High Frequency AC Distribution for Vehicles

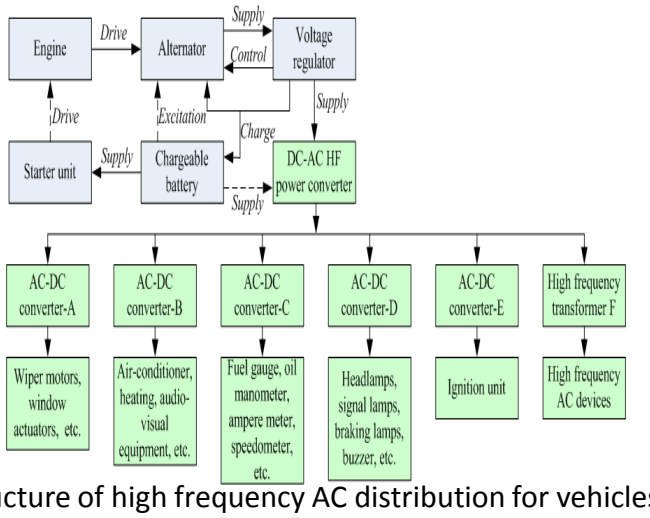
Funding source: Innovation and Technology Fund
Funding amount: $1.4 Million
Period: September 2014 - March 2016

Project Abstract:

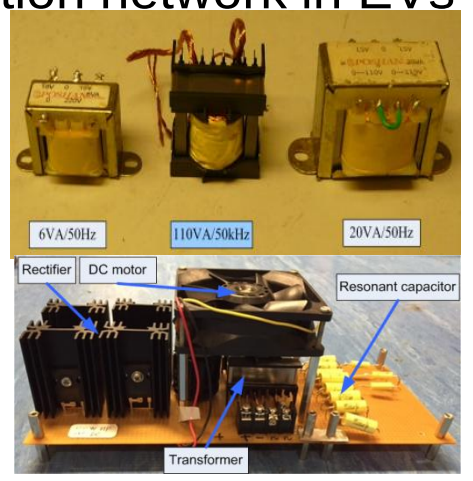
The project is to develop the high frequency AC distribution network for vehicles. The development includes the technologies of high frequency AC inverter, high frequency AC breaker, RCD for high frequency AC, over-current protection for high frequency AC, high frequency AC transformer, and high frequency AC-DC converter. The power conversion using high frequency AC will reduce the size of all the power conversion and AC devices.

Technologies and Features of the Research Development:

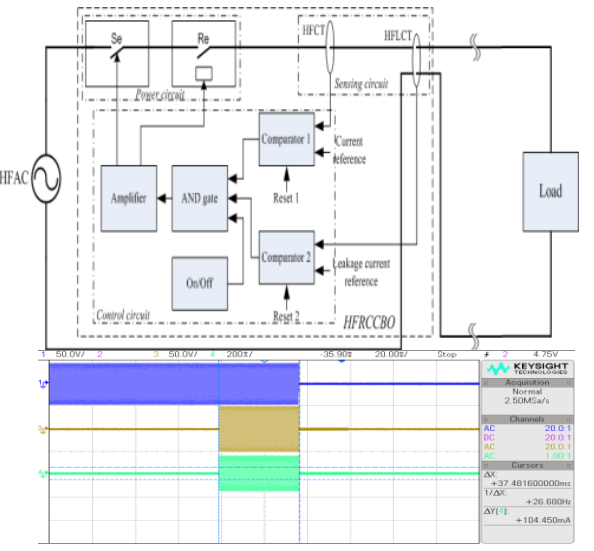
- Structure of high frequency AC distribution for vehicles
- High frequency AC transformer
- DC-AC high frequency inverter
- High frequency residual-current circuit breaker with overcurrent protection (HFRCCBO)
- High frequency AC distribution network in EVs



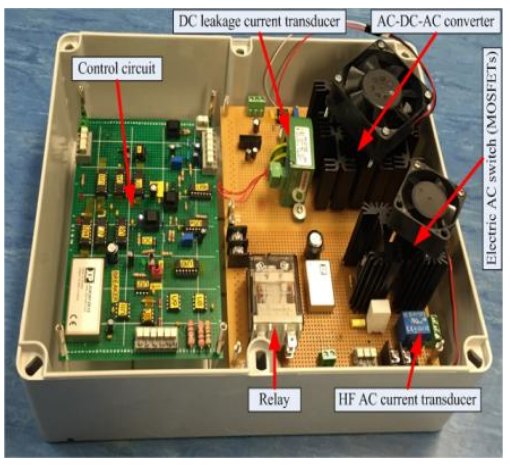
Structure of high frequency AC distribution for vehicles



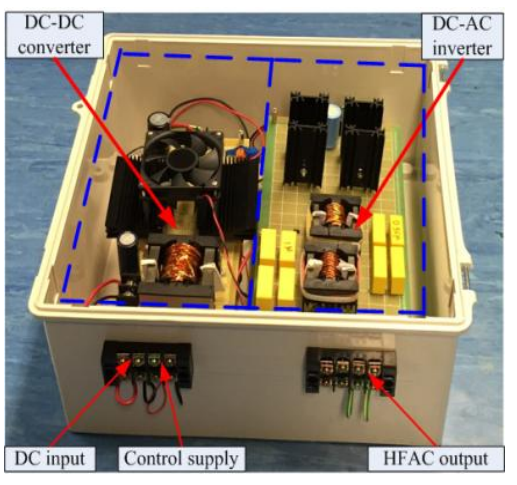
50 kHz AC transformer and 50kHz AC-DC converter



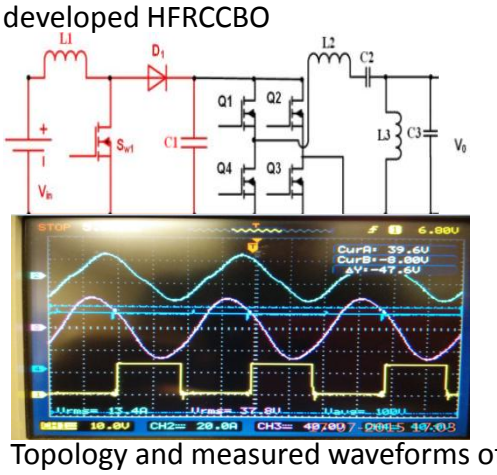
Schematic diagram and measured waveforms of developed HFRCCBO



Prototype of developed 50kHz residual-current circuit breaker with overcurrent protection



Prototype of developed DC-AC 50 kHz inverter



Topology and measured waveforms of developed DC-AC high frequency inverter

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