Flexible Research Platform #1
Measurement Overview

Public Version

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March 01 2017
Flexible Research Platform #1
Measurement Overview

FRP 1 Building Equipment Summary

• The 1-story FRP is 2,400 ft² and is currently targeted at the energy efficiency of metal buildings.
• It has two HVAC systems to facilitate operation of either a conventional gas-pack (air-conditioner with natural gas heat) or a gas-engine–driven heat pump.
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FRP 1 Building Equipment Summary

1. AC-1 Single Package Gas/Electric Air Conditioning Unit (Johnson Controls System)
2. CU-1 Split System Multi-Zone Natural Gas Driven Heat Pump (not on Johnson Controls System)
   A. AH-1 Air Handler West
   B. AH-2 Air Handler East
3. EF-1 Exhaust Fan
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FRP 1 Building Equipment Summary

1. **AC-1** Single Package Gas/Electric Air Conditioning Unit (Johnson Controls System)
   - Nordyne Mammoth R6GP Series Model RGP-090D-200Ca (SN R6F120900062), Nominal 7 ½ Ton, and 460/3/60Hz Power.
   - Loads
     - Two Outdoor Condenser Fan
     - Two Compressor
     - Blower
     - Controls

<table>
<thead>
<tr>
<th>Device</th>
<th>Quantity</th>
<th>Voltage</th>
<th>Current</th>
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<td>Blower Drive</td>
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<td>Compressor</td>
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<td>Condensor Fan</td>
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<td>480vac/3ph</td>
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FRP 1 Building Equipment Summary

1. AC-1 Single Package Gas/Electric Air Conditioning Unit (Johnson Controls System)

- Nordyne Mammoth R6GP Series Model RGP-090D-200Ca (SN R6F120900062), Nominal 7 ½ Ton, and 460/3/60Hz

- Loads
  - Two Outdoor Condenser Fan
  - Two Compressor
  - Blower
  - Controls

### ELECTRICAL INFORMATION

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Nominal Electric Supply</th>
<th>Voltage Range</th>
<th>Compressors</th>
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2. **CU-1** Split System Multi-Zone Natural Gas Driven Heat Pump (not on Johnson Controls System)
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FRP 1 Building Equipment Summary

3. A & B AC-1 AH-1 Air Handler
   West & AH-2 Air Handler East
   • Daikin FXMLQ48PVJU equal nominal 4 ton
     208/1/60Hz power.
FRP 1 Electrical 1-Line Diagram (1/2)

- **Incoming Power Feed**
  - 480vac/3ph/60Hz

- **Outside FRP1**
  - 100 A Bkr

- **Transformer T1**
  - 30 A Bkrs 38/40/42

- **Transformer T1 (480 to 120Y/208)**

- **ACU-1**
  - 30 A Bkrs 2/4/6

- **Current Measurement Location**
  - C1

- **Voltage Measurement Location**
  - V1

Main Feed Location
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FRP 1 Electrical 1-Line Diagram (2/2)

120Y/208vac/60Hz

PGPL1 Breaker Panel

V2

T1
480 to 120Y/208 Transformer

125 A Bkr

AHU-1
30 A Bkrs
10/12
208vac/1ph

AHU-2
30 A Bkrs
16/18
208vac/1ph

CU-1
30 A Bkrs
2/x/6
208vac/1ph

C6

C5

AHU-1
AHU-2
CU-1
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FRP 1 Building Summary
Current Measurements

- Total of 8 CT’s.

<table>
<thead>
<tr>
<th>Measurement Location</th>
<th>Description</th>
<th>Voltage</th>
<th>Current</th>
<th>Quantity of CT’s</th>
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<tbody>
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<td>C1</td>
<td>FRP Incoming Power Feed</td>
<td>480vac/3ph</td>
<td>100A</td>
<td>3</td>
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<tr>
<td>C2</td>
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<td>480vac/3ph</td>
<td>30A</td>
<td>3</td>
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<td>AHU-1</td>
<td>208vac/1ph</td>
<td>15A</td>
<td>1</td>
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<td>AHU-2</td>
<td>208vac/1ph</td>
<td>15A</td>
<td>1</td>
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Total of 8 CT’s.
### Flexible Research Platform #1 Measurement Overview

**FRP 1 Building Summary**

**Voltage Measurements**

- Total of 6 VT measurements.
- 2 – 3 phase VT’s.

<table>
<thead>
<tr>
<th>Measurement Location</th>
<th>Description</th>
<th>Voltage</th>
<th>Current</th>
<th>Quantity of VT’s</th>
<th>Notes</th>
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<td>V1</td>
<td>FRP Incoming Power Feed</td>
<td>480vac/3ph</td>
<td>100A</td>
<td>3</td>
<td>Use extra/unused 3-phase circuit breaker</td>
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<td>T1 Power Feed</td>
<td>120Y208/3ph</td>
<td>125A</td>
<td>3</td>
<td>Use extra/unused 3-phase circuit breaker</td>
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</table>
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ORNL Requirements for Richman Surrey Equipment

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