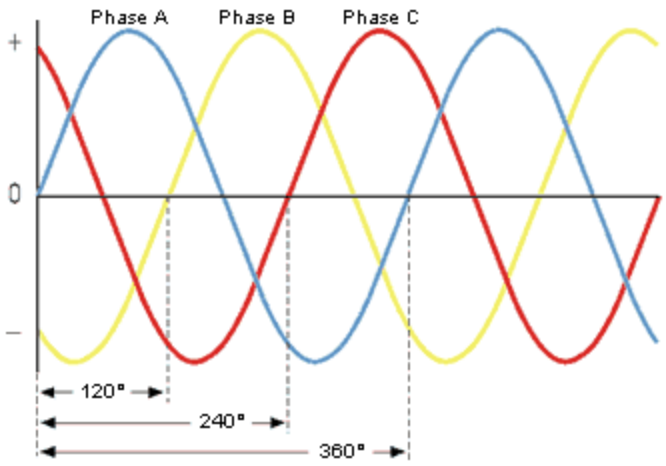
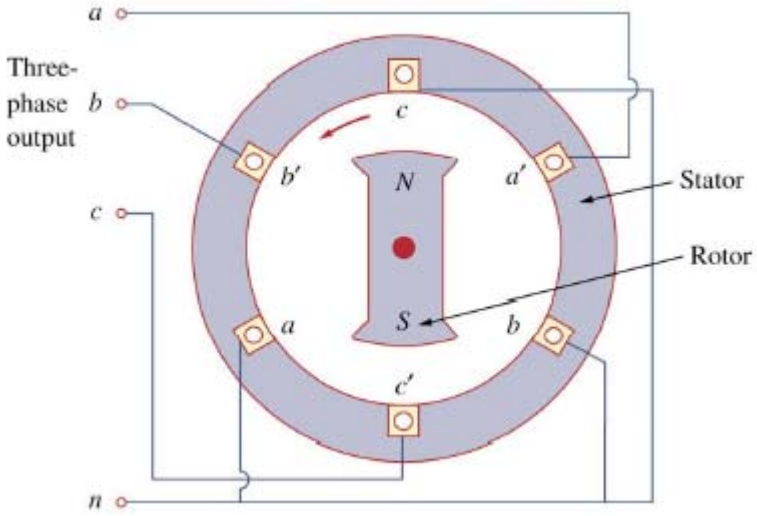
AMERICAN RIVER COLLEGE

3 Phase Review

Transformers and 3-phase power

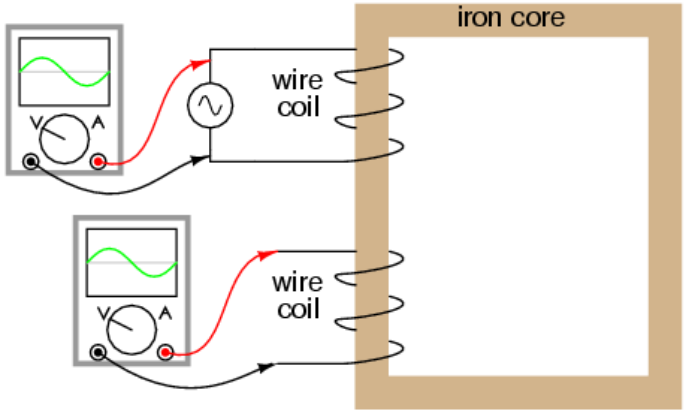
- Why do we care?
- Where do we start?
  - AC/DC wars ….. Who won, who lost, why?
  - How do generators and motors work?
  - How is electricity distributed today?

