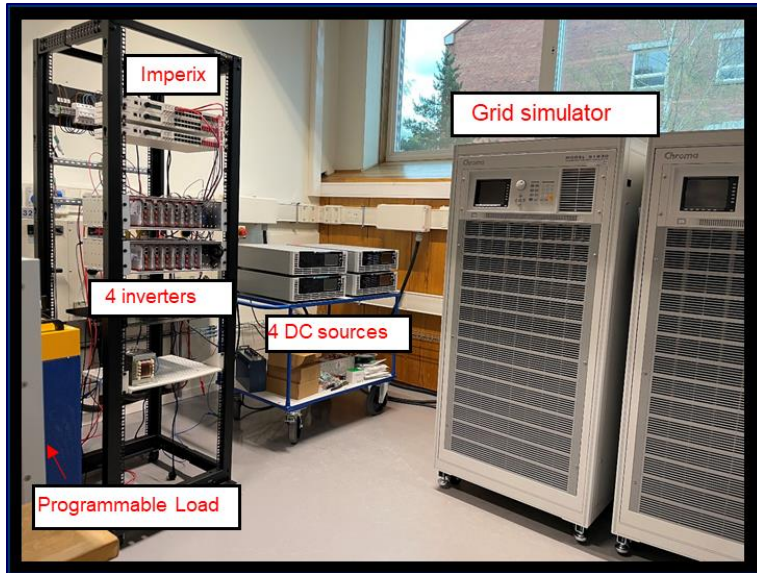
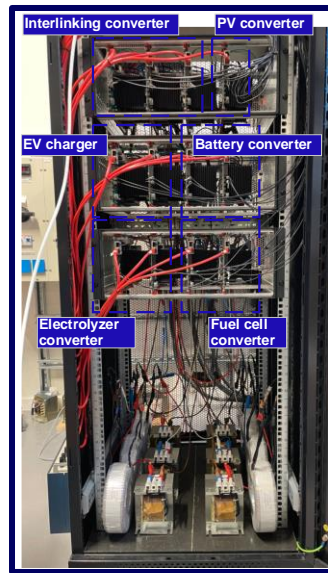


