

# TIMESHEET REPORT

CUSTOMER NAME AMBIENT CONTROLS LTD		SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER			SHEET NUMBER <b>08550</b>
SITE NAME & ADDRESS (PLANT OWNER F-GAS) RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT		ENGINEER STEVE ORLANDO	MATE CHARLIE ORLANDO		CLIENT ASSET NUMBER <b>01037</b>
REASON FOR VISIT COMPILE REPORT	MANUFACTURER GEOCLIMA	MODEL	TMA 2A440A EC LLN		
JOB NUMBER J/N: 2756. O/N: CHRIS WARD	SERIAL No. GEO1302016	YEAR INSTALLED	01/01/2013		
PLANT LOCATION ROOF HVAC PLANT AREA	REFRIGERANT TYPE R134A	TOTAL REF. CHARGE	154.5 KG		
PLANT REFERENCE CHILLER NO.2 (1037)	REFRIGERANT GWP 1430	IND. REF SYS. CHARGE	SINGLE SYSTEM		
LOADS SERVED BASE BUILD COMFORT COOLING LOADS	EQUIV. TONNES CO2E 220.935	FGAS LEAK CHECK FREQ.	HALF YEARLY		

WORK CARRIED OUT:

ATTENDED SITE TO CARRY OUT DILAPIDATION REPORT. ON ARRIVAL FOUND COMPRESSOR 1 ELECTRICALLY FAILED AND COMPRESSOR 2 MANUALLY LOCK OUT ON THE CONTROLLER.

CARRIED OUT INVESTIGATIONS ON COMPRESSOR 1, FOUND SOFT-START CARD WITH A BROKEN CAPACITOR AND BLOWN FAST BLOW FUSE. USED CARD FROM CHILLER 1 COMPRESSOR 1 AS THAT COMPRESSOR HAS A FAILED INVERTER CARD.

CARRIED OUT BEARING CALIBRATION, NONE HAVE BEEN CARRIED OUT SINCE JULY 2010 TO BOTH COMPRESSORS; SAVED TO EEPROM. DOWNLOADED FAULT LOGS OF BOTH COMPRESSORS.

RAN COMPRESSORS UP BUT LOW COOLING LOAD SO UNABLE TO GET BOTH COMPRESSORS TO 100%. CHECKED REFRIGERANT CHARGE ALL OK.

LOOKED AT COMPRESSOR 2 AND TO THE REASON WHY IT WAS LOCKED OFF ON KEYPAD. FOUND SOME BMCC CARD OVERTEMPERATURE FAULTS. RAN UP COMPRESSOR UNABLE TO FAULT OPERATION. LEFT COMPRESSOR AVAILABLE; KEEP UNDER OBSERVATION.

RECOMMENDATIONS:

- \* RECOMMEND INSTALLING ELECTRICAL HEATER WITHIN COMPRESSOR ENCLOSURE TO STOP REFRIGERANT MIGRATION IN COMPRESSORS.
- \* KEEP COMPRESSOR 2 BMCC TEMPERATURE TRIPS UNDER OBSERVATION.
- \* CHEMICAL CLEAN CONDENSER COIL HEAT EXCHANGER.
- \* PRESSURE RELIEF VALVES OUT OF CERTIFICATION, REPLACEMENTS REQUIRED.

ENGINEERS TIME ON SITE & TRAVEL									MATERIALS USED	
DAY	DATE	START	FINISH	TRAVEL	TOTAL	COMPLETE Y/N	MILEAGE	No. ENG	QUANTITY	DESCRIPTION
MON										
TUES										
WED										
THUR										
FRI	06/11/2019			1.5	5	Y	45	1		
SAT										
SUN										

CUSTOMER TO SIGN FOR ENGINEERS TIME ON SITE

ENGINEER SIGNATURE: 

CUSTOMERS SIGNATURE: \_\_\_\_\_

F-GAS QUALIFICATION: C&G 2079 PART 1

CUSTOMER NAME: BRUCE GARDENER

SIGNATURE DATE: 06/11/2019

CUSTOMERS JOB TITLE: SITE ENGINEER

ADDITIONAL WORKS RECOMMENDED / REQUIRED:

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ISO9001:2008. CUSTOMER SATISFACTION: 1 = UNSATISFIED 2 = BELOW AVERAGE 3 = MET EXPECTATION 4 = ABOVE AVERAGE 5 = EXCELLENT

CUSTOMER COMMENTS ABOUT PERFORMANCE ON THIS JOB / CONTRACT:

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## F-GAS & BOTTLE LOG

CUSTOMER NAME AMBIENT CONTROLS LTD					SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER		SHEET NUMBER <span style="color: red; font-size: 1.2em;">08550</span>	
SITE NAME & ADDRESS (PLANT OWNER F-GAS) RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT					ENGINEER STEVE ORLANDO	QUALIFICATION C&G 2079 PART 1	CLIENT ASSET NUMBER <span style="color: blue; font-size: 1.2em;">01037</span>	
MANUFACTURER GEOCLIMA	MODEL TMA 2A440A EC LLN	SERIAL GEO1302016	DATE INSTALLED 01/01/2013	PLANT REFERENCE CHILLER NO.2 (1037)				
REFRIG TYPE R134A	TOT. REFRIG CHR.G. 154.5 KG	INDIVIDUAL SYS. REF. CHARGE SINGLE SYSTEM	REFRIG GWP 1430	EQUIV. TONNES CO2e 220.935	F-GAS LEAK CHECK FREQ. HALF YEARLY	CLG LOAD SERVED BASE BUILD COMFORT COOLING LOADS		

### VIRGIN REFRIGERANT BOTTLE LOG (KG)

DATE RECEIVED	DELIVERY NOTE NUMBER	BOTTLE NUMBER	SUPPLIER	REFRIGERANT	BOTTLE TYPE	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT	NET USED	DATE RETURNED	RETURNS NOTE NUMBER

### RECOVERY BOTTLE LOG (KG)

DATE RECEIVED	DELIVERY NOTE NUMBER	BOTTLE NUMBER	SUPPLIER	REFRIGERANT	RECOVERY TYPE	TARE WEIGHT	RECOVERED NET	RECOVERED USED	GROSS WEIGHT	DATE RETURNED	WASTE TRANSFER NOTE

### F-GAS REFRIGERATION LOG RECORD

#### REFRIGERANT ADDITIONS

DATE	ENGINEER	AMOUNT ADDED (KG)	REASON FOR ADDITION

#### REFRIGERANT REMOVALS

DATE	ENGINEER	AMOUNT REMOVED (KG)	REASON FOR REMOVAL

#### REFRIGERANT LEAK TEST

DATE	ENGINEER	TEST RESULT	FOLLOW UP ACTIONS REQUIRED
06/11/2019	STEVE ORLANDO	PASS	ELECTRONIC REFRIGERANT LEAK DETECTION AND RUN LOAD CHECK

