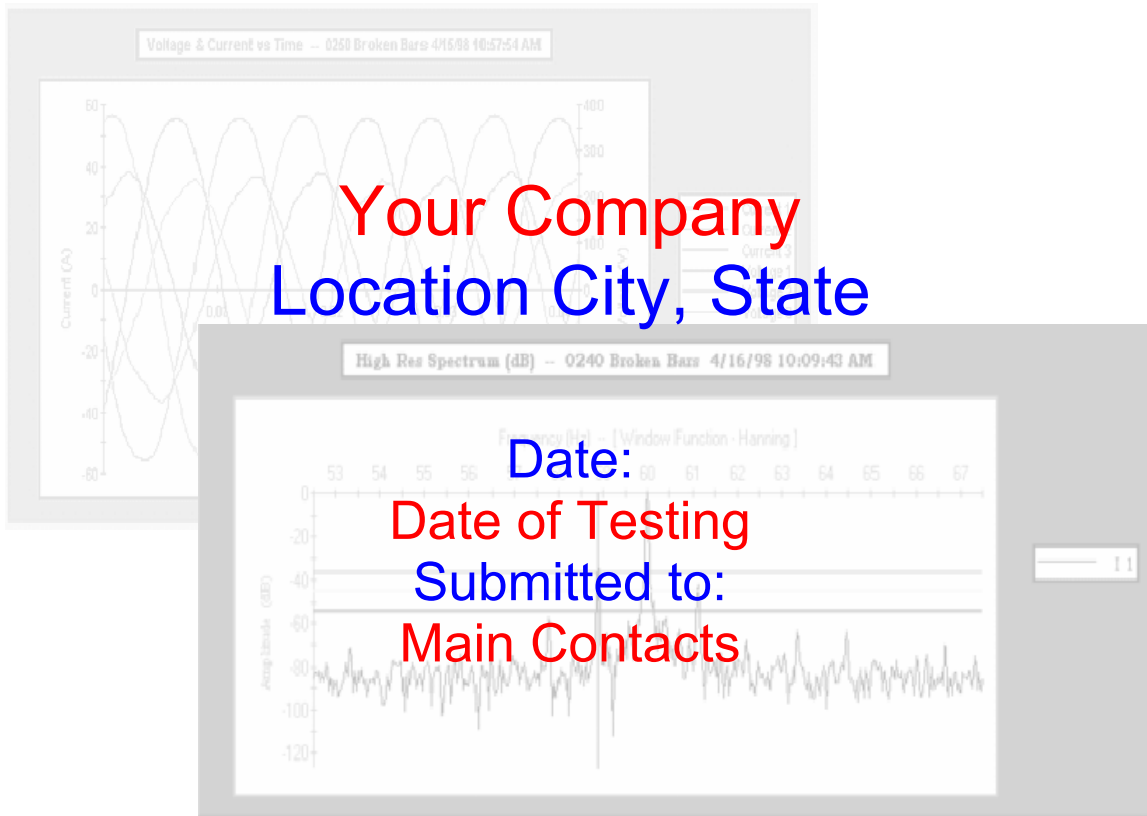


# Motor Circuit Analysis Report



*"Mechanical Reliability Solutions Since 1955"*

# Report Summary

*This is where the summary of the tests performed would be listed with a description of each motor tested, the severity color coded, and a description of the fault found.*

