



## Qualitative Infrared Thermographic Survey of Electrical Switchgear



*Prepared for:*  
**Mr. Sample Client**  
**Acme Widget Company**  
9274 Industrial Drive  
Your Town, Your State 23456



*Report Prepared by:* SoCal Infrared Thermal Imaging Services  
*an Authorized ElectricIR™ Contractor*  
888-762-2547 [info@socalinfrared.com](mailto:info@socalinfrared.com)

June 4, 2011

Mr. Sample Client  
Acme Widget Company  
9274 Industrial Drive  
Your Town, Your State 23456

Dear Mr. Client:

The electrical switchgear of Acme Widget Company was the subject of an infrared (IR) survey on June 4, 2011. Equipment designated by the client for this survey is listed in the report.

**Your *ElectricIR™* report includes:**

- Section A - Data Log, a list of all equipment surveyed
- Section B - Repair Guide, a list of all equipment with thermal anomalies
- Section C - Thermographic Reports, individual report pages of all equipment with thermal anomalies

SoCal Infrared, an Authorized *ElectricIR™* Contractor, was retained for a qualitative infrared thermographic survey of electrical switchgear in an effort to identify areas of thermal anomalies and to document them for further review and repair. Further investigations of these areas may reveal additional conditions that were not readily visible at time of inspection. We document our findings with infrared thermograms and visual photographs of the areas. Our inspection is designed to comply with accepted industrial standards and this report is for the exclusive use of our client and is not intended for any other purpose. This report is based on information obtained at the site at the given date and time as described in the report. Should additional information become available at a later date, we reserve the right to determine the impact, if any, that the new information may have on our discovery and recommendations and to revise the report if necessary and warranted.

**Analysis and Recommendations**

We recommend that your maintenance team carefully review this report. Items listed on the Repair Guide should be checked by qualified personnel. We use the Delta-T temperature Criteria method of rating anomalies on the electrical equipment. Below, see the temperature ratings, however, your criteria for rating a problem will include not only temperature, but criticality of the equipment and other factors.

Our reports are designed to be clear, concise and useful. Please review this report carefully. If there is anything you would like us to explain, or if there is other information you would like, please feel free to call us as we would be happy to answer any questions.

Sincerely,

*Peter Hopkins*

Peter Hopkins  
Certified Level II Thermographer, #26838  
SoCal Infrared, **Authorized *ElectricIR™* Contractor**

## Infrared Survey Info

**Client: Acme Widget Company**

**Survey Date: June 4, 2011**

**Qualified Client Representative: Mr. John Jones**

**Building Location: 9274 Industrial Drive**

**Your Town, Your State 23456**

**Infrared Imager Used: FSI T400**

**Notes: Section B: Repair guide not shown in this sample report.**

### **RECAP OF FINDINGS**

(NR) Not Rated =	<b>2</b>
(M) Minor =	<b>15</b>
(A) Alert =	<b>21</b>
(S) Serious =	<b>8</b>
(C) Critical =	<b>2</b>
<b>TOTAL =</b>	<b>48</b>

## **Understanding Infrared Imagery**

Infrared imagery is often a picture or “thermograph” whose scales (or shades of color) represent the differences in emitted energy from the surface of an object. As a general rule, patterns in the image that are lighter in shade are warmer and darker patterns cooler. Unlike visible light imagery (0.4-0.7 micrometer wavelengths), objects observed using infrared imagers capture infrared wavelengths in the 3-5 and/or 8-14 micrometer range.

When an image is taken with an infrared camera, it is often recorded onto videotape and/or digitally saved to an on-board storage device. The image may be then modified in a number of ways to enhance its value to the end user. Image files are digitized, saved, then adjusted for color, contrast and brightness before being scaled and placed into a report file. The report is then printed in high quality and saved to a CD-ROM for the clients use.

### ***Delta-T Temperature Rating Criteria was used, shown below:***

<b>Rating</b>	<b>Temperature Rise F°</b>	<b>Recommendation</b>
<b>Minor</b>	<b>1-18 °F</b>	<b>Routine, Repair during regular maintenance, little chance of physical damage.</b>
<b>Alert</b>	<b>19-36 °F</b>	<b>Repair within 30 days, watch load and inspect for physical damage.</b>
<b>Serious</b>	<b>37-54 °F</b>	<b>Repair/Replace ASAP. Inspect surrounding components for physical damage.</b>
<b>Critical</b>	<b>55+ °F</b>	<b>Immediate repair/replace. Danger exists!</b>

## SECTION A: DATA LOG

AREA	LOCATION	TIME	NOTES
June 4, 2011	SURVEY BEGINS	10:30:00	
MAIN SWITCHGEAR ROOM (MSR)	Main Transformer Overview	10:38:30	
MSR/CHILLER #1	Starter Panel Overview	10:43:20	
MSR/CHILLER #2	Starter Panel Overview	10:45:18	
MSR/MAIN PANEL A	Main Switch/Fuses	10:47:03	CT Damaged
MSR/MAIN PANEL A	Main Disc/MCC-1	10:49:20	
MSR/MAIN PANEL A	Main Disc/Buss Duct C	10:50:46	
MSR/MAIN PANEL A	Main Disc/MCC-3	10:53:10	
MSR/MAIN PANEL A	Main Disc/MCC-1	10:58:10	
MSR/MAIN PANEL A	Main Disc/MCC-2	11:04:15	
MSR/MAIN PANEL B	Main Disc/Lighting Main	11:06:20	
MSR/MAIN PANEL B	Main Switch/Fuses	11:08:31	
MSR/MAIN PANEL B	Main Disc/Buss Duct A	11:11:00	
MSR/MAIN PANEL B	Main Disc/Circuit 10	11:15:05	
MSR/MAIN PANEL B	Main Disc/Chiller #1	11:17:00	Not Operating
MSR/MAIN PANEL B	Main Disc/Chiller #2	11:18:37	
MSR/MAIN PANEL B	Main Disc/Buss Duct B	11:20:15	
MSR/MAIN PANEL B	Main Disc/Buss Duct C	11:24:30	Not Used
MAIN MECH RM 1/MCC-1	Xformer/Panel EI-EI	11:30:07	
MAIN MECH RM 1/MCC-1	Comb Starter-EF/E9	11:32:25	
MAIN MECH RM 1/MCC-1	Comb Starter-RFE-2	11:34:15	
MAIN MECH RM 1/MCC-1	Comb Starter/CW Pump 1	0	Not Operating
MAIN MECH RM 1/MCC-1	Comb Starter/CW Pump 2	11:36:30	
MAIN MECH RM 1/MCC-1	Comb Starter/AHU E9	11:38:25	
MAIN MECH RM 1/MCC-1	Incoming Lines/Fuses/Switch	11:44:00	
MAIN MECH RM 1/MCC-2	Main Disconnect	11:47:00	
MAIN MECH RM 1/MCC-2	Incoming Lines/Fuses/Switch	11:49:00	
MAIN MECH RM 1/MCC-2	Disconnects Overview	11:51:00	
MAIN MECH RM 1/MCC-2	Transformer OV	11:53:00	
MAIN MECH RM 1/MCC-2	Panel Overview	11:55:45	
MAIN MECH RM 1/MCC-2	Panel/Breaker #6	11:55:45	
MAIN MECH RM 1/MCC-2	Panel Overview	11:57:07	
MAIN MECH RM 1/MCC-2	Transformer Disc-PR-1/PR-2	12:32:40	
MAIN MECH RM 1/MCC-2	PNL EDP7/Main Switch/Fuses	12:39:00	
MAIN MECH RM 1/MCC-2	PNL EDP7/Circuits 2-5	12:40:39	
MAIN MECH RM 1/MCC-2	PNL EDP7/Circuits 6-13	12:42:00	

# THERMOGRAPHIC REPORT # 1

**CLIENT:** Acme Widget  
Company

**AREA:** MSR/MAIN PANEL  
**LOCATION:** Main  
Disc/MCC-1

**DATE:** June 4, 2011  
**TIME:** 10:49:20 AM

**AMPERAGES:**

Phase A: 126  
Phase B: 129  
Phase C: 124

**Ambient Temp:** 80

*Reference Temperature*

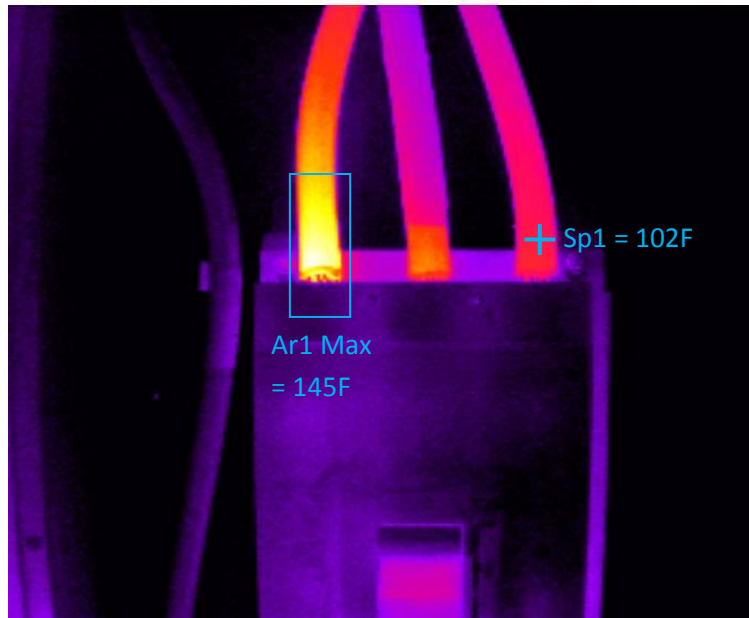
Sp1 = 102 °F

*High Temperature*

Ar1 = 145 °F

**Fault Rating = Serious**

Temperature Rise: 43°F



**DESCRIPTION:** Breaker Lug, Phase A, Line side is overheating.

**RECOMMENDATION:** Check Lug Connection

Rating	Temp. Rise in F°	Recommendation
MINOR	1-18	Routine, Repair during regular maintenance, little chance of physical damage.
ALERT	19-36	Repair within 30 days, watch load and inspect for physical damage.
<b>SERIOUS</b>	<b>37-54</b>	<b>Repair/Replace ASAP. Inspect surrounding components for physical damage.</b>
CRITICAL	55+	Immediate repair/replace. Danger exists!

**QUESTION ABOUT THIS REPORT? Call 1-888-722-6447**

**REPAIRED BY:**

**DATE:**