

microgrid controllers

their important role in the system

MICROGRIDS MEET RESILIENCY and reliability needs by effectively providing an uninterrupted power supply to critical loads. They may also improve environmental performance by facilitating renewable resource integration, such as photovoltaics and combined heat and power plants. Microgrids afford opportunities for economically delivering energy, capacity, and ancillary services. As a result of all of these and other factors, several policy makers are actively promoting microgrid development.

The business and legal hurdles of establishing a microgrid can be daunting and often prove more difficult than the physical issues. These include establishing clear lines of responsibility among many different entities constructing, operating, maintaining, and owning microgrid facilities; getting power purchase agreements in place; equitably sharing operating and maintenance costs; siting and permitting physical equipment; respecting workforce rules across multiple parties; and coordinating operating agreements among the host utility system, microgrid operator, and loads. Microgrid rate making and contractual arrangements can prove quite complex.

In This Issue

Our microgrid controllers issue discusses several applications of these advanced state-of-the-art technologies. The controllers must flexibly provide service to critical loads under a wide variety of operating



conditions, including power transfers to and from the interconnecting utility and self-sufficient operation in isolated mode. Fault detection and isolation schemes must have the ability to function under a wide range of short circuit availability and power flow conditions. The state of the microgrid can be highly variable as a result of configuration changes from forced and maintenance outage conditions, different levels and rate of change of demand, and many output states of supply resources that often include photovoltaics. The physical operation of the microgrid must also respect its business model by minimizing the cost of operation.

Our guest editors, Mani Venkata and Mohammad Shahidepour, collected

seven articles and an “In My View” column that discuss many of the latest developments of microgrid controllers. Their guest editorial summarizes the theme and introduces articles that feature means of realizing the full potential of microgrids through microgrid controller design and operation; the importance of microgrid controller standards, testing, and integration with the host distribution system; and case studies of the design architecture, implementation, testing, and operation of microgrid controllers.

History

A warm welcome to Hyde Merrill, our new associate editor, History. This issue features a terrific column by Andrew

Isaacs, who summarizes the development of network simulation software over the past 60 years. It's a fun read, as he tells the story well. Many of us lived much of that history, and I hope you enjoy revisiting it as much as I did. If you have something to add, please send us an e-mail; we'll try to publish it.

PES Updates

The "Leaders' Corner" column by Tommy Mayne and Shay Bahramirad discusses initiatives the IEEE Power & Energy Society (PES) is taking to become more relevant to practicing engineers. The More Power to the Future initiative comprehensively addresses cooperation with key regulatory and industry entities and relates a full

range of PES activities that will help us better engage with members and other stakeholders. Key issues include technology development, accompanying standards, workforce development, and business models and strategies.

Vote

This issue features statements by candidates for PES president, treasurer, and secretary. When the time comes, please vote! It is not only your right, it is your responsibility as a member of PES.

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Thanks

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authors. A particular note of appreciation to Robert C. Henderson, who provides editorial assistance.



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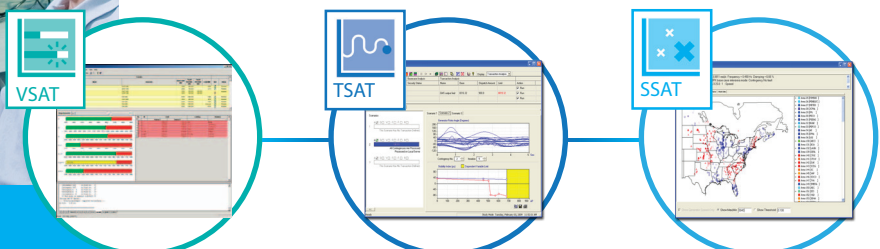
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