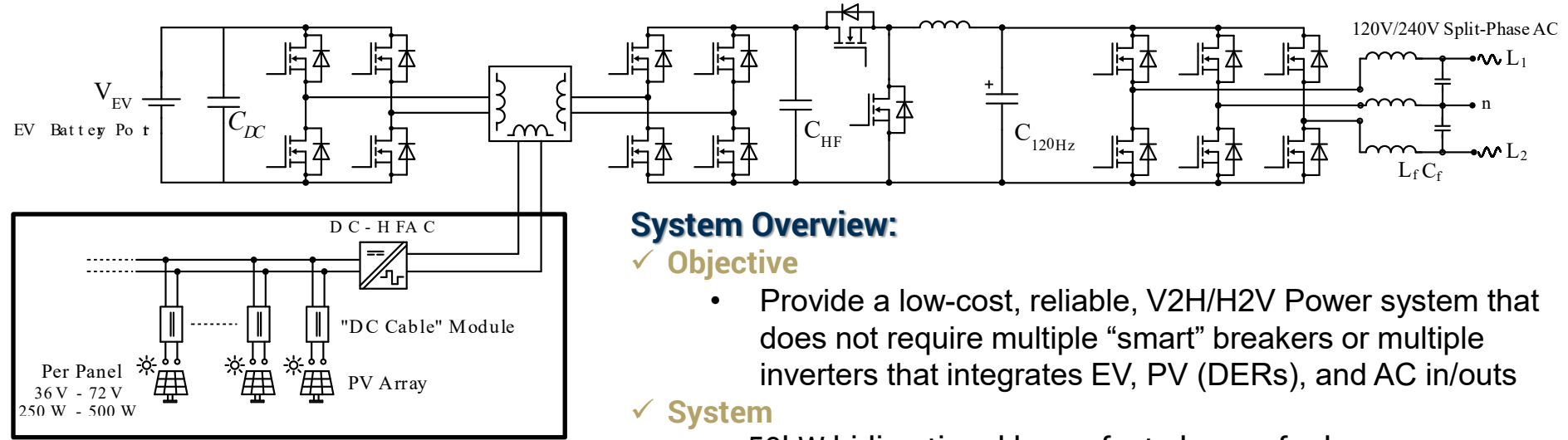




System Overview:

✓ Objective

- Provide a low-cost, reliable, V2H/H2V Power system that does not require multiple “smart” breakers or multiple inverters that integrates EV, PV (DERs), and AC in/out

✓ System

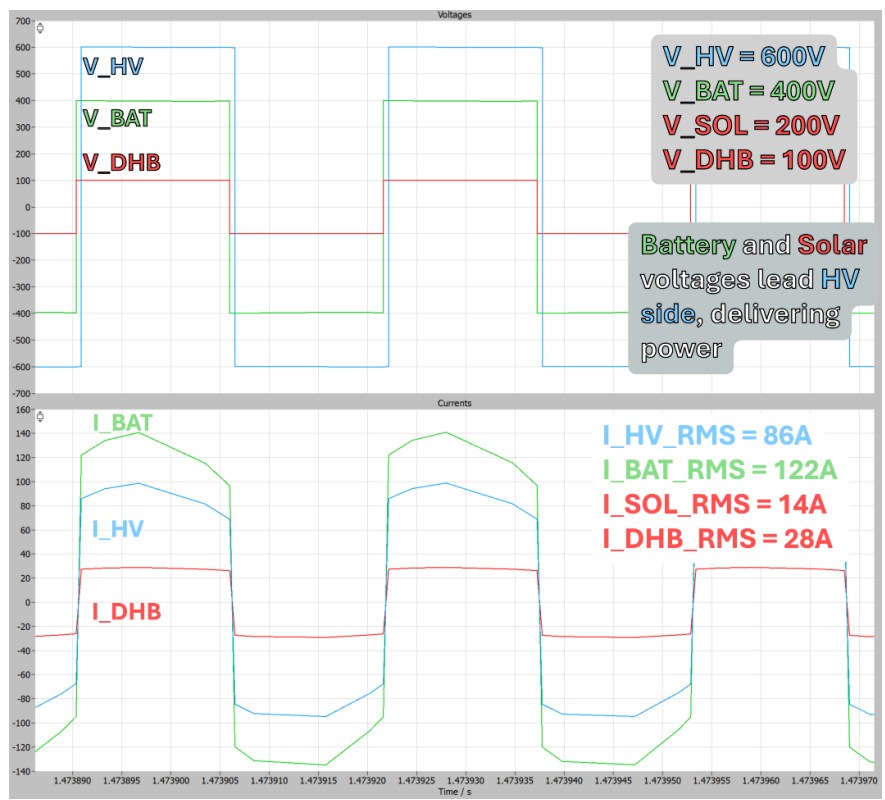
- 50kW bidirectional home fast charger for home energy power systems
- 250-400 V_{DC} EV Battery
- 120V_{AC} split-phase AC
- Interleaved PFC, Active Power Decoupled

