Flexible Research Platform #2 Measurement Overview

Rough Draft

V2

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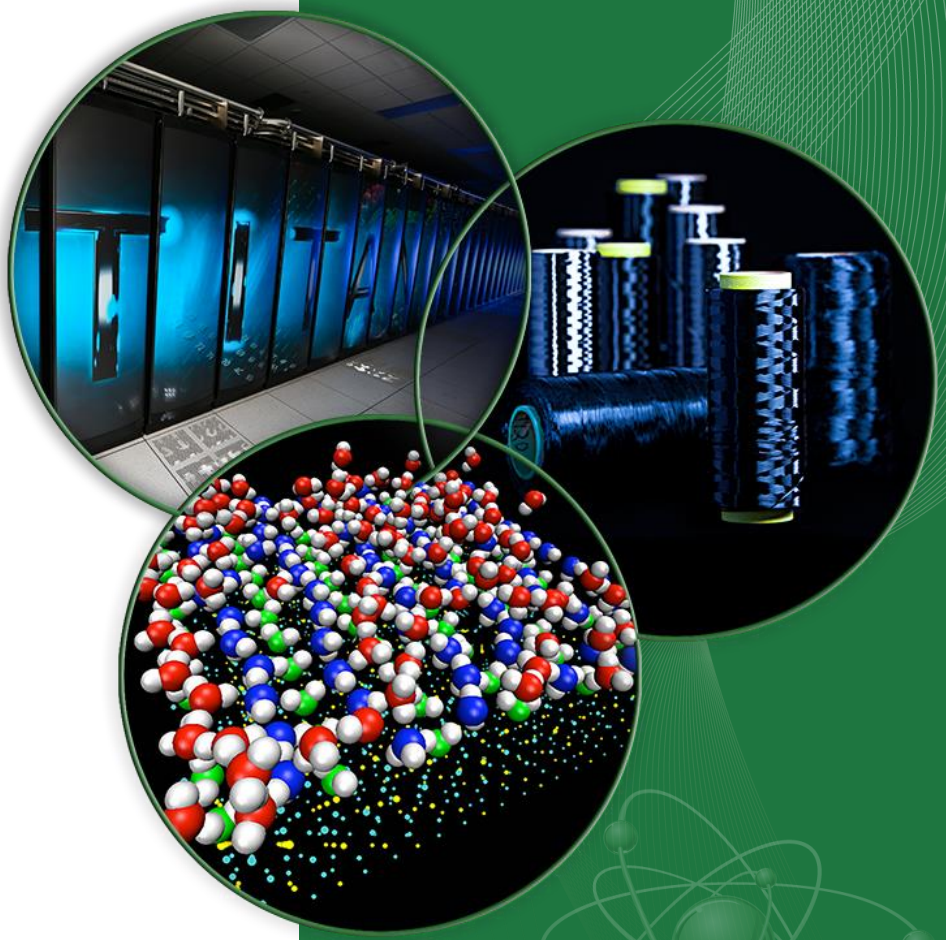

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Flexible Research Platform #2
Measurement Overview

