

Customer Forest Products City Mill

April 2013

#1 Paper Machine Outage

DC Motor Evaluations AC Synchronous Motor Evaluations Report

Mr. Customer
Customer Forest Products

This evaluation is provided on 17 motors that were evaluated during the April 2013 #1 Machine outage.

The following motors are of concern based on their condition and recommended for additional action.

M41674; Top Wire Turning Roll Motor

Multiple damaged brushes & springs – Recommend evaluating motor vibration for signs of misalignment or abnormal vibration from gear train. Re-inspect motor within 60 days.

M41089; Bottom Wire Turning Roll Motor

Commutator worn – Plan for refurbishment within 12 months
Cooling air duct not sealed to motor inlet

M41100; 3rd Press Ventanip

Cooling air duct not sealed to motor inlet.
Armature riser insulation coating appears cracked in multiple places - Electrical evaluation is recommended

Vacuum Pump Motors

Heavy contaminations build up on windings – Consider in-place CO2 cleaning.

The following motors were not made available to evaluate during the outage

M41112	Paper Trail Roll-3 rd Dryer
M41113	Paper Breaker Stack Roll
M41114	Paper Lead Roll-4 th Dryer
M41165	5 & 6 Vacuum Pump

Motor evaluations for all motors are provided on the following pages

The cooperation and support provided by your entire team ensured the safe and successful outcome of this project.

Respectfully submitted

Mike Rathbun
Reliability Program Manger

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13			
EECO						
Technician	Ronnie Alford/James Stanley					
Machine Description/Application	Top Wire Turning Roll					
Machine ID	M41674	Manufacture	GE			
Model	5CD28C32G900030	Frame	CD5882			
HP	1000	RPM	850/1000			
Armature:	Voltage	500	Amps	1575		
Field:	Voltage	300/150	Amps	12.9/11	Ohms	14.4 at 25c

Commutator Evaluation

Commutator Profile Height	.775"	Undercut Depth	.0625"
Commutator Surface Condition	Signs of starting under load or stalling		
Commutator Run Out	N/A		

Brush Holder Assembly Evaluation

Quantity of Brushes	18	Brush Part#	National	T341
Spring Part #	GE-83W 8#			
Brushes Replaced	4	Springs Replaced	5	
Spring Tension	8-10lbs	Brush Holder Height	.250"	

Visual Evaluation

Brush holder bar A had 2 damaged brushes & springs-REPLACED

Brush holder bar E had 3 damaged brushes & springs-REPLACED

Electrical Evaluation

NA

Additional Observations

Check vibration on motor for indication of misalignment
Re-inspect motor within 60 days

A.C. Synchronous Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13			
EECO Technician	James Stanley/Chris Muscavage					
Machine Description/Application	7 & 8 Vacuum Pumps					
Machine ID	M41168	Manufacture	EM			
Model		Frame	G-62			
HP	1000	RPM	300			
Stator:	Voltage	2300	Amps	197		
Field:	Voltage	250	Amps	45.6	Ohms	at 25c
Commutator Evaluation						
	Slip Rings Profile Height	.625"	Undercut Depth	NA		
	Slip Rings Surface Condition	Rough				
	Slip Ring Run Out	N/A				
Brush Holder Assembly Evaluation						
	Quantity of			AY-138		
	Brushes	4	Brush Part#	G1009802		
	Spring Part #	Not Listed				
	Brushes Replaced	4	Springs Replaced	0		
	Spring Tension	6lbs	Brush Holder Height	.375"		
Visual Evaluation						
Heavy contamination bulid up on windings - Consider inplace CO2 cleaning						

Electrical Evaluation

NA

Additional Observations

A.C. Synchronous Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13	
EECO Technician	Ronnie Alford			
Machine Description/Application	3 & \$ Vacuum Pumps			
Machine ID	M41162	Manufacture	Westinghouse	
Model		Frame	HR 6E	
HP	1000	RPM	308	
Stator:	Voltage	2300	Amps	197
Field:	Voltage	250	Amps	30.8
			Ohms	AT 25C

Commutator Evaluation

Slip Rings Profile Height	0.75	Undercut Depth	NA
Slip Rings Surface Condition	Back ring-signs of overheating from arcing; Front ring-Threaded		
Slip Ring Run Out	N/A		

Brush Holder Assembly Evaluation

Quantity of Brushes	4	Brush Part#	National	138-61009802
Spring Part #				
Brushes Replaced	4	Springs Replaced		0
Spring Tension	7-9lbs	Brush Holder Height		.250"

Visual Evaluation

Heavy contamination build up on windings - Consider in place CO2 cleaning

Electrical Evaluation

NA

Additional Observations

A.C. Synchronous Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13			
EECO Technician	Carl Hunter					
Machine Description/Application	1 & 2 vacuum Pumps					
Machine ID	M41159	Manufacture	Westinghouse			
Model		Frame	G-62			
HP	1000	RPM	300			
Stator:	Voltage	2300	Amps	197		
Field:	Voltage	Not Listed	Amps	Not Listed	Ohms	Hot

Commutator Evaluation

Slip Rings Profile Height	.500"	Undercut Depth	NA
Slip Rings Surface Condition	Front ring threaded		
Slip Ring Run Out	N/A		

Brush Holder Assembly Evaluation

Quantity of Brushes	4	Brush Part#	61009802
Spring Part #	SC-1/3.2		
Brushes Replaced	4	Springs Replaced	0
Spring Tension	5-7lbs	Brush Holder Height	.3125"

Visual Evaluation

OK

Electrical Evaluation

NA

Additional Observations

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13				
EECO Technician	Ronnie Alford						
Machine Description/Application	Reel Drum						
Machine ID	M41135	Manufacture	GE				
Model	5CD223PA067B806	Frame	CD506T				
HP	150	RPM	1150/1600				
Armature:	Voltage	500	Amps	238			
Field:	Voltage	300/150	Amps	4.82/2.26	Ohms	45	at 25c

Commutator Evaluation

Commutator Profile Height	.2187"	Undercut Depth	.03125"
Commutator Surface Condition	Worn		
Commutator Run Out	N/A		

Brush Holder Assembly Evaluation

Quantity of				
Brushes	8	Brush Part#	Helwig	10-871594
Spring Part #	GE-84W 10#			
Brushes Replaced	16	Springs Replaced		0
Spring Tension	10lbs	Brush Holder Height		1/4

Visual Evaluation

Commutator service needed (turn & undercut)

Electrical Evaluation

NA

Additional Observations

D.C. Machine In-Service Evaluation

Customer		Customer Forest Products				Date		4/2/13							
EECO Technician		Jeff Parker/James Stanley													
Machine Description/Application				M41128											
Machine ID		M41128		Manufacture		GE									
Model		5CD444LA704A700		Frame		CD4460									
HP		600		RPM		1150/1500									
Armature:		Voltage		500		Amps		960							
Field:		Voltage		240/120		Amps		15.7/10.7		Ohms		10.2		Hot	
Commutator Evaluation															
				Commutator Profile Height		.625"		Undercut Depth				.1875"			
				Commutator Surface Condition		Good									
				Commutator Run Out		N/A									
Brush Holder Assembly Evaluation															
				Quantity of											
				Brushes		16		Brush Part#		SA4542/61047445					
				Spring Part #		GE-84W									
				Brushes Replaced		16		Springs Replaced		0					
				Spring Tension		10lbs		Brush Holder Height		.1875"					
Visual Evaluation															
Good															
Electrical Evaluation															
NA															

Additional Observations

D.C. Machine In-Service Evaluation

Customer		Customer Forest Products				Date		4/2/13	
EECO Technician		James Stanley							
Machine Description/Application				1st Calendar Stack Bottom Roll					
Machine ID		M41121		Manufacture		GE			
Model		5CD434KA0100004		Frame		CD4358			
HP		500		RPM		1150/1500			
Armature:		Voltage		500		Amps		805	
Field:		Voltage		300/150		Amps		10.3/6.56	
						Ohms		23	
								at 25c	
Commutator Evaluation									
Commutator Profile Height				.625"		Undercut Depth		.0625"	
Commutator Surface Condition				OK					
Commutator Run Out				N/A					
Brush Holder Assembly Evaluation									
Quantity of Brushes		16		Brush Part#		National		T431	
Spring Part #		GE - 83W, 8#							
Brushes Replaced		1		Springs Replaced		1			
Spring Tension		8lbs		Brush Holder Height		.0937"			
Visual Evaluation									
Overall condition good									

Electrical Evaluation

NA

Additional Observations

Brush holder & brush missing from position C4 - INSTALLED NEW

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products
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Date 4/2/13

EECO

Technician Jeff Parker/Carl Hunter

Machine Description/Application

4th Dryer Section

Machine ID M41116

Manufacture GE

Model 5CD604KA007A012

Frame CD6058

HP 500

RPM 1150/1500

Armature: **Voltage** 500

Amps 795

Field:	Voltage	150
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Ohms 3.5 at 25c

Voltage 300

Ohms 14 at 25c

Commutator Evaluation

Commutator Profile Height

0.6875	Undercut Depth	.1875"
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Commutator Surface Condition

Good

Commutator Run Out

N/A

Brush Holder Assembly Evaluation

Quantity of

Brushes 16

Brush Part#	National	T341
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Spring Part # GE-83W; #8

Brushes Replaced	0
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Springs Replaced	0
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Spring Tension 8lbs

Brush Holder Height .0625"

Visual

Evaluation

Very good
condition

NA

D.C. Machine In-Service Evaluation

Date 4/2/13

Technician Ronnie Alford/James Stanley

Armature:	Voltage	500	Amps	795			
Field:	Voltage	150	Amps	29.4/18.6	Ohms	14	at 25c
	Voltage	300	Amps	14.7/9.3	Ohms	3.5	at 25c

Commutator Profile Height	.625"	Undercut Depth	.0625"
Commutator Surface Condition	Grooved		
Commutator Run Out	N/A		

Quantity of				
Brushes	16	Brush Part#	National	T341
Spring Part #	743662			
Brushes Replaced	0	Springs Replaced		0
Spring Tension	10lbs	Brush Holder Height		.125"

Evidence of minor moisture contamination on commutator

NA

D.C. Machine In-Service Evaluation

Date 4/2/13

Technician Mike Rathbun

2nd Dryer Section

Manufacture GE

Frame CD6058

RPM 1150/1500

Amps 795

Amps 29.4/18.6

Ohms 3.5 at 25c

Amps 14.7/9.3

Ohms 14 at 25c

Commutator Profile Height	.250"	Undercut Depth	.0625"
Commutator Surface Condition	Good		
Commutator Run Out	N/A		

Quantity of

Brush Part# Helwig 542472

Springs Replaced	0
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Brush Holder Height .1875"

Very good
condition

Electrical Evaluation

NA

Additional Observations**D.C. Machine In-Service Evaluation**

Customer	Customer Forest Products	Date	4/2/13			
EECO Technician	Mike Rathbun					
Machine Description/Application	1st Dryer Section					
Machine ID	M41103	Manufacture	GE			
Model	5CD224240658803	Frame	CD508AT			
HP	250	RPM	1150/1500			
Armature:	Voltage	500	Amps	398		
Field:	Voltage	300/150	Amps	6.43/3.81	Ohms	33.7 at 25c
Commutator Evaluation						
	Commutator Profile Height	.250"	Undercut Depth	0.0625"		
	Commutator Surface Condition	OK				
	Commutator Run Out	N/A				
Brush Holder Assembly Evaluation						
	Quantity of					
	Brushes	12	Brush Part#	National	36A164452AAP28	
	Spring Part #	GE-176 5.0#				
	Brushes Replaced	12	Springs Replaced	0		
	Spring Tension	5lbs	Brush Holder Height	.125"		
Visual Evaluation						
	Satisfactory					

NA

Customer	Customer Forest Products	Date	4/2/13
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Technician Jeff Parker

3rd Press Ventanip

Manufacture GE

Frame CD4468

RPM 1150/1500

Amps 960

Amps 15.7/10.7

Ohms	10.2	25c
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Commutator Profile Height	.625"	Undercut Depth	.125"
Commutator Surface Condition	Grooved		
Commutator Run Out	N/A		

Quantity of Brushes	16	Brush Part#	Helwig	10-101594
Spring Part #	GE-83W			
Brushes Replaced	7	Springs Replaced		0
Spring Tension	8lbs	Brush Holder Height		.125"

Visual Evaluation

Cooling air ducting directly above motor appears to have a large crack
 Brush holders on brush arms B & D out of alignment - CORRECTED
 Armature riser insulation coating appears cracked in multiple places - Electrical evaluation is recommended

Electrical Evaluation

N/A

Additional Observations

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products				Date	4/2/13	
EECO Technician	Carl Hunter/James Stanley						
Machine Description/Application	2nd Press Ventanip						
Machine ID	M41099		Manufacture	GE			
Model	5CD684A507012		Frame	CD8053			
HP	300		RPM	1150/1500			
Armature:	Voltage	500	Amps	793			
Field:	Voltage	300/150	Amps	14.7/9.3	Ohms	14.4	at 25c
Commutator Evaluation							
	Commutator Profile Height		.625"	Undercut Depth	0.0625		
	Commutator Surface Condition		Grooved & worn				
	Commutator Run Out		N/A				
Brush Holder Assembly Evaluation							
	Quantity of Brushes		16	Brush Part#	Helwig	10-101594	
	Spring Part #		GE-175 5#				
	Brushes Replaced		7	Springs Replaced	0		
	Spring Tension		12.5	Brush Holder Height	.093"		

**Visual
Evaluation**

Electrical Evaluation

NA

Additional Observations

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products	Date	3/11/13				
EECO Technician	Ronnie Alford						
Machine Description/Application	1st Press Suction Roll						
Machine ID	M41098	Manufacture	GE				
	5CD434KAC10C00						
Model	4	Frame	CD4358				
HP	500	RPM	1150/1500				
Armature:	Voltage	500	Amps	805			
Field:	Voltage	300/150	Amps	10.3/6.56	Ohms	23	at 25c
Commutator Evaluation							
	Commutator Profile Height	.750"	Undercut Depth	.093"			
	Commutator Surface Condition	Good					
	Commutator Run						
	Out	N/A					
Brush Holder Assembly Evaluation							
	Quantity of						
	Brushes	16	Brush Part#	Helwig	10-101595		

Spring Part #	GE-83W; #8		
Brushes Replaced	0	Springs Replaced	0
Spring Tension	10lbs	Brush Holder Height	.125"

**Visual
Evaluation**

Electrical Evaluation
N/A

Additional Observations

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13
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EECO Technician	Jeff Parker/Carl Hunter
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Machine Description/Application		Bottom Wire Turning			
Machine ID	M41089	Manufacture	GE		
Mode	5CD623VA001000	Frame	CD8268		
I	3		1150/125		
HP	1000	RPM	0		
Armature:	Voltage	500	Amps	1570	
Field:	Voltage	300/150	Amps	7.2/15.2	Ohms 11.9 at 25c
			Amps	34.4/30.4	Ohms 2.9 at 25c
Commutator Evaluation					
	Commutator Profile Height	.375"	Undercut Depth	.0625"	
	Commutator Surface Condition	Groove			

Commutator Run Out

d
N/A

Brush Holder Assembly Evaluation

Quantity of Brushes	32	Brush Part#	Helwig 10-101594	5424179
	GE-84W			
Spring Part #	10#			
Brushes Replaced	32	Springs Replaced		0
Spring Tension	10lbs	Brush Holder Height		.125"

Visual Evaluation

Cooling air duct does not seal at motor air inlet, fasteners missing

Electrical Evaluation

NA

Additional Observations

Commutator will need to be turned and undercut this year

D.C. Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13
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EECO

Technician	Mike Rathbun
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Machine Description/Application

Couch Roll

Machine ID	M41088	Manufacture	GE
Model	5CD454NA800A800	Frame	CD4570
HP	800	RPM	1150/1250

Armature:	Voltage	500	Amps	1270		
Field:	Voltage	300/150	Amps	12.9/14.1	Ohms	12.8
						at 25c

Commutator Evaluation

Commutator Profile Height	.625"	Undercut Depth	0.125"
Commutator Surface Condition	Lightly Grooved, Light Threading		
Commutator Run Out	N/A		

Brush Holder Assembly Evaluation

Quantity of Brushes	36	Brush Part#	National	36A164453AHX0
			2	

	GE-175		
Spring Part #	5#		
Brushes Replaced	1	Springs Replaced	0
Spring Tension	5.5LBS	Brush Holder Height	3/16"

**Visual
Evaluation**

Brush A4 shunt frayed - REPLACED

Electrical Evaluation

N/A

Additional Observations

A.C. Synchronous Machine In-Service Evaluation

Customer	Customer Forest Products	Date	4/2/13
EECO Technician	Jeff Parker		
Machine Description/Application	Primary Fan Pump Synchro		
Machine ID	M41008 5TS8407131030	Manufacture	GE
Model	1	Frame	CD8407
HP	800	RPM	720
Stator	Voltage	2300	Amps 158
Field:	Voltage		Ohm s 22.7 at 25c
		Amps	19.9

Slip Rings Evaluation

Slip Rings Surface Condition	Grooved
Slip Ring Run Out	N/A

Brush Holder Assembly Evaluation

Quantity of	4	Brush Part#	61048499
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Brushes

Unknow

Spring Part #

n

Brushes

Replaced

0

Springs Replaced

0

Spring Tension

5lbs

Brush Holder Height

1/8"

Visual

Evaluation

Heavy contamination build up on windings - Consider inplace CO2 cleaning

Newly replaced brushes were not seated - CORRECTED

Electrical Evaluation

N/A

Additional Observations