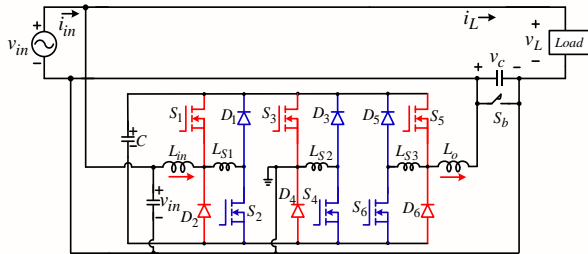


## Power Electronics & Energy Conversion Lab

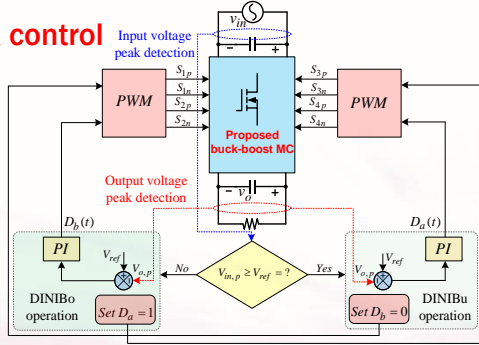
### Direct AC-AC Converters for Grid Voltage Regulation

- ❑ Bipolar buck-boost voltage injection
- ❑ Elimination of commutation issue
- ❑ High-frequency transformer isolation

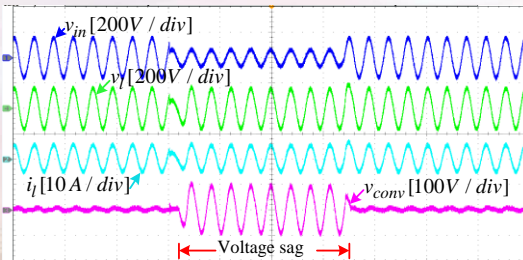
#### ➤ Proposed dynamic voltage restorer



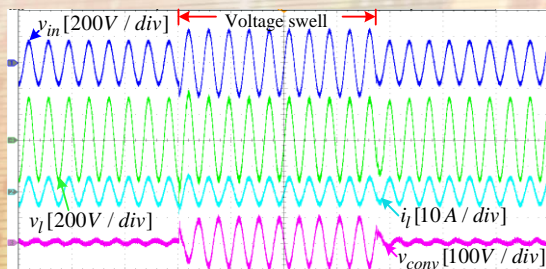
#### ➤ Feedback control



#### ➤ Voltage sag mitigation (vin=110~50 V, vo=110 V)



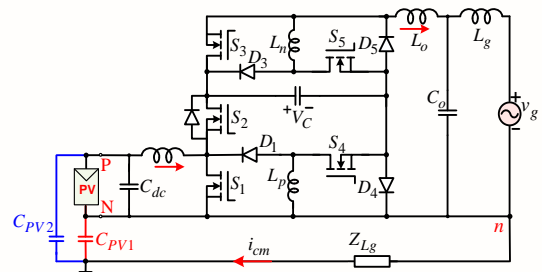
#### ➤ Voltage swell mitigation (vin=110~150 V, vo=110 V)



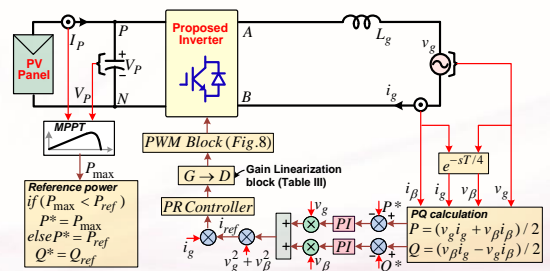
### DC-AC Inverters for PV Power Generation

- ❑ Buck-boost voltage inversion
- ❑ Double-grounding feature
- ❑ Constant common-mode voltage
- ❑ Elimination of ground leakage current

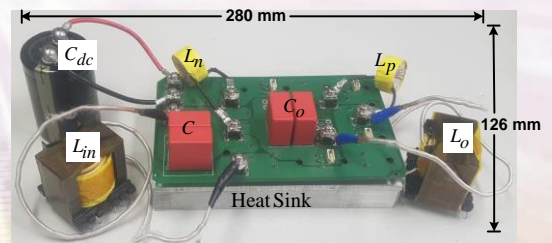
#### ➤ Proposed grid-tied PV inverter



#### ➤ Feedback control diagram



#### ➤ Fabricated hardware



#### ➤ Grid-connected operation (vin=2000 V, vo=110 Vrms)