Lab facilities and hardware platforms

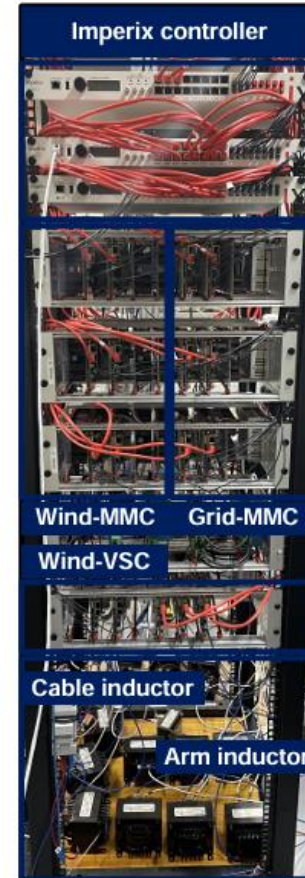
AC microgrid



Multi-energy microgrid



Two-terminal HVDC



Power module



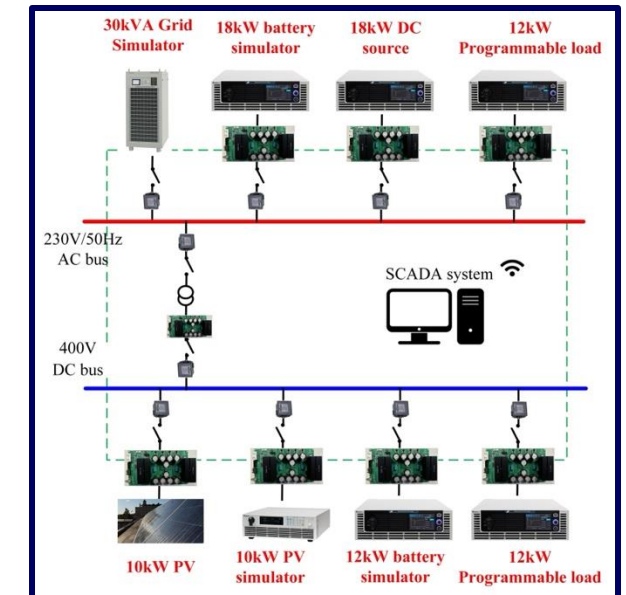
fifThertz Controller



8 PhD students and 5 postdocs

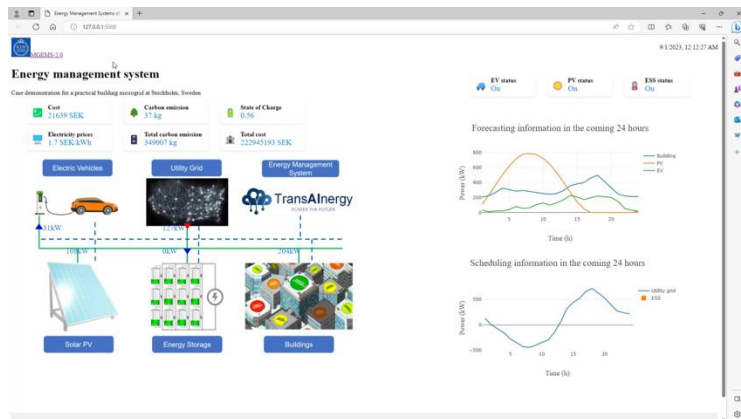
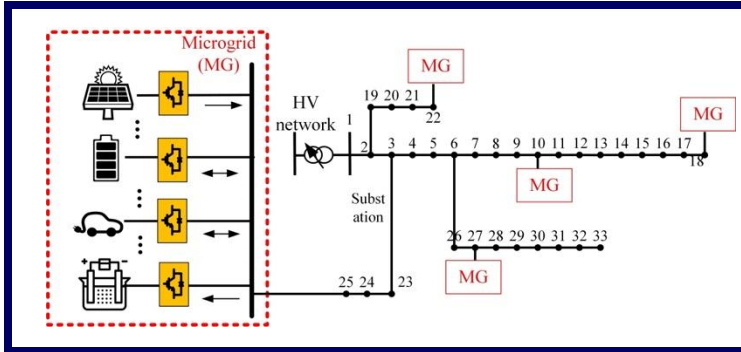
- 1) An AC microgrid hardware platform consisting of 4 inverter interfaced assets.
- 2) A multi-energy microgrid hardware platform consisting of solar PV, battery, hydrogen electrolyzer, EV charger with interface DC/AC converters and DC/DC converters.
- 3) A two-terminal HVDC hardware platform consisting of wind side multi-level converter and grid side multi-level converter.

Schematic diagram

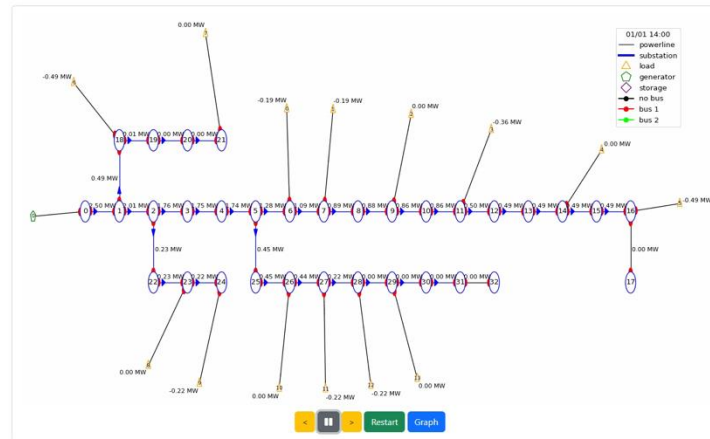
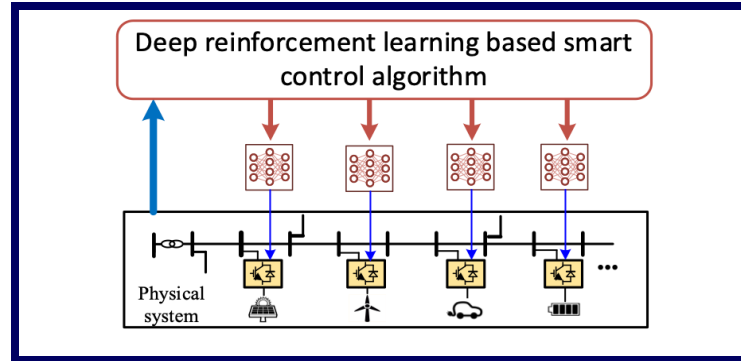


