

Protection, Sensing and Monitoring of Direct-Current (DC) Power Networks and Smart Grids

Yucheng Zhang, Ph.D.

Electrical and Computer Engineering, Old Dominion University, Norfolk, VA

A. Research Interests:

Current Focuses:

- Fault Current Interruption & Protection in DC Power Networks;
- Wireless Power Harvesting for Remote Sensors and Underwater Applications;
- Status Monitoring of Smart Grids via Power Electronics Devices.

Long-Term Research on *Power Electronics and their Applications in Power Systems*:

- Switching Power Converters & Motor Drives;
- Modeling, Control, Security and Protection of Islanded and Utility Power Systems;
- Resilient Smart Grid, and IoT-based Cyber-Physical Systems;
- Integration and Management of Distributed Generators, Electric Vehicle, and Energy Storage Systems;
- Flexible ac transmission systems (FACTS).

B. Service to the Hampton Roads:

We provides higher-education, professional training and consulting service to the employees of naval shipyards and shipbuildings, NAVY agencies, local industry and the public at the Hampton Roads.



❖ **Workshop of STEM Education at Kaufman Hall, ODU**

C. Contact Information:

Dr. Yucheng Zhang

231 Kaufman Hall
Norfolk, VA 23529
United States

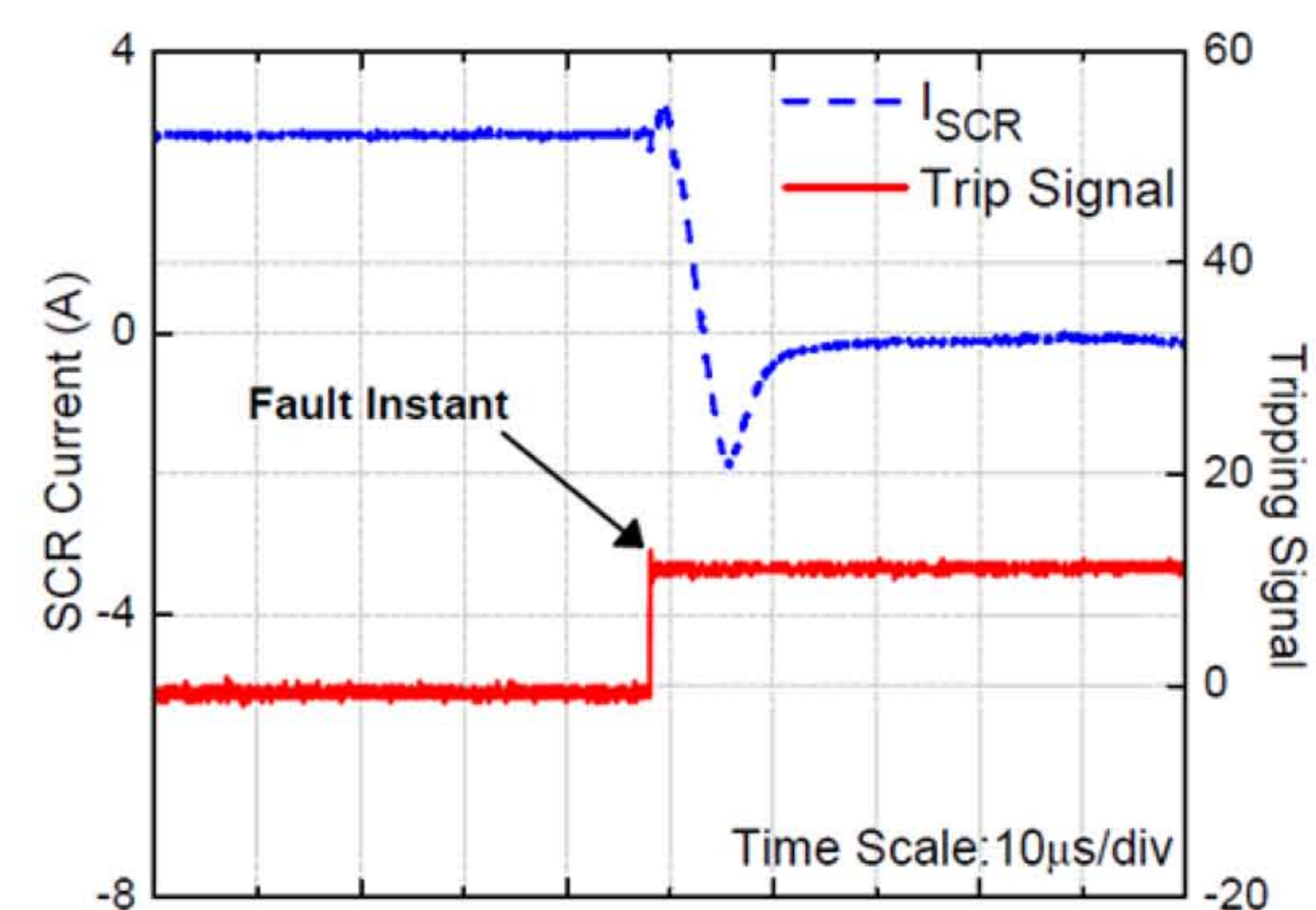
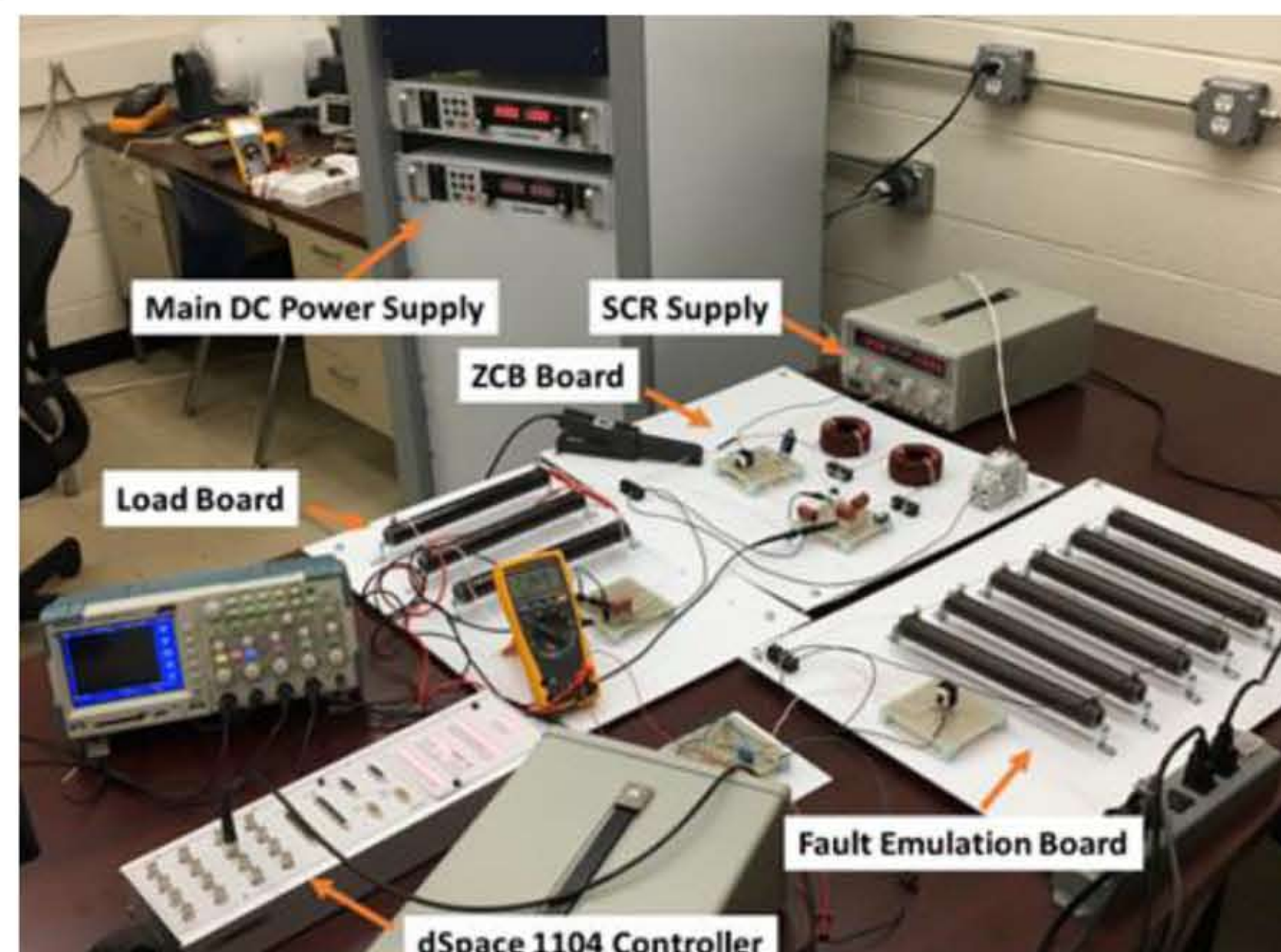
Assistant Professor