#### FOLLOW UP ACTIONS

DATE	ENGINEER	RELATED TO TEST ON	ACTIONS TAKEN

#### TESTING AUTOMATIC LEAK DETECTION SYSTEM (IF FITTED)

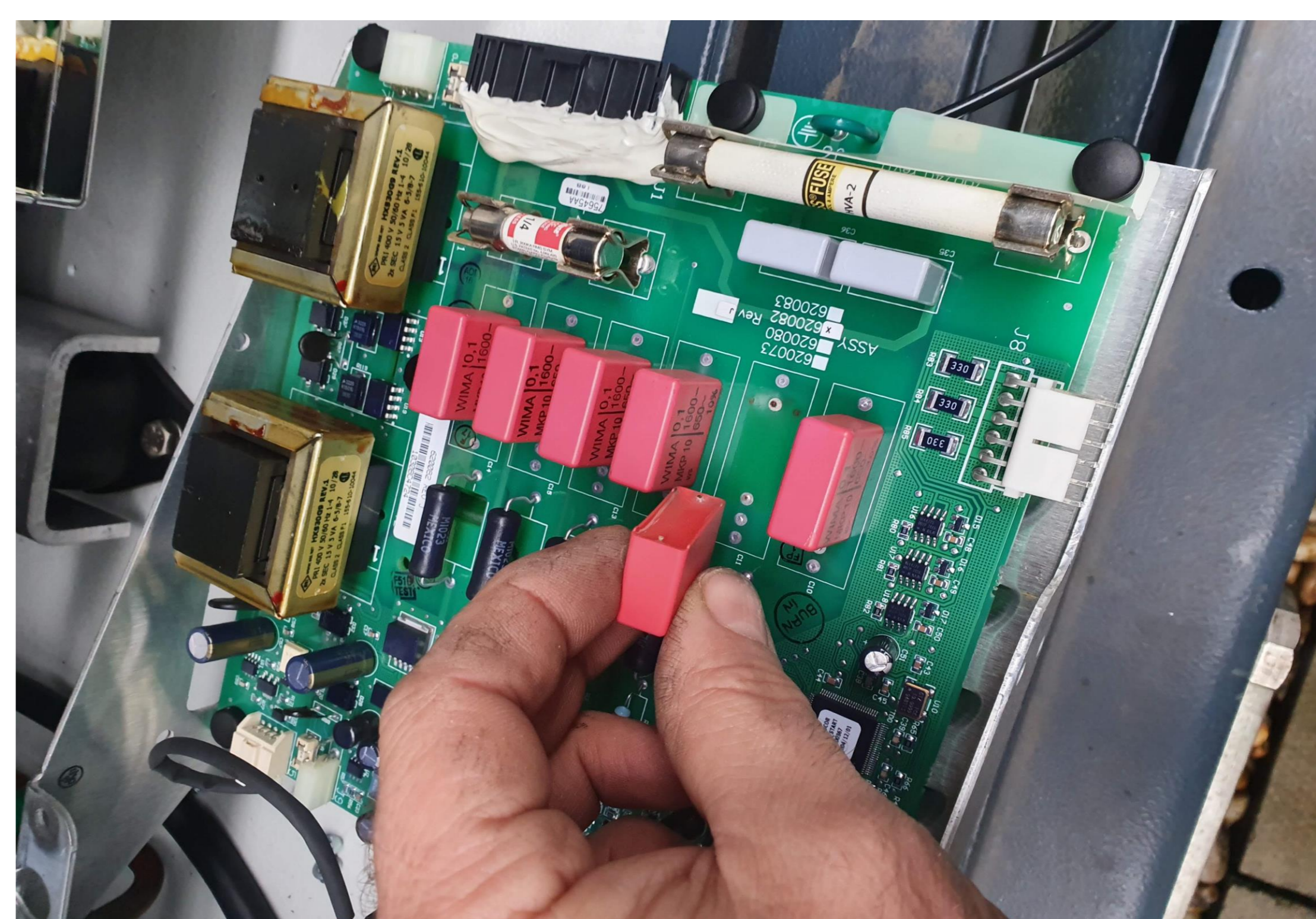
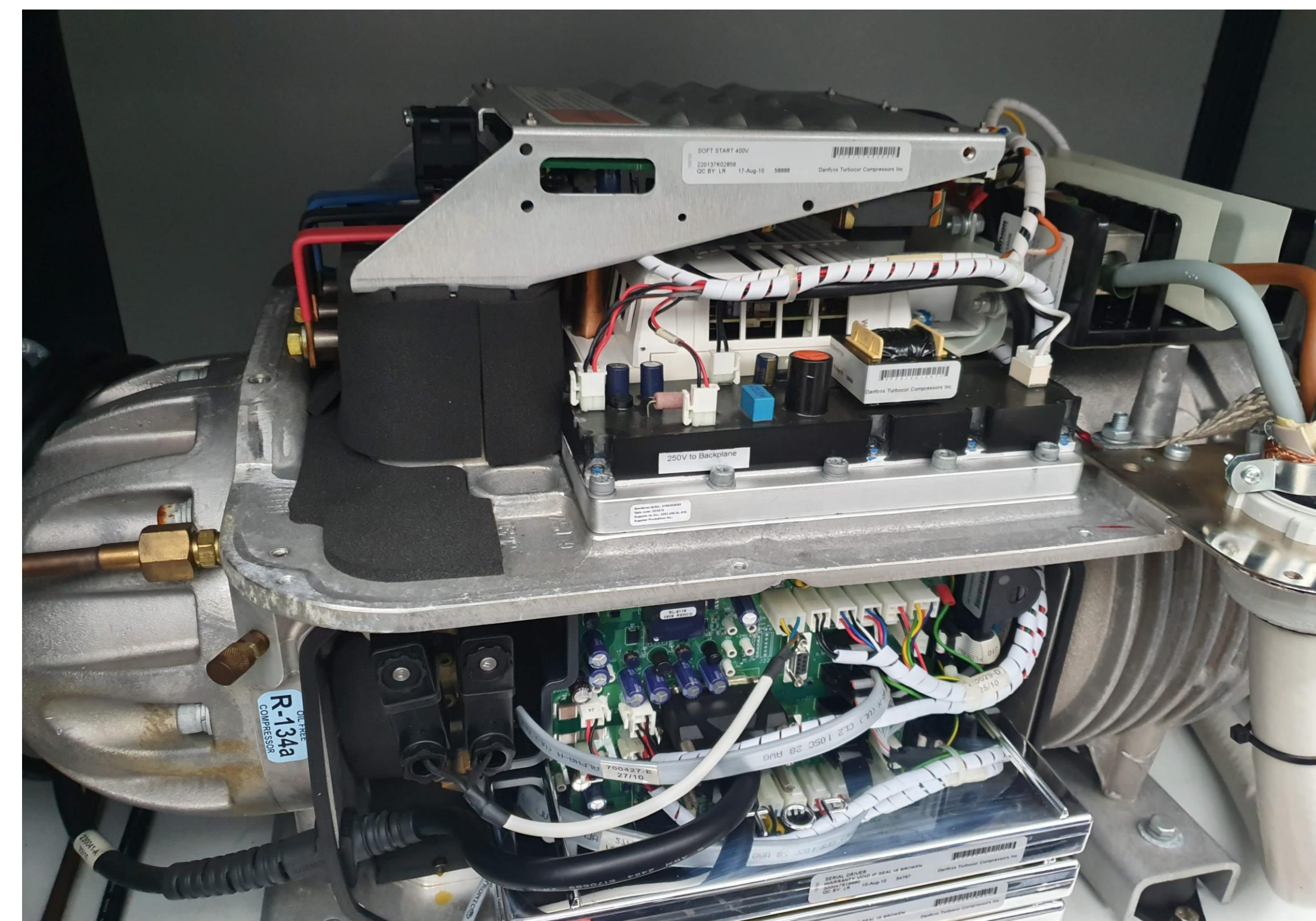
DATE	ENGINEER	TEST RESULT	COMMENTS



