

November 01, 2016

Energogroup Canada Inc.

Attention: Mr. Dragan Lemez

Subject: MVROT Testing

Mr. Lemez,

I am pleased to enclose the following report for the MVROT tested at AC TESLA.

I would like to take this opportunity to thank you for your interest in our services and hope that you found our work to meet your expectations.

Should you have any questions or concerns regarding this report, or any other matter, please contact us.

Kind regards,



Zoran Zlatanovski
AC Tesla Inc.



MVROT

Attn.: Mr. Dragan Lemez

Prepared by:
Zoran Zlatanovski

Date: November 01, 2016
ACT Job No.: 0816504



Goran Bogdanovic P.Eng.

Pages: 04

The following are our findings and recommendations based on our visual inspections, observations and testing:

I. Equipment

Listed below is the equipment that was included in the scope of work:

1. MVROT

II. Tasks Performed

1. Regarding the above listed Equipment

1. Visual inspection
2. Insulation resistance test
3. Winding resistance test
4. Transformer turn ratio test

III. Findings, Comments and Recommendations

1. Regarding Transformer

1. All tests results were found to be acceptable

Work Order Data:

Date: September 19, 2016 ACT Job No.: 08161504 Technicians: ZZ
 Customer: Energro Group Canada Inc. Site: AC TESLA
 Equip. Designation: N/A

Equipment Data:

Manufacturer:	<u>FMT</u>	Phase:	<u>2</u>
Power Rating:	<u>200 KVA</u>	Tap:	<u>1</u>
High Voltage:	<u>4.16 V</u>	Type of Cooling:	<u>AIR</u>
Low Voltage:	<u>2500 V</u>	Impedance:	<u>2.6 % at 80 °C</u>
Frequency:	<u>60 Hz</u>	Temperature Rise:	<u>N/A °C</u>
Serial No.:	<u>N/A</u>	Winding Configuration:	<u>H1/H2-X1/X0</u>
Type:	<u>MVROT-250</u>	Style:	<u>DRY</u>
MFG Date:	<u>2016</u>		

Mechanical & Electrical Inspection:

Description	Status	Notes
External Condition	✓	
Coil, Core & Supports	✓	
Primary Connection	✓	
Secondary Connection	✓	
Ground Connection	✓	
Temperature Relay		N/A

Description	Status	Notes
Inspect Overheating & Moisture		N/V
Isolators	✓	
Energized Noise		N/V
Fan Operation		N/A
Name Plate & Warning Sign	✓	
Tap Changer		N/A

Transformer Turn Ratio Test:

Tap Position	Pri. Voltage	Sec. Voltage	Calc. Ratio	H1H2/X1X0	
				Ratio	mA
1	4160	2500	1.664	1.6675	7.3

Insulation Resistance as per NETA Specifications (GΩ):

	HV/Ground	HV/LV & Ground	LV/Ground	LV/HV & Ground	Core/Ground
Test Voltage	5000 VDC	5000 VDC	5000 VDC	5000 VDC	500 VDC
Measured at 20 °C	473 GΩ	451 GΩ	297 GΩ	283 GΩ	N/A
Reported at 20 °C	473 GΩ	451 GΩ	297 GΩ	283 GΩ	N/A

Primary Winding Resistance:

	Current	Duration	Resistance
H1 - H2	5 A	1-Minute	0.280 Ω

Secondary Winding Resistance:

	Current	Duration	Resistance
X0 - X1	5 A	1-Minute	69.4 mΩ

Notes & Comments:

(C) Correct (N/C) Non Conform (N/A) Non Applicable (N/V) Non Verified (✓) Satisfactory



Voltage Transformers

Work Order Data:

Date: September 19, 2016 ACT Job No.: 08161504 Technicians: ZZ

Customer: Energro Group Canada Inc. Site: AC TESLA

Equipment Data:

Manufacturer: FMT
 Style/Catalog number: N/A
 Ratio: 34.6
 Type: DRY
 Class: N/A
 Accuracy Class: FMT
 VA Rating: N/A VA
 Pri. Voltage: 4160 V

Fuse Data:

Manufacturer: N/A
 Type: N/A
 Class: N/A
 Voltage: N/A V
 Amps: N/A A
 Inter. Rating: N/A
 Bil: N/A

Ratio and Polarity:

PT Identification	Nameplate Ratio	Ratio	
		A1	mA
A1	34.666	34.766	15.3
A2	34.666	34.658	15.5

Insulation Resistance as per NETA Specifications (MΩ):

PT Identification	HV-GND (5 kVDC)	HV-LV&GND (5 kVDC)	LV-GND (250 VDC)	LV-HV&GND (250 VDC)
A1	473000	451000	>999	>999
A2	473000	451000	>999	>999

Notes & Comments:

(C) Correct (N/C) Non Conform (N/A) Non Applicable (N/V) Non Verified (✓) Satisfactory