700HP High Speed Motor

Rotor Bar Issues

## Repair Priority Code Legend:

**Priority 1 – Severe**

**Priority 2 - Caution**

**Priority 3 – Observe**

**Priority 4 – Normal Operation**

Priority 5 – Unassigned

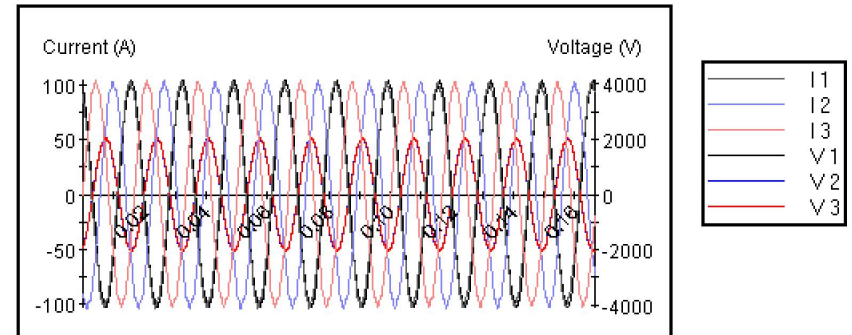
**Company Name**  
**Location City, State**  
**Motor Current Analysis**  
**Date of Testing**



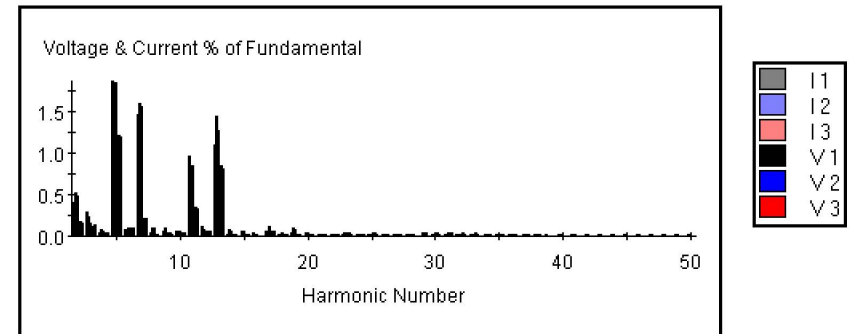
Report Title:	Emax Sample Report	Condition Code:	Severe	Frame #:	29EA50105
Date:	01/25/2006	Power Test Date:	1/30/2003 2:50:52 PM	Stator Slots:	N/A
Submitted By:	O.J. Utter	Voltage:	4000	Rotor Bars:	42
Motor ID:	#2 Sullair	HP:	700		
Asset ID:		FLA:	90		
Manufacturer:	RELIANCE ELECTRIC	Speed:	3564		

VOLTAGE				POWER					
	Fund RMS	Tot RMS	C.F.	THD		kW	kVAR	kVA	Pf
Voltage 1-2	4297.93	4301.31	1.44	1.54	Phase 1	201.83	29.61	203.99	0.99
Voltage 2-3	30.73	31.11	1.63	12.41	Phase 2	61.85	82.03	102.73	0.60
Voltage 1-3	4296.31	4299.67	1.44	1.53	Phase 3	37.19	95.19	102.20	0.36
Average	2874.99	2877.36			Total	300.88	206.83	408.92	0.65
% Imbalance	98.93	98.92	HVF	0.04	Power Sequence	300.88	40.33	303.57	0.99
%NEMA Derating	0.00	%NEMA	Derating	98.80					
CURRENT				EFFICIENCY					
Voltage 1	2864.73	2866.98	1.44	1.54	Efficiency	0.00			
Voltage 2	1433.26	1434.39	1.44	1.56	HP Output	0.00			
Voltage 3	1431.64	1432.75	1.44	1.52	kW Output	0.00			
Average	1909.87	1911.37			Torque Output	0			
% Imbalance	50.00	50.00							
IMPEDANCE				SEQUENCE					
	Real	Magnitude	Angle						
Phase 1	39.94	40.30	7.66	Positive	2496.27	2465.58	0.00		
Phase 2	12.08	20.03	52.91	Volt Phase-Phase	1441.22	1423.51	0.00		
Phase 3	7.32	20.09	68.62	Volt Phase-Neutral	0.27	71.30	0.00		
% Imbalance	101.90			Current					
				Zero	19.96	352.23	19.96	112.23	
				Positive	0.08	30.14	0.08	149.80	
				Negative	20.27	352.32	20.22	351.98	
				Phase Configuration	P to P Missing Phase 2				
				Phase Rotation	Clockwise				