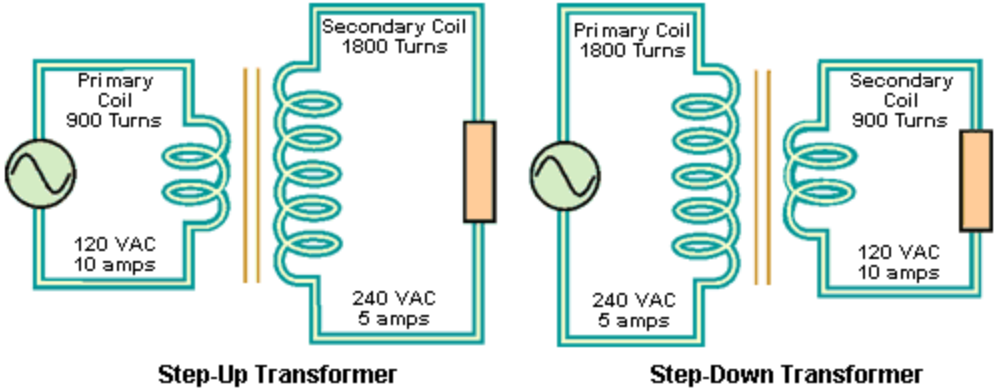




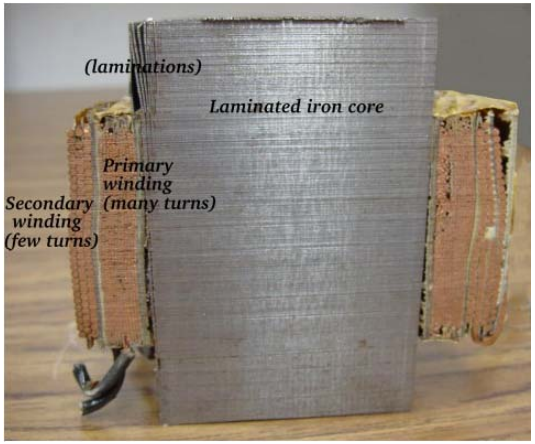
Transformers and 3-phase power

- What do transformers do?
- How do they work?
- Windings and Voltage
  - V1/N1 = V2/N2
  - V1/V2 = N1/N2

