



*predictive maintenance specialists*

**Remote Thermal Inspection  
and  
Preventative Maintenance Program  
of  
*Electrical Distribution Panels*  
at  
Company Name  
  
*Date***

**INSPECTION PERFORMED BY:**

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Level II Thermographer (ITC)  
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**FOR ATTENTION:**

***Mr. name***

**Company Name**

## ***1. Standards and Procedures***

Faults are classified according to standards based on the temperature difference between the exception and acceptable reference. This method is a widely accepted norm from Thermal Inspection operators, both locally and abroad and is recognised by major Thermal Inspection Institutes in Europe and the USA. Different classification criteria do exist and may be used. Client specific classification criteria may also be agreed upon, but are mostly in use where specific design criteria and needs apply.

## ***2. Priority Classification***

These standards are most strictly adhered to and applied, although the clients responsible person's subjective interpretation as to equipment criticality, existing maintenance schedules, spares availability, etc., prevails.

<b>Prioirty Code</b>	<b>Temperature Range</b>	<b>Action</b>
0		Measurement pending
1	> 80 °C or $\Delta T > 30$ °C	Repair immediately
2	$\Delta T$ 21 - 30 °C	Schedule repair as soon as possible
3	$\Delta T$ 11 - 20 °C	Schedule repair during next shutdown
4	$\Delta T$ 6 - 10 °C	Inspect component at next opportunity
5	$\Delta T$ 6 °C	Recordable indication only
12		Unit / equipment offline
13		Inaccessible / Not Inspected
none		No fault was found

## ***3. Equipment Specification***

Camera Model	*****
Serial Number	*****
Calibration Date	*****
Calibration Site	*****
Calibration Requirements	*****

## ***4. Registration Details***

Mark Doubell      Level II Thermographer (ITC)

Whilst every effort is made to ensure accuracy we do not accept liability for errors or omissions in this report.

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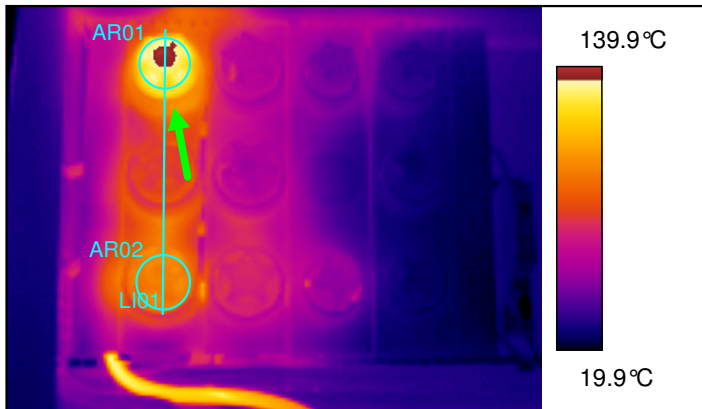
# Route Marking

Section	Equipment	Code
Metal Prep	Plasma Cutter Control Panels	IR_5
Substation 1	Power Factor Panel	IR_2
Coating	Main Distribution Panel - Panel No P1	none
Coating	Main Distribution Panel - Panel No P2	none
Coating	Main Distribution Panel - Panel No P3	none
Steri Amonia Room	Machine 10114 Motor	IR_40
Oven 2	OTX 2 Panel	none
Oven 2	Zone 8 Control Panel	none
Oven 2	Zone 7 Control Panel	none
Oven 2	Zone 6 Control Panel	none
Line 3	Dehidration Motor	IR_15
Factory	DB FAC - 1	none
Lab	Scrubber Control Panel	none
Mez Floor	A/C Control Panel	none
1st Floor Offices	UPS DB	none

Thermogram File Name

Ir\_0005.jpg

Photo and Identification

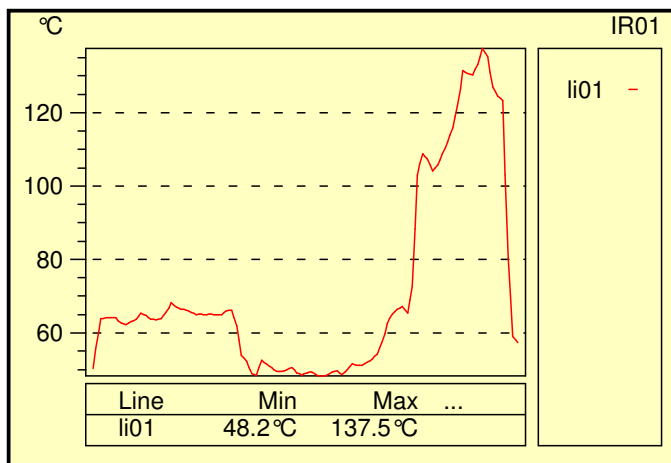


**Delta T**      **67.94**      **°C**

**Priority Classification:**  
**P1**

IR Text Comment	Value
Section	Metal Prep
Equipment	Plasma Cutter Panel No 4
Additional information	Fuse 11F1
Fault	Loose connection
Priority code	Priority No. 1