Voltage and Current Time Domain -- #2 Sullair 1/30/2003 2:50:52 PM



Voltage and Current Harmonics -- #2 Sullair 1/30/2003 2:50:52 PM



**Problem Description:**

A simple Description of the Problem found would be listed here. For example the main issue with this motor is: Suspected Broken Rotor Bar, Total Harmonic Distortion

**Findings:**

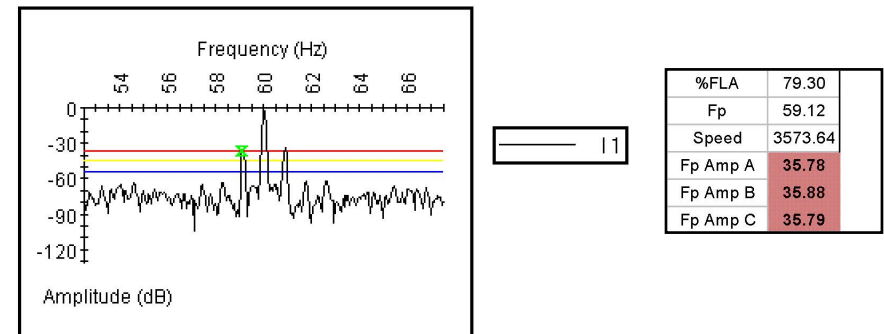
A brief description of test findings would be written here. For example for this motor: High dB pole pass peaks can result from broken or cracked rotor bars. Pole Pass peaks of 36 dB or less (taller peaks on the spectrum) indicates possible advanced rotor bar damage. The test graph to the right shows the tests at 35.78dB.

There is also harmonic distortion present on the Voltage 2-3 connection of 12%.

**Recommendations:**

Here is where we place the repair recommendations for the fault found. Example: Have vibration analysis and offline testing performed within the next two weeks. If these tests confirm rotor damage, make plans to rebuild this motor as soon as possible. If the motor must run, minimize the load and number of start-ups. The motor may start to produce an audible beat frequency that can be heard when standing near the motor.

Low Res Spectrum (dB) -- #2 Sullair 1/30/2003 2:52:29 PM





## Predictive Maintenance Technologies

### PRIORITY LEVEL EXPLANATION

#### PRIORITY LEVEL 1 - SEVERE

##### Emax™- Online Motor Circuit Analysis

Motors at this level have severe voltage or current irregularities or severe rotor or stator problems. Repairs must occur immediately. Continued operation at this level will cause catastrophic failure and possible damage to the motor control center circuitry & components. **Repairs may require a motor rebuild or replacement and possible electrical component repair or replacement.**

#### PRIORITY LEVEL 2 - CAUTION

##### Emax™- Online Motor Circuit Analysis

Motors at this level have a voltage/current irregularity or a rotor/stator problem that require maintenance. Repair actions need to occur within the prescribed time guideline to minimize the wear to the motor and electrical components. Continued operation will cause damage to the motor and motor control circuitry. **Repairs may require rebuild or replacement of the motor or electrical components.**

#### PRIORITY LEVEL 3 - OBSERVE

##### Emax™- Online Motor Circuit Analysis

Motors at this level have exceeded the early warning prescribed by NEMA for voltage/current irregularities or rotor/stator problems. **This level may require minor adjustment or repairs to the motor control circuitry. The motor operating status should be monitored as prescribed.**

#### PRIORITY LEVEL 4 – Normal Operation

##### Vibration, Electrical Infrared, Mechanical Infrared, & Emax™- Online Motor Circuit Analysis

For all technologies listed, this means that the levels are within acceptable parameters for the associated test results. No action or repairs are necessary at this stage. Continue to monitor the equipment on a regular basis to watch for any new faults that may develop.