Prof. Alex Q. Huang of Texas ECE has received a grant from the U.S. Department of Energy (DOE) to develop a modular, hybrid, solid-state transformer (H-SST) for next generation flexible and adaptable large power transformers. The grant is part of a $7.5 million initiative by the DOE to support the research and development of innovative designs that will strengthen the resilience of the U.S. power grid. The DOE says the projects will "lead to the next generation of transformers that can be shared and replaced more easily in the event of a failure, are smarter with embedded sensors and analytics, and are more secure to cyber-physical threats." Prof. Huang is the lead PI of the project and is working in conjunction with Temple University, Argonne National Laboratory, United Technology Research Center, Control Transformer, and Siemens on the project which totals over $2 million in grant money.

A resilient, reliable, and secure power grid is vital to the Nation’s security, economy, and the services that American communities and businesses depend on every day, said Under Secretary of Energy Mark Menezes. "Creating the next generation of these critical grid components will help ensure the Nation’s critical energy infrastructure is secure and able to recover rapidly when disruptions occur."

Prof. Huang and the project team will "design and test a 500 kVA Hybrid Solid State Transformer (H-SST) as a full-scale building block for next generation flexible and adaptable large power transformers. The project team will also develop and validate a model of the H-SST to enable the simulation of LPTs at various voltage and power levels. Advanced sensor technology will be used to collect data from the H-SST to monitor the health status of the H-SST and enable its long-term reliability."

Alex Q. Huang holds the Dula D. Cockrell Centennial Chair in Engineering in the Department of Electrical and Computer Engineering at The University of Texas at Austin. Huang is a world-renowned expert in power semiconductor device technology, power electronics, smart grids and renewable energy systems, recently developed a way to integrate solar power generation and storage into one single system, effectively reducing
the cost by 50 percent. He is widely recognized for his contributions to the development of the Energy Internet concept and solid-state, transformer-based energy router technology.

Huang has published more than 500 papers in journals and conferences and holds more than 20 U.S. patents for his inventions, including several based on the Emitter-Turn-Off Thyristor (ETO) technology. During an academic career spanning two decades, Huang has generated more than $200 million in R&D funding.

Prof. Huang will be inducted into the prestigious National Academy of Inventors [5] in April 2019.


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