Week 9 Meeting

10/29/18
Team Leader: Ahmed
Other Team Members: Katayi,Nur, Chufu, Tam, YJ
Advisor: Dr. Ajjarapu

Safety Moment: How to Reset a CCT Breaker

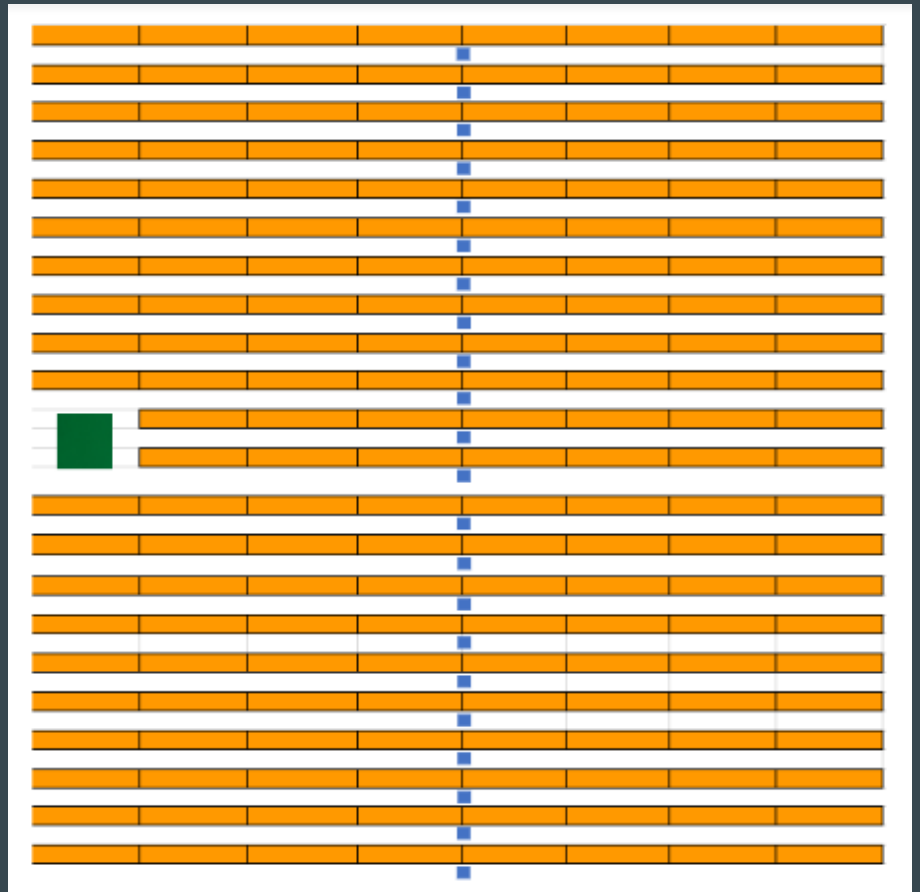
- Once this happens, do the following:
  - Turn off the light switches and unplug appliances in the room that has lost power.
  - Find your circuit breaker box and open the cover.
  - Locate the tripped breaker.
  - The tripped circuit breaker will be in the "off" position or in a middle position between "on" and "off."
  - Reset the breaker by moving it to the full "off" position and then back to "on."
- Safety tips:

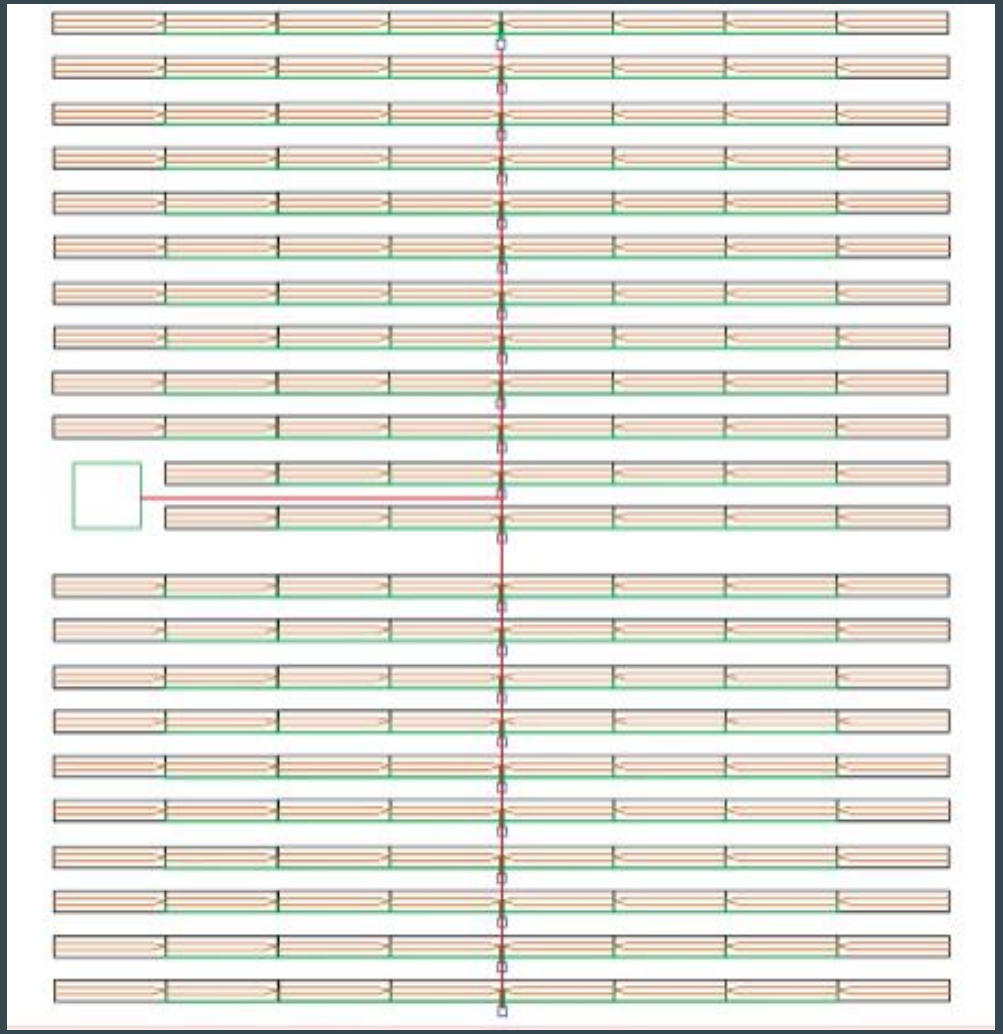
Topics

- Array Wiring Diagram
- Conductor Sizing and Type
- Collector AutoCAD and Parameters Calculation
- Feeder Drawing