## LOG - SITE DATA CAPTURE

CUSTOMER NAME AMBIENT CONTROLS LTD		SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER		SHEET NUMBER <b>08550</b>	
SITE NAME & ADDRESS RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT		ENGINEER STEVE ORLANDO	F-GAS QUALIFICATION C&G 2079 PART 1		CLIENT ASSET NUMBER <b>01037</b>
REASON FOR VISIT COMPILE REPORT	MANUFACTURER GEOCLIMA	MODEL TMA 2A440A EC LLN			
JOB NUMBER J/N: 2756. O/N: CHRIS WARD	SERIAL No. GEO1302016	YEAR INSTALLED 01/01/2013			
PLANT LOCATION ROOF HVAC PLANT AREA	REFRIGERANT TYPE R134A	QUANTITY (KG) 154.5 KG			
PLANT REFERENCE CHILLER NO.2 (1037)	CLG LOAD SERVED BASE BUILD COMFORT COOLING LOADS				

### CONTROLLER LOG CAPTURE



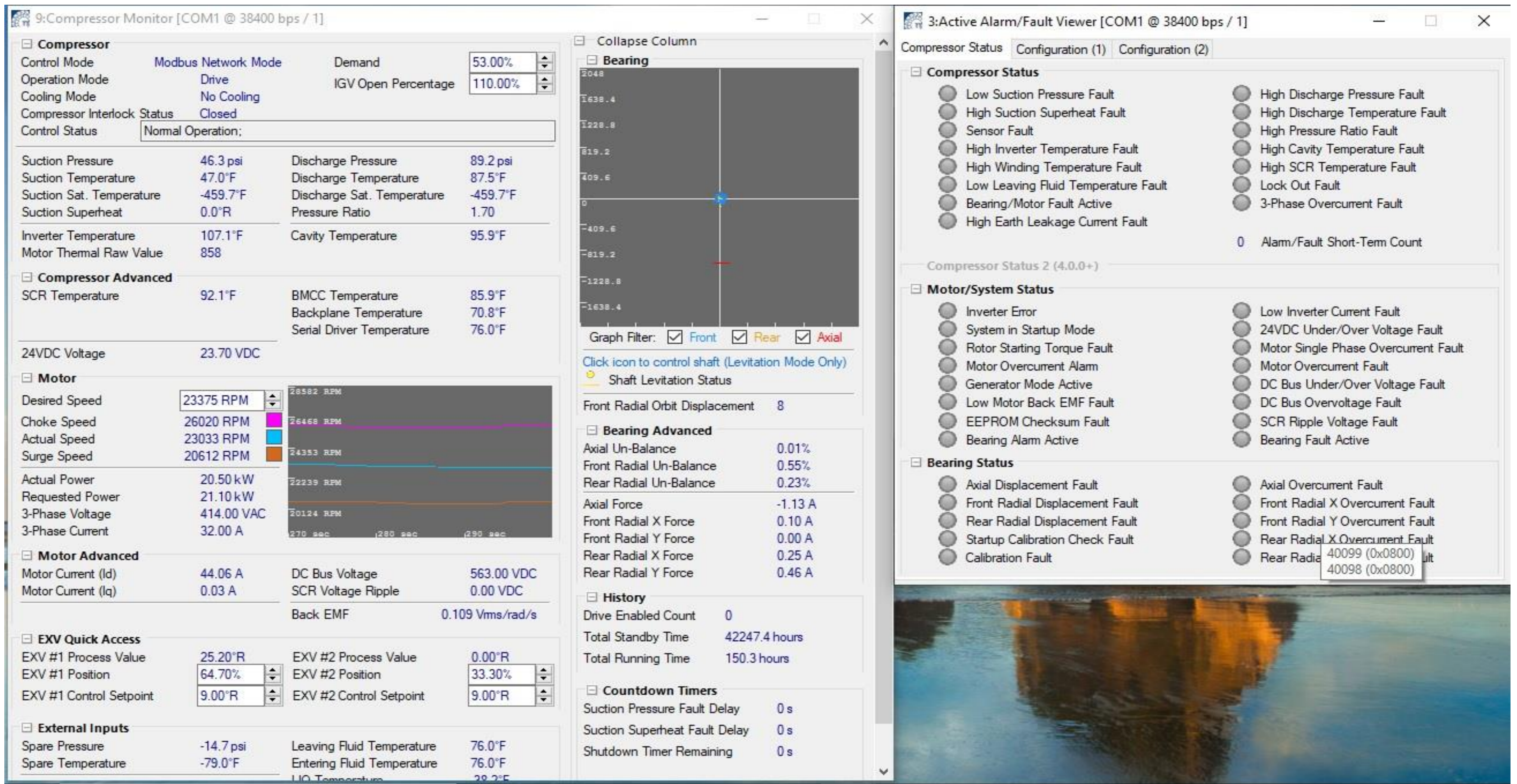


# LOG - SITE DATA CAPTURE

CUSTOMER NAME AMBIENT CONTROLS LTD		SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER		SHEET NUMBER <b>08550</b>
SITE NAME & ADDRESS RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT		ENGINEER STEVE ORLANDO	CLIENT ASSET NUMBER <b>01037</b>	
REASON FOR VISIT COMPILE REPORT	MANUFACTURER GEOCLIMA	MODEL TMA 2A440A EC LLN		
JOB NUMBER J/N: 2756. O/N: CHRIS WARD	SERIAL No. GEO1302016	YEAR INSTALLED 01/01/2013		
PLANT LOCATION ROOF HVAC PLANT AREA	REFRIGERANT TYPE R134A	QUANTITY (KG) 154.5 KG		
PLANT REFERENCE CHILLER NO.2 (1037)	CLG LOAD SERVED BASE BUILD COMFORT COOLING LOADS			

## RUN LOG CAPTURE

### COMPRESSOR 1 RUN LOG



**Compressor Monitor [COM1 @ 38400 bps / 1]**

**Compressor**  
Control Mode: Modbus Network Mode  
Operation Mode: Drive  
Cooling Mode: No Cooling  
Compressor Interlock Status: Closed  
Control Status: Normal Operation

