

# 15 powerful applications for the Fluke Visual IR Thermometer

## Application Note

### Detect issues instantly

The Fluke Visual IR Thermometers combine the convenience of a spot thermometer with the visual advantage of an infrared camera, creating a brand new tool category.

Get the power to see what you are measuring while detecting issues instantly and affordably.



## DESIGNED TO SEE IT ALL

Every Fluke Visual IR Thermometer has a built-in digital camera with a thermal heat map overlay to instantly identify the exact location of the problem.

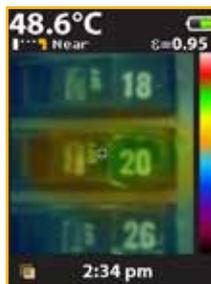


**Centerpoint temperature (°C/°F)**

**Digital image for context**

Clearly see that breaker 20 is overloaded and communicate your findings.

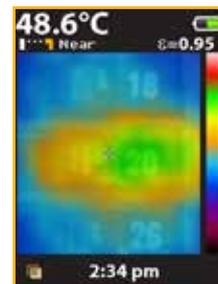
**Thermal heat map overlay**



25 % heat map

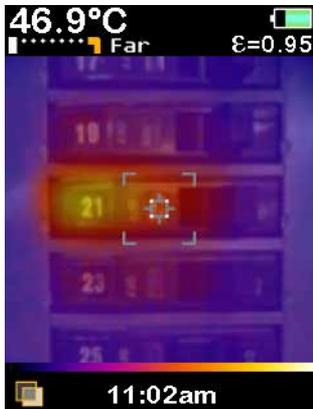


50 % heat map



75 % heat map

## 1. Overloaded circuit breaker



Heat map overlay

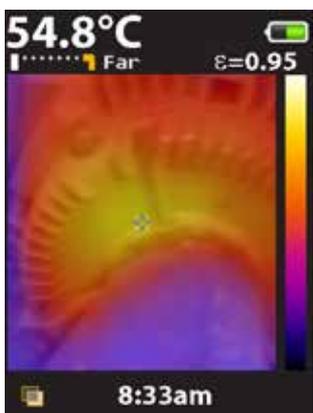


Full digital

Scan large electrical panels in seconds to find potential faults that generate heat, such as loose connections, imbalance or overloading.

Notice how the visual IR thermometer not only shows an apparent hot spot on a breaker, but the digital image also shows the exact location where the potential problem lies.

## 2. Overheated motor output



Heat map overlay



Full digital

This image reflects a motor that may be overheated based on the center point measurement of 54.8 °C.

The combination of the thermal heat map and field of view in tight spaces is powerful orientation when troubleshooting and communicating needed repairs to others.

## 3. Thermal inspection of bearing



Heat map overlay

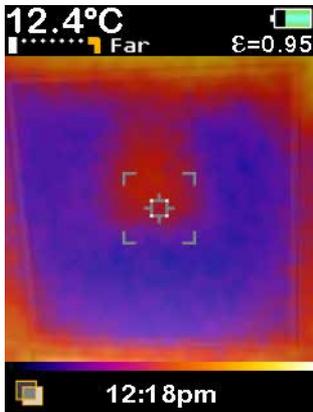


Full digital

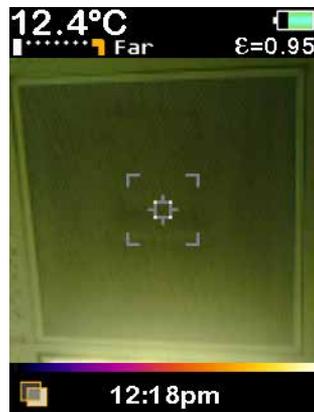
The visual IR thermometer can be used to scan bearings to compare temperature readings with past inspections or with other bearings operating under similar conditions. Establishing temperature benchmarks with the Fluke Visual IR Thermometer can become an important part of your preventive maintenance regimen.