Wiring And Final Array Layout

- Using the 6x6 layout
- ILR is 1.29

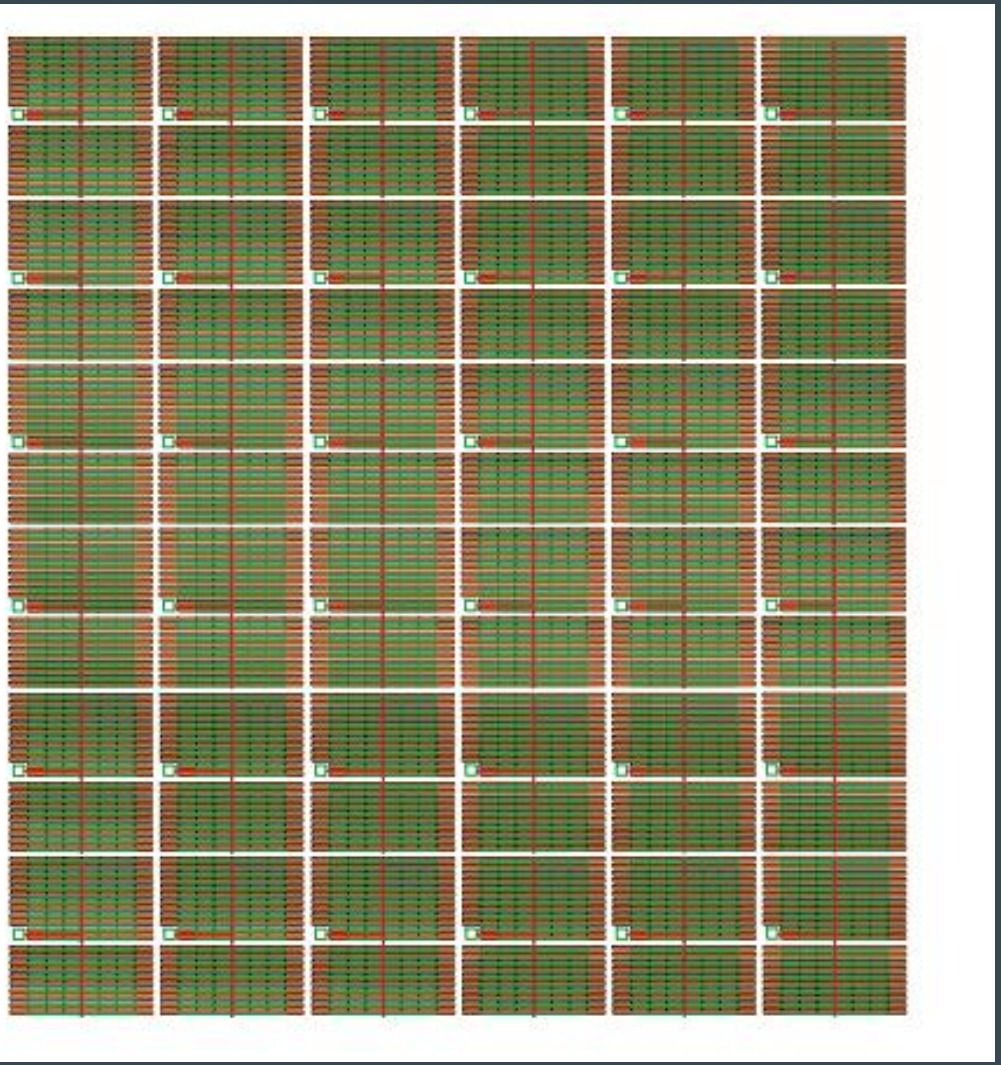




	Wire Harness
	Jumper
	Feeder wire

Voltage drop for circuit
per cent
0.83%
0.82%
0.80%
0.79%
0.78%
0.76%
0.75%
0.74%
0.72%
0.71%
0.69%
0.71%
0.73%
0.74%
0.76%
0.77%
0.78%
0.80%
0.81%
0.82%
0.84%
0.85%

Average of worst-case DCB voltage drop:	0.77%



Conductor Sizing

CBs 1-10, 13-22					
Conductors	Isc(A)	IMP(A)	Type	Material	AWG
String (Harness)	9.44	14.75	free air	Copper	12
Rack to CB (Jumper)	18.88	118	free air	Copper	2/0
CB to Inverter	75.52	236	Underground	Copper	400 kcmil

CBs 11 and 12					
Conductors	Isc(A)	IMP(A)	Type	Material	AWG
String (Harness)	9.44	14.75	Free Air	Copper	12
Rack to CB (Jumper)	18.88	118	Free Air	Copper	2/0 *
CB to Inverter (Feeder)	66.08	206.5	Underground	Copper	300 kcmil
NOTE: * Input racks 1 to 3 have a wire size of 1 AWG					

Collector AutoCAD and Parameters Calculation

Parameters Calculation:

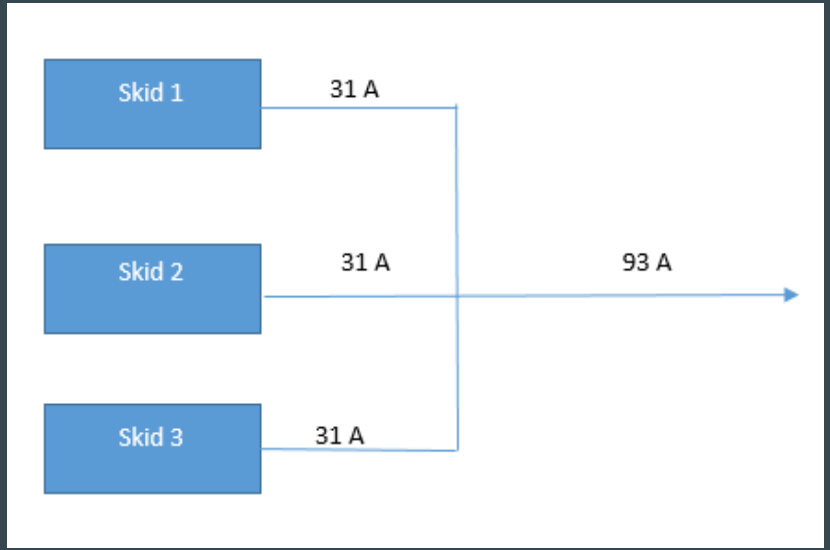
Transformer rating:

Max current of the inverter = 3000 A
Rated output voltage = 357 V
Transformer rating = (3000*357*1.732) = 1854 KVA
Eaton 1666 KVA inverter output is 1831 KVA

Based on the transformer parameters:
1831 KVA KNAN, 65 celsius
34.5 KV - 357 V
3 phase, 5.75 %

Single inverter skid output current:

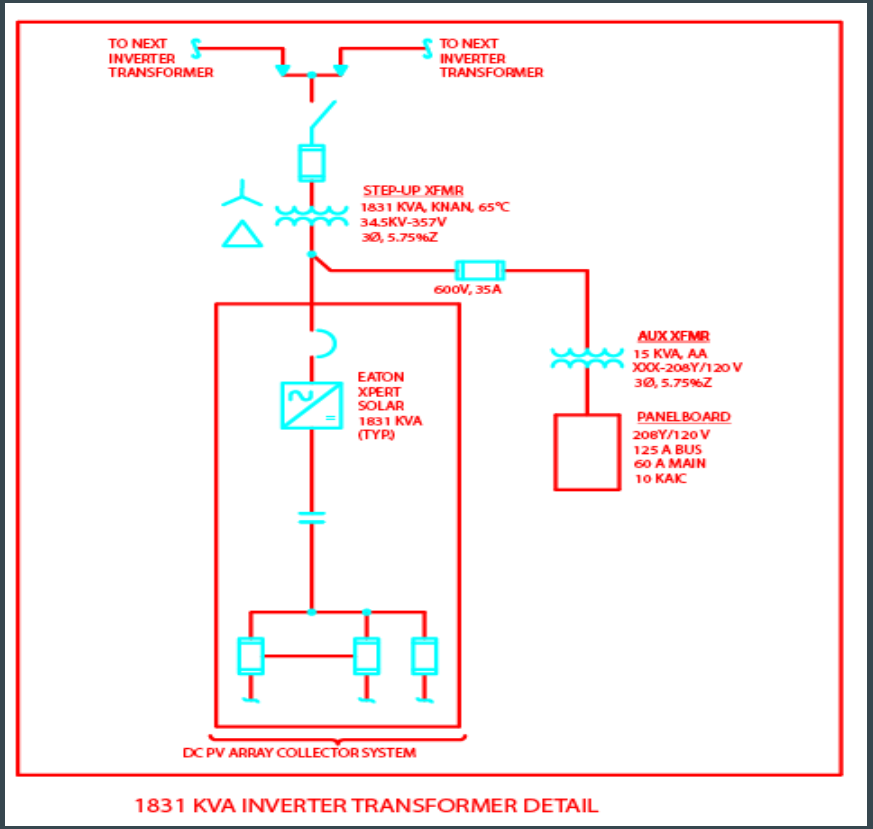
I = 1831 KVA / (34.5 KV * 1.732) = 30.64 A



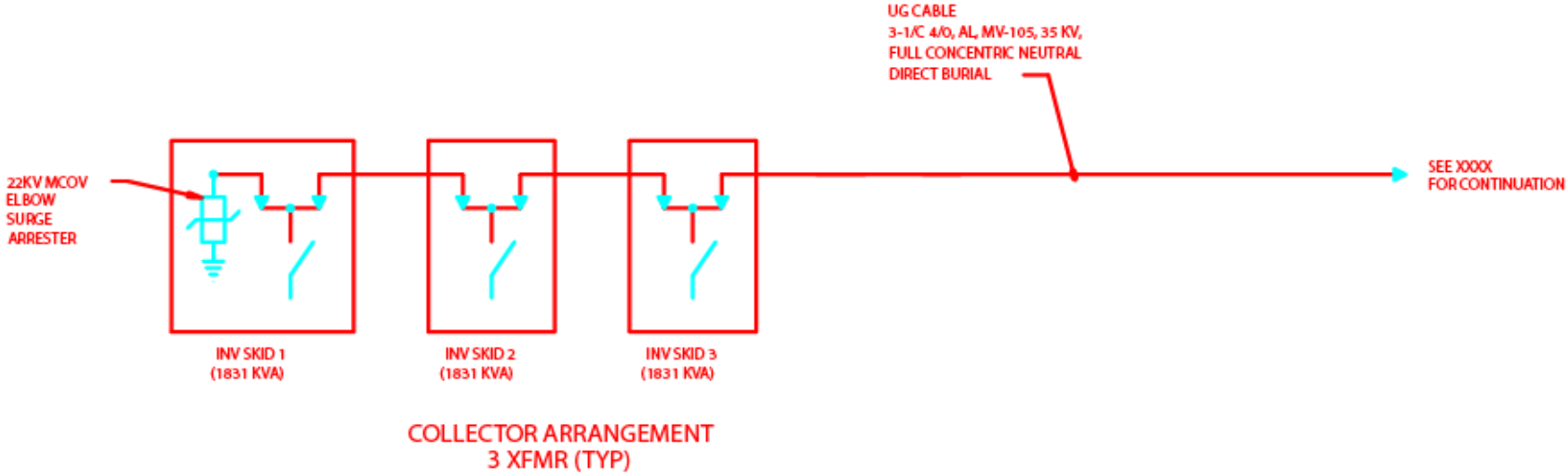
Collector AutoCAD and Parameters Calculation