**Compressor Advanced**  
Suction Pressure: 46.3 psi | Discharge Pressure: 89.2 psi  
Suction Temperature: 47.0°F | Discharge Temperature: 87.5°F  
Suction Sat. Temperature: -459.7°F | Discharge Sat. Temperature: -459.7°F  
Suction Superheat: 0.0°R | Pressure Ratio: 1.70  
Inverter Temperature: 107.1°F | Cavity Temperature: 95.9°F  
Motor Thermal Raw Value: 858

**Motor**  
Desired Speed: 23375 RPM  
Choke Speed: 26020 RPM  
Actual Speed: 23033 RPM  
Surge Speed: 20612 RPM

**Motor Advanced**  
Actual Power: 20.50 kW | Requested Power: 21.10 kW  
3-Phase Voltage: 414.00 VAC  
3-Phase Current: 32.00 A

**EXV Quick Access**  
EXV #1 Process Value: 25.20°R | EXV #2 Process Value: 0.00°R  
EXV #1 Position: 64.70% | EXV #2 Position: 33.30%  
EXV #1 Control Setpoint: 9.00°R | EXV #2 Control Setpoint: 9.00°R

**External Inputs**  
Spare Pressure: -14.7 psi | Leaving Fluid Temperature: 76.0°F  
Spare Temperature: -79.0°F | Entering Fluid Temperature: 76.0°F

**Compressor Status**  
Demand: 53.00%  
IGV Open Percentage: 110.00%

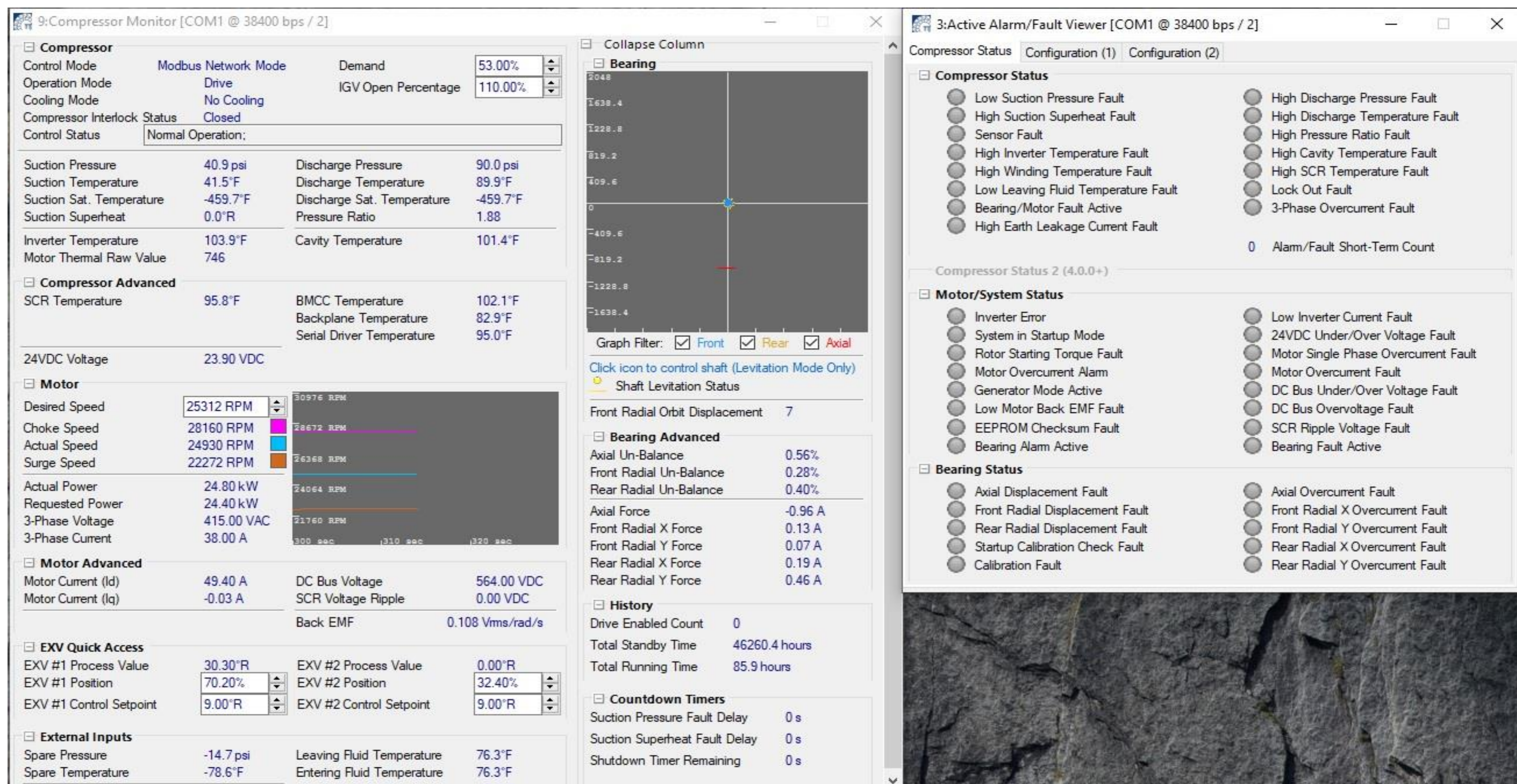
**Compressor Status 2 (4.0.0+)**  
Compressor Status:  
 Low Suction Pressure Fault  
 High Suction Superheat Fault  
 Sensor Fault  
 High Inverter Temperature Fault  
 High Winding Temperature Fault  
 Low Leaving Fluid Temperature Fault  
 Bearing/Motor Fault Active  
 High Earth Leakage Current Fault  
 High Discharge Pressure Fault  
 High Discharge Temperature Fault  
 High Pressure Ratio Fault  
 High Cavity Temperature Fault  
 High SCR Temperature Fault  
 Lock Out Fault  
 3-Phase Overcurrent Fault  
 0 Alarm/Fault Short-Term Count

**Motor/System Status**  
 Inverter Error  
 System in Startup Mode  
 Rotor Starting Torque Fault  
 Motor Overcurrent Alarm  
 Generator Mode Active  
 Low Motor Back EMF Fault  
 EEPROM Checksum Fault  
 Bearing Alarm Active  
 Low Inverter Current Fault  
 24VDC Under/Over Voltage Fault  
 Motor Single Phase Overcurrent Fault  
 Motor Overcurrent Fault  
 DC Bus Under/Over Voltage Fault  
 DC Bus Overvoltage Fault  
 SCR Ripple Voltage Fault  
 Bearing Fault Active

**Bearing Status**  
 Axial Displacement Fault  
 Front Radial Displacement Fault  
 Rear Radial Displacement Fault  
 Startup Calibration Check Fault  
 Calibration Fault  
 Axial Overcurrent Fault  
 Front Radial X Overcurrent Fault  
 Front Radial Y Overcurrent Fault  
 Rear Radial X Overcurrent Fault  
 Rear Radial Y Overcurrent Fault

**Graphs:**  
 - **Bearing:** Graph showing Front, Rear, and Axial displacement over time. Front Radial Orbit Displacement: 8.  
 - **Bearing Advanced:** Axial Un-Balance: 0.01%, Front Radial Un-Balance: 0.55%, Rear Radial Un-Balance: 0.23%.  
 - **History:** Drive Enabled Count: 0, Total Standby Time: 42247.4 hours, Total Running Time: 150.3 hours.  
 - **Countdown Timers:** Suction Pressure Fault Delay: 0s, Suction Superheat Fault Delay: 0s, Shutdown Timer Remaining: 0s.