✓ IP

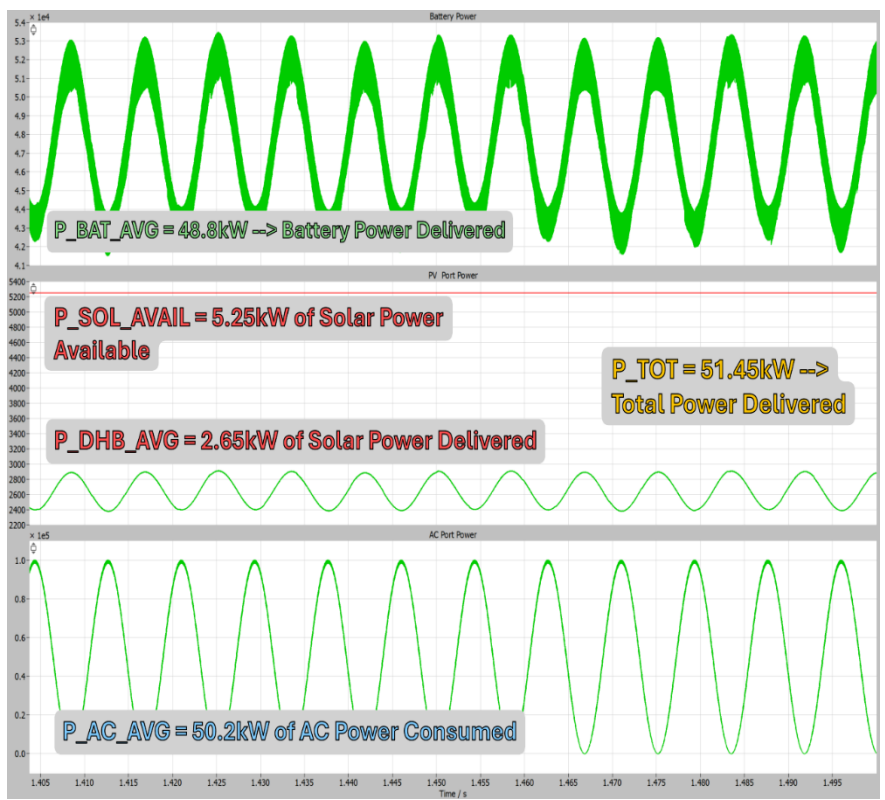
- “Automatic PV Integration” – Patent Pending

R. Hao, S. Manjrekar, A. Marellapudi, J. Benzaquen and D. Divan, "A Multiport Bidirectional HF-Link Split-Phase DC/DC/AC Universal Minimal Converter," 2025 IEEE Energy Conversion Conference Congress and Exposition (ECCE), Philadelphia, PA, USA, 2025, pp. 1-6, doi: 10.1109/ECCE58356.2025.11259542. **** (Different Project)**