Label	Value
IR : max	138.9°C
IR : min	17.4°C
LI01 : max	137.5°C
AR01 : max	138.9°C
AR02 : max	71.0°C
ISO01	128.5°C



**Analysis & Recommended action:**

**WARNING:** Temperature exceeds 135°C

Heat radiates from the inside of the fuse holder, indicating that there is either a loose connection or that the fuse is faulty. Suggest that the fuse holder and fuse be replaced. The conductor has visible signs of melting. Replace the conductor or cut the conductor back and ensure that all the connections are clean and tight. **The temperature has increased by 34°C since the last inspection. This fault needs to be repaired immediately.**

Repaired by:.....

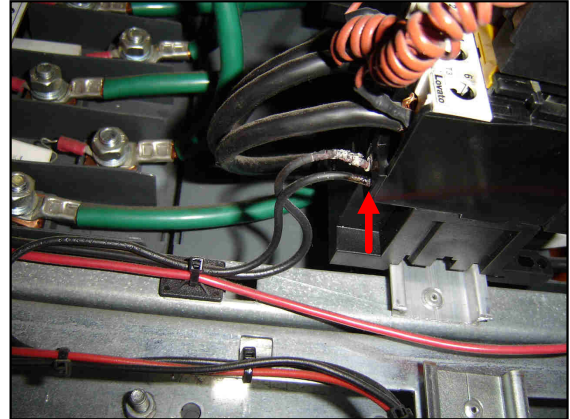
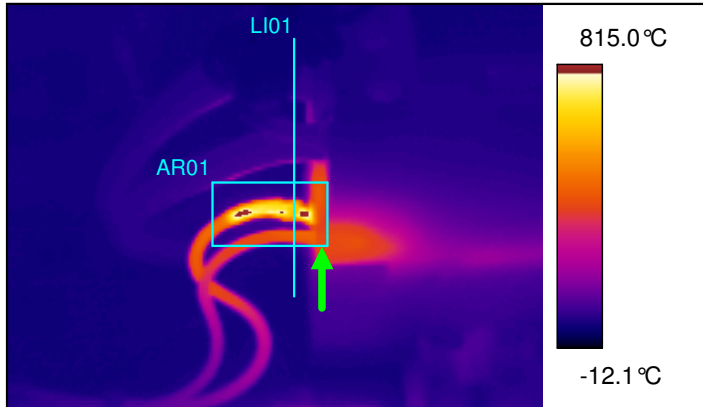
Comment:

Date:

Thermogram File Name

lr\_0002.jpg

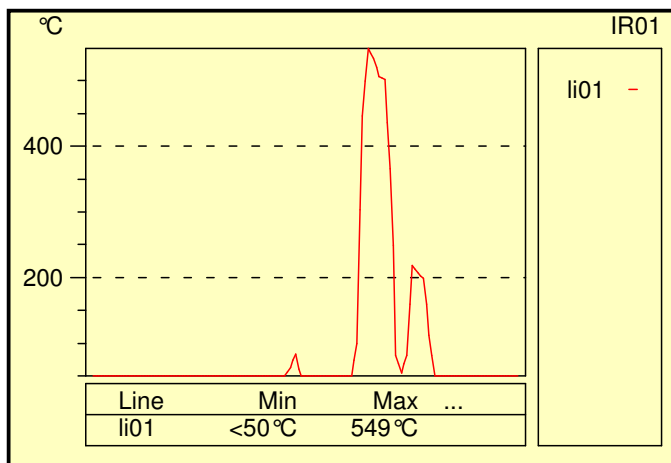
Photo and Identification



**Priority Classification:**  
**P1**

IR Text Comment	Value
Section	Substation 1
Equipment	Power Factor Panel
Additional information	Stage 5 Contactor
Fault	Loose connection
Priority code	Priority No. 1

Label	Value
IR : max	814°C
IR : min	<50°C
LI01 : max	549°C
AR01 : max	814°C
ISO01	770°C



**Analysis & Recommended action:**

**WARNING:** Temperature exceeds 810°C

Heat radiates from the neutral terminal feeding the coil of the contactor, indicating a loose connection. Replace the conductor as well as the contactor as both will be damaged due to the excessive heat. **This fault needs to be repaired immediately before the whole panel burns out.**

Repaired by:.....