Email: y Zhang@odu.edu

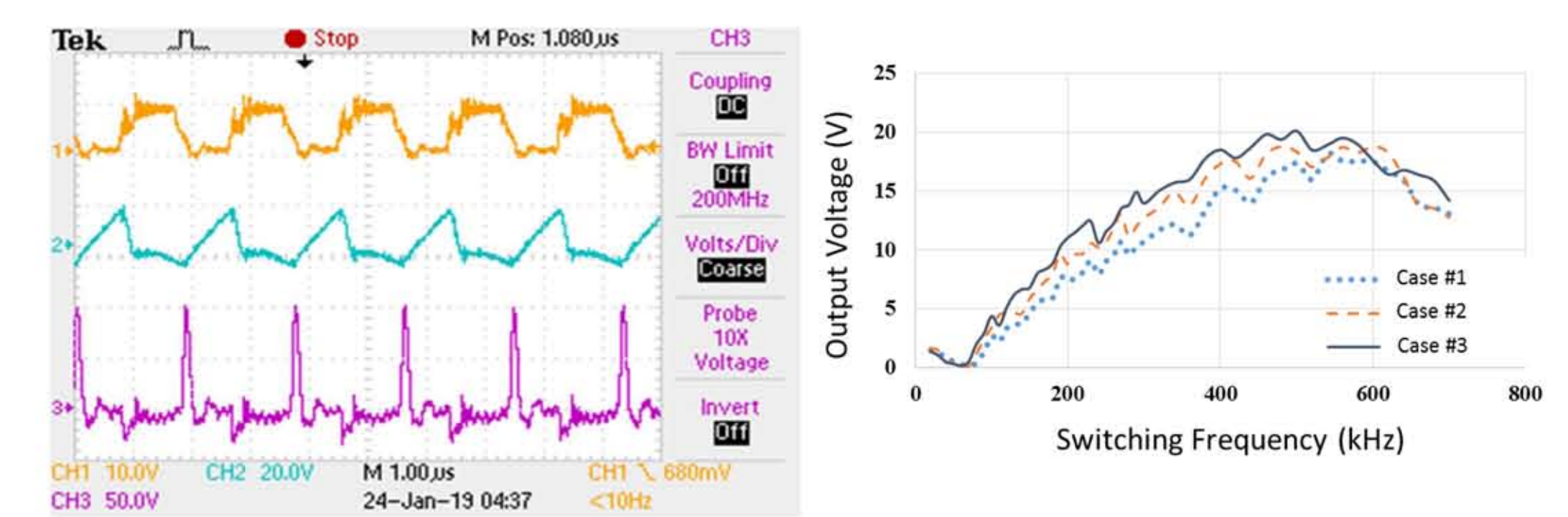
