemens Foundational Technology, was elevated to IEEE Senior Member.
- Deepak Ramasubramanian received the Energy Systems Integration Group's (ESIG's) Excellence Award *For thought leadership across the industry on the topic of services from IBRs and their utilization to support power grid decarbonization*.
- Nathan Baeckeland represented the National Laboratory of the Rockies as a finalist at the 2025 National Lab Research Slam.

Deepak Ramasubramanian pictured alongside other awardees recognized by ESIG in 2025. (Image credit: ESIG.)

Debjyoti Chatterjee @UT Austin (pictured left) and Gab-Su Seo @NLR (middle) receiving the IEEE Transactions in Power Electronics (TPEL) First Prize Paper Award from Xiongfei Wang, TPEL Editor-in-Chief (right) at the TPEL Award ceremony, Philadelphia, 2025.

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