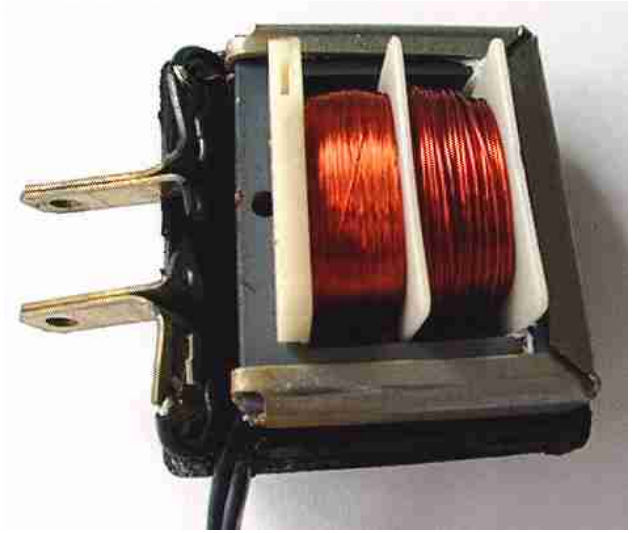


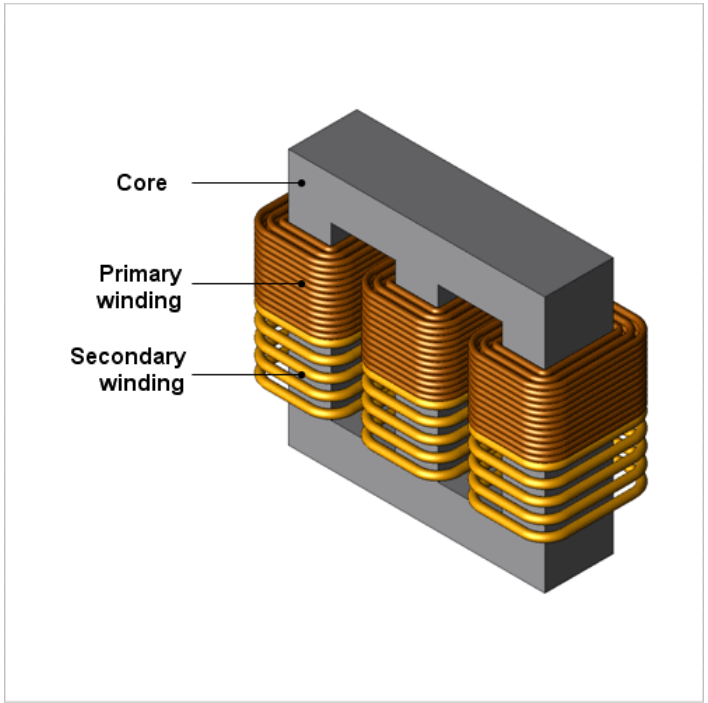


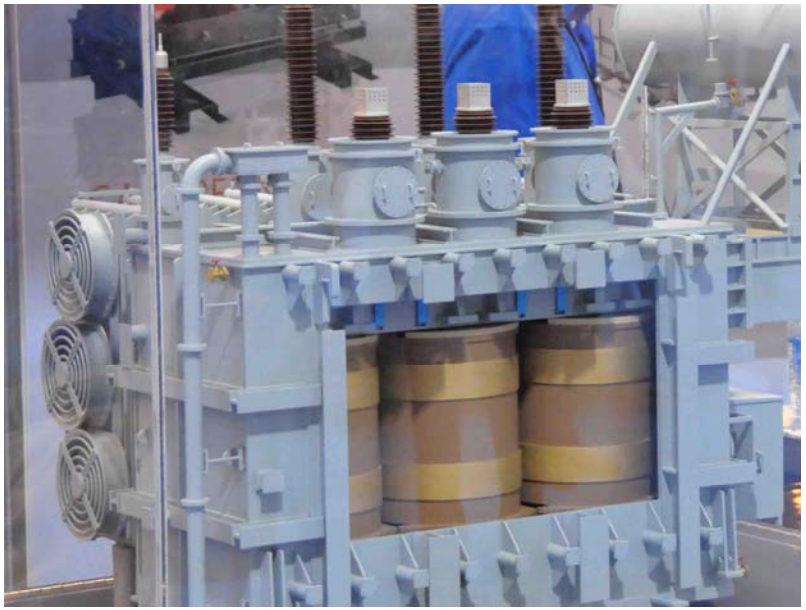
Transformers and 3-phase power



Transformers and 3-phase power

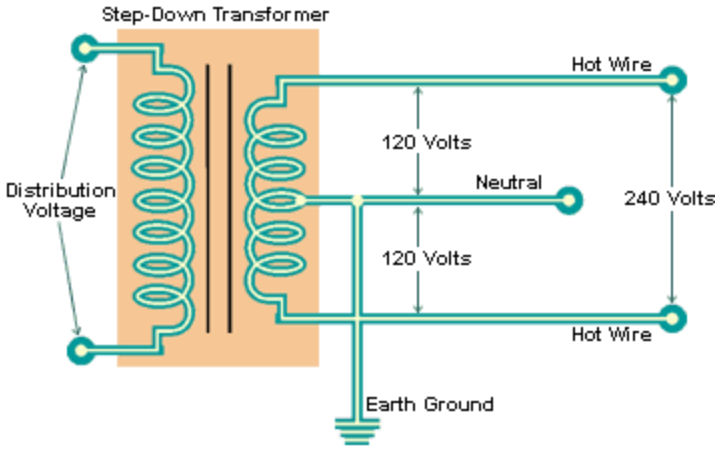


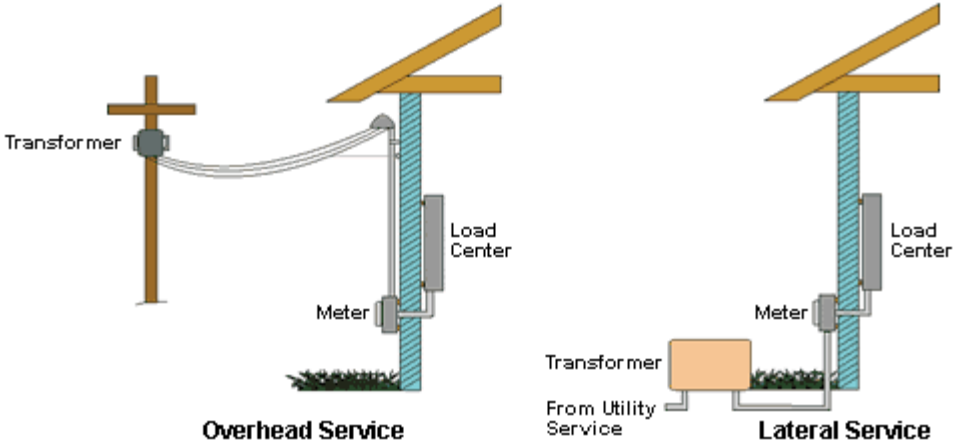