Images portrayed are actual images from Fluke Visual IR Thermometers. Proper PPE Gear should be worn at all times.

## 4. Potentially faulty cold air damper



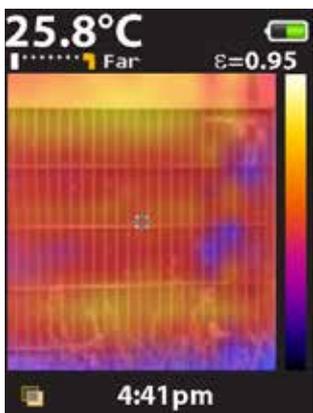
Heat map overlay



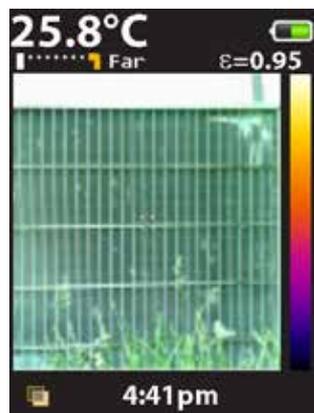
Full digital

Use your visual IR thermometer to see how well the VAV box is working by scanning vents. The warm area in this otherwise cold vent could indicate a faulty cold air damper.

## 5. Uneven distribution in AC condenser



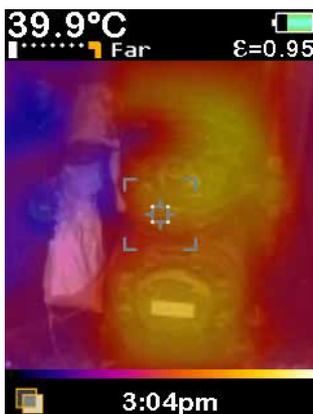
Heat map overlay



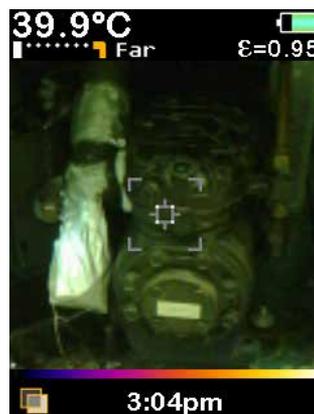
Full digital

In this typical AC condenser, the uneven distribution of heat in the center row may indicate a potential issue.

## 6. Inspection of compressor thermal expansion valve



Heat map overlay



Full digital

The thermal heat map allows you to quickly scan the compressor and determine that the TXV (thermal expansion valve) to the left appears to be cold, indicating that it is closed.

Images portrayed are actual images from Fluke Visual IR Thermometers. Proper PPE Gear should be worn at all times.

## 7. Non-operational AC compressor



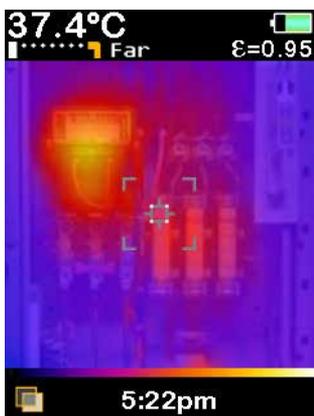
Stage 2 Compressor



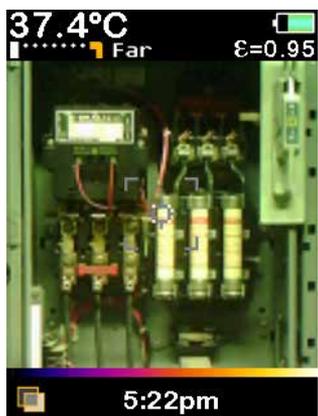
One of the Operational Stages

The compressors in these images are running on a 4-stage system. The second stage compressor appeared cold, while the other three compressors in the system all appeared hot. This compressor will need to be further investigated.

