


Electrical Preventive Maintenance (December 2023)

Shama Lakeview Asoke Bangkok

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Engineering of Hospitality Industry

	DISTRIBUTION TRANSFORMER	SHEET 1
		OF 1

FACTORY : ชามมา สุขุมวิท LOCATION : หม้อแปลงไฟฟ้า	PANEL NAME / No. : ด็กA FEEDER NAME / No. : TR - 1
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1. TECHNICAL DATA

Manufacturer :	HTT	Rated power :	1250
BIL :	STEP DOWN	Frequency :	50
Serial No :	9710072	No. of phase :	3
Year :	1998	Cooling type :	ONAN
Standard :	IEC 60076	Vectergroup symbol :	DYN11
Volume of oil :	625	Service tap :	1
	lit	%Impedance :	6
Total mass :	3320		
	kg.	Oil temperature	
Oil temperature rise :	60	Temperature :	60 °C
	°C	Temperature max :	65 °C
Rated voltage HV :	24000	Alarm :	- °C
	V.	Trip :	- °C
Rated voltage LV :	4161		
	V.		
Rated current HV :	24.06		
	A.		
Rated current LV :	1387.86		
	A.		

2. CONSTRUCTION CHECK


- 2.1 Seal and body
- 2.2 Oil level and leakage inspection
- 2.3 Bushing connection and cleaning
- 2.4 Termination and moution
- 2.5 Earthing Terminal
- 2.6 Marker phase
- 2.7 Drier filter condition
- 2.8 Cooling system condition
- 2.9 Bucholz relay
- 2.10 Pressure relief
- 2.11 Winding temperature
- 2.12 Oil temperature
- 2.13 Oil level indicator

Inspection results ผลการตรวจสอบ	Problems and solutions ปัญหาและการแก้ไข	Correction results ผลการแก้ไข
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
-	ไม่มีการติดตั้ง	
good/ดี		
good/ดี		
good/ดี		
good/ดี		

3. TRANSFERMER OIL CLASSIFICATION

Good	Good Oil (Pole Yellow)
PROP A	Proposition A Oil (Yellow)
Marginal	Marginal Oil (Bright Yellow)
Bad	Bad Oil (Brown)
Very Bad	Very Bad Oil (Brown) Extremely Bad
Extremely Bad	Extremely Bad Oil (Dark Brown)
	Oil in Disastrous Condition (Black)

3.1 COMMENT :

	DISTRIBUTION TRANSFORMER	SHEET 2
		OF 1
FACTORY : ชาม่า สุขุมวิท	PANEL NAME / No. : ดักA	
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : TR - 1	

4. OIL DIELECTRIC STRENGTH MEASUREMENT

Test standard : _____ Gap distance : _____ Electrode type : _____

MAIN TANK

Item no.	Breakdown voltage (kV)	
	Before	After
1		
2		
3		
4		
5		
6		
AVG		
Result		

Criteria : Breakdown voltage should be more than 30 KV

5. INSULATION RESISTANCE MEASUREMENT

Temp. : 32 °C Humidity : %

Connection	Measurement of minute (MΩ)			Result
	Standard	Must be greater than	Value	
Pri. To Sec	1000	≥	78.9 G	Pass/ผ่าน
Pri.-Gnd.	1000	≥	85.6 G	Pass/ผ่าน
Sec.-Gnd.	500	≥	37.3 G	Pass/ผ่าน

Insulation resistance at 30 sec

6. REFERENCES TO USED INSTRUMENT

6.1 Insulation resistance test

Manufacturer : **MEGGER** Type : **5kV INSULATION** Serial no. : -

6.2 Oil dielectric breakdown test

Manufacturer : **MEGGER** Type : **OTS 60PB** Serial no. : **081008/3986**

7. COMMENT:

	DISTRIBUTION TRANSFORMER	SHEET 6
		OF 2

FACTORY : ขามา สุขุมวิท	PANEL NAME / No. : ด็กA
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : TR - 2

1. TECHNICAL DATA

Manufacturer : HTT BIL : GDNN1250/24-2 Serial No : 1035927 Year : 2010 Standard : IEC 60076 Volume of oil : - Liter Total mass : 3540 kg. Oil temperature rise : 60 °K Rated voltage HV : 24000 V. Rated voltage LV : 416-240 V. Rated current HV : 30.1 A. Rated current LV : 1735 A.	Rated power : 1250 Rated frequency : 50 No. of phase : 3 Cooling type : ONAN Vectergroup symbol : DYN11 Ser vice tap : 1 %Impedance : 5.8 Oil temperature Temperature : 60 °C Temperature max : 65 °C Alarm : - °C Trip : - °C
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2. CONSTRUCTION CHECK


- 2.1 Seal and body
- 2.2 Oil level and leakage inspection
- 2.3 Bushing connection and cleaning
- 2.4 Termination and mounion
- 2.5 Earthing Terminal
- 2.6 Marker phase
- 2.7 Drier filter condition
- 2.8 Cooling system condition
- 2.9 Bucholz relay
- 2.10 Pressure relief
- 2.11 Winding temperature
- 2.12 Oil temperature
- 2.13 Oil level indicator

Inspection results ผลการตรวจสอบ	Probiems and solutions ปัญหาและการแก้ไข	Correction results ผลการแก้ไข
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
-	ไม่มีการติดตั้ง	
good/ดี		
good/ดี		
good/ดี		
good/ดี		

3. TRANSFERMER OIL CLASSIFICATION

Good	Good Oil (Pole Yellow)
PROP A	Proposition A Oil (Yellow)
Marginal	Marginal Oil (Bright Yellow)
Bad	Bad Oil (Brown)
Very Bad	Very Bad Oil (Brown) Extremely Bad
Extremely Bad	Extremely Bad Oil (Dark Brown)
	Oil in Disastrous Condition (Black)

3.1 COMMENT :

	DISTRIBUTION TRANSFORMER	SHEET 7
		OF 2
FACTORY : ชามา สุขุมวิท	PANEL NAME / No. : ด็กA	
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : TR - 2	

4. OIL DIELECTRIC STRENGTH MEASUREMENT

Test standard : ASTM D877A-13 Gap distance : 2.54 mm. Electrode type : Cylinder

MAIN TANK

Item no.	Breakdown voltage (kV)	
	Before	After
1		
2		
3		
4		
5		
6		
AVG		
Result		

Criteria : Breakdown voltage should be more than 30 KV

5. INSULATION RESISTANCE MEASUREMENT

Temp. : 34 °C Humidity : %

Connection 2.5 Kv.	Measurement of minute (MΩ)			Result
	Standard	Must be greater than	Value	
Pri. To Sec	1000	≥	92.3 G	Pass/ผ่าน
Pri.-Gnd.	1000	≥	99.1 G	Pass/ผ่าน
Sec.-Gnd.	500	≥	1.227 G	Pass/ผ่าน

Insulation resistance at 30 sec

6. REFERENCES TO USED INSTRUMENT

6.1 Insulation resistance test

Manufacturer : **MEGGER** Type : **5kV INSULATION** Serial no. : -

6.2 Oil dielectric breakdown test

Manufacturer : **MEGGER** Type : **OTS 60PB** Serial no. : **081008/3986**

7. COMMENT:

MV PANEL INSPECTION

	MV PANEL INSPECTION	SHEET 4
		OF 2

FACTORY : ชามมา สุขุมวิท	PANEL NAME / No. : ตู้กA
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 1

13. INSULATION RESISTANCE MEASUREMENT BUSBAR

Connection	Measurement of minute (MΩ)			Result
1000 V.	A	B	C	
Phase to Phase	OL	OL	OL	Pass/ผ่าน
Phase to Grounding	OL	OL	OL	Pass/ผ่าน

Insulation resistance at 10 sec

14. REFERENCE FOR USED INSTRUMENT

14.1 Insulation resistance test

Manufacturer : **Megger** Type : **515** Serial no. : **W0405399**

14.2 Digital multimeter

Manufacturer : **FLUKE** Type : **115** Serial no. : **16460168**

	MV PANEL INSPECTION	SHEET 3
		OF 2

FACTORY : ชาม่า สุขุมวิท	PANEL NAME / No. : ด็กA
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 2

1. VISUAL INSPECTION

1.1 Check panel support and door	Comment	PASSED
1.2 Complete assembly	Comment	PASSED
1.3 Lamp, nameplate and cleanliness	Comment	PASSED
1.4 Wiring connection	Comment	PASSED
1.5 Earthing connention	Comment	PASSED
1.6 Control cable, cable number	Comment	PASSED

2. METERING INSTRUMENT AND PROTECTIVE RELAY CHECK

2.1 Voltmeter check	Result :		2.6 Watt-hour meter check	Result :	
2.2 Ammeter check	Result :		2.7 Digital multimeter check	Result :	PASSED
2.3 Walt meter check	Result :		2.8 Protective relay setting test	Result :	
2.4 Var meter check	Result :		2.9 Protective relay function trip test	Result :	
2.5 Cos phi meter check	Result :				

9. CABLE COMPARTMENT CHECK

9.1 Clean cable compartment	Comment	PASSED
9.2 Check connection	Comment	PASSED

10. LOW VOLTAGE COMPARTMENT CHECK

10.1 Clean low voltage compartment	Comment	PASSED
10.2 Grease lubricate all machanism	Comment	PASSED

11. BUSBAR COMPARTMENT CHECK

11.1 Clean bus bar compartment	Comment	PASSED
11.2 Check tightening torque	Comment	PASSED

12. CB OR LBS COMPARTMENT / PT COMPARTMENT

12.1 Clean circuit breaker compartment	Comment	PASSED
12.2 Grease lubricate all mechanism	Comment	PASSED
12.3 Check connection of control plug.	Comment	PASSED

COMMENT : _____

	MV PANEL INSPECTION	SHEET 4
		OF 2

FACTORY : ขวามา สุขุมวิท	PANEL NAME / No. : ตู้A
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 2

13. INSULATION RESISTANCE MEASUREMENT BUSBAR

Connection	Measurement of minute (MΩ)			Result
1000 V.	A	B	C	
Phase to Phase	OL	OL	OL	Pass/ผ่าน
Phase to Grounding	OL	OL	OL	Pass/ผ่าน

Insulation resistance at 10 sec

14. REFERENCE FOR USED INSTRUMENT

14.1 Insulation resistance test

Manufacturer : Megger Type : 515 Serial no. : W0405399

14.2 Digital multimeter

Manufacturer : FLUKE Type : 115 Serial no. : 16460168

BRANCH CIRCUIT BREAKER



AUTOMATIC POWER FACTOR CONTROLLER

SHEET 8

OF 5

FACTORY : ชาม่า สุขุมวิท
LOCATION : ELECTRICAL ROOM.

PANEL NAME / No. : ดีกA
FEEDER NAME / No. : TR - 1

25. POWER FACTOR CONTROL TEST

Manufacture: FRANKE Switch on time 40 sec. Switch off time 40 sec.
PF. 0.97 Capacitance 50 kvar Step No. 12 step

Setting time (sec.)	Operating time (sec.)	
	Connected time (sec.)	Disconnected time (sec.)
40.0	40.0	40.0

26. FUNCTION CHECK

26.1 Step command to close magnetic contactor test. PASS
26.2 Step command to open magnetic contactor test. PASS
26.3 Operation sequence test. PASS
26.4 Display indicator and flag target operate check. PASS
26.5 All of out contact check. PASS

27. FINAL JUDGEMENT

Test result of Automatic power factor regulator	<input checked="" type="checkbox"/>	Pass (in accuracy limit)
	<input type="checkbox"/>	Not pass (Out of accuracy limit)

COMMENT :



AUTOMATIC POWER FACTOR CONTROLLER

SHEET 8

OF 5

FACTORY : ชามมา สุขุมวิท
LOCATION : ELECTRICAL ROOM.

PANEL NAME / No. : ดักA
FEEDER NAME / No. : TR - 2

25. POWER FACTOR CONTROL TEST

Manufacture: FRANKE Switch on time 40 sec. Switch off time 40 sec.
PF. 0.97 Capacitance 50 kvar Step No. 12 step

Setting time (sec.)	Operating time (sec.)	
	Connected time (sec.)	Disconnected time (sec.)
40.0	40.0	40.0

26. FUNCTION CHECK

26.1 Step command to close magnetic contactor test. PASS
26.2 Step command to open magnetic contactor test. PASS
26.3 Operation sequence test. PASS
26.4 Display indicator and flag target operate check. PASS
26.5 All of out contact check. PASS

27. FINAL JUDGEMENT

Test result of Automatic power factor regulator	<input checked="" type="checkbox"/>	Pass (in accuracy limit)
	<input type="checkbox"/>	Not pass (Out of accuracy limit)

COMMENT :

	CAPACITOR BANK	SHEET 9
		OF 6

FACTORY : ชาม่า สุขุมวิท	PANEL NAME / No. : ตึกA
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 1

28. TECHNICAL DATA

Manufacturer : ABB	Rated : 50 kVAR
Type : CLMD 63	Reted voltage : 400/415 Volt
Reted power fuse and type : 125 Amp	Reted current : 72.2 Amp
Connection : Δ	Reted capacitance : 518 μF

29. VISUAL CHECK

29.1 Inspection check	Comment PASS
29.2 Cable for capacitor	Comment PASS
29.3 Cleaning and tightening	Comment PASS

30. CAPACITANCE MEASUREMENT

Step	Reted kVAR	Reted current A.	Capacitance (Micro Farad)			Result
			L1-L2	L2-L3	L3-L1	
1	50/54		513	525	507	PASS
2	50/54		509	510	506	PASS
3	50/54		316	433	366	PASS
4	50/54		508	506	506	PASS
5	50/54		476	471	416	PASS
6	50/54		444	417	374	PASS
7	50/54		506	505	508	PASS
8	50/54		444	387	392	PASS
9	50/54		531	531	531	PASS
10	50/54		506	508	503	PASS
11	50/54		501	507	510	PASS
12	50/54		484	482	428	PASS

หมายเหตุ : ค่า + - ระหว่างเฟส -5%-10%

COMMENT :

	CONTACTOR	SHEET 10
		OF 6

FACTORY : ชามมา สุขุมวิท	PANEL NAME / No. : ดึกA
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 1

31. MAGNATIC CONTACTION CHECK

Step	Manufacturer	Type	Magnatic check	Comment
1	ABB	UA75-30	PASS	
2	ABB	UA75-30	PASS	
3	ABB	UA75-30	PASS	
4	ABB	UA75-30	PASS	
5	ABB	UA75-30	PASS	
6	ABB	UA75-30	PASS	
7	ABB	UA75-30	PASS	
8	ABB	UA75-30	PASS	
9	ABB	UA75-30	PASS	
10	ABB	UA75-30	PASS	
11	ABB	UA75-30	PASS	
12	ABB	UA75-30	PASS	

32. REFERENCE TO USED INSTRUMENT

32.1 Insulation resistance test

Manufacturer : **Megger** Type : **515** Serial no. : **W0405399**

32.2 Capacitance measurement

Manufacturer : **Fluke** Type : **115** Serial no. : **-**

COMMENT :

	CAPACITOR BANK	SHEET 9
		OF 6

FACTORY : ชาม่า สุขุมวิท	PANEL NAME / No. : ดึกA
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 2

28. TECHNICAL DATA

Manufacturer : <u>ABB</u>	Rated : <u>50</u> kVAR
Type : <u>IEC 60831</u>	Reted voltage : <u>400/415</u> Volt
Reted power fuse and type : <u>125</u> Amp	Reted current : <u>72.2</u> Amp
Connection : <u>Δ</u>	Reted capacitance : <u>518</u> μF

29. VISUAL CHECK

29.1 Inspection check	Comment	<u>PASS</u>
29.2 Cable for capacitor	Comment	<u>PASS</u>
29.3 Cleaning and tightening	Comment	<u>PASS</u>

30. CAPACITANCE MEASUREMENT

Step	Reted kVAR	Reted current A.	Capacitance (Micro Farad)			Result
			L1-L2	L2-L3	L3-L1	
1	50	UA75-30	409	427	477	PASS
2	50	UA75-30	516	511	515	PASS
3	50	UA75-30	429	488	489	PASS
4	50	UA75-30	387	384	385	PASS
5	50	UA75-30	486	483	428	PASS
6	50	UA75-30	512	508	510	PASS
7	50	UA75-30	427	484	485	PASS
8	50	UA75-30	509	510	509	PASS
9	50	UA75-30	509	506	507	PASS
10	50	UA75-30	513	512	513	PASS
11	50	UA75-30	513	514	511	PASS
12	50	UA75-30	430	488	488	PASS

หมายเหตุ : ค่า + - ระหว่างเฟส -5%-10%

COMMENT : _____

	CONTACTOR	SHEET 10
		OF 6

FACTORY : ชามมา สุขุมวิท	PANEL NAME / No. : ตู้กA
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : TR - 2

31. MAGNATIC CONTACTION CHECK

Step	Manufacturer	Type	Magnatic check	Comment
1	ABB		PASS	
2	ABB		PASS	
3	ABB		PASS	
4	ABB		PASS	
5	ABB		PASS	
6	ABB		PASS	
7	ABB		PASS	
8	ABB		PASS	
9	ABB		PASS	
10	ABB		PASS	
11	ABB		PASS	
12	ABB		PASS	

32. REFERENCE TO USED INSTRUMENT


32.1 Insulation resistance test

Manufacturer : **Megger** Type : **515** Serial no. : **W0405399**

32.2 Capacitance measurement

Manufacturer : **Fluke** Type : **115** Serial no. : **-**

COMMENT :

	AIR CIRCUIT BREAKER/MCCB	SHEET 3
		OF 1
FACTORY : ชามว สุขุมวิท LOCATION : ELECTRICAL ROOM.		PANEL NAME / No. : ดึก A FEEDER NAME / No. : MDB - 1

1. CIRCUIT BREAKER INSPECTION

1.1 Body and seal	<i>Normal / ปกติ</i>	6.6 Control accessory equipment	<i>Normal / ปกติ</i>
1.2 Mechanism condition	<i>Normal / ปกติ</i>	6.7 Termination and mounting	<i>Normal / ปกติ</i>
1.3 Pole and gripping condition	<i>Normal / ปกติ</i>	6.8 Racking / rail mechanism	<i>Fixed type</i>
1.4 Grounding and mounting	<i>Normal / ปกติ</i>	6.9 Display and indicator status	<i>Normal / ปกติ</i>
1.5 Auxiliary / limit switch	<i>Normal / ปกติ</i>	6.10 Final operation counter check	<i>Normal / ปกติ</i>

2. FUNCTION TEST

2.1 Operation and function test	<i>Normal / ปกติ</i>
2.2 Mechanism operation test	<i>Normal / ปกติ</i>
2.3 Display and indicator status test	<i>Normal / ปกติ</i>
2.4 Under voltage release test	<i>Normal / ปกติ</i>
2.5 Shunt trip release test	<i>Normal / ปกติ</i>
2.6 Motor operating mechanism test	<i>Normal / ปกติ</i>

3. INSULATION RESISTANCE MEASUREMENT


Connection 2500 V.	Measurement of minute (Ω)			Result
	A	B	C	
Phase to Phase	-	-	-	-
Phase to G.	-	-	-	-

Remark: _____

4. CONTACT RESISTANCE MEASUREMENT

Pole	Test current (Adc)	Phase A (μ Ω)	Phase B (μ Ω)	Phase C (μ Ω)	Criteria	Result	
Top-Bottom (Close status)	10	23.72	18.63	18.89	± 50% of lowest value (ANSI/NETA MTS)	/	<i>Passed</i>
							<i>Failed</i>

Remark: Contact resistance ควรมีค่าน้อยกว่า 100 μΩ _____

	AIR CIRCUIT BREAKER/MCCB	SHEET 4
		OF 1

FACTORY : ชลมา สุขุมวิท	PANEL NAME / No. : ตู้ A
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : MDB - 1

AIR CIRCUIT BREAKER REPORT

5. Date: _____ **Project Name:** _____ **ACB TEST**

Plant: Electrical Room NO.1 Voltage Rating 400/415 V. Panel Name: MDB (FROM TR 1250 KVA.)

Rate Current: 2000 A. ACB Tyep: Darw Tyep Serial No: -

Manufacture: SCHNEIDER Frequency: 50 Hz. Interrupting Capacity: 65 KA. Pole: 3 P.

Relay Setting

Ir: 1	tr: 20 Sec
I_{sd}: 4	tsd: 0.3 Sec
I_{l@6}: 4	
I_g: A	tig: 0.3 Sec

6. FUNCTION TEST

6.1 Operation and function test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.2 Mechanism operation test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.3 Display and indicator status test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.4 Under voltage release test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.5 Shunt trip release test	<input type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input checked="" type="checkbox"/>	N/A	
6.6 Motor operating mechanism test	<input type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input checked="" type="checkbox"/>	N/A	

7. TRIP PING DEVICE TEST

ACB Fixed Type: ☐ **ACB Darw Type:** ☒ **Protection Unit Release :** Micrologic 6.0 E.


	Seting(IR)	Injection Current(A.)	Trip Time(S)	Time Cure(S)	Status.
LONG TIME DELAY TEST(LTD)	1xIn	6000	15.254	20.094	Pass / ผ่าน
SHORT TIME DELAY TEST(STD)	4	12000	0.164	0.397	Pass / ผ่าน
INSTANTANEOUS TIME TEST(INST)	4	20000	0.036	≤	Pass / ผ่าน
GROUP FAULT TEST (GFR)	A	1000	0.211	0.3	Pass / ผ่าน

7. REFERENCE FOR USED INSTRUMENT

7.1 Insulation resistance test
 Manufacturer : _____ Type : _____ Serial no. : _____

7.2 Contact resistance test
 Manufacturer : Chauvin arnoux Type : C.A6240 Serial no. : 106875

7.3 Tripping device test
 Manufacturer : Scheider Type : Full-Function Test Kit Serial no. : S33595

	AIR CIRCUIT BREAKER/MCCB	SHEET 8
		OF 2
FACTORY : ชามว สุขุมวิท LOCATION : ELECTRICAL ROOM.		PANEL NAME / No. : ดีกA FEEDER NAME / No. : MDB - 2

1. CIRCUIT BREAKER INSPECTION

1.1 Body and seal	<i>Normal / ปกติ</i>	6.6 Control accessory equipment	<i>Normal / ปกติ</i>
1.2 Mechanism condition	<i>Normal / ปกติ</i>	6.7 Termination and mounting	<i>Normal / ปกติ</i>
1.3 Pole and gripping condition	<i>Normal / ปกติ</i>	6.8 Racking / rail mechanism	<i>Fixed type</i>
1.4 Grounding and mounting	<i>Normal / ปกติ</i>	6.9 Display and indicator status	<i>Normal / ปกติ</i>
1.5 Auxiliary / limit switch	<i>Normal / ปกติ</i>	6.10 Final operation counter check	<i>Normal / ปกติ</i>

2. FUNCTION TEST

2.1 Operation and function test	<i>Normal / ปกติ</i>
2.2 Mechanism operation test	<i>Normal / ปกติ</i>
2.3 Display and indicator status test	<i>Normal / ปกติ</i>
2.4 Under voltage release test	<i>Normal / ปกติ</i>
2.5 Shunt trip release test	<i>Normal / ปกติ</i>
2.6 Motor operating mechanism test	<i>Normal / ปกติ</i>

3. INSULATION RESISTANCE MEASUREMENT


Connection 2500 V.	Measurement of minute (Ω)			Result
	A	B	C	
Phase to Phase	OL	OL	OL	<i>Pass/ผ่าน</i>
Phase to G.	OL	OL	OL	<i>Pass/ผ่าน</i>

Remark: _____

4. CONTACT RESISTANCE MEASUREMENT

Pole	Test current (Adc)	Phase A (μ Ω)	Phase B (μ Ω)	Phase C (μ Ω)	Criteria	Result	
Top-Bottom (Close status)	10	41.86	40.81	44.06	± 50% of lowest value (ANSI/NETA MTS)	/	<i>Passed</i>
							<i>Failed</i>

Remark: Contact resistance ควรมีค่าน้อยกว่า 100 μΩ _____

	AIR CIRCUIT BREAKER/MCCB	SHEET 9
		OF 2

FACTORY : ชาวมา สุขุมวิท LOCATION : ELECTRICAL ROOM.	PANEL NAME / No. : ตึกA FEEDER NAME / No. : MDB - 2
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AIR CIRCUIT BREAKER REPORT

5. Date: 22/12/2562		Project Name: ACB TEST	
Plant: Electrical Room NO.2	Voltage Rating: 400/415	V. Panel Name:	MDB (FROM TR 1250 KVA.)
Rate Current: 2000 A.	ACB Tyep:	Darw Tyep	Serial No: -
Manufacture: SCHNEIDER	Frequency: 50 Hz.	Interrupting Capacity: 65 KA.	Pole: 3 P.

Relay Setting

Ir: 1	tr: 20 Sec
Isd: 4	tsd: 0.3 Sec
Ii@6 4	
Ig: A	tig: 0.3 Sec

6. FUNCTION TEST

6.1 Operation and function test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A	
6.2 Mechanism operation test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A	
6.3 Display and indicator status test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A	
6.4 Under voltage release test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A	
6.5 Shunt trip release test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A	
6.6 Motor operating mechanism test	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A	

7. TRIP PING DEVICE TEST


ACB Fixed Type: ☐
 ACB Darw Type: ☒
 Protection Unit Release : Micrologic 6.0 E.

	Seting(IR)	Injection Current(A.)	Trip Time(S)	Time Cure(S)	Status.
LONG TIME DELAY TEST(LTD)	1xIn	6000	15.254	20.094	Pass / ผ่าน
	Seting(IR)	Injection Current	Trip Time(S)	Time Cure(S)	Status.
SHORT TIME DELAY TEST(STD)	4	12000	0.164	0.397	Pass / ผ่าน
	Seting(IR)	Injection Current	Trip Time(S)	Time Cure(S)	Status.
INSTANTANEOUS TIME TEST(INST)	4	20000	0.036	≤	Pass / ผ่าน
	Seting(IR)	Injection Current	Trip Time(S)	Time Cure(S)	Status.
GROUP FAULT TEST (GFR)	A	1000	0.211	0.3	Pass / ผ่าน

7. REFERENCE FOR USED INSTRUMENT

7.1 Insulation resistance test	Manufacturer :	Type :	Serial no. :
7.2 Contact resistance test	Manufacturer : Chauvin arnoux	Type : C.A6240	Serial no. : 106875
7.3 Tripping device test	Manufacturer : Scheider	Type : Full-Function Test Kit	Serial no. : S33595

8. COMMENT : _____

	AIR CIRCUIT BREAKER/MCCB	SHEET 10
		OF 2

FACTORY : ชามว สุขุมวิท	PANEL NAME / No. : TIE
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : MBD1-MDB - 2

1. CIRCUIT BREAKER INSPECTION

1.1 Body and seal	<i>Normal / ปกติ</i>	6.6 Control accessory equipment	<i>Normal / ปกติ</i>
1.2 Mechanism condition	<i>Normal / ปกติ</i>	6.7 Termination and mounting	<i>Normal / ปกติ</i>
1.3 Pole and gripping condition	<i>Normal / ปกติ</i>	6.8 Racking / rail mechanism	<i>Fixed type</i>
1.4 Grounding and mounting	<i>Normal / ปกติ</i>	6.9 Display and indicator status	<i>Normal / ปกติ</i>
1.5 Auxiliary / limit switch	<i>Normal / ปกติ</i>	6.10 Final operation counter check	<i>Normal / ปกติ</i>

2. FUNCTION TEST

2.1 Operation and function test	<i>Normal / ปกติ</i>
2.2 Mechanism operation test	<i>Normal / ปกติ</i>
2.3 Display and indicator status test	<i>Normal / ปกติ</i>
2.4 Under voltage release test	<i>Normal / ปกติ</i>
2.5 Shunt trip release test	<i>Normal / ปกติ</i>
2.6 Motor operating mechanism test	<i>Normal / ปกติ</i>

3. INSULATION RESISTANCE MEASUREMENT

Connection 2500 V.	Measurement of minute (Ω)			Result
	A	B	C	
Phase to Phase	OL	OL	OL	<i>Pass/ผ่าน</i>
Phase to G.	OL	OL	OL	<i>Pass/ผ่าน</i>

Remark: _____

4. CONTACT RESISTANCE MEASUREMENT

Pole	Test current (Adc)	Phase A (μ Ω)	Phase B (μ Ω)	Phase C (μ Ω)	Criteria	Result	
Top-Bottom (Close status)	10	41.86	40.81	44.06	± 50% of lowest value (ANSI/NETA MTS)	/	<i>Passed</i>
							<i>Failed</i>

Remark: Contact resistance ควรมีค่าน้อยกว่า 100 μΩ _____

	AIR CIRCUIT BREAKER/MCCB	SHEET 11
		OF 2

FACTORY : ชาวมารู	PANEL NAME / No. : TIE
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : MBD1-MDB - 2

AIR CIRCUIT BREAKER REPORT

5. Date: 22/12/2562	Project Name: ACB TEST
Plant: Electrical Room NO.2	V. Panel Name: MDB (FROM TR 1250 KVA.)
Voltage Rating: 400/415	
Rate Current: 2000	ACB Tyep: Darw Tyep
Serial No: -	
Manufacture: SCHNEIDER	Frequency: 50 Hz.
Interrupting Capacity: 65 KA.	Pole: 3 P.

Relay Setting

Ir: 1	tr: 20 Sec
Isd: 4	tsd: 0.3 Sec
Ii@6 4	
Ig: A	tig: 0.3 Sec

6. FUNCTION TEST

6.1 Operation and function test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
6.2 Mechanism operation test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
6.3 Display and indicator status test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
6.4 Under voltage release test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
6.5 Shunt trip release test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
6.6 Motor operating mechanism test	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A

7. TRIP PING DEVICE TEST


ACB Fixed Type: <input type="checkbox"/>	ACB Darw Type: <input checked="" type="checkbox"/>	Protection Unit Release : Micrologic 6.0 E.
--	--	--

	Seting(IR)	Injection Current(A.)	Trip Time(S)	Time Cure(S)	Status.
LONG TIME DELAY TEST(LTD)	1	6000	15.33	20.094	Pass / ผ่าน
SHORT TIME DELAY TEST(STD)	4	12000	0.164	0.397	Pass / ผ่าน
INSTANTANEOUS TIME TEST(INST)	4	20000	0.036	≤	Pass / ผ่าน
GROUP FAULT TEST (GFR)	A	1000	0.223	0.3	Pass / ผ่าน

7. REFERENCE FOR USED INSTRUMENT

7.1 Insulation resistance test	Manufacturer : _____	Type : _____	Serial no. : -
7.2 Contact resistance test	Manufacturer : Chauvin arnoux	Type : C.A6240	Serial no. : 106875
7.3 Tripping device test	Manufacturer : Scheider	Type : Full-Function Test Kit	Serial no. : S33595

8. COMMENT : _____

	GROUNDING SYSTEM	SHEET 5
		OF 1
FACTORY : ชามว สุขุมวิท LOCATION : ELECTRICAL ROOM.		PANEL NAME / No. : ดีก A FEEDER NAME / No. : MDB - 1

1. VISUAL CHECK

- | | |
|--|---------------|
| - Grounding system weiding joints performed properly | Normal / ปกติ |
| - Grounding connections to steel structures, apparatuses and outdoor cubicles performed properly | Normal / ปกติ |
| - Grounding connections to control building and contyrol building performed properly | Normal / ปกติ |

2. GROUNDING MEASUREMENT

ITEM	LOCATION	GROUNDING MEASURED	REMARK
1	TR	0.47 Ω	Pass/ผ่าน
2	MDB	0.37 Ω	Pass/ผ่าน

3. REFERENCE TO USED INSTRUMENT


3.1 Grounding system test

Manufacturer : Megger Type : DET14C Serial no. : 8164300

4. COMMENT :

มาตรฐานการติดตั้งทางไฟฟ้าสำหรับประเทศไทยของ ว.ส.ท. ได้กำหนดค่าความต้านทานของหลักดินต้องไม่เกิน 5 Ω สำหรับพื้นที่ที่ยากในการปฏิบัติ ถ้าความต้านทานของหลักดินเกินค่าดังกล่าว และทางการไฟฟ้าเห็นชอบอาจกำหนดให้มีค่าไม่เกิน 25 Ω



	GROUNDING SYSTEM	SHEET 5
		OF 1
FACTORY : ชามมา สุขุมวิท	PANEL NAME / No. : ด็กA	
LOCATION : ELECTRICAL ROOM.	FEEDER NAME / No. : MDB - 2	

1. VISUAL CHECK

- | | |
|--|---------------|
| - Grounding system weiding joints performed properly | Normal / ปกติ |
| - Grounding connections to steel structures, apparatuses and outdoor cubicles performed properly | Normal / ปกติ |
| - Grounding connections to control building and contyrol building performed properly | Normal / ปกติ |

2. GROUNDING MEASUREMENT

ITEM	LOCATION	GROUNDING MEASURED	REMARK
1	TR	0.49 Ω	Pass/ผ่าน
2	MDB	0.37 Ω	Pass/ผ่าน

3. REFERENCE TO USED INSTRUMENT

3.1 Grounding system test

Manufacturer : Megger Type : DET14C Serial no. : 8164300

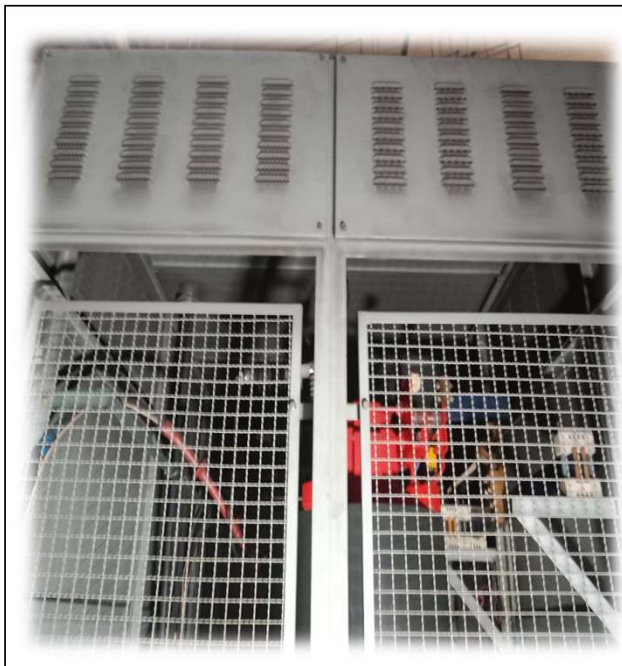
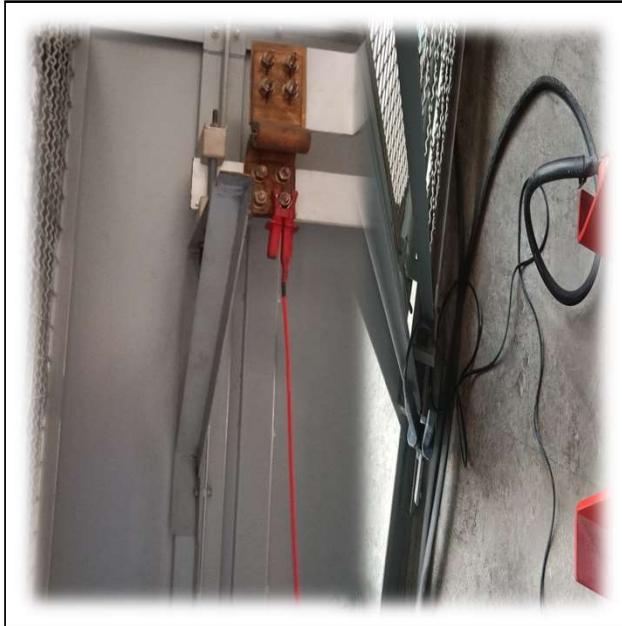
4. COMMENT :

มาตรฐานการติดตั้งทางไฟฟ้าสำหรับประเทศไทยของ ว.ส.ท. ได้กำหนดค่าความต้านทานของหลักดินต้องไม่เกิน 5 Ω สำหรับพื้นที่ที่ยากในการปฏิบัติ ถ้าความต้านทานของหลักดินเกินค่าดังกล่าว และทางการไฟฟ้าเห็นชอบอาจกำหนดให้มีค่าไม่เกิน 25 Ω

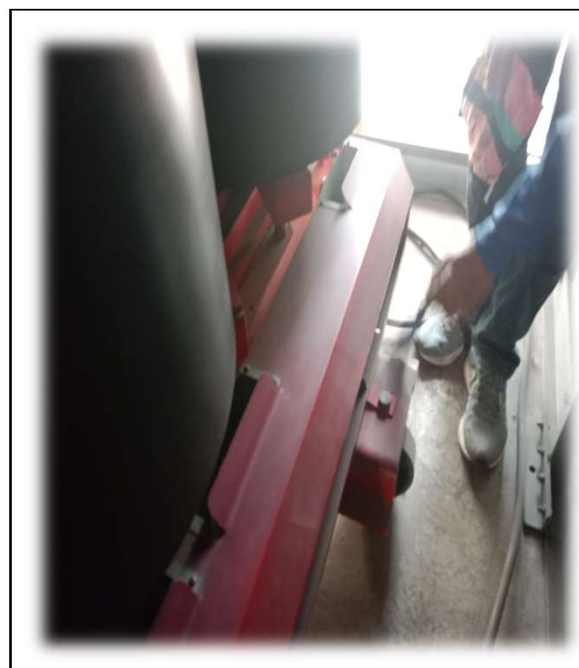




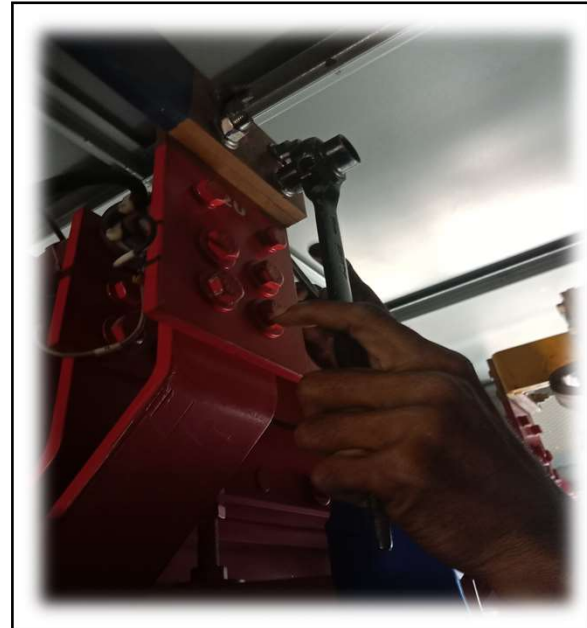
รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



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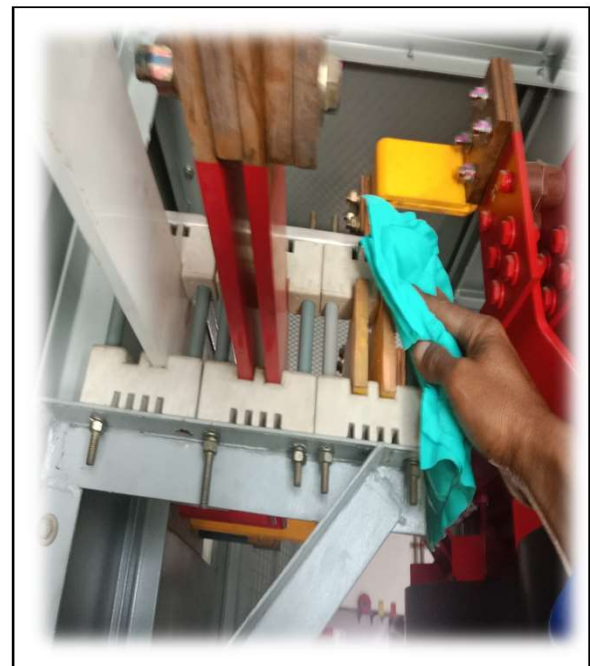
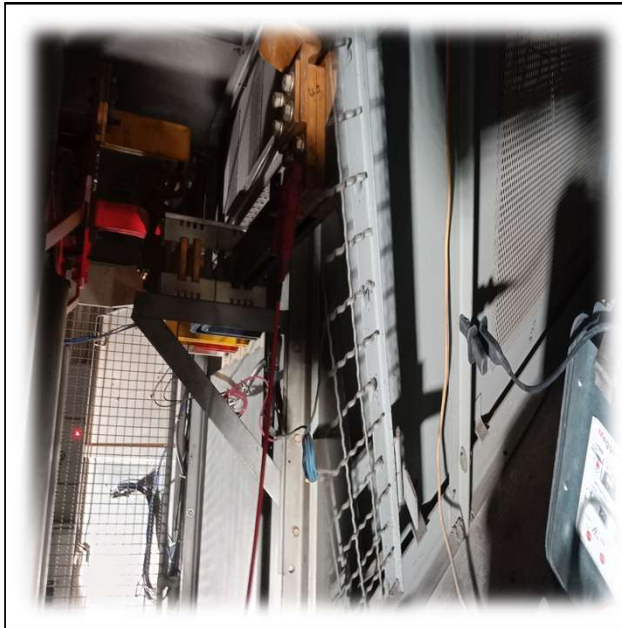
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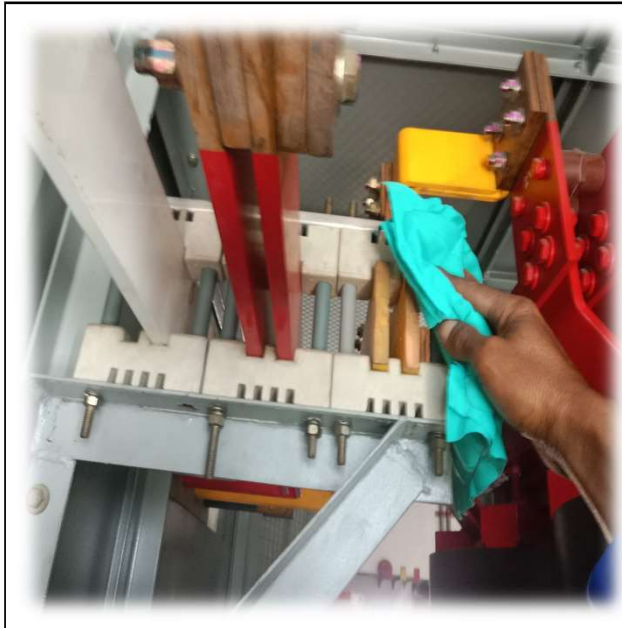
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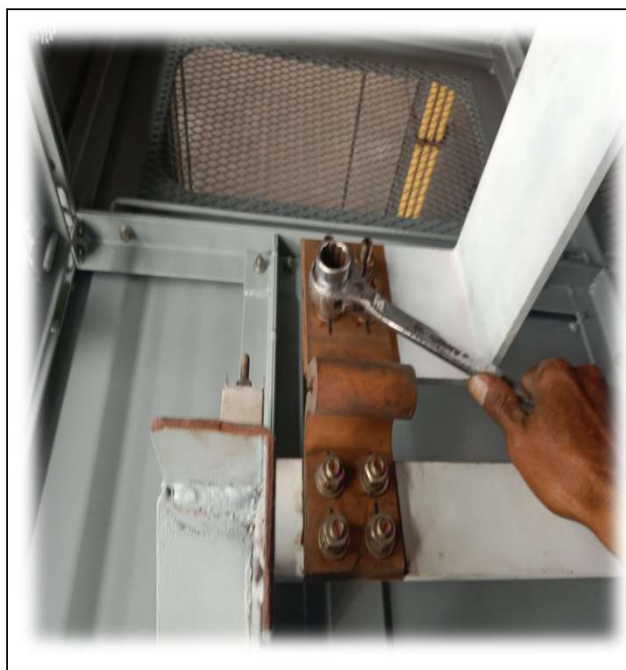
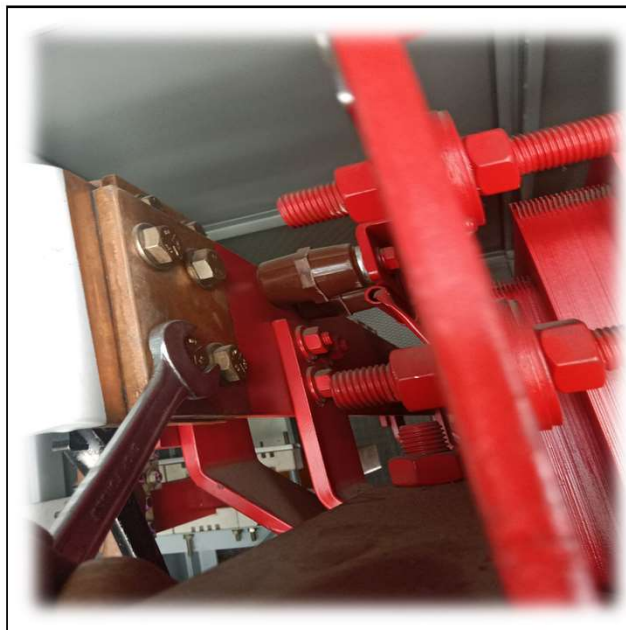
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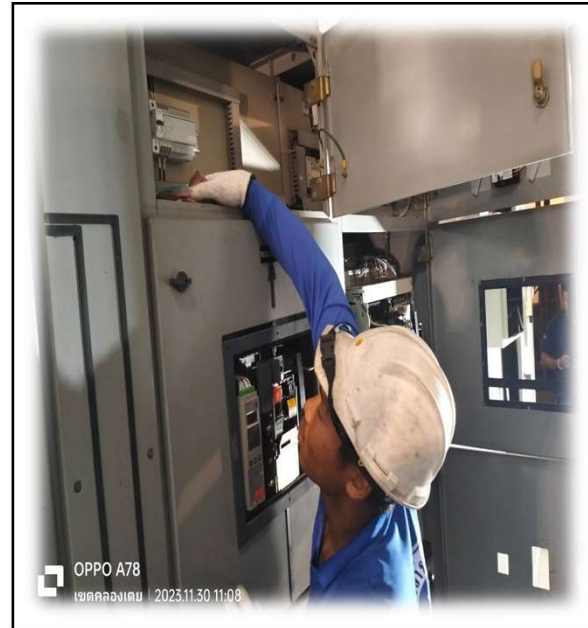
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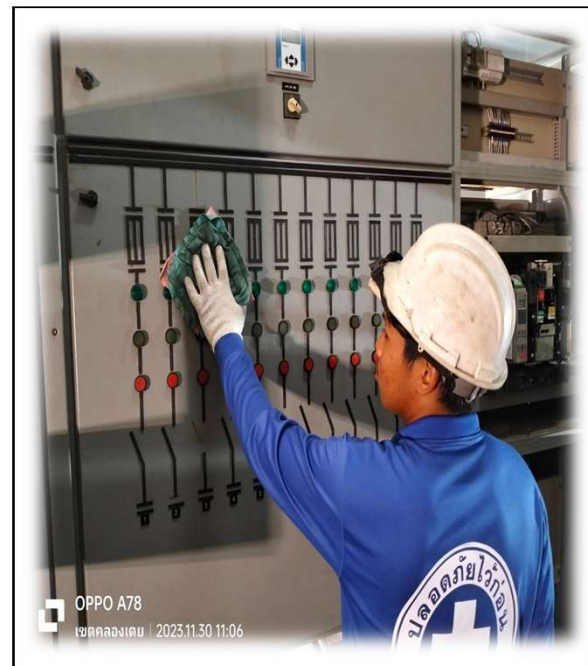
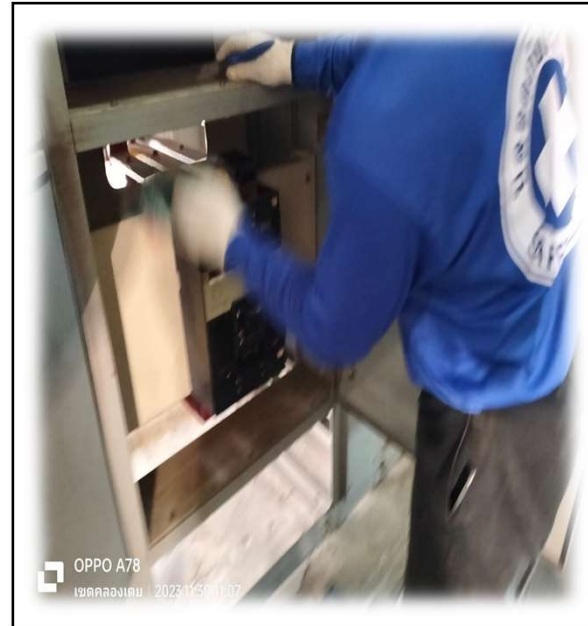
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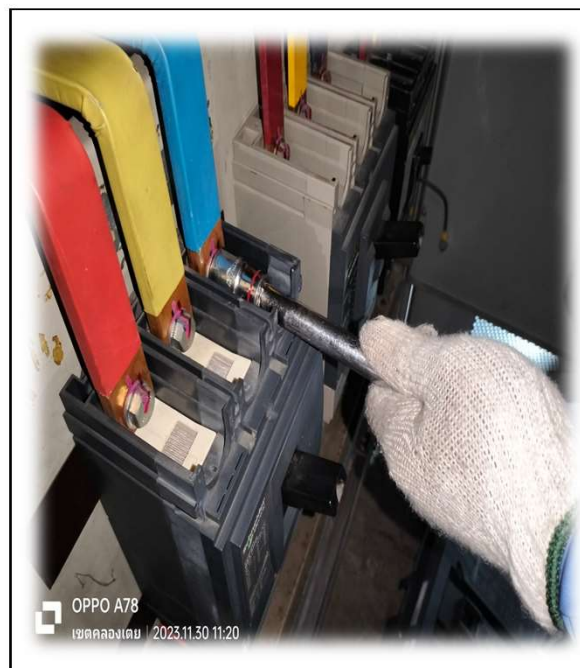
รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า




รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า

	DISTRIBUTION TRANSFORMER	SHEET 1
		OF 1
FACTORY : ชามมา สุขุมวิท LOCATION : หม้อแปลงไฟฟ้า	PANEL NAME / No. : ด็กB FEEDER NAME / No. : TR - 1	

1. TECHNICAL DATA

Manufacturer :	HTT	Rated power :	1250
BIL :	STEP DOWN	Frequency :	50
Serial No :	9710072	No. of phase :	3
Year :	1998	Cooling type :	ONAN
Standard :	IEC 60076	Vectergroup symbol :	DYN11
Volume of oil :	625	Service tap :	1
	lit	%Impedance :	6
Total mass :	3320		
	kg.	Oil temperature	
Oil temperature rise :	60	Temperature :	60 °C
	°C	Temperature max :	65 °C
Rated voltage HV :	24000	Alarm :	- °C
	V.	Trip :	- °C
Rated voltage LV :	4161		
	V.		
Rated current HV :	24.06		
	A.		
Rated current LV :	1387.86		
	A.		


2. CONSTRUCTION CHECK

Inspection results ผลการตรวจสอบ	Problems and solutions ปัญหาและการแก้ไข	Correction results ผลการแก้ไข
2.1 Seal and body	good/ดี	
2.2 Oil level and leakage inspection	good/ดี	
2.3 Bushing connection and cleaning	good/ดี	
2.4 Termination and moution	good/ดี	
2.5 Earthing Terminal	good/ดี	
2.6 Marker phase	good/ดี	
2.7 Drier filter condition	good/ดี	
2.8 Cooling system condition	good/ดี	
2.9 Bucholz relay	-	ไม่มีการติดตั้ง
2.10 Pressure relief	good/ดี	
2.11 Winding temperature	good/ดี	
2.12 Oil temperature	good/ดี	
2.13 Oil level indicator	good/ดี	

3. Transformer oil Classification

Good	Good Oil (Pole Yellow)
PROP A	Proposition A Oil (Yellow)
Marginal	Marginal Oil (Bright Yellow)
Bad	Bad Oil (Brown)
Very Bad	Very Bad Oil (Brown) Extremely Bad
Extremely Bad	Extremely Bad Oil (Dark Brown)
	Oil in Disastrous Condition (Black)

3.1 COMMENT :

	DISTRIBUTION TRANSFORMER	SHEET 2
		OF 1
FACTORY : ชาม่า สุขุมวิท		PANEL NAME / No. : ดักB
LOCATION : หม้อแปลงไฟฟ้า		FEEDER NAME / No. : TR - 1

4. OIL DIELECTRIC STRENGTH MEASUREMENT

Test standard : ASTM D877A-13 Gap distance : 2.54 mm. Electrode type : Cylinder

MAIN TANK

Item no.	Breakdown voltage (kV)	
	Before	After
1		
2		
3		
4		
5		
6		
AVG		
Result		

Criteria : Breakdown voltage should be more than 30 KV

5. INSULATION RESISTANCE MEASUREMENT

Temp. : 32 °C Humidity : %

Connection	Measurement of minute (MΩ)			Result
	Standard	Must be greater than	Value	
Pri. To Sec	1000	≥	320 G	Pass/ผ่าน
Pri.-Gnd.	1000	≥	395 G	Pass/ผ่าน
Sec.-Gnd.	500	≥	303 G	Pass/ผ่าน

Insulation resistance at 30 sec

6. REFERENCES TO USED INSTRUMENT

6.1 Insulation resistance test

Manufacturer : **KYORITSU** Type : **KEW 3125A** Serial no. : -

6.2 Oil dielectric breakdown test

Manufacturer : **MEGGER** Type : **OTS 60PB** Serial no. : **081008/3986**

7. COMMENT:

	DISTRIBUTION TRANSFORMER	SHEET 6
		OF 2

FACTORY : ขามา สุขุมวิท	PANEL NAME / No. : ด็กB
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : TR - 2

1. TECHNICAL DATA

Manufacturer : HTT BIL : GDNN1250/24-2 Serial No : 1035927 Year : 2010 Standard : IEC 60076 Volume of oil : - Liter Total mass : 3540 kg. Oil temperature rise : 60 °K Rated voltage HV : 24000 V. Rated voltage LV : 416-240 V. Rated current HV : 30.1 A. Rated current LV : 1735 A.	Rated power : 1250 Rated frequency : 50 No. of phase : 3 Cooling type : ONAN Vectergroup symbol : DYN11 Ser vice tap : 1 %Impedance : 5.8 Oil temperature Temperature : 60 °C Temperature max : 65 °C Alarm : - °C Trip : - °C
--	---

2. CONSTRUCTION CHECK


- 2.1 Seal and body
- 2.2 Oil level and leakage inspection
- 2.3 Bushing connection and cleaning
- 2.4 Termination and mounion
- 2.5 Earthing Terminal
- 2.6 Marker phase
- 2.7 Drier filter condition
- 2.8 Cooling system condition
- 2.9 Bucholz relay
- 2.10 Pressure relief
- 2.11 Winding temperature
- 2.12 Oil temperature
- 2.13 Oil level indicator

Inspection results ผลการตรวจสอบ	Probiems and solutions ปัญหาและการแก้ไข	Correction results ผลการแก้ไข
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
good/ดี		
-	ไม่มีการติดตั้ง	
good/ดี		
good/ดี		
good/ดี		
good/ดี		

3. TRANSFERMER OIL CLASSIFICATION

Good	Good Oil (Pole Yellow)
PROP A	Proposition A Oil (Yellow)
Marginal	Marginal Oil (Bright Yellow)
Bad	Bad Oil (Brown)
Very Bad	Very Bad Oil (Brown) Extremely Bad
Extremely Bad	Extremely Bad Oil (Dark Brown)

3.1 COMMENT :

	DISTRIBUTION TRANSFORMER	SHEET 7
		OF 2
FACTORY : ชามา สุขุมวิท LOCATION : หมอแปลงไฟฟ้า	PANEL NAME / No. : ดักB FEEDER NAME / No. : TR - 2	

4. OIL DIELECTRIC STRENGTH MEASUREMENT

Test standard : ASTM D877A-13 Gap distance : 2.54 mm. Electrode type : Cylinder

MAIN TANK

Item no.	Breakdown voltage (kV)	
	Before	After
1		
2		
3		
4		
5		
6		
AVG		
Result		

Criteria : Breakdown voltage should be more than 30 KV

5. INSULATION RESISTANCE MEASUREMENT

Temp. : 34 °C Humidity : %

Connection 2.5 Kv.	Measurement of minute (MΩ)			Result
	Standard	Must be greater than	Value	
Pri. To Sec	1000	≥	54.2 G	Pass/ผ่าน
Pri.-Gnd.	1000	≥	59.9 G	Pass/ผ่าน
Sec.-Gnd.	500	≥	42.3 G	Pass/ผ่าน

Insulation resistance at 30 sec

6. REFERENCES TO USED INSTRUMENT

6.1 Insulation resistance test

Manufacturer : **KYORITSU** Type : **KEW 3125A** Serial no. : -

6.2 Oil dielectric breakdown test

Manufacturer : **MEGGER** Type : **OTS 60PB** Serial no. : **081008/3986**

7. COMMENT:

	MV PANEL INSPECTION	SHEET 3
		OF 2

FACTORY :	ชาวมฯ สุขุมวิท	PANEL NAME / No. :	ตู้กบ
LOCATION :	หม้อแปลงไฟฟ้า	FEEDER NAME / No. :	MDB - 1

1. VISUAL INSPECTION

1.1 Check panel support and door	Comment	PASSED
1.2 Complete assembly	Comment	PASSED
1.3 Lamp, nameplate and cleanliness	Comment	PASSED
1.4 Wiring connection	Comment	PASSED
1.5 Earthing connention	Comment	PASSED
1.6 Control cable, cable number	Comment	PASSED

2. METERING INSTRUMENT AND PROTECTIVE RELAY CHECK

2.1 Voltmeter check	Result :		2.6 Watt-hour meter check	Result :	
2.2 Ammeter check	Result :		2.7 Digital multimeter check	Result :	PASSED
2.3 Walt meter check	Result :		2.8 Protective relay setting test	Result :	
2.4 Var meter check	Result :		2.9 Protective relay function trip test	Result :	
2.5 Cos phi meter check	Result :				

9. CABLE COMPARTMENT CHECK

9.1 Clean cable compartment	Comment	PASSED
9.2 Check connection	Comment	PASSED

10. LOW VOLTAGE COMPARTMENT CHECK

10.1 Clean low voltage compartment	Comment	PASSED
10.2 Grease lubricate all machanism	Comment	PASSED

11. BUSBAR COMPARTMENT CHECK

11.1 Clean bus bar compartment	Comment	PASSED
11.2 Check tightening torque	Comment	PASSED

12. CB OR LBS COMPARTMENT / PT COMPARTMENT

12.1 Clean circuit breaker compartment	Comment	PASSED
12.2 Grease lubricate all mechanism	Comment	PASSED
12.3 Check connection of control plug.	Comment	PASSED

COMMENT : _____

	MV PANEL INSPECTION	SHEET 4
		OF 2

FACTORY :	ชาวมฯ สุขุมวิท	PANEL NAME / No. :	ตู้กบ
LOCATION :	หม้อแปลงไฟฟ้า	FEEDER NAME / No. :	MDB - 1

13. INSULATION RESISTANCE MEASUREMENT BUSBAR

Connection	Measurement of minute (MΩ)			Result
1000 V.	A	B	C	
Phase to Phase	OL	OL	OL	Pass/ผ่าน
Phase to Grounding	OL	OL	OL	Pass/ผ่าน

Insulation resistance at 10 sec


14. REFERENCE FOR USED INSTRUMENT

14.1 Insulation resistance test

Manufacturer : Megger Type : 515 Serial no. : W0405399

14.2 Digital multimeter

Manufacturer : FLUKE Type : 115 Serial no. : 16460168

	MV PANEL INSPECTION	SHEET 3
		OF 2
FACTORY : ชาม่า สุขุมวิท		PANEL NAME / No. : ดักB
LOCATION : หม้อแปลงไฟฟ้า		FEEDER NAME / No. : MDB - 2

1. VISUAL INSPECTION

1.1 Check panel support and door	Comment	PASSED
1.2 Complete assembly	Comment	PASSED
1.3 Lamp, nameplate and cleanliness	Comment	PASSED
1.4 Wiring connection	Comment	PASSED
1.5 Earthing connention	Comment	PASSED
1.6 Control cable, cable number	Comment	PASSED

2. METERING INSTRUMENT AND PROTECTIVE RELAY CHECK

2.1 Voltmeter check	Result :		2.6 Watt-hour meter check	Result :	
2.2 Ammeter check	Result :		2.7 Digital multimeter check	Result :	PASSED
2.3 Walt meter check	Result :		2.8 Protective relay setting test	Result :	
2.4 Var meter check	Result :		2.9 Protective relay function trip test	Result :	
2.5 Cos phi meter check	Result :				

9. CABLE COMPARTMENT CHECK

9.1 Clean cable compartment	Comment	PASSED
9.2 Check connection	Comment	PASSED

10. LOW VOLTAGE COMPARTMENT CHECK

10.1 Clean low voltage compartment	Comment	PASSED
10.2 Grease lubricate all machanism	Comment	PASSED


11. BUSBAR COMPARTMENT CHECK

11.1 Clean bus bar compartment	Comment	PASSED
11.2 Check tightening torque	Comment	PASSED

12. CB OR LBS COMPARTMENT / PT COMPARTMENT

12.1 Clean circuit breaker compartment	Comment	PASSED
12.2 Grease lubricate all mechanism	Comment	PASSED
12.3 Check connection of control plug.	Comment	PASSED

COMMENT : _____

	MV PANEL INSPECTION	SHEET 4
		OF 2
FACTORY : ชาม่า สุขุมวิท		PANEL NAME / No. : ดับB
LOCATION : หม้อแปลงไฟฟ้า		FEEDER NAME / No. : MDB - 2

13. INSULATION RESISTANCE MEASUREMENT BUSBAR

Connection	Measurement of minute (MΩ)			Result
1000 V.	A	B	C	
Phase to Phase	OL	OL	OL	Pass/ผ่าน
Phase to Grounding	OL	OL	OL	Pass/ผ่าน

Insulation resistance at 10 sec

14. REFERENCE FOR USED INSTRUMENT

14.1 Insulation resistance test

Manufacturer : Megger Type : 515 Serial no. : W0405399

14.2 Digital multimeter

Manufacturer : FLUKE Type : 115 Serial no. : 16460168

	AUTOMATIC POWER FACTOR CONTROLLER	SHEET 8
		OF 5

FACTORY : ชามมา สุขุมวิท	PANEL NAME / No. : ตู้กบ
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 1

25. POWER FACTOR CONTROL TEST

Manufacture: FRANKE Switch on time 40 sec. Switch off time 40 sec.
 PF. 0.97 Capacitance 50 kvar Step No. 12 step

Setting time (sec.)	Operating time (sec.)	
	Connected tme (sec.)	Disconnected time (sec.)
40.0	40.0	40.0

26. FUNCTION CHECK

26.1 Step command to close magnatic contactor test.	<u>PASS</u>
26.2 Step command to open magnatic contactor test.	<u>PASS</u>
26.3 Operation sequence test.	<u>PASS</u>
26.4 Display indicator and flag target operate check.	<u>PASS</u>
26.5 All of out contact check.	<u>PASS</u>

27. FINAL JUDGEMENT

Test result of Automatic power factor regulator	<input checked="" type="checkbox"/> Pass (in accuracy limit)
	<input type="checkbox"/> Not pass (Out of accuracy limit)

COMMENT : _____

	AUTOMATIC POWER FACTOR CONTROLLER	SHEET 8
		OF 5

FACTORY : ชวมา สุขุมวิท	PANEL NAME / No. : ตู้B
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 2

25. POWER FACTOR CONTROL TEST

Manufacture: FRANKE Switch on time 40 sec. Switch off time 40 sec.
 PF. 0.97 Capacitance 50 kvar Step No. 12 step

Setting time (sec.)	Operating time (sec.)	
	Connected tme (sec.)	Disconnected time (sec.)
40.0	40.0	40.0

26. FUNCTION CHECK

26.1 Step command to close magnatic contactor test.	<u>PASS</u>
26.2 Step command to open magnatic contactor test.	<u>PASS</u>
26.3 Operation sequence test.	<u>PASS</u>
26.4 Display indicator and flag target operate check.	<u>PASS</u>
26.5 All of out contact check.	<u>PASS</u>

27. FINAL JUDGEMENT

Test result of Automatic power factor regulator	<input checked="" type="checkbox"/> Pass (in accuracy limit)
	<input type="checkbox"/> Not pass (Out of accuracy limit)

COMMENT : _____

	CAPACITOR BANK	SHEET 9
		OF 6

FACTORY : ชาม่า สุขุมวิท	PANEL NAME / No. : ดึกB
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 1

28. TECHNICAL DATA

Manufacturer : ABB	Rated : 50 kVAR
Type : DRY	Reted voltage : 400 Volt
Reted power fuse and type : 125 Amp	Reted current : 72.2 Amp
Connection : Δ	Reted capacitance : 518 μF

29. VISUAL CHECK

29.1 Inspection check	Comment	PASS
29.2 Cable for capacitor	Comment	PASS
29.3 Cleaning and tightening	Comment	PASS

30. CAPACITANCE MEASUREMENT

Step	Reted kVAR	Reted current A	Capacitance (Micro Farad)			Result
			L1-L2	L2-L3	L3-L1	
1	50		515	514	519	PASS
2	50		517	517	515	PASS
3	50		499	496	496	PASS
4	50		516	516	517	PASS
5	50		497	497	499	PASS
6	50		496	498	495	PASS
7	50		498	498	497	PASS
8	50		498	497	497	PASS
9	50		515	516	517	PASS
10	50		498	497	497	PASS
11	50		515	515	514	PASS
12	50		521	521	518	PASS

หมายเหตุ : ค่า + - ระหว่างเฟส -5%-10%

COMMENT : _____

	CONTACTOR	SHEET 10
		OF 6

FACTORY : ชามมา สุขุมวิท	PANEL NAME / No. : ดักB
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 1

31. MAGNATIC CONTACTION CHECK

Step	Manufacturer	Type	Magnatic check	Comment
1	ABB	UA75-30	PASS	
2	ABB	UA75-30	PASS	
3	ABB	UA75-30	PASS	
4	ABB	UA75-30	PASS	
5	ABB	UA75-30	PASS	
6	ABB	UA75-30	PASS	
7	ABB	UA75-30	PASS	
8	ABB	UA75-30	PASS	
9	ABB	UA75-30	PASS	
10	ABB	UA75-30	PASS	
11	ABB	UA75-30	PASS	
12	ABB	UA75-30	PASS	

32. REFERENCE TO USED INSTRUMENT

32.1 Insulation resistance test

Manufacturer : **Megger** Type : **515** Serial no. : **W0405399**

32.2 Capacitance measurement

Manufacturer : **Fluke** Type : **115** Serial no. : **-**

COMMENT :

	CAPACITOR BANK	SHEET 9
		OF 6

FACTORY : ชามาศูภูมิวิท	PANEL NAME / No. : ดีกบ
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 2

28. TECHNICAL DATA

Manufacturer : ABB	Rated : 50 kVAR
Type : DRY	Reted voltage : 400 Volt
Reted power fuse and type : 125 Amp	Reted current : 72.2 Amp
Connection : Δ	Reted capacitance : 518 μF

29. VISUAL CHECK

29.1 Inspection check	Comment	PASS
29.2 Cable for capacitor	Comment	PASS
29.3 Cleaning and tightening	Comment	PASS

30. CAPACITANCE MEASUREMENT

Step	Reted kVAR	Reted current A	Capacitance (Micro Farad)			Result
			L1-L2	L2-L3	L3-L1	
1	50		514	514	514	PASS
2	50		516	514	513	PASS
3	50		514	514	514	PASS
4	50		513	513	513	PASS
5	50		515	515	515	PASS
6	50		515	515	515	PASS
7	50		466	395	395	PASS
8	50		515	514	515	PASS
9	50		516	517	516	PASS
10	50		516	517	517	PASS
11	50		514	514	514	PASS
12	50		516	517	516	PASS

หมายเหตุ : ค่า + - ระหว่างเฟส -5%-10%

COMMENT : _____

	CONTACTOR	SHEET 10
		OF 6

FACTORY : ชามมา สุขุมวิท LOCATION : หม้อแปลงไฟฟ้า	PANEL NAME / No. : ดักB FEEDER NAME / No. : MDB - 2
--	--

31. MAGNATIC CONTACTION CHECK

Step	Manufacturer	Type	Magnatic check	Comment
1	ABB	UA75-30	PASS	
2	ABB	UA75-30	PASS	
3	ABB	UA75-30	PASS	
4	ABB	UA75-30	PASS	
5	ABB	UA75-30	PASS	
6	ABB	UA75-30	PASS	
7	ABB	UA75-30	PASS	
8	ABB	UA75-30	PASS	
9	ABB	UA75-30	PASS	
10	ABB	UA75-30	PASS	
11	ABB	UA75-30	PASS	
12	ABB	UA75-30	PASS	

32. REFERENCE TO USED INSTRUMENT


32.1 Insulation resistance test

Manufacturer : **Megger** Type : **515** Serial no. : **W0405399**

32.2 Capacitance measurement

Manufacturer : **Fluke** Type : **115** Serial no. : **-**

COMMENT :

	AIR CIRCUIT BREAKER/MCCB	SHEET 3
		OF 1
FACTORY : ชามรา สุขุมวิท LOCATION : หม้อแปลงไฟฟ้า		PANEL NAME / No. : ด็กB FEEDER NAME / No. : MDB - 1

1. CIRCUIT BREAKER INSPECTION

1.1 Body and seal	<i>Normal / ปกติ</i>	6.6 Control accessory equipment	<i>Normal / ปกติ</i>
1.2 Mechanism condition	<i>Normal / ปกติ</i>	6.7 Termination and mounting	<i>Normal / ปกติ</i>
1.3 Pole and gripping condition	<i>Normal / ปกติ</i>	6.8 Racking / rail mechanism	<i>Fixed type</i>
1.4 Grounding and mounting	<i>Normal / ปกติ</i>	6.9 Display and indicator status	<i>Normal / ปกติ</i>
1.5 Auxiliary / limit switch	<i>Normal / ปกติ</i>	6.10 Final operation counter check	<i>Normal / ปกติ</i>

2. FUNCTION TEST

2.1 Operation and function test	<i>Normal / ปกติ</i>
2.2 Mechanism operation test	<i>Normal / ปกติ</i>
2.3 Display and indicator status test	<i>Normal / ปกติ</i>
2.4 Under voltage release test	<i>Normal / ปกติ</i>
2.5 Shunt trip release test	<i>Normal / ปกติ</i>
2.6 Motor operating mechanism test	<i>Normal / ปกติ</i>

3. INSULATION RESISTANCE MEASUREMENT


Connection 2500 V.	Measurement of minute (Ω)			Result
	A	B	C	
Phase to Phase	-	-	-	-
Phase to G.	-	-	-	-

Remark: _____

4. CONTACT RESISTANCE MEASUREMENT

Pole	Test current (Adc)	Phase A (μ Ω)	Phase B (μ Ω)	Phase C (μ Ω)	Criteria	Result	
Top-Bottom (Close status)	10	10	10	12	± 50% of lowest value (ANSI/NETA MTS)	/	<i>Passed</i>
							<i>Failed</i>

Remark: Contact resistance ควรมีค่าน้อยกว่า 100 μΩ _____

	AIR CIRCUIT BREAKER/MCCB	SHEET 4
		OF 1

FACTORY : ชามว สุขุมวิท	PANEL NAME / No. : ดักB
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 1

AIR CIRCUIT BREAKER REPORT

5. Date: _____ **Project Name:** ACB TEST

Plant: Electrical Room NO.2 Voltage Rating 400/415 V. Panel Name: MDB (FROM TR 1250 KVA.)

Rate Current: 2000 A. ACB Typ: Darw Typ Serial No: -

Manufacture: SCHNEIDER Frequency: 50 Hz. Interrupting Capacity: 65 KA. Pole: 3 P.

Relay Setting

Ir: 1	tr: 20 Sec
Isd: 4	tsd: 0.3 Sec
Ii@6 4	
Ig: A	tig: 0.3 Sec

6. FUNCTION TEST

6.1 Operation and function test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.2 Mechanism operation test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.3 Display and indicator status test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.4 Under voltage release test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.5 Shunt trip release test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.6 Motor operating mechanism test	<input type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	

7. TRIP PING DEVICE TEST

ACB Fixed Type: ☐ **ACB Darw Type:** ☒ **Protection Unit Release :** Micrologic 6.0 E.

	Seting(IR)	Injection Current(A.)	Trip Time(S)	Time Cure(S)	Status.
LONG TIME DELAY TEST(LTD)	1	6000	15.33	20.094	Pass / ผ่าน
SHORT TIME DELAY TEST(STD)	4	12000	0.164	0.397	Pass / ผ่าน
INSTANTANEOUS TIME TEST(INST)	4	20000	0.036	≤	Pass / ผ่าน
GROUP FAULT TEST (GFR)	A	1000	0.223	0.3	Pass / ผ่าน


7. REFERENCE FOR USED INSTRUMENT

7.1 Insulation resistance test
 Manufacturer : _____ Type : _____ Serial no. : _____

7.2 Contact resistance test
 Manufacturer : Chauvin arnoux Type : C.A6240 Serial no. : 106875

7.3 Tripping device test
 Manufacturer : Scheider Type : Full-Function Test Kit Serial no. : S33595

8. COMMENT : _____

	AIR CIRCUIT BREAKER/MCCB	SHEET 8
		OF 2
FACTORY : ชามาศูขุมวิท		PANEL NAME / No. : ด็กB
LOCATION : หม้อแปลงไฟฟ้า		FEEDER NAME / No. : MDB - 2

1. CIRCUIT BREAKER INSPECTION

1.1 Body and seal	<i>Normal / ปกติ</i>	6.6 Control accessory equipment	<i>Normal / ปกติ</i>
1.2 Mechanism condition	<i>Normal / ปกติ</i>	6.7 Termination and mounting	<i>Normal / ปกติ</i>
1.3 Pole and gripping condition	<i>Normal / ปกติ</i>	6.8 Racking / rail mechanism	<i>Fixed type</i>
1.4 Grounding and mounting	<i>Normal / ปกติ</i>	6.9 Display and indicator status	<i>Normal / ปกติ</i>
1.5 Auxiliary / limit switch	<i>Normal / ปกติ</i>	6.10 Final operation counter check	<i>Normal / ปกติ</i>

2. FUNCTION TEST

2.1 Operation and function test	<i>Normal / ปกติ</i>
2.2 Mechanism operation test	<i>Normal / ปกติ</i>
2.3 Display and indicator status test	<i>Normal / ปกติ</i>
2.4 Under voltage release test	<i>Normal / ปกติ</i>
2.5 Shunt trip release test	<i>Normal / ปกติ</i>
2.6 Motor operating mechanism test	<i>Normal / ปกติ</i>

3. INSULATION RESISTANCE MEASUREMENT


Connection 2500 V.	Measurement of minute (Ω)			Result
	A	B	C	
Phase to Phase	OL	OL	OL	<i>Pass/ผ่าน</i>
Phase to G.	OL	OL	OL	<i>Pass/ผ่าน</i>

Remark: _____

4. CONTACT RESISTANCE MEASUREMENT

Pole	Test current (Adc)	Phase A (μ Ω)	Phase B (μ Ω)	Phase C (μ Ω)	Criteria	Result	
Top-Bottom (Close status)	10	11	12	13	± 50% of lowest value (ANSI/NETA MTS)	/	<i>Passed</i>
							<i>Failed</i>

Remark: Contact resistance ควรมีค่าน้อยกว่า 100 μΩ

	AIR CIRCUIT BREAKER/MCCB	SHEET 9
		OF 2
FACTORY : ชา มา สุขุมวิท LOCATION : หมอนแปลงไฟฟ้า	PANEL NAME / No. : ด็กB FEEDER NAME / No. : MDB - 2	

AIR CIRCUIT BREAKER REPORT

5. Date: _____ **Project Name:** ACB TEST

Plant: Electrical Room NO.2 Voltage Rating: 400/415 V. Panel Name: MDB (FROM TR 1250 KVA.)

Rate Current: 2000 A. ACB Tyep: Darw Tyep Serial No: -

Manufacture: SCHNEIDER Frequency: 50 Hz. Interrupting Capacity: 65 KA. Pole: 3 P. P.

Relay Setting

Ir: 1 Isd: 4 Ii@6 4 Ig: A	tr: 20 Sec tsd: 0.3 Sec tig: 0.3 Sec
--	--

6. FUNCTION TEST

6.1 Operation and function test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.2 Mechanism operation test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.3 Display and indicator status test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.4 Under voltage release test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.5 Shunt trip release test	<input checked="" type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	
6.6 Motor operating mechanism test	<input type="checkbox"/>	Pass	<input type="checkbox"/>	Fail	<input type="checkbox"/>	N/A	

7. TRIP PING DEVICE TEST

ACB Fiexed Type: ☐ **ACB Darw Type:** ☒ **Protection Unit Release :** Micrologic 6.0 E.

	Seting(IR)	Injection Current(A.)	Trip Time(S)	Time Cure(S)	Status.
LONG TIME DELAY TEST(LTD)	1	6000	15.33	20.094	Pass / ผ่าน
SHORT TIME DELAY TEST(STD)	4	12000	0.164	0.397	Pass / ผ่าน
INSTANTANEOUS TIME TEST(INST)	4	20000	0.036	≤	Pass / ผ่าน
GROUP FAULT TEST (GFR)	A	1000	0.223	0.3	Pass / ผ่าน


7. REFERENCE FOR USED INSTRUMENT

7.1 Insulation resistance test
 Manufacturer : _____ Type : _____ Serial no. : -

7.2 Contact resistance test
 Manufacturer : Chauvin armoux Type : C.A6240 Serial no. : 106875

7.3 Tripping device test
 Manufacturer : Scheider Type : Full-Function Test Kit Serial no. : S33595

8. COMMENT : _____

	GROUNDING SYSTEM	SHEET 5
		OF 1
FACTORY : ชาม่า สุขุมวิท	PANEL NAME / No. : ด็กB	
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 1	

1. VISUAL CHECK

- | | |
|--|---------------|
| - Grounding system weiding joints performed properly | Normal / ปกติ |
| - Grounding connections to steel structures, apparatuses and outdoor cubicles performed properly | Normal / ปกติ |
| - Grounding connections to control building and contyrol building performed properly | Normal / ปกติ |

2. GROUNDING MEASUREMENT

ITEM	LOCATION	GROUNDING MEASURED	REMARK
1	TR	15.92 Ω	No Pass/ไม่ผ่าน
2	MDB	0.06 Ω	Pass/ผ่าน

3. REFERENCE TO USED INSTRUMENT


3.1 Grounding system test

Manufacturer : KYORISU Type : KEW 4202 Serial no. : -

4. COMMENT :

มาตรฐานการติดตั้งทางไฟฟ้าสำหรับประเทศไทยของ ว.ส.ท. ได้กำหนดค่าความต้านทานของหลักดินต้องไม่เกิน 5 Ω สำหรับพื้นที่ที่ยากในการปฏิบัติ ถ้าความต้านทานของหลักดินเกินค่าดังกล่าว และทางกรไฟฟ้าเห็นชอบอาจกำหนดให้มีค่าไม่เกิน 25 Ω



	GROUNDING SYSTEM	SHEET 5
		OF 1
FACTORY : ชามา สุขุมวิท	PANEL NAME / No. : ด็กB	
LOCATION : หม้อแปลงไฟฟ้า	FEEDER NAME / No. : MDB - 2	

1. VISUAL CHECK

- | | |
|--|---------------|
| - Grounding system weiding joints performed properly | Normal / ปกติ |
| - Grounding connections to steel structures, apparatuses and outdoor cubicles performed properly | Normal / ปกติ |
| - Grounding connections to control building and contyrol building performed properly | Normal / ปกติ |

2. GROUNDING MEASUREMENT

ITEM	LOCATION	GROUNDING MEASURED	REMARK
1	TR	0.81 Ω	Pass/ผ่าน
2	MDB	0.06 Ω	Pass/ผ่าน

3. REFERENCE TO USED INSTRUMENT

3.1 Grounding system test

Manufacturer : KYORISU Type : KEW 4202 Serial no. : -

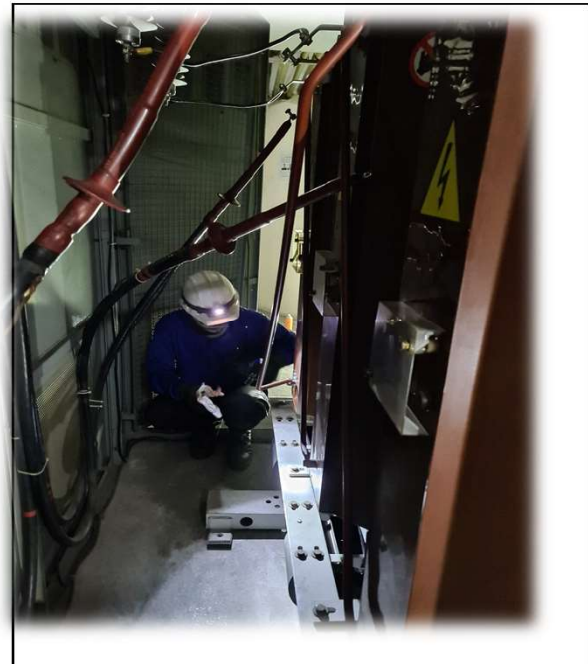
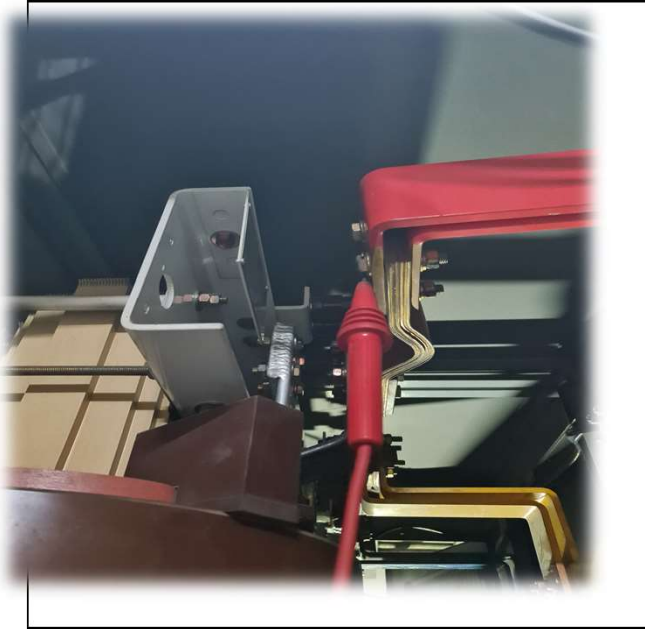
4. COMMENT :

มาตรฐานการติดตั้งทางไฟฟ้าสำหรับประเทศไทยของ ว.ส.ท. ได้กำหนดค่าความต้านทานของหลักดินต้องไม่เกิน 5 Ω สำหรับพื้นที่ที่ยากในการปฏิบัติ ถ้าความต้านทานของหลักดินเกินค่าดังกล่าว และทางการไฟฟ้าเห็นชอบอาจกำหนดให้มีค่าไม่เกิน 25 Ω

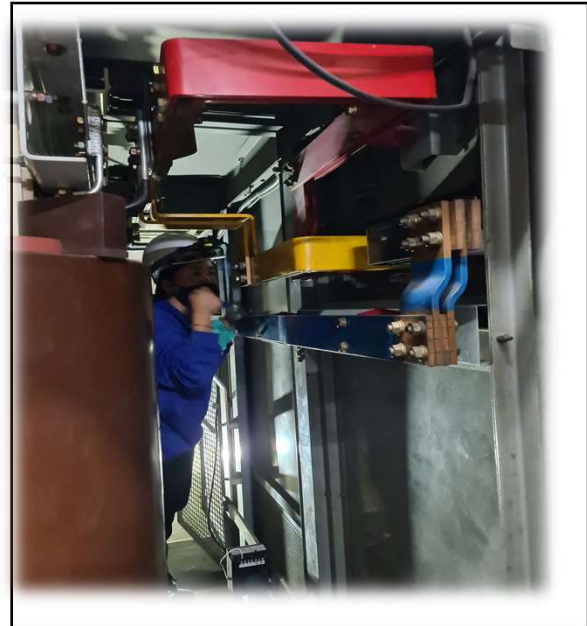




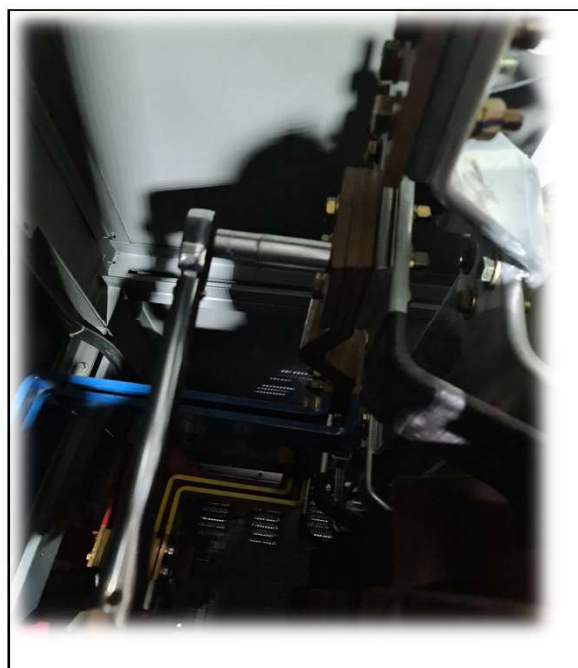