### COMPRESSOR 2 RUN LOG



**Compressor Monitor [COM1 @ 38400 bps / 2]**

**Compressor**  
Control Mode: Modbus Network Mode  
Operation Mode: Drive  
Cooling Mode: No Cooling  
Compressor Interlock Status: Closed  
Control Status: Normal Operation

**Compressor Advanced**  
Suction Pressure: 40.9 psi | Discharge Pressure: 90.0 psi  
Suction Temperature: 41.5°F | Discharge Temperature: 89.9°F  
Suction Sat. Temperature: -459.7°F | Discharge Sat. Temperature: -459.7°F  
Suction Superheat: 0.0°R | Pressure Ratio: 1.88  
Inverter Temperature: 103.9°F | Cavity Temperature: 101.4°F  
Motor Thermal Raw Value: 746

**Motor**  
Desired Speed: 25312 RPM  
Choke Speed: 28160 RPM  
Actual Speed: 24930 RPM  
Surge Speed: 22272 RPM

**Motor Advanced**  
Actual Power: 24.80 kW | Requested Power: 24.40 kW  
3-Phase Voltage: 415.00 VAC  
3-Phase Current: 38.00 A

**EXV Quick Access**  
EXV #1 Process Value: 30.30°R | EXV #2 Process Value: 0.00°R  
EXV #1 Position: 70.20% | EXV #2 Position: 32.40%  
EXV #1 Control Setpoint: 9.00°R | EXV #2 Control Setpoint: 9.00°R

**External Inputs**  
Spare Pressure: -14.7 psi | Leaving Fluid Temperature: 76.3°F  
Spare Temperature: -78.6°F | Entering Fluid Temperature: 76.3°F

**Compressor Status**  
Demand: 53.00%  
IGV Open Percentage: 110.00%

**Compressor Status 2 (4.0.0+)**  
Compressor Status:  
 Low Suction Pressure Fault  
 High Suction Superheat Fault  
 Sensor Fault  
 High Inverter Temperature Fault  
 High Winding Temperature Fault  
 Low Leaving Fluid Temperature Fault  
 Bearing/Motor Fault Active  
 High Earth Leakage Current Fault  
 High Discharge Pressure Fault  
 High Discharge Temperature Fault  
 High Pressure Ratio Fault  
 High Cavity Temperature Fault  
 High SCR Temperature Fault  
 Lock Out Fault  
 3-Phase Overcurrent Fault  
 0 Alarm/Fault Short-Term Count

**Motor/System Status**  
 Inverter Error  
 System in Startup Mode  
 Rotor Starting Torque Fault  
 Motor Overcurrent Alarm  
 Generator Mode Active  
 Low Motor Back EMF Fault  
 EEPROM Checksum Fault  
 Bearing Alarm Active  
 Low Inverter Current Fault  
 24VDC Under/Over Voltage Fault  
 Motor Single Phase Overcurrent Fault  
 Motor Overcurrent Fault  
 DC Bus Under/Over Voltage Fault  
 DC Bus Overvoltage Fault  
 SCR Ripple Voltage Fault  
 Bearing Fault Active

**Bearing Status**  
 Axial Displacement Fault  
 Front Radial Displacement Fault  
 Rear Radial Displacement Fault  
 Startup Calibration Check Fault  
 Calibration Fault  
 Axial Overcurrent Fault  
 Front Radial X Overcurrent Fault  
 Front Radial Y Overcurrent Fault  
 Rear Radial X Overcurrent Fault  
 Rear Radial Y Overcurrent Fault

**Graphs:**  
 - **Bearing:** Graph showing Front, Rear, and Axial displacement over time. Front Radial Orbit Displacement: 7.  
 - **Bearing Advanced:** Axial Un-Balance: 0.56%, Front Radial Un-Balance: 0.28%, Rear Radial Un-Balance: 0.40%.  
 - **History:** Drive Enabled Count: 0, Total Standby Time: 46260.4 hours, Total Running Time: 85.9 hours.  
 - **Countdown Timers:** Suction Pressure Fault Delay: 0s, Suction Superheat Fault Delay: 0s, Shutdown Timer Remaining: 0s.



# LOG - TURBOCOR COMP.1

CUSTOMER NAME	SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE)		SHEET NUMBER
AMBIENT CONTROLS LTD	BRUCE GARDENER	SITE ENGINEER	<b>08550</b>
SITE NAME & ADDRESS	ENGINEER	STEVE ORLANDO	CLIENT ASSET NUMBER
RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT	F-GAS QUALIFICATION	C&G 2079 PART 1	<b>01037</b>
REASON FOR VISIT	MANUFACTURER	GEOCLIMA	MODEL
COMPILE REPORT			TMA 2A440A EC LLN
JOB NUMBER	SERIAL No.	GEO1302016	YEAR INSTALLED
J/N: 2756. O/N: CHRIS WARD			01/01/2013
PLANT LOCATION	REFRIGERANT TYPE	R134A	QUANTITY (KG)
ROOF HVAC PLANT AREA			154.5 KG
PLANT REFERENCE	CLG LOAD SERVED	BASE BUILD COMFORT COOLING LOADS	
CHILLER NO.2 (1037)			