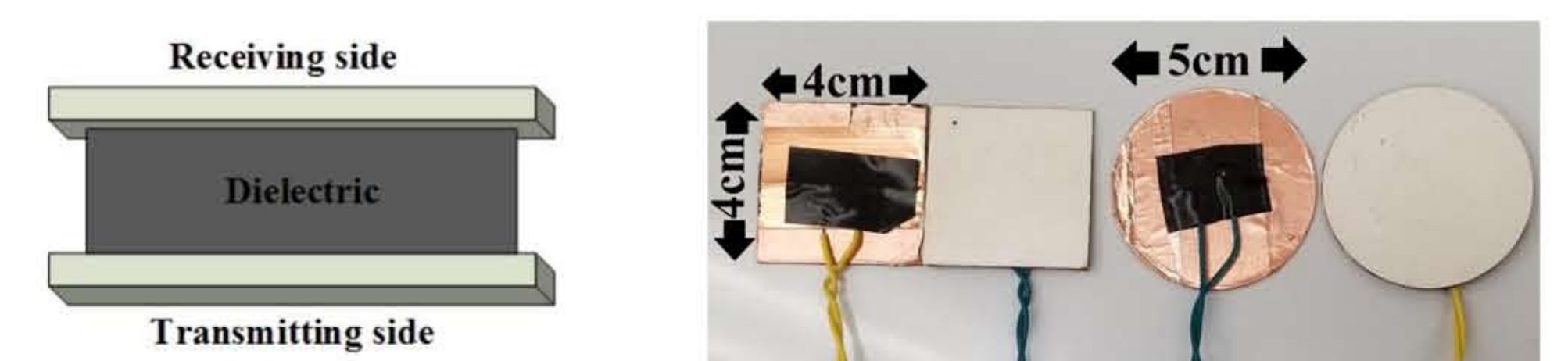
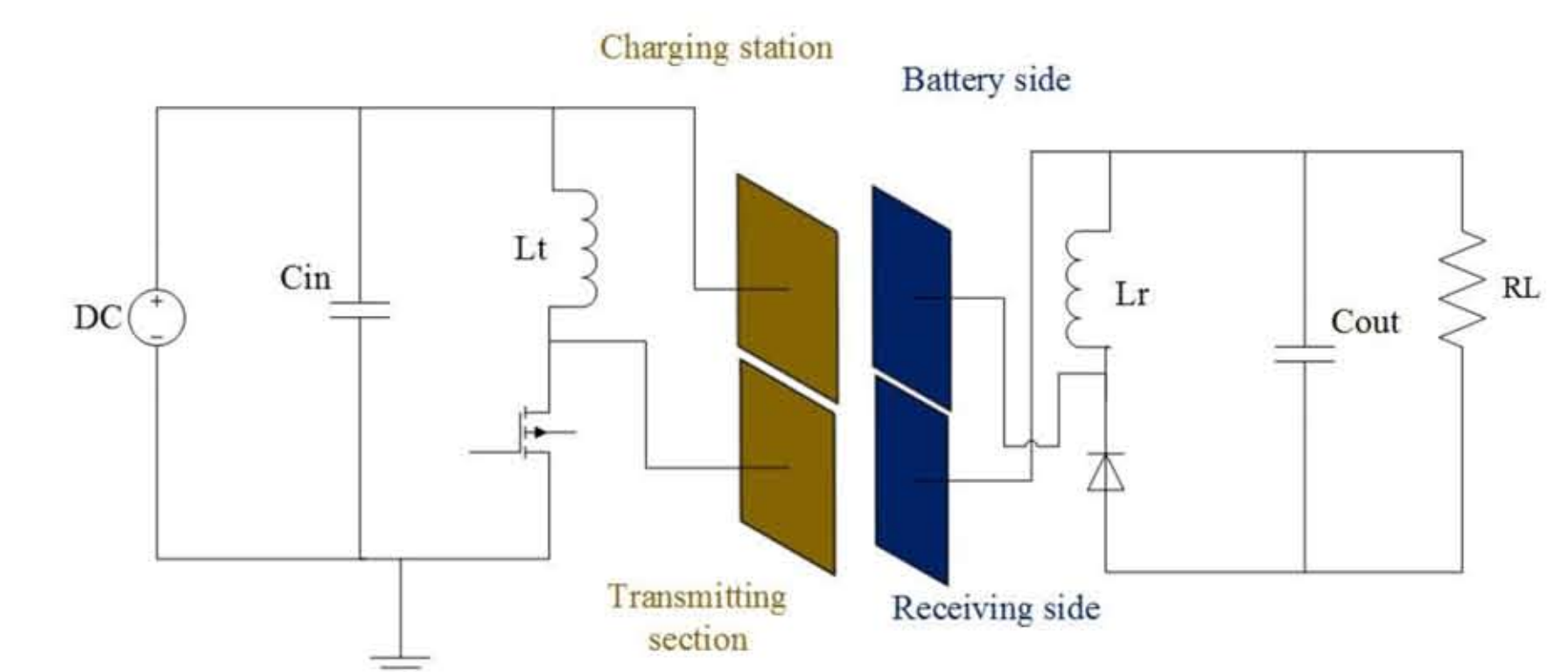
Office: (757)683-5483