## 8. Thermal inspection of combination starter



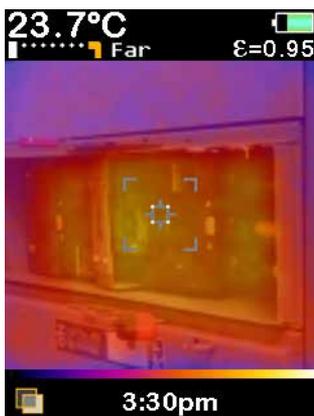
Heat map overlay



Full digital

Use a Fluke Visual IR Thermometer to look for connection or overload conditions in combination starters. Alarm features on the VT04, as well as the universal tripod mount, can help you troubleshoot intermittent issues unattended.

## 9. Main breaker for mission critical equipment



Heat map overlay



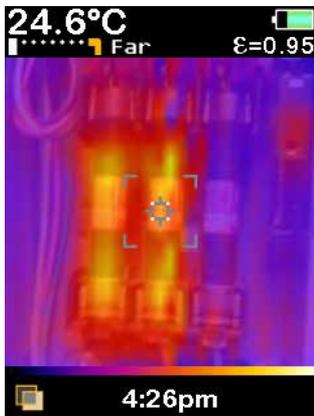
Full digital

This main service breaker controls the main breaker panel for the company's IT department. A fault could cause an outage of mission critical data center equipment.

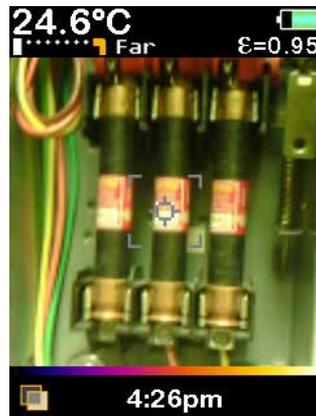
The thermal inspection of this important breaker indicates that there is even heat distribution which signifies that there does not appear to be anything wrong.

Images portrayed are actual images from Fluke Visual IR Thermometers. Proper PPE Gear should be worn at all times.

## 10. Unbalanced load in three phase supply



Heat map overlay



Full digital

Quickly identify apparent unbalanced loadings. In this image, the fuses are connected to a water heater, and the most likely scenario is that the two fuses on the left are being used more than the fuse on the right. This could indicate a problem with the heating element in the water heater. If this were single phasing, it could indicate that the fuse on the right may be blown. The next step is to check continuity of the fuse and current loads on the 3 phases.

## 11. Power factor correction capacitors



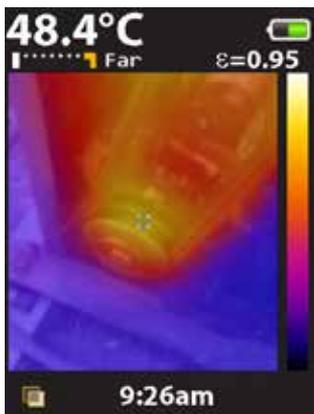
Heat map overlay



Full digital

Power factor correction capacitors will usually run warm when they are operating correctly. A failed capacitor will show up as cool in comparison with the operating capacitors.

## 12. Preventive inspections of pulleys and belts



Heat map overlay

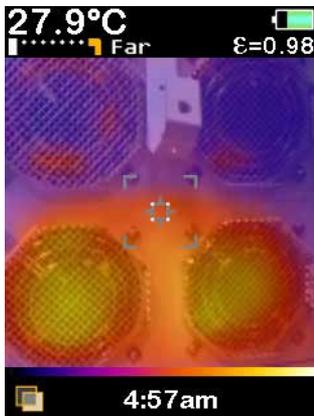


Full digital

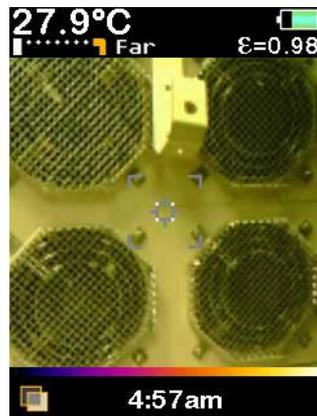
If a pulley appears warmer than expected, you'll want to inspect the belt to ensure there is no slippage, misalignment, or damage to the belt. A quick scan with the thermal heat map on the visual IR thermometer can help you quickly detect a temperature change that may be cause for further investigation.

Images portrayed are actual images from Fluke Visual IR Thermometers. Proper PPE Gear should be worn at all times.

### 13. Environmental monitoring of fan for high-powered equipment



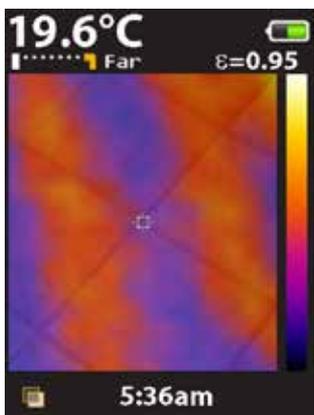
Heat map overlay



Full digital

If a fan starts to seize up, workers in the area may not notice until there is a burning smell. However, a quick scan with the blended thermal heat map reveals the hot and cold areas to help determine if the fans are functioning as expected.

### 14. Troubleshoot issues with radiant flooring



Heat map overlay

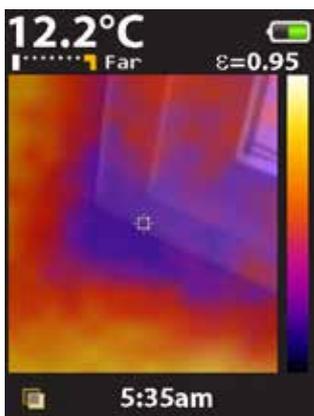


Full digital

This radiant flooring was scanned to check for the expected heat pattern. For best results, leave the radiant system off for 24 hours to cool down. Power on the system again and scan the flooring to check for the expected thermal heat pattern.

To find potential issues in electrical-based systems, look for cold spots that are anomalies in the normal heat pattern. For hydronic systems, look for cold spots or a spreading hot spot that could indicate the pipes are leaking.

### 15. Heat loss from windows and doors



Heat map overlay



Full digital

The Fluke Visual IR Thermometer can help you find a broken or damaged window seal that is allowing a cold or warm draft to occur around windows or doors.

Images portrayed are actual images from Fluke Visual IR Thermometers. Proper PPE Gear should be worn at all times.

## Set yourself up for success

Follow a few simple steps that will help you troubleshoot issues in facilities applications:

- Wear proper PPE for your environment, according to your local, national, and company protocols. Always remain the proper distance away from potentially hazardous equipment.
- Have direct access to the target you are scanning. Disassembly may be required around your target.
- When you've found a potential issue using the blended heat map, move closer to take a center-point temperature measurement.
- Understand how surface material characteristics such as emissivity can influence your readings. For more information visit: [www.fluke.com/emissivity](http://www.fluke.com/emissivity) or [www.fluke.com/emissivityexplanation](http://www.fluke.com/emissivityexplanation).



Professional SmartView™ reporting software included with purchase.



Automated monitoring alarms available on the VT04.

**Fluke Corporation**  
PO Box 9090, Everett, WA 98206 U.S.A.

**Fluke Europe B.V.**  
PO Box 1186, 5602 BD  
Eindhoven, The Netherlands

**For more information call:**  
In the U.S.A. (800) 443-5853 or  
Fax (425) 446-5116  
In Europe/M-East/Africa +31 (0) 40 2675 200 or  
Fax +31 (0) 40 2675 222  
In Canada (800)-36-FLUKE or  
Fax (905) 890-6866  
From other countries +1 (425) 446-5500 or  
Fax +1 (425) 446-5116  
Web access: <http://www.fluke.com>

©2013 Fluke Corporation.  
Specifications subject to change without notice.  
Printed in U.S.A. 8/2013 6000833A\_EN

**Modification of this document is not permitted without written permission from Fluke Corporation.**