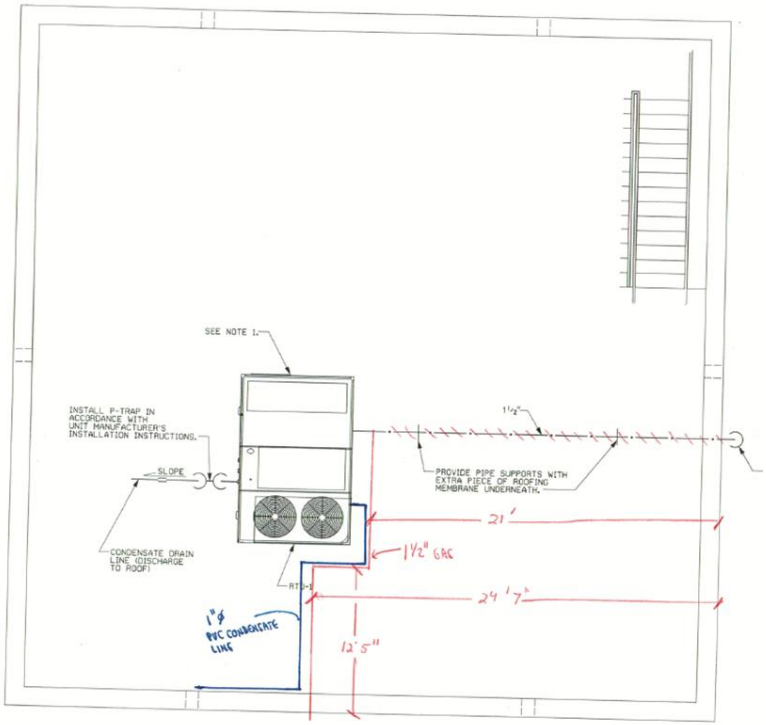
FRP 2 Building Equipment Summary

- The 2 story FRP is 3,200 ft2 and is targeted for study of the energy efficiency of a variety of light commercial buildings.
- The baseline brick/block-wall building with low-slope roof has eight HVAC zones.
- Rooftop unit that is variable air volume with electric reheat shutoff terminal boxes.

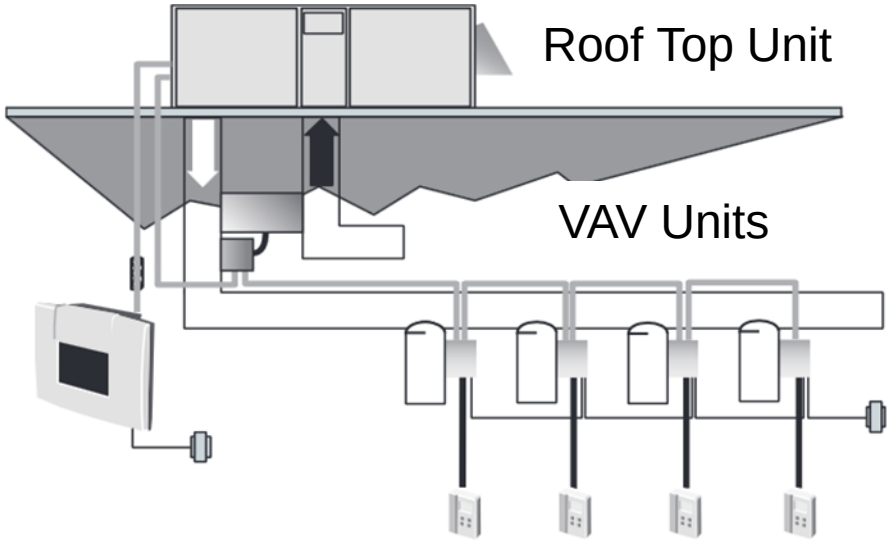
Two-story light commercial building flexible research platform

Flexible Research Platform #2 Measurement Overview

- Roof-top-unit is a Trane YCD150 12 ½ Ton Unit.
- Variable Air Volume (VAV) systems distribute the conditioned air.



FRP 2 Building Equipment Summary



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Flexible Research Platform #2 Measurement Overview

- Roof-top-unit is a Trane YCD150 12 ½ Ton Unit.
  - Gas Heat
  - DX Cooling
  - Loads
    - Blower (Evaporator) Fan
    - Condenser Coil Fan
    - Two Compressors
    - Combustion Fan Motor