Research focus

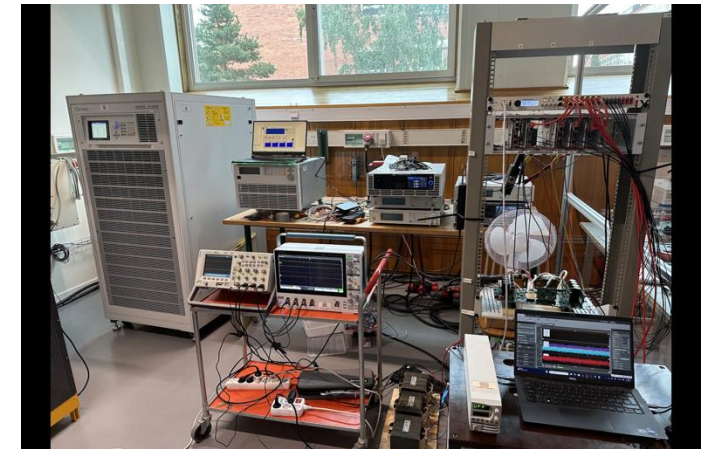
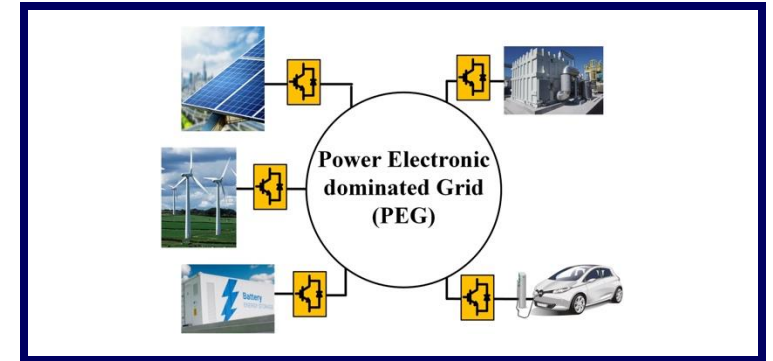
Smart sector-coupled microgrid



AI for sustainable grid



Power electronic dominated systems



rial

Most recent publications:

- M. Zhang, G. Guo, T. Zhao and Q. Xu*, "DNN Assisted Projection Based Deep Reinforcement Learning for Safe Control of Distribution Grids," in IEEE Transactions on Power Systems, vol. 39, no. 4, pp. 5687-5698, July 2024
- M. Agredano-Torres, M. Zhang, L. Söder and Q. Xu*, "Decentralized Dynamic Power Sharing Control for Frequency Regulation Using Hybrid Hydrogen Electrolyzer Systems," in IEEE Transactions on Sustainable Energy, vol. 15, no. 3, pp. 1847-1858, July 2024
- B. Li and Q. Xu, "A Machine Learning-Assisted Distributed Optimization Method for Inverter-Based Volt-VAR Control in Active Distribution Networks," in IEEE Transactions on Power Systems, vol. 39, no. 2, pp. 2668-2681, March 2024
- M. Zhang, Y. Zhang and Q. Xu*, "Transfer Learning Based Online Impedance Identification for Modular Multilevel Converters," in IEEE Transactions on Power Electronics, vol. 38, no. 10, pp. 12207-12218, Oct. 2023