Transformers and 3-phase power

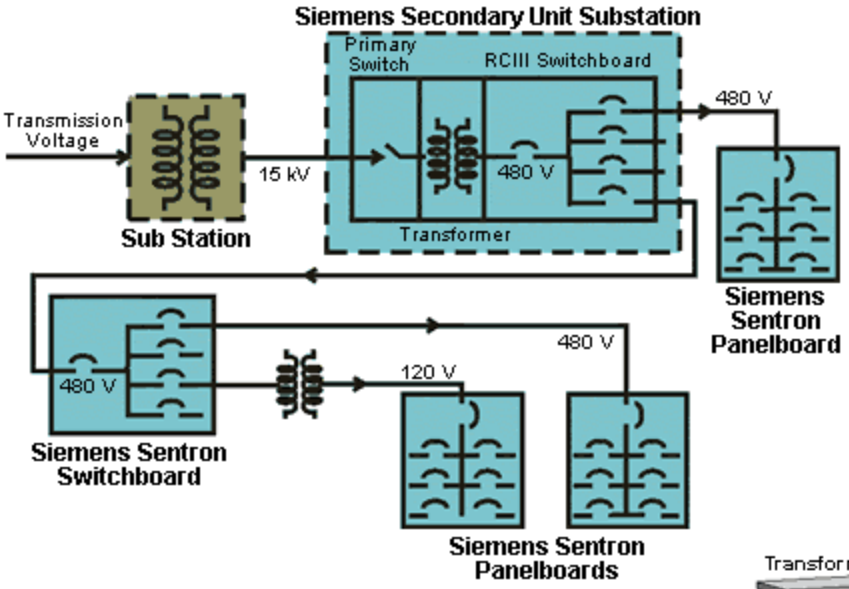
- Typical residential application

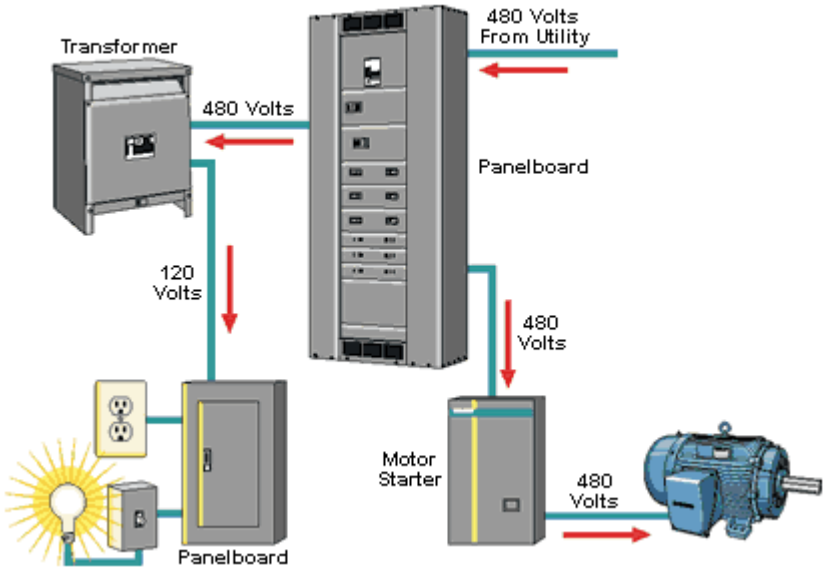




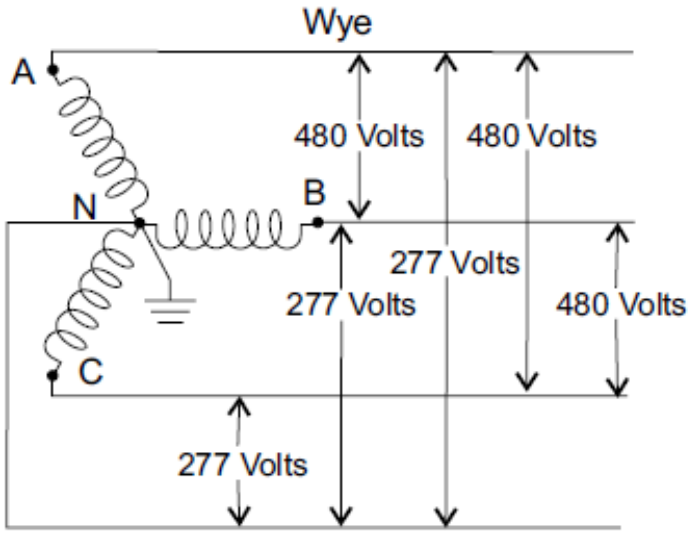
Transformers and 3-phase power

- Typical commercial application

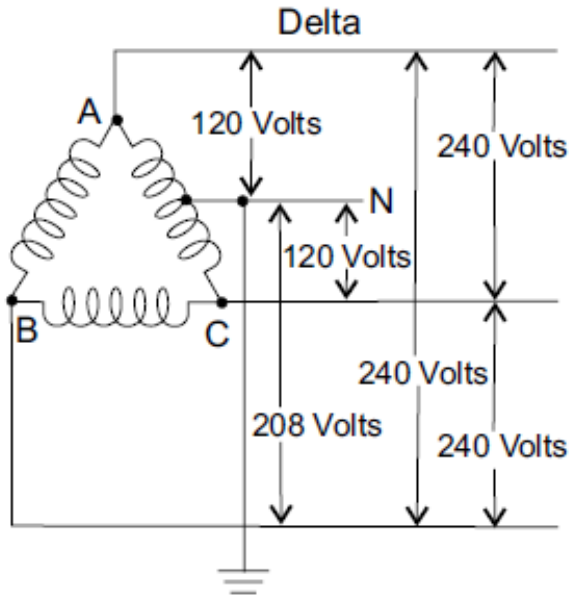




- Three phase wiring



A - B 480 Volts
B - C 480 Volts
C - A 480 Volts
A - N 277 Volts
B - N 277 Volts
C - N 277 Volts

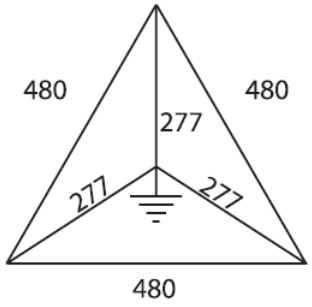


A - B 240 Volts
B - C 240 Volts
C - A 240 Volts
A - N 120 Volts
B - N 208 Volts
C - N 120 Volts