Department: (757)683-3741

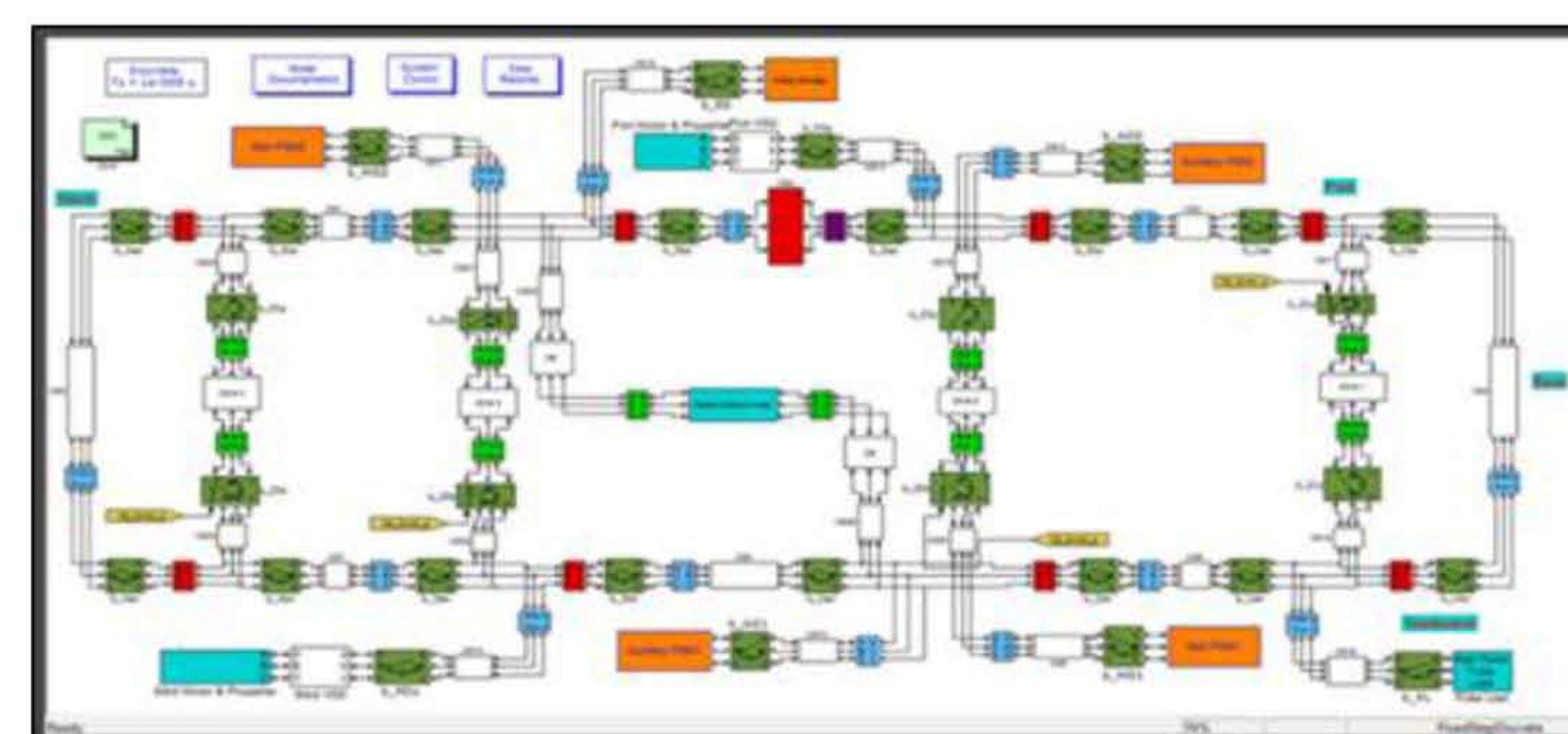
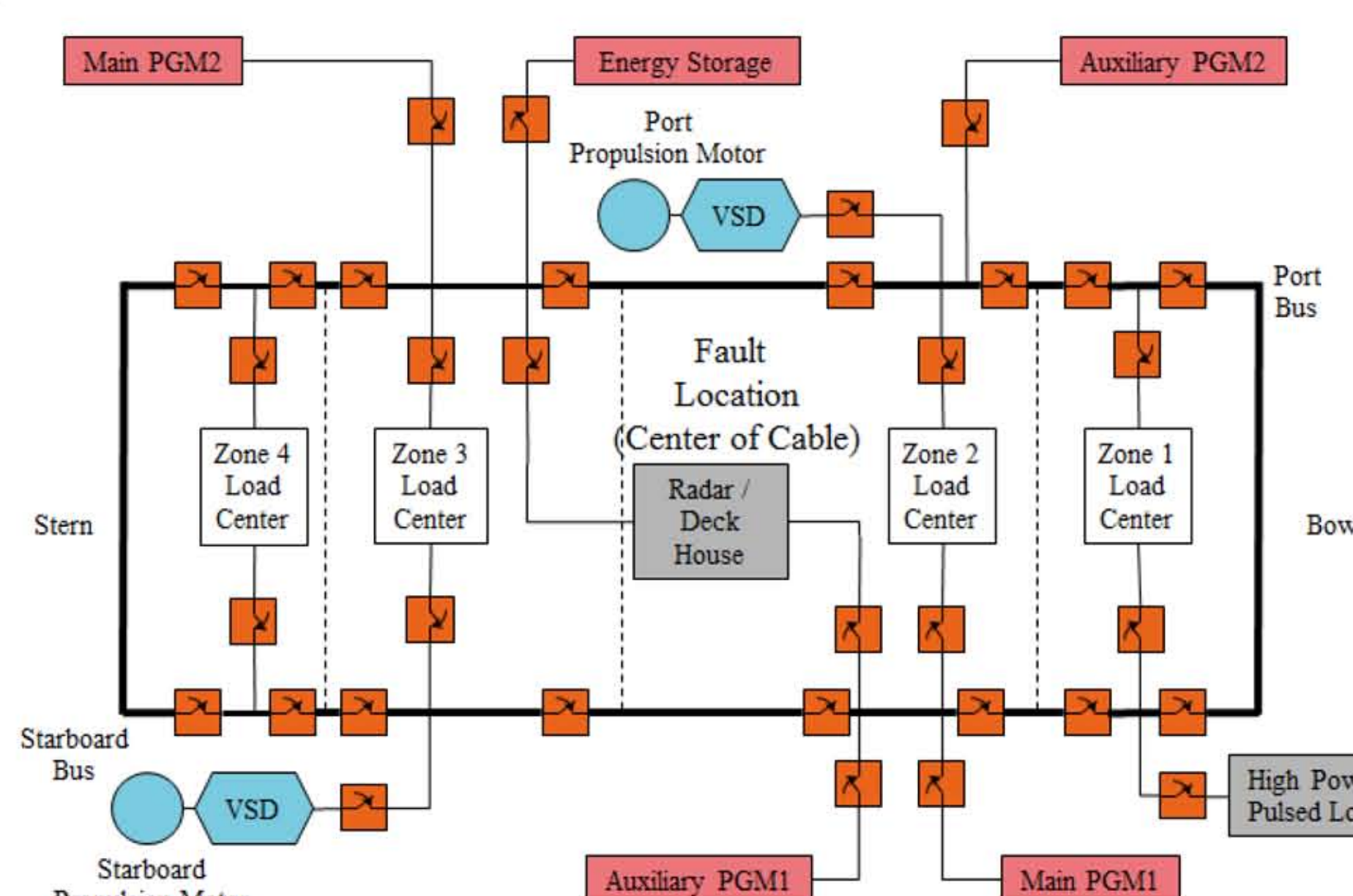
Power Electronics and their Applications in Power Systems



❖ **Z-source Breaker Prototype and its Hardware-In-the-Loop (HIL) Testbed for DC Circuit Protection.**



❖ **Capacitive-coupled WPT Prototype for Remote and Underwater Wireless Charging.**