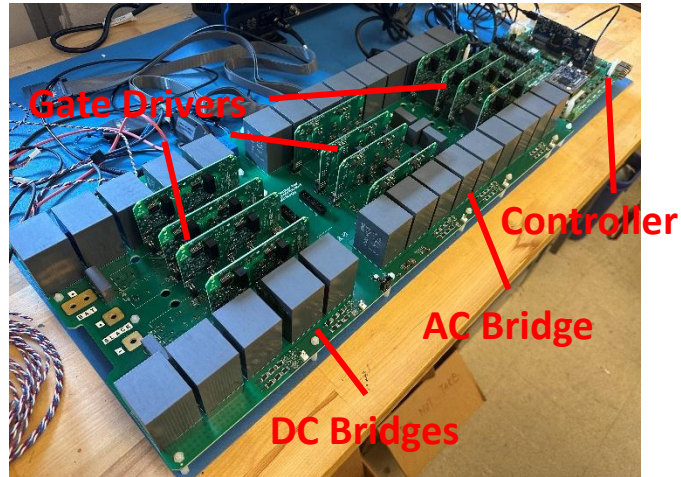
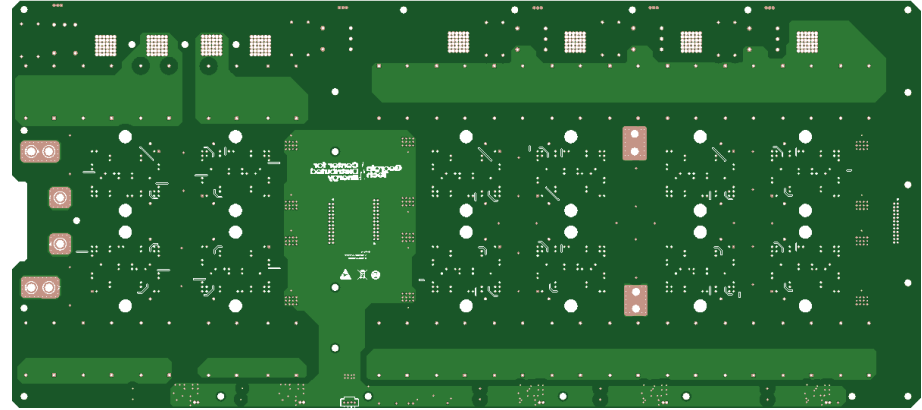
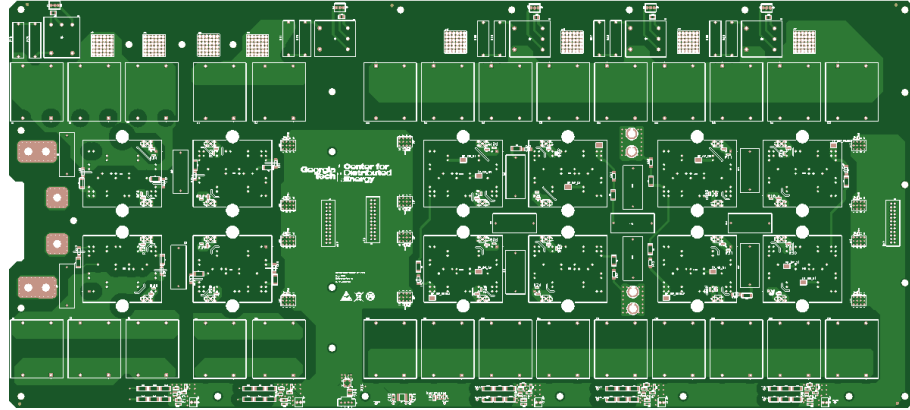
Simulation Results - Battery + Solar → AC



Voltage & Currents



Power



- DAB-mode (when $V_{ac} \approx V_{dc}$), multiple AC cycles, 50 V, 20 Arms, 1 kW

