Hi-Speed Industrial Service
7030 Ryburn Dr
Millington, Tn 38053
901-873-5300

AC Inspection as Found

ARKANSAS INDUSTRIAL MACHINERY
3804 N. NONA ST
NORTH LITTLE ROCK, AR 72118

FolderID: 103732
FormID: 22201319

AC Inspection - Rev. 2

Location:	Shop
Serial Number:	1PC31042AB400DV2
Description:	55KW SIEMENS

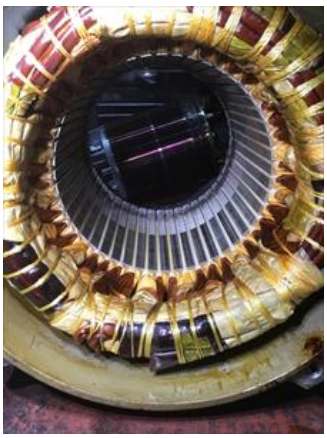
Hi-Speed Job Number:	103732
Manufacturer:	Siemens
Product Number:	M: 1AV2204B
Serial Number:	1PC31042AB400DV2
HP/kW:	55 (kW)
RPM:	3610 (RPM)
Frame:	200L
Voltage:	Other
Phase:	Three
Hz:	400 (Hz)
Service Factor:	1.15
Enclosure:	TEFC
# of Leads:	3
J-box Included:	Complete
Date Received:	11/07/2024
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Final
Heaters:	No
Winding Type :	Random Wound
Bearing Type:	Rolling Element

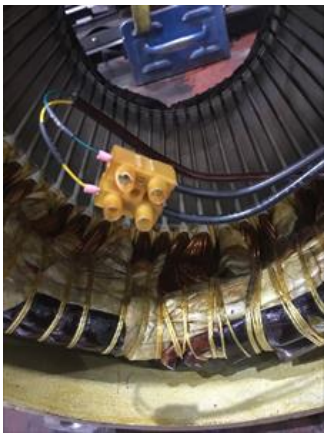
Priorities Found: **7 - High** **3 - Good**

Overall Condition

1. Report Date **11/07/2024**
2. Nameplate Picture P37

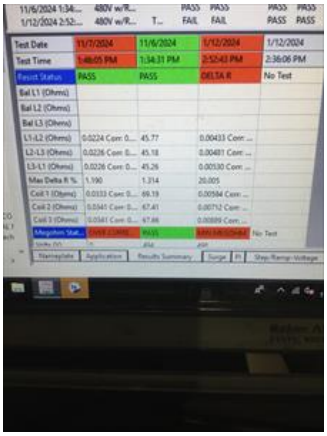
3. Photos of all six sides of the machine. P45



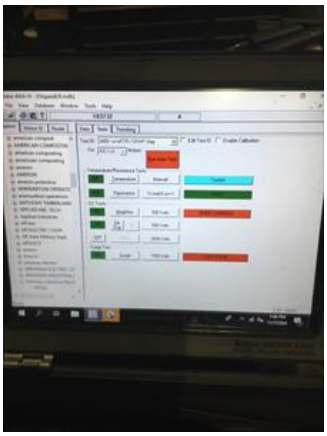


	4.	Describe the Overall Condition of the Equipment as Received ***Serviceable***	
	5.	Distance from the end of the shaft to the Coupling/Sheave	
Initial Mechanical/Electrical			
🔴	6.	Does Shaft Turn Freely?	**(N) No**
🔴	7.	Does the shaft require T.I.R in Lathe to identify additional repairs?	**(Yes) Yes**
	8.	Does Shaft Have Visible Damage?	**(No) No**
	9.	Assembled Shaft Runout	**Inches**
	10.	Assembled Shaft End Play	**inches**
	11.	Air Gap Variation <10%	
🟢	12.	Lead Condition	**(P) Pass**
	13.	Lead Length	
🔴	14.	Does it have Lugs?, If so what is the Stud Size?	**(Yes) Yes**
	15.	Lead Numbers ***U1-V1-W1***	
	16.	Frame Condition	**pass**
🔴	17.	Fan Condition ***Destroyed***	**(F) Fail**
	18.	Broken or Missing Components	**fan blade destroyed**
Initial Electrical Inspection			
	19.	Insulation Resistance/Megger	**Megohms**

20.	Winding Resistance			P20
	1-2	1-3	2-3	



21.	Perform Surge Test	**(F) Fail**	P57



22.	Number of Stator Slots	**48**	
23.	Stator Condition	**rewind & core repair**	
24.	Stator Thermistors/Ohms		
25.	Stator Overloads/Ohms	**601.9**	

Mechanical Inspection

26.	Drive End Bearing Brand	**SKF**	P12

27.	Drive End Bearing Number-	**NU 212 ECP**	P32

28.	Drive End Bearing Qty.	**1**	
29.	Drive End Bearing Type	**(Roller) Roller Bearing**	
30.	Drive End Lubrication Type	**(Oil) Oil Lubricated**	
31.	Drive End Bearing Insulation or Grounding Device?	**none**	
32.	Drive End Wavy Washer/Snap-Ring Other Retention Device?	**none**	
33.	Drive End Bearing Condition	**replace**	
34.	Opposite Drive End Bearing Brand	**unreadable**	
35.	Opposite Drive End Bearing Number-	**6212 2Z/C4**	
36.	Opposite Drive End Bearing Qty.	**1**	
37.	Opposite Drive End Bearing Type	**(Ball) Ball Bearing**	
38.	Opposite Drive End Lubrication Type	**(Grease) Grease Lubricated**	
39.	Opposite Drive End Bearing Insulation or Grounding Device?	**none**	
40.	Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	**snap ring**	
41.	Opposite Drive End Bearing Condition	**catastrophic cage failure**	P118