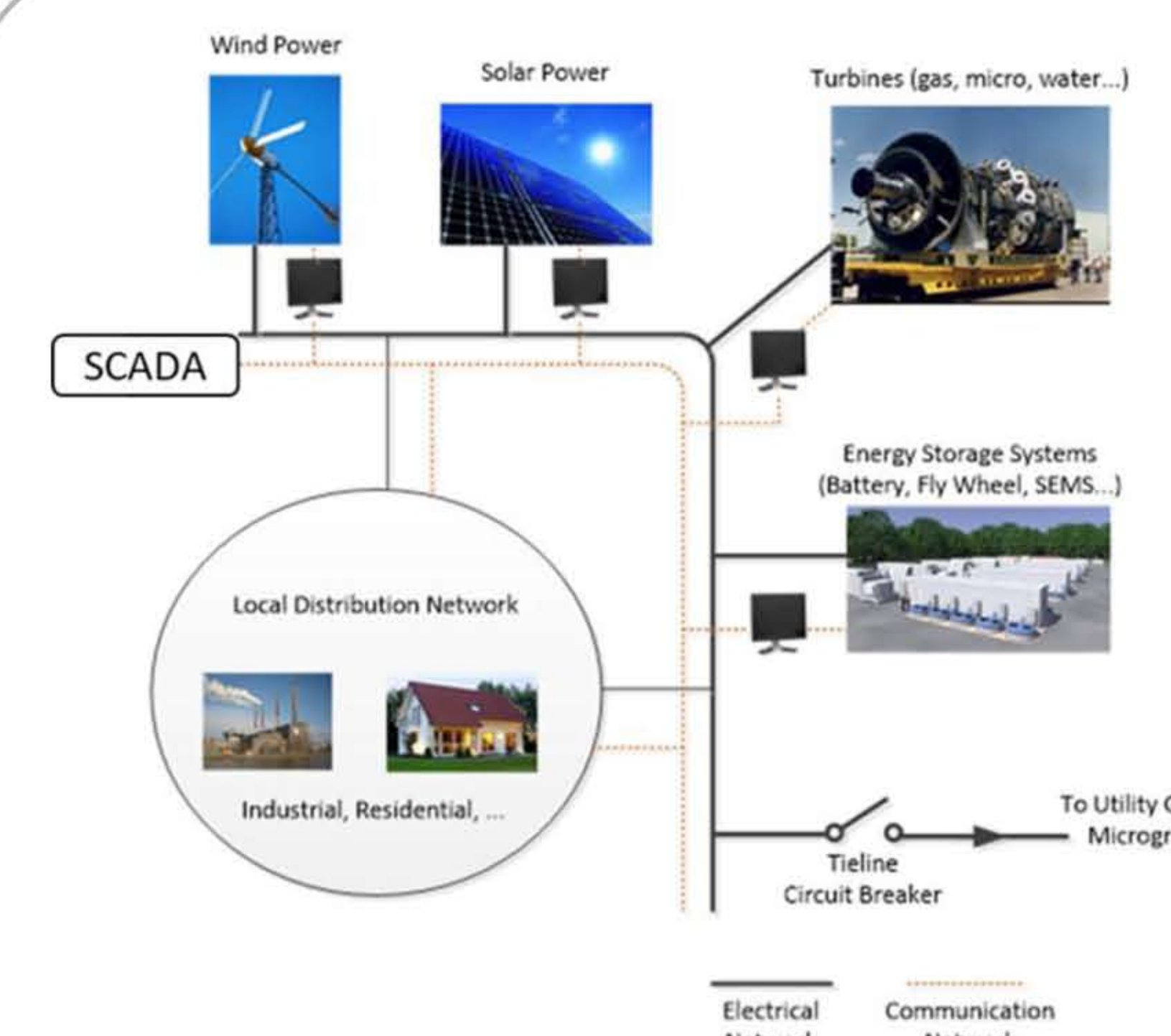
❖ **Analysis of Islanded Shipboard Power Systems.**

Top power board



Bottom control board

❖ **Integrative Design of High-Power-Density Power Converter.**



❖ **Microgrid with Integrated Distributed Generations (DGs).**