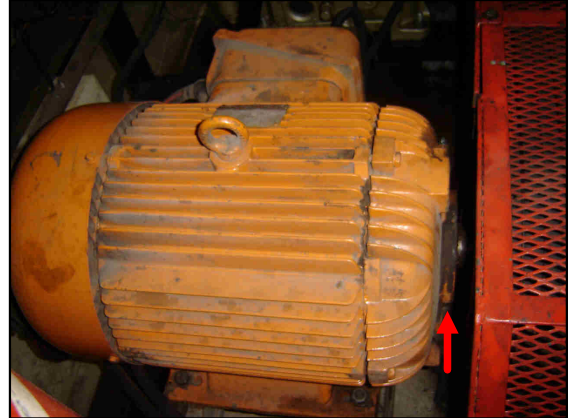
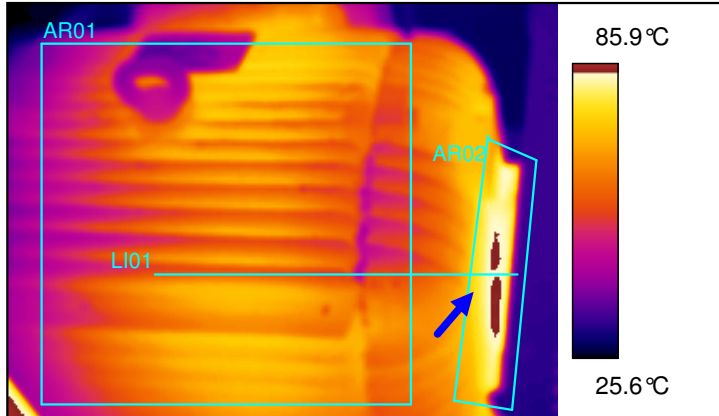
Comment:

Date:

## Thermogram File Name

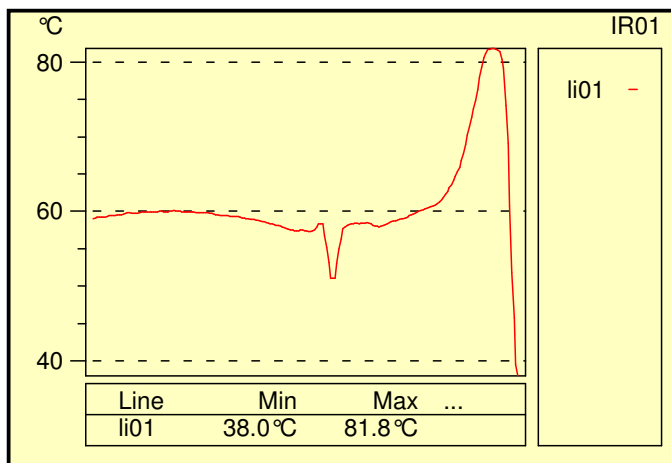
Ir\_0040.jpg

## Photo and Identification

**Priority Classification:**  
**P1**

IR Text Comment	Value
Section	Steri Amonia Room
Equipment	Machine 11014
Additional information	Motor
Fault	Faulty or Dry Bearing
Priority code	Priority No. 1

Label	Value
IR : max	84.9°C
IR : min	25.6°C
LI01 : max	81.8°C
AR01 : max	68.5°C
AR02 : max	82.9°C
ISO01	82.0°C

**Analysis & Recommended action:**

Heat radiates from the front of the motor where the bearing is, indicating that the bearing is either dry or faulty. Lubricate the bearing or replace it if necessary.

Repaired by:.....

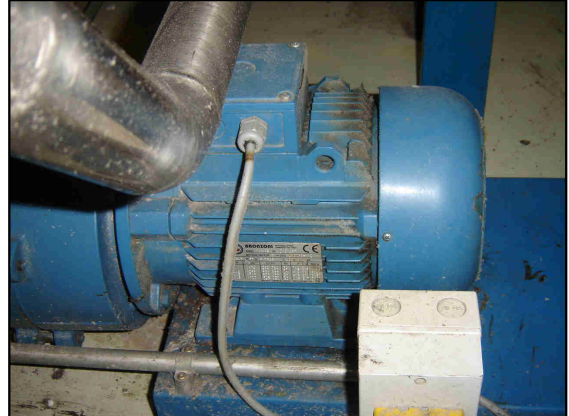
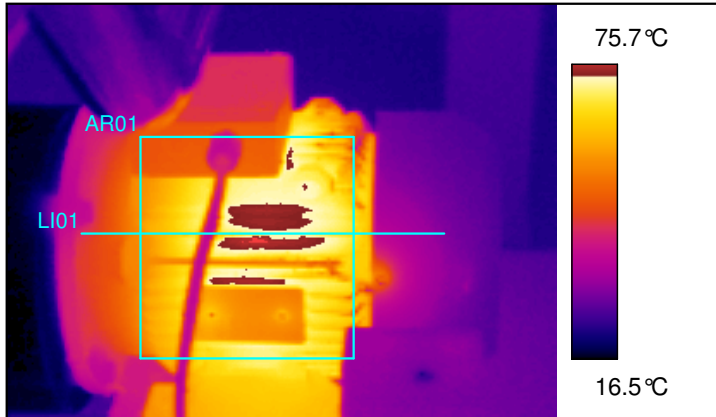
Comment:

Date:

**Thermogram File Name**

Ir\_0015.jpg

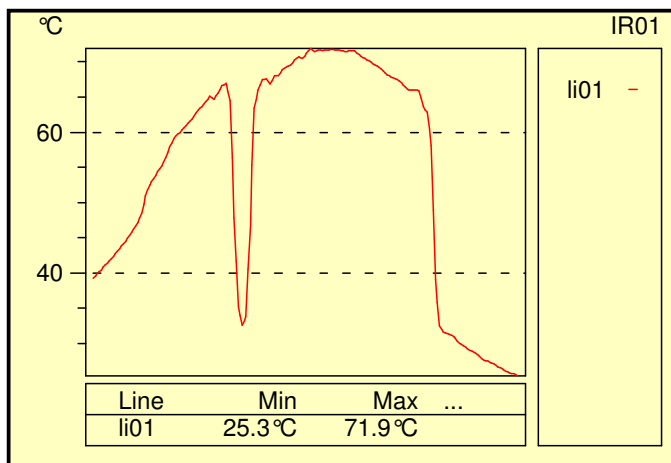
**Photo and Identification**



**Priority Classification:**  
**P2**

IR Text Comment	Value
Section	Line 3
Equipment	Dehydration
Additional information	Motor
Fault	Possible Overloaded Motor
Priority code	Priority No. 2

Label	Value
IR : max	76.0 °C
IR : min	16.4 °C
LI01 : max	71.9 °C
AR01 : max	76.0 °C
ISO01	72.7 °C



**Analysis & Recommended action:**

Heat radiates from the inside of the motor, indicating that the motor might be overloaded or there might be an internal fault. Ensure that the motor is of the correct size for the application. Replace or repair if necessary. **The temperature of the motor has increased by 24°C since the last inspection.**

Repaired by:.....

Comment:

Date:





## Summary of inspection

Section	Equipment	Priority
Metal Prep	Plasma Cutter Panel No 4	Priority No. 1
Substation 1	Power Factor Panel	Priority No. 1
Steri Amonia Room	Machine 11014	Priority No. 1
Line 3	Dehidration	Priority No. 2



## Analysis of thermal patterns and anomalies

**The thermal images may include one or more of the parameters:**

Emissivity	Refers to the emissivity of the specific object or objects.
Object distance	Refers to camera distance in meters from the specific object.
Ambient temperature	Refers to the ambient temperature of the environment.
Reference temperature	Refers to the reference temperature measured.

**The thermal images may include one or more of the following labels:**

IR : max	The maximum temperature within the thermal image.
IR : min	The minimum temperature within the thermal image.
AR01 - AR10	Refers to parameters with the specific area. - The area may be a circle, rectangle or poloygon.
AR01 - AR10 : max	The maximum temperature within the identified area.
AR01 - AR10 : min	The minimum temperature within the identified area.
AR01 - AR10 : max - min	The difference between the maximum and minimum temperature within the identified area.
AR01 - AR10 : avg	The average temperature within the identified area.
SP01 - SP30	The spot temperature of a specific point - Where 2 or more spot temperatures are used the difference between the spots are indicated in 'Diff' column.
ISO01 - ISO10	Isotherm: Analysis tool to determine the source of the heat radiation. - The isotherm range is also included.
LI01 - LI10 : max	The maximum temperature on the line.
LI01 - LI10 : min	The minimum temperature in the line.
LI01 - 10 : max-min	The difference between the maximum and minimum temperature.
Delta T: spot temp	Difference between the exception and acceptable reference.
Histogram	Visual display of temperature along the line or area (LI01 - LI10).
Scale	The maximum and minimum temperatures displayed.
Text	Descriptive text or indication.
Arrows	Arrows are used to identify anomalies.

**If we can be of any further assistance in interpreting your thermal images please do not hesitate to contact Bill Rankin or Mark Doubell at cellular number 082 659 2654.**



