Team 18: Rogowski Coil Integrator

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Background

The objective of the project is to design and build an integrator for various Rogowski coils, which are current transformers used for power monitoring applications. A conductor carrying an input AC current runs through the center of the Rogowski coil and generates a magnetic field that induces a voltage in the Rogowski coil. The integrator receives this voltage signal and converts it to a current that is scaled down but proportional to the original input current.

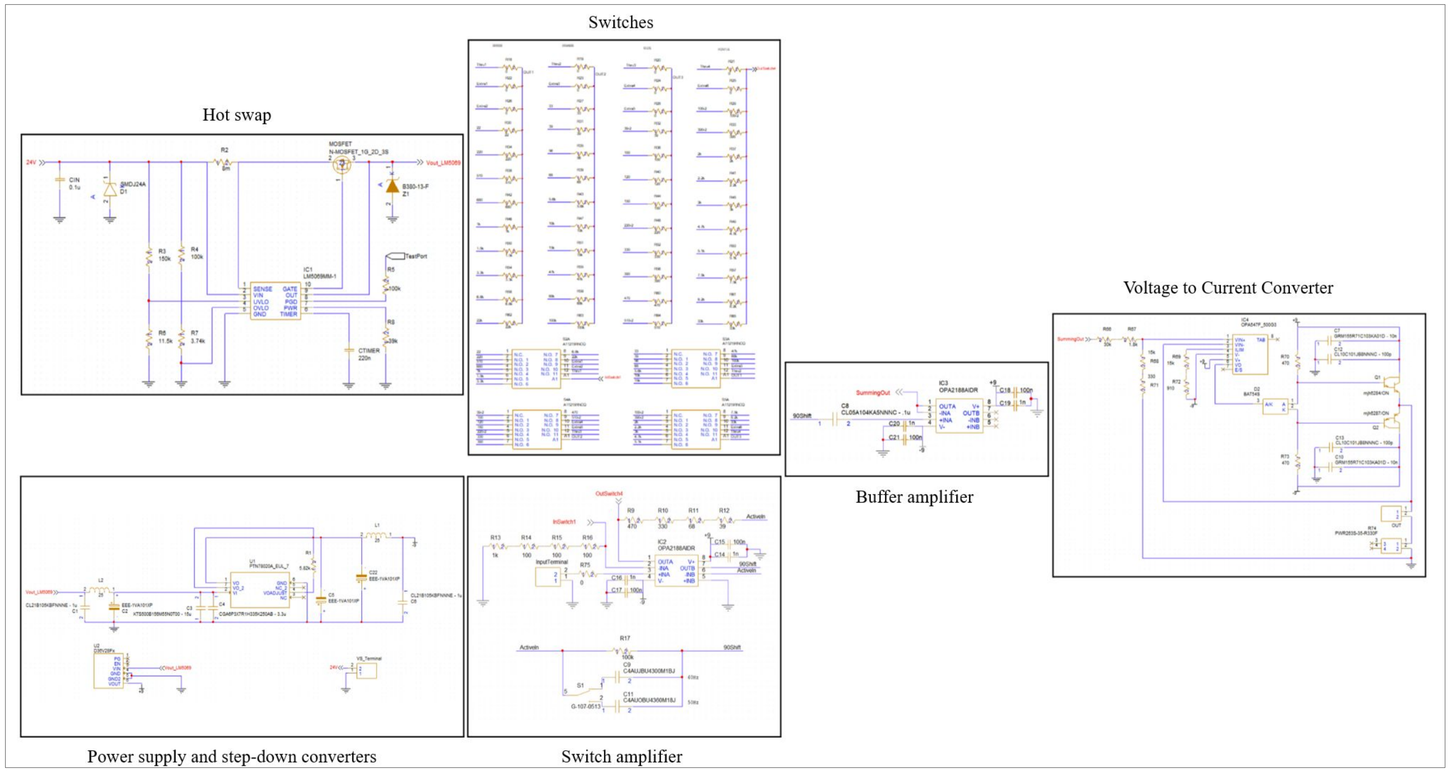
Important Specifications

- Output: 0 – 5 Amps rms AC
- Phase variation < = 0.5°
- Current accuracy error < = 0.5% [0 to 60°C]
- User selection for input current between 0-20,000 Amps
- Power draw < = 40W at full load

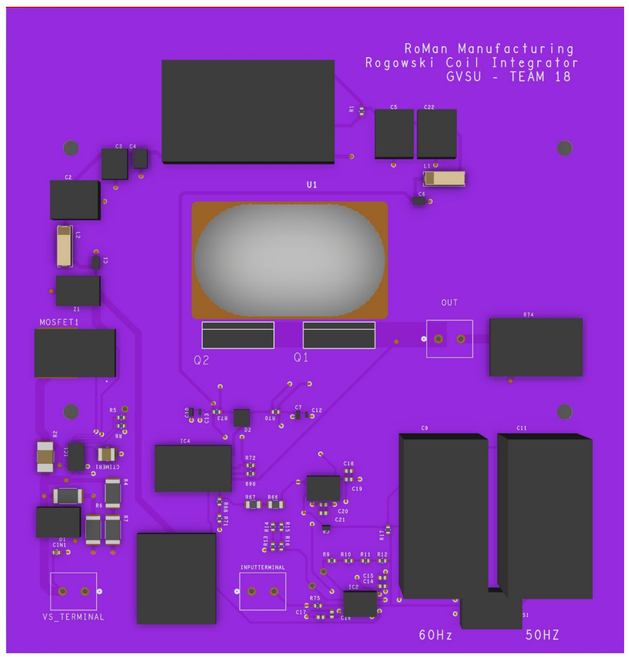
Main Project Elements

- Power circuit
- Amplifying circuit
- Active integrator circuit
- Voltage to current converted circuit
- Housing for interference blocking
- Heat dissipation elements

Full Schematic



Bottom PCB



Top PCB