42.	Drive End Seal	**1622462800 S0164370.001 ID: 4449560**	P120

43.	Opposite Drive End Seal	

Rotor Inspection

44.	Rotor Type/Material	**(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast** P3

45.	Growler Test	**(Pass) Pass**
46.	Number of Rotor Bars	**36**
47.	Rotor Condition	**pass**
48.	List the Parts needed for the Repair Below	
	Replace snap ring, seals and bearings. Machine ODE shaft bearing cap housing fit and shaft air seal surface. Replace broken fan.	
49.	Signature of Technician that Disassembled Motor	**Terrence Holland**

Mechanical Fits- Rotor

50.	Shaft Runout		
51.	Rotor Runout		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing

52. Coupling Fit Closest to Bearing Housing

0 Degrees	90 Degrees	120 Degrees

53. Coupling Fit Closest to the end of the Shaft

0 Degrees	60 Degrees	120 Degrees

54. Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees
2.3631	**2.3632**	**2.3633**

55. Drive End Bearing Shaft Fit Condition **(P) Pass**

56. Opposite Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees

See below

57. Opposite Drive End Bearing Shaft Fit Condition **(F) Fail**

Excessive wear from bearing race welded to shaft

58. Shaft Air Seal Fits

Drive End Air Seal	Opposite Drive End Air Seal

Mechanical Fits- Bearing Housings

59. Drive End - Endbell Bearing Fit

0 Degrees	60 Degrees	120 Degrees

60. Drive End - Endbell Bearing Fit Condition **(P) Pass**

61. Opposite Drive End - Endbell Bearing Fit

0 Degrees	60 Degrees	120 Degrees

Failed, see below:

62. Opposite Drive End - Endbell Bearing Fit Condition **(F) Fail**

Excessive wear from catastrophic bearing cage failure.

63. Bearing Cap Condition

Drive End Bearing Cap	Opposite Drive End Bearing Cap
na	**excessive wear and cracks**

64. End Bell Air Seal Fits

Drive End Air Seal	Opposite Drive End Air Seal

65. List Machine Work Needed Below

Sleeve ODE housing and shaft fits and repair bearing shoulder and shaft where bearing cap rides. Repair ODE bearing cap opening.

66. Technician **Terrence Holland**

Root Cause of Failure

67. Failure locations

ODE housing and shaft fits, and rewind stator

68. Root cause of failure

ODE bearing cage had catastrophic failure due to lack of lubrication, causing the rotor to rub on the stator iron core shorting out the windings.

Dynamic Balance Report

69. Rotor Weight and Balance Grade

Rotor Weight	Balance Grade

70. Initial Balance Readings

Drive End	Opposite Drive End

71.	Final Balance Readings		
	Drive End	Opposite Drive End	
72.	Technician		

Rewind

73.	Core Test Results - Watts loss per Pound		
	Pre-Burnout	Post Burnout	
74.	Core Hot Spot Test		
	Pre-Burnout	Post-Burnout	
75.	Post Rewind Electrical Test- Insulation Resistance		
76.	Post Rewind Polarization Index		
77.	Post Rewind Winding Resistance		
	1-2	1-3	2-3
78.	Post Rewind Surge Test		
79.	Post Rewind Hi-Pot		
80.	Technician		

Mechanical Fits- Rotor - Post Repair

81.	Shaft Runout Post Repair		
82.	Rotor Runout Post Repair		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
83.	Coupling Fit Closest to Bearing Housing Post Repair		
	0 Degrees	90 Degrees	120 Degrees
84.	Coupling Fit Closest to the end of the Shaft Post Repair		
	0 Degrees	60 Degrees	120 Degrees
85.	Drive End Bearing Shaft Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
86.	Opposite Drive End Bearing Shaft Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
87.	Shaft Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
88.	Shaft Repair Sign-off		

Mechanical Fits- Bearing Housings - Post Repair

89.	Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
90.	Opposite Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees

91.	Bearing Cap Condition Post Repair		
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
92.	End Bell Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
93.	End Bell Repair Sign-off		
Assembly			
94.	QC Check All Parts for Cleanliness Prior to Assembly		
95.	Photograph All Major Components prior to assembly		
96.	Final Insulation Resistance Test		
97.	Assembled Shaft Endplay		
98.	Assembled Shaft Runout		
99.	Test Run Voltage		
	Volts	Volts	Volts
100.	Test Run Amperage		
	Amps	Amps	Amps
101.	Drive End Vibration Readings - Inches Per Second		
	Horizontal	Vertical	Axial
102.	Opposite Drive End Vibration Readings - Inches Per Second		
	Horizontal	Vertical	Axial
103.	Ambient Temperature - Fahrenheit		
104.	Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
105.	Opposite Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
106.	Document Final Condition with Pictures after paint		
107.	Final Pics and QC Review		