

Commercial Office Building Jersey City, NJ



Test Site

A multi-tenant 600,000 square foot office building located in Jersey City, NJ.

Background

Variable Frequency Drives (VFD's). A VFD is basically a computer and power supply. Excessive Heat **will** cause premature VFD failure.

Causes of excessive heat include:

- Fan Failure
- Clogged Vents
- Loose terminal connections

Testing Procedure

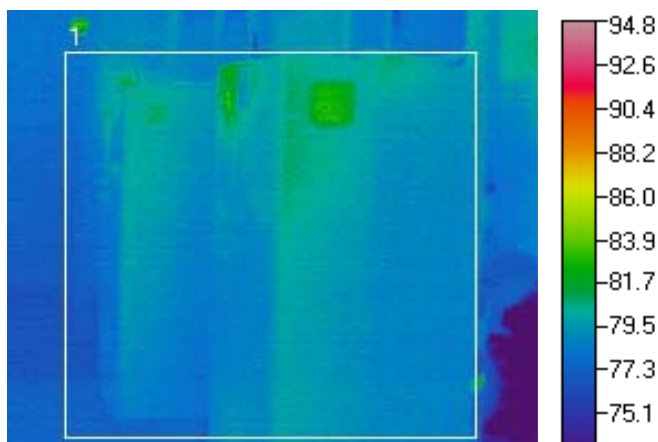
Delta T Engineering with the help of building engineer's tested and recorded temperatures at two VFD's labeled P-4 and P-5. Delta T Alerts were installed on both units as illustrated in the pictures below.



Operating & Temperature Data

| VFD # | Operating Hertz | Room Ambient Temperature | Internal VFD Temperature Recorded by Delta T Alert |
|-------|-----------------|--------------------------|--|
| P-4 | 45 | 77 F | 97.0 F |
| P-5 | 45 | 77F | 95.0 F |

Thermogram showing normal operation of VFD's



Thermogram Temperatures

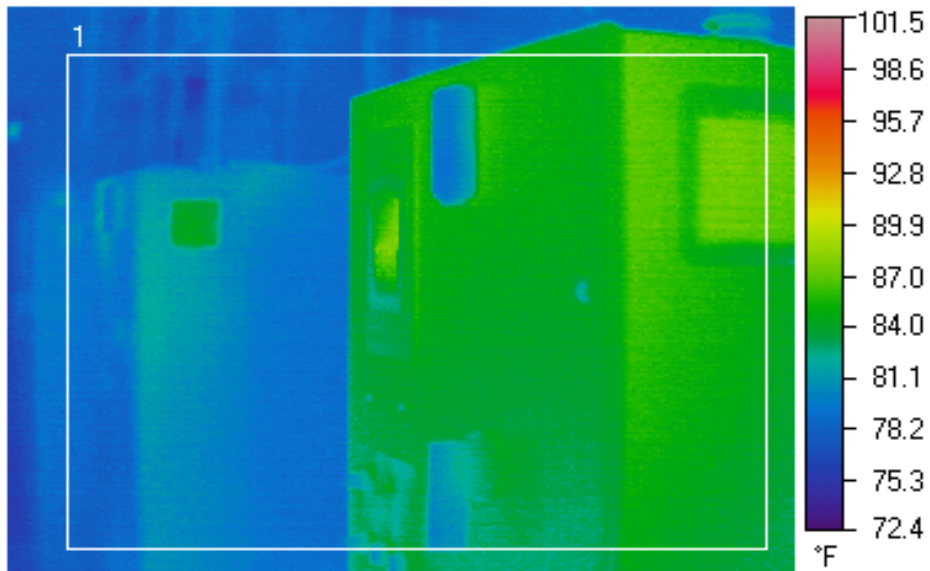
| Temperatures | Average | Minimum | Maximum |
|--------------|---------|---------|-----------------------|
| Rec. #1 | 79.0 F | 75.0 F | 83.0 F – Exhaust Vent |

Fan Removal



Above pictures show the disconnection and Fan removal from P-5 VFD

The below thermogram showing operation of both VFD's with fan removal after 30 minutes of operation at 45 hertz.



Delta T Alert Temperatures

| VFD # | Operating Hertz | Room Ambient Temperature | Internal VFD Temperature Recorded by Delta T Alert |
|------------|-----------------|--------------------------|--|
| P-4 | 45 | 77 F | 97.0 F |
| P-5 | 45 | 77 F | 117.0 F |

Conclusion – The Delta T Alert monitoring system can be used as a pro-active tool to reduce expensive repairs and/or replacement of Variable Frequency Drives.