Single Skid Parametres:

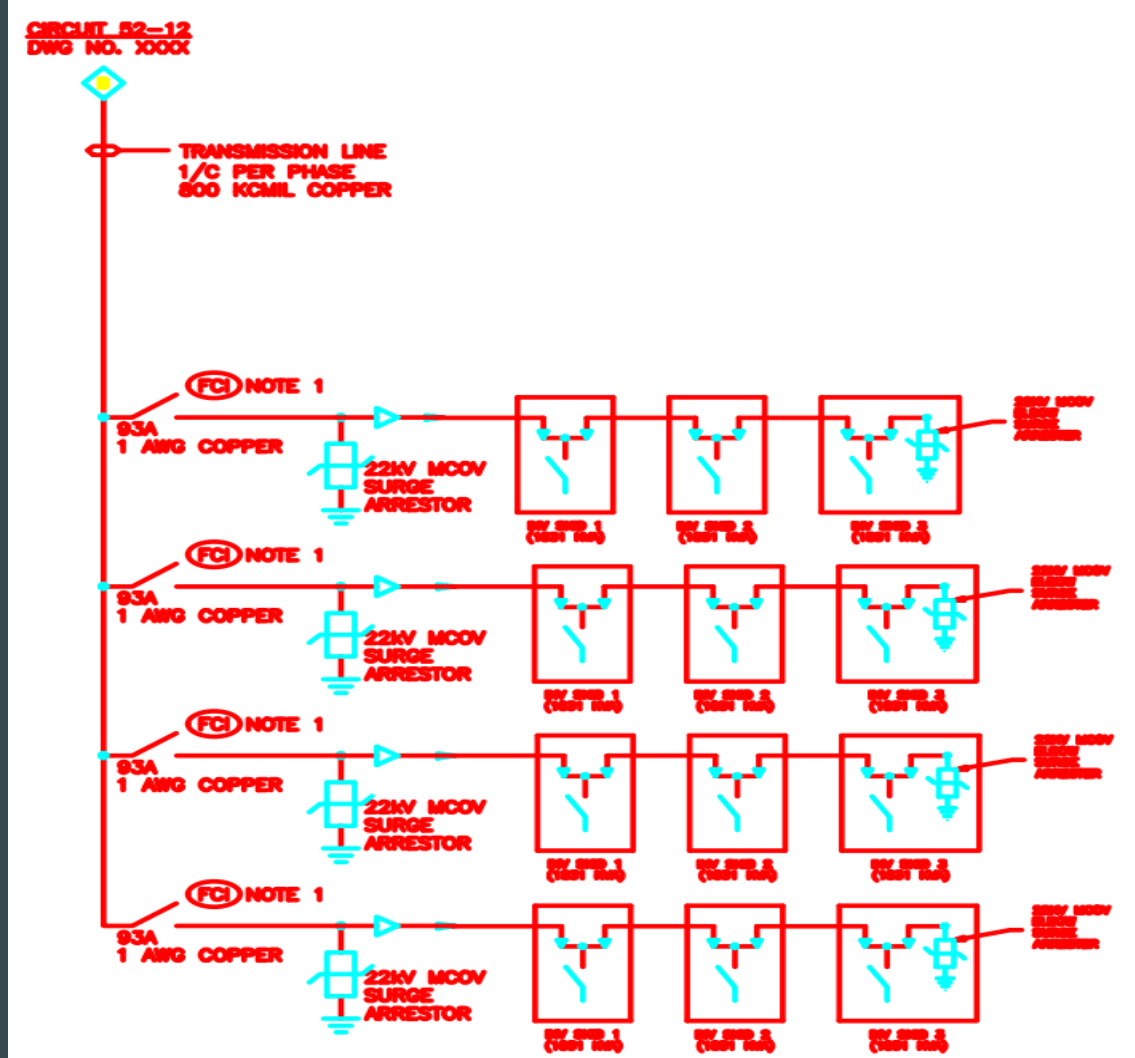
- 22 CB serve as input to 1666 KW Eaton Inverter
- Inverter output 1831 KVA will be matched with 1831 step-up transformer
- The output of transformer will be collected with 8 AWG copper conductor
- Another collector with 1 AWG size will collect and combine all the current and deliver it to the feeder.



Collector Arrangement



Single Feeder layout



Questions