FRP 2 Building Equipment Summary

Table ED-1 — Electrical Characteristics — Evaporator Fan Motors — 60 Cycle

		Standard Evaporator Fan Motor						Oversized Evaporator Fan Motor					
	Unit					Amps						Amps	
Tons	Model No.	No.	Volts	Phase	HP	FLA	LRA	No.	Volts	Phase	HP	FLA	LRA
12½	YC*150D4,YC*151C4	1	460	3	3.00	4.8	40.5	1	460	3	5.00	7.6	54.9
	YC*150DK	1	380	3	5.0	9.2	66.5	–	–	–	–	–	–
15	YC*180B3,YC*181C3	1	208-230	3	3.00	10.6	81.0	1	208-230	3	5.00	16.7	109.8
	YC*180B4,YC*181C4	1	460	3	3.00	4.8	40.5	1	460	3	5.00	7.6	54.9
	YC*180BW,YC*181CW	1	575	3	3.00	3.9	31.0	1	575	3	5.00	6.1	41.6
	YC*180BK	1	380	3	5.0	9.2	66.5	–	–	–	–	–	–
17½	YC*210C3,YC*211C3	1	208-230	3	5.00	16.7	109.8	1	208-230	3	7.50	24.2	120.4
	YC*210C4,YC*211C4	1	460	3	5.00	7.6	54.9	1	460	3	7.50	11.0	74.0
	YC*210CW,YC*211CW	1	575	3	5.00	6.1	41.6	1	575	3	7.50	9.0	60.0
	YC*210CK	1	380	3	7.5	13.3	83.5	–	–	–	–	–	–
20	YC*240B3,YC*241C3	1	208-230	3	5.00	16.7	109.8	1	208-230	3	7.50	24.2	120.4
	YC*240B4,YC*241C4	1	460	3	5.00	7.6	54.9	1	460	3	7.50	11.0	74.0
	YC*240BW,YC*241CW	1	575	3	5.00	6.1	41.6	1	575	3	7.50	9.0	60.0
	YC*240BK	1	380	3	7.5	13.3	83.5	–	–	–	–	–	–
25	YC*300B3,YC*301C3	1	208-230	3	7.50	24.2	120.4	—	—	—	—	—	—
	YC*300B4,YC*301C4	1	460	3	7.50	11.0	74.0	—	—	—	—	—	—
	YC*300BW,YC*301CW	1	575	3	7.50	9.0	60.0	—	—	—	—	—	—
	YC*300BK	1	380	3	7.5	13.3	83.5	—	—	—	—	—	—

Table ED-2 — Electrical Characteristics — Compressor Motor And Condenser Motor — 60 Cycle — Standard Efficiency

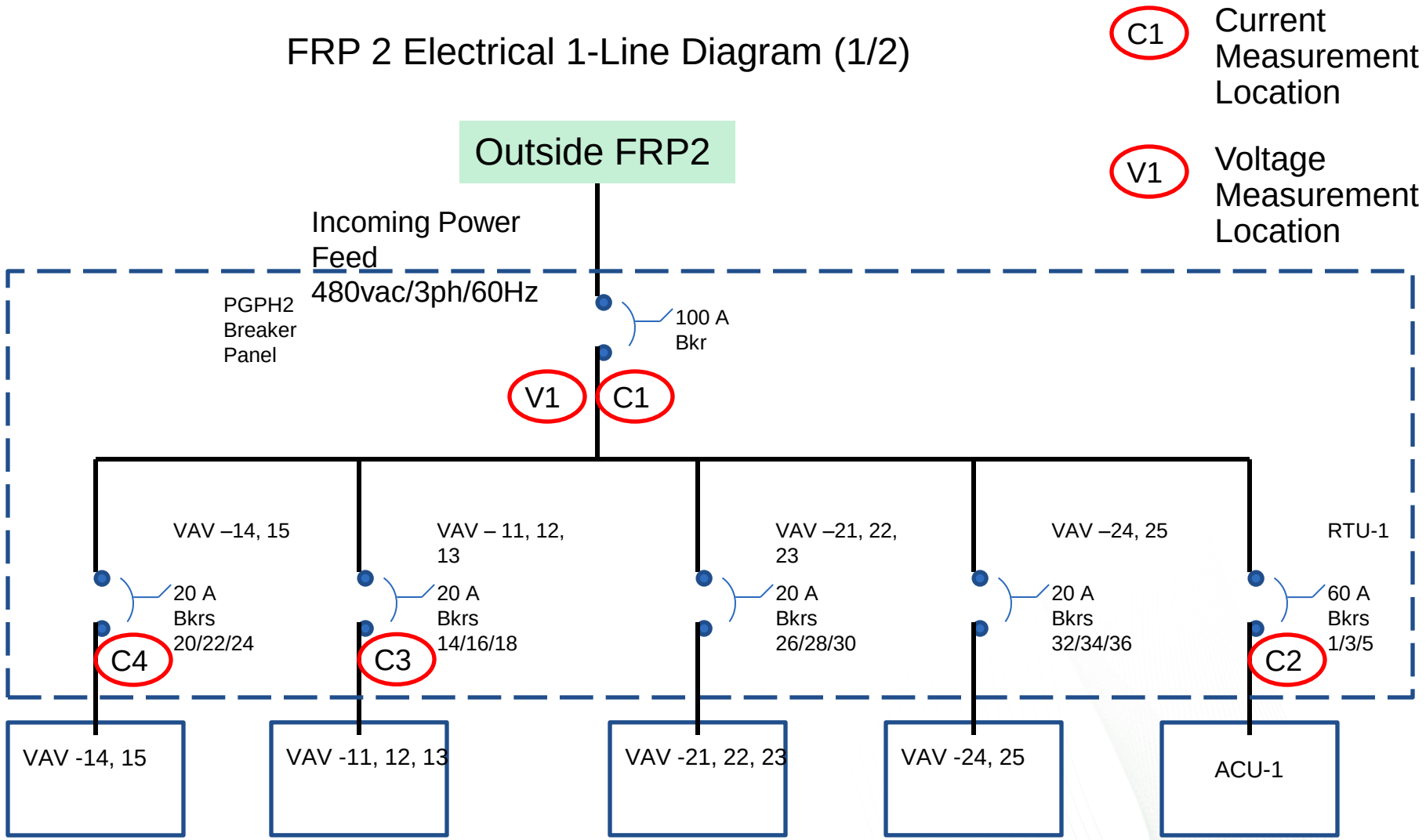
		Compressor Motor							Condenser Fan Motors				
	Unit						Amps[1]					Amps[1]	
Tons	Model No.	No.	Volts	Phase	HP[2]	RPM	RLA	LRA	No.	Phase	HP	FLA	LRA
12½	YC*150D4	2	460	3	6.0	3450	10.8	75	2	1	.50	1.6	3.8
	YC*150DK	2	380	3	6.0	3450	13.1	70	2	1	.50	1.9	5.2

Flexible Research Platform #2 Measurement Overview

FRP 2 Building Equipment Summary

- Variable Air Volume (VAV) systems distribute the conditioned air.
- JCI TSS model VAV Units
  - Air Heater
  - Air flow modulation

Flexible Research Platform #2
Measurement Overview



Flexible Research Platform #2
Measurement Overview

FRP 2 Building Summary
Current Measurements

- Total of 12 CT's.

Measurement Location	Description	Voltage	Current	Quantity of CT's
C1	FRP Incoming Power Feed	480vac/3ph	100A	3
C2	ACU-1 Power Feed	480vac/3ph	60A	3
C3	VAV –11, 12, 13	480vac/3ph	20A	3
C4	VAV –14, 15	480vac/3ph	20A	3
C5	?	?	?	?
C6	?	?	?	?

Flexible Research Platform #2
Measurement Overview

FRP 2 Building Summary
Current Measurements

- Total of 3 VT measurements.
  - 1 – 3 phase VT's.

Measurement Location	Description	Voltage	Current	Quantity of CT's	Notes
V1	FRP Incoming Power Feed	480vac/3ph	100A	3	Use extra/unused 3-phase circuit breaker

Flexible Research Platform #2
Measurement Overview

ORNL Requirements for Richman Surrey Equipment

1. UL listed components and enclosure.
2. Minimum rating of Nema 1 for enclosure.