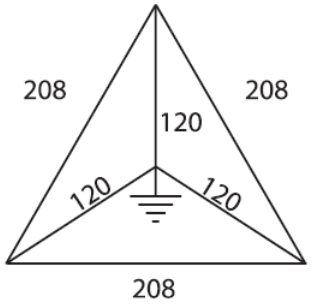
Transformers and 3-phase power

- Three phase wiring

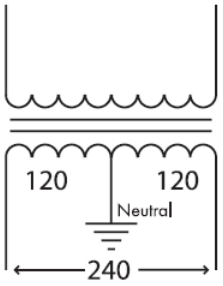
480 Delta: 277 WYE



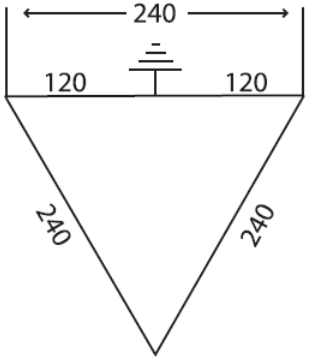
208 Delta: 120 WYE *



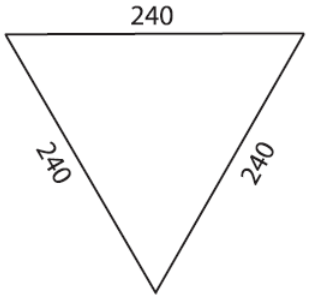
240: 120 Split Phase



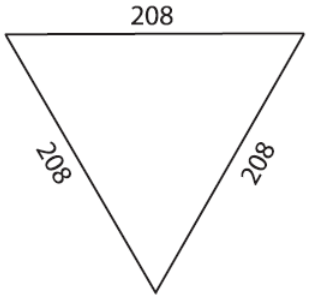
240 Delta: 120 Stinger



240 Delta

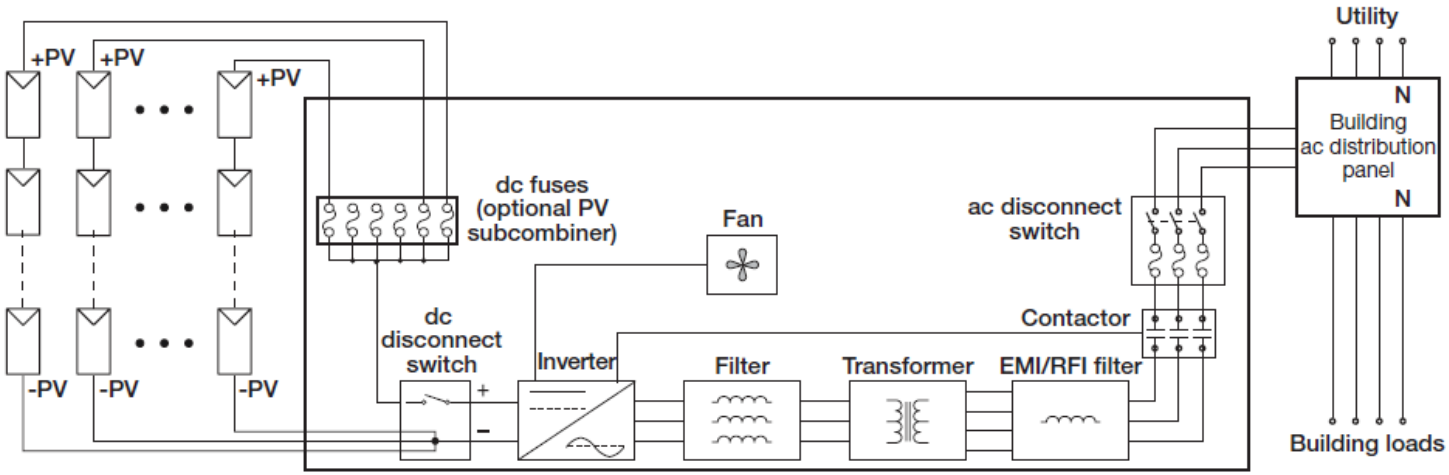


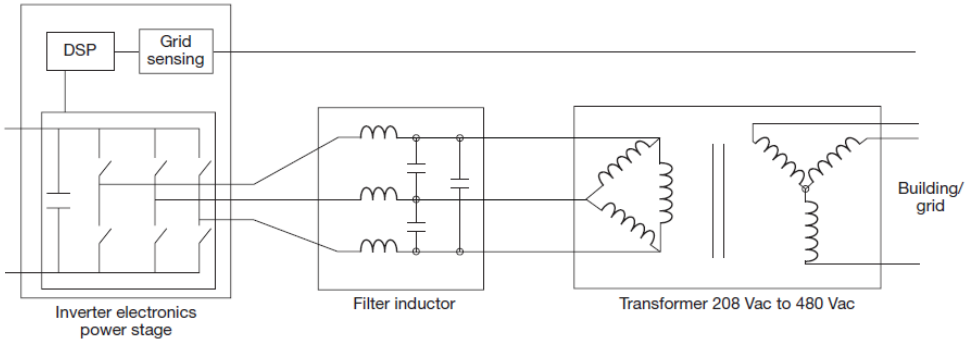
208 Delta *



Transformers and 3-phase power

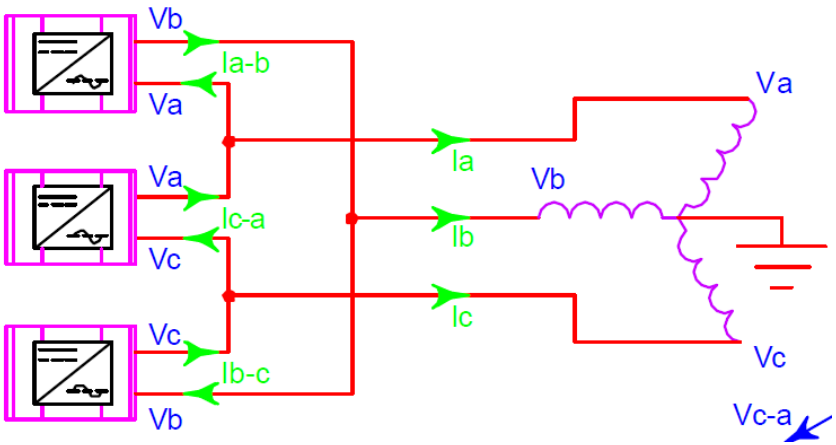
- How do we design a 3-phase PV system
- Use a 3-phase inverter





Transformers and 3-phase power

- How do we design a 3-phase PV system
- Use multiple single phase inverters



- What is the OCPD rating for inverter output?

  (max AC output of SB6000US at 208V = 29A)

  29A * 1.25 = 36.25A next size = 40A
- What is the OCPD rating of each phase? **40A**
- What is the OCPD for the 3 phase subpanel?

  29A * √3 = 50.2A * 1.25 = 62.8A next size = 70A