## TURBOCOR COMPRESSOR 1 BEARING CALIBRATION - PAGE 1 OF 2.

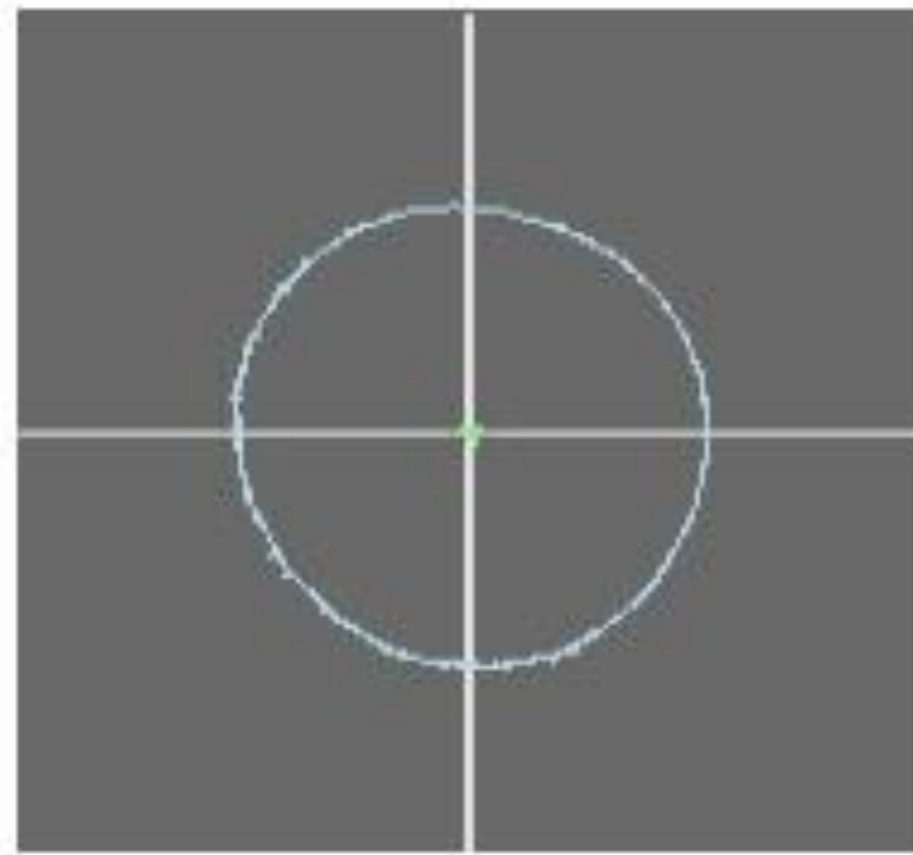


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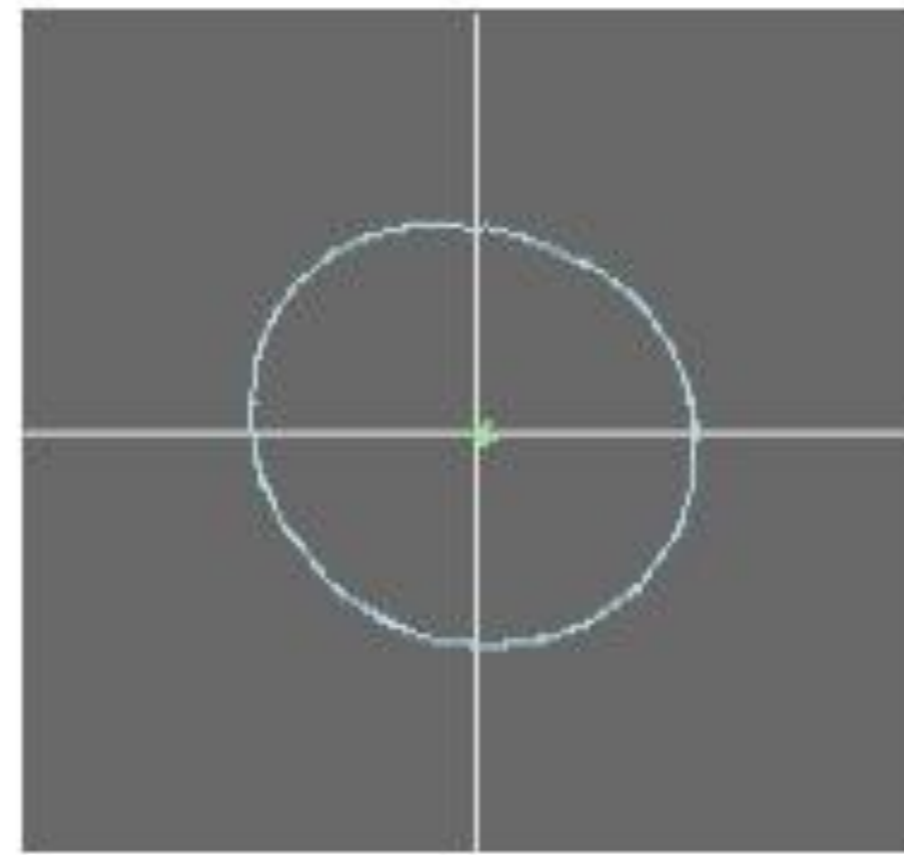
### TT Service Monitoring Tools - Calibration Report

DSP Serial Number	57458-42003-0	Housing #	1-1-160
Software Part Number	170429	Configuration Revision	137
BMC Version	2.2.2826	CC Version	2.2.1196
Access Level	OEM		
SMT Version	3.3.1 (Production Release)		
SMT Build Time	11/20/2018 04:52:44 PM (ET)		

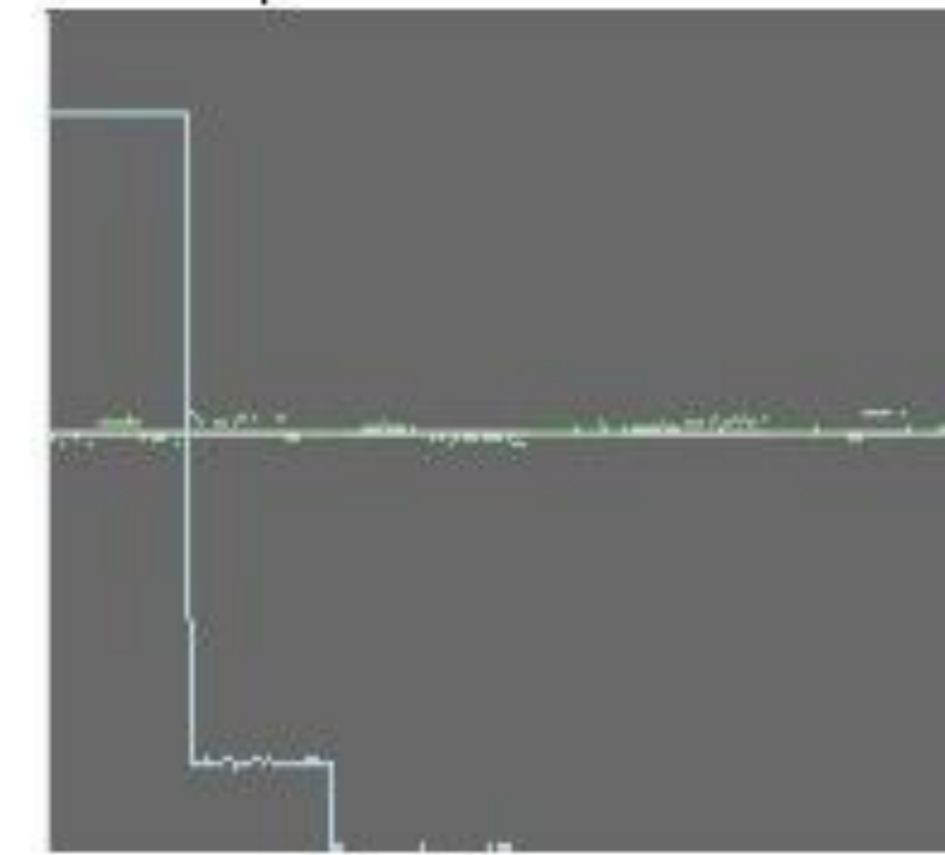
Front Radial Offset



Rear Radial Offset



Axial Displacement



### Stored Calibration (06/12/2019 08:56:06)

	Gain	Hardware Offset	Software Offset	Min	Max
Front Radial X	1.89	0.60 VDC	-0.01 VDC	-0.88 VDC	0.87 VDC
Front Radial Y	1.78	-0.52 VDC	-0.02 VDC	-0.94 VDC	0.91 VDC
Rear Radial X	1.99	-0.63 VDC	-0.02 VDC	-0.85 VDC	0.81 VDC
Rear Radial Y	1.95	-0.41 VDC	0.00 VDC	-0.85 VDC	0.84 VDC
Axial	1.29	-0.02 VDC	-0.01 VDC	-1.28 VDC	1.27 VDC

### Latest Calibration (06/12/2019 08:54:47)

	Gain	Hardware Offset	Software Offset	Min	Max
Front Radial X	1.89	0.60 VDC	-0.01 VDC	-0.88 VDC	0.87 VDC
Front Radial Y	1.78	-0.52 VDC	-0.02 VDC	-0.94 VDC	0.91 VDC
Rear Radial X	1.99	-0.63 VDC	-0.02 VDC	-0.85 VDC	0.81 VDC
Rear Radial Y	1.95	-0.41 VDC	0.00 VDC	-0.85 VDC	0.84 VDC
Axial	1.29	-0.02 VDC	-0.01 VDC	-1.28 VDC	1.27 VDC

### Comments

- 2019-12-06 08.46.25: Calibration Started
- 2019-12-06 08.47.31: Calibration Complete
- 2019-12-06 08.47.31: Front X Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 08.47.31: Front Y Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 08.47.31: Rear X Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 08.47.31: Rear Y Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 08.47.31: Axial Force Current Min: -2.29 A, Max: 2.26 A

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## LOG - TURBOCOR COMP.1

CUSTOMER NAME AMBIENT CONTROLS LTD		SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER			SHEET NUMBER <b>08550</b>
SITE NAME & ADDRESS RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT		ENGINEER STEVE ORLANDO	F-GAS QUALIFICATION C&G 2079 PART 1		CLIENT ASSET NUMBER <b>01037</b>
REASON FOR VISIT COMPILE REPORT	MANUFACTURER GEOCLIMA	MODEL TMA 2A440A EC LLN			
JOB NUMBER J/N: 2756. O/N: CHRIS WARD	SERIAL No. GEO1302016	YEAR INSTALLED 01/01/2013			
PLANT LOCATION ROOF HVAC PLANT AREA	REFRIGERANT TYPE R134A	QUANTITY (KG) 154.5 KG			
PLANT REFERENCE CHILLER NO.2 (1037)	CLG LOAD SERVED BASE BUILD COMFORT COOLING LOADS				

### TURBOCOR COMPRESSOR 1 BEARING CALIBRATION - PAGE 2 OF 2.



#### TT Service Monitoring Tools - Calibration Report

- 2019-12-06 08.47.46: Calibration committed to EEPROM
- 2019-12-06 08.47.51: Validation Start
- 2019-12-06 08.47.51: Validating Latest Calibration values
- 2019-12-06 08.48.06: Validation Complete

#### Validation Results (2019-12-06 08.47.51)

Result	Test Description
Good	Axial Gain Range (actual = 1.29, max = 16, min = 1)
Good	Front Radial X Gain Range (actual = 1.89, max = 16, min = 1)
Good	Front Radial Y Gain Range (actual = 1.78, max = 16, min = 1)
Good	Rear Radial X Gain Range (actual = 1.99, max = 16, min = 1)
Good	Rear Radial Y Gain Range (actual = 1.95, max = 16, min = 1)
Good	Comparison (Stored vs. Latest): Axial Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Front Radial X Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Front Radial Y Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Rear Radial X Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Rear Radial Y Gain (actual difference = 0%; max = 30%)
Good	Axial total offset change (Software change-Hardware change) (actual = 0.00 VDC; max = 0.3 VDC; min = -0.3 VDC)
Good	Front Radial X total offset change (Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Front Radial Y total offset change (Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Rear Radial X total offset change (Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Rear Radial Y total offset change (Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Mean Front Radial X Force Current (actual = 0.31 A; max = 1.5 A; min = -1.5 A)
Good	Mean Front Radial Y Force Current (actual = 0.11 A; max = 1.5 A; min = -1.5 A)
Good	Mean Front Radial Average Displacement (actual = 7.46; max = 75)
Good	Peak Front Radial Average Displacement (actual = 14.00; max = 100)
Good	Mean Rear Radial X Force Current (actual = 0.30 A; max = 1.5 A; min = -1.5 A)
Good	Mean Rear Radial Y Force Current (actual = 0.41 A; max = 1.5 A; min = -1.5 A)
Good	Mean Rear Radial Average Displacement (actual = 0.00; max = 75)
Good	Peak Rear Radial Average Displacement (actual = 0.00; max = 100)
Good	Mean Axial Displacement Current (actual = -0.84 A; max = 2 A; min = -2 A)

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## LOG - TURBOCOR COMP.2

CUSTOMER NAME AMBIENT CONTROLS LTD		SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER		SHEET NUMBER <b>08550</b>
SITE NAME & ADDRESS RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT		ENGINEER STEVE ORLANDO	CLIENT ASSET NUMBER <b>01037</b>	
REASON FOR VISIT COMPILE REPORT	MANUFACTURER GEOCLIMA	MODEL TMA 2A440A EC LLN		
JOB NUMBER J/N: 2756. O/N: CHRIS WARD	SERIAL No. GEO1302016	YEAR INSTALLED 01/01/2013		
PLANT LOCATION ROOF HVAC PLANT AREA	REFRIGERANT TYPE R134A	QUANTITY (KG) 154.5 KG		
PLANT REFERENCE CHILLER NO.2 (1037)	CLG LOAD SERVED BASE BUILD COMFORT COOLING LOADS			

### TURBOCOR COMPRESSOR 2 BEARING CALIBRATION - PAGE 1 OF 2.

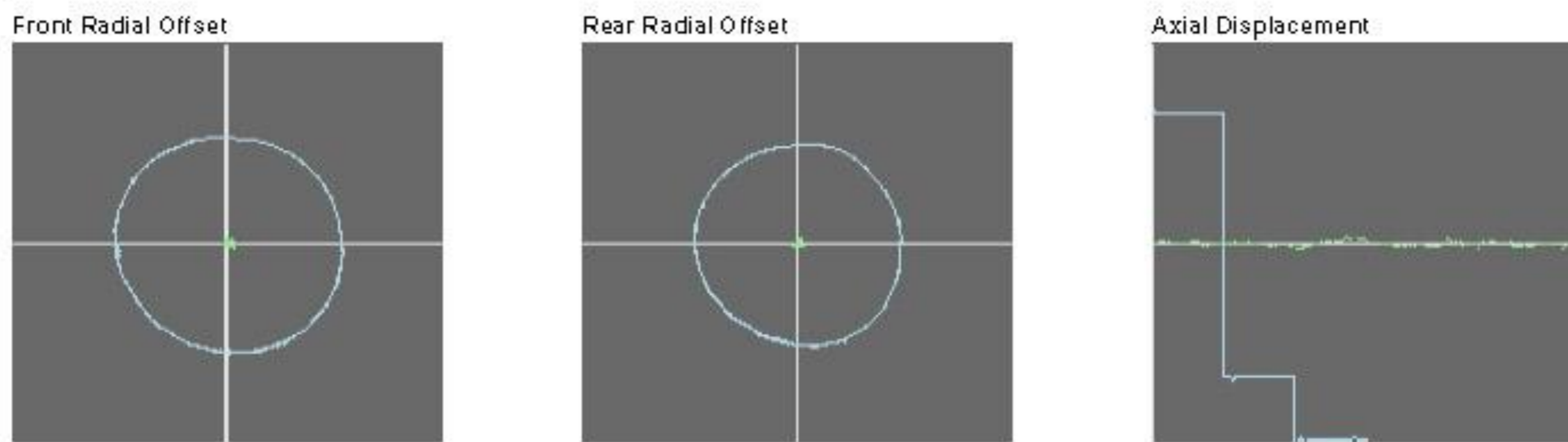


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#### TT Service Monitoring Tools - Calibration Report

DSP Serial Number	55143-52755-0	Housing #	1-1-160
Software Part Number	170429	Configuration Revision	137
BMC Version	2.2.2826	CC Version	2.2.1196
Access Level	OEM		

SMT Version	3.3.1 (Production Release)
SMT Build Time	11/20/2018 04:52:44 PM (ET)



#### Stored Calibration (06/12/2019 09:27:47)

	Gain	Hardware Offset	Software Offset	Min	Max
Front Radial X	1.85	0.38 VDC	0.00 VDC	-0.89 VDC	0.89 VDC
Front Radial Y	1.81	-0.15 VDC	-0.01 VDC	-0.92 VDC	0.90 VDC
Rear Radial X	2.06	0.08 VDC	0.00 VDC	-0.80 VDC	0.80 VDC
Rear Radial Y	1.94	0.02 VDC	-0.01 VDC	-0.86 VDC	0.84 VDC
Axial	1.51	0.43 VDC	0.00 VDC	-1.09 VDC	1.09 VDC

#### Latest Calibration (06/12/2019 09:26:36)

	Gain	Hardware Offset	Software Offset	Min	Max
Front Radial X	1.85	0.38 VDC	0.00 VDC	-0.89 VDC	0.89 VDC
Front Radial Y	1.81	-0.15 VDC	-0.01 VDC	-0.92 VDC	0.90 VDC
Rear Radial X	2.06	0.08 VDC	0.00 VDC	-0.80 VDC	0.80 VDC
Rear Radial Y	1.94	0.02 VDC	-0.01 VDC	-0.86 VDC	0.84 VDC
Axial	1.51	0.43 VDC	0.00 VDC	-1.09 VDC	1.09 VDC

#### Comments

- 2019-12-06 09.10.03: Calibration Started
- 2019-12-06 09.11.09: Calibration Complete
- 2019-12-06 09.11.09: Front X Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 09.11.09: Front Y Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 09.11.09: Rear X Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 09.11.09: Rear Y Force Current Min: -1.87 A, Max: 1.89 A
- 2019-12-06 09.11.09: Axial Force Current Min: -2.27 A, Max: 2.25 A

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## LOG - TURBOCOR COMP.2

CUSTOMER NAME AMBIENT CONTROLS LTD		SITE CONTACT (OPERATOR RESPONSIBLE FOR F-GAS COMPLIANCE) BRUCE GARDENER - SITE ENGINEER			SHEET NUMBER <b>08550</b>
SITE NAME & ADDRESS RELAY BUILDING, 1 COMMERCIAL STREET, SHADWELL, LONDON. E1 7PT		ENGINEER STEVE ORLANDO	F-GAS QUALIFICATION C&G 2079 PART 1		CLIENT ASSET NUMBER <b>01037</b>
REASON FOR VISIT COMPILE REPORT	MANUFACTURER GEOCLIMA	MODEL TMA 2A440A EC LLN			
JOB NUMBER J/N: 2756. O/N: CHRIS WARD	SERIAL No. GEO1302016	YEAR INSTALLED 01/01/2013			
PLANT LOCATION ROOF HVAC PLANT AREA	REFRIGERANT TYPE R134A	QUANTITY (KG) 154.5 KG			
PLANT REFERENCE CHILLER NO.2 (1037)	CLG LOAD SERVED BASE BUILD COMFORT COOLING LOADS				

### TURBOCOR COMPRESSOR 1 BEARING CALIBRATION - PAGE 2 OF 2.



Automatically Generated Report

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#### TT Service Monitoring Tools - Calibration Report

- 2019-12-06 09.11.17: Calibration committed to EEPROM
- 2019-12-06 09.11.20: Validation Start
- 2019-12-06 09.11.20: Validating Latest Calibration values
- 2019-12-06 09.11.35: Validation Complete

#### Validation Results (2019-12-06 09.11.20)

Result	Test Description
Good	Axial Gain Range (actual = 1.51, max = 16, min = 1)
Good	Front Radial X Gain Range (actual = 1.95, max = 16, min = 1)
Good	Front Radial Y Gain Range (actual = 1.81, max = 16, min = 1)
Good	Rear Radial X Gain Range (actual = 2.06, max = 16, min = 1)
Good	Rear Radial Y Gain Range (actual = 1.94, max = 16, min = 1)
Good	Comparison (Stored vs. Latest): Axial Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Front Radial X Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Front Radial Y Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Rear Radial X Gain (actual difference = 0%; max = 30%)
Good	Comparison (Stored vs. Latest): Rear Radial Y Gain (actual difference = 0%; max = 30%)
Good	Axial total offset change(Software change-Hardware change) (actual = 0.00 VDC; max = 0.3 VDC; min = -0.3 VDC)
Good	Front Radial X total offset change(Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Front Radial Y total offset change(Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Rear Radial X total offset change(Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Rear Radial Y total offset change(Software change-Hardware change) (actual = 0.00 VDC; max = 0.44 VDC; min = -0.44 VDC)
Good	Mean Front Radial X Force Current (actual = 0.20 A; max = 1.5 A; min = -1.5 A)
Good	Mean Front Radial Y Force Current (actual = 0.10 A; max = 1.5 A; min = -1.5 A)
Good	Mean Front Radial Average Displacement (actual = 5.33; max = 75)
Good	Peak Front Radial Average Displacement (actual = 17.00; max = 100)
Good	Mean Rear Radial X Force Current (actual = 0.21 A; max = 1.5 A; min = -1.5 A)
Good	Mean Rear Radial Y Force Current (actual = 0.72 A; max = 1.5 A; min = -1.5 A)
Good	Mean Rear Radial Average Displacement (actual = 0.00; max = 75)
Good	Peak Rear Radial Average Displacement (actual = 0.00; max = 100)
Good	Mean Axial Displacement Current (actual = -0.96 A; max = 2 A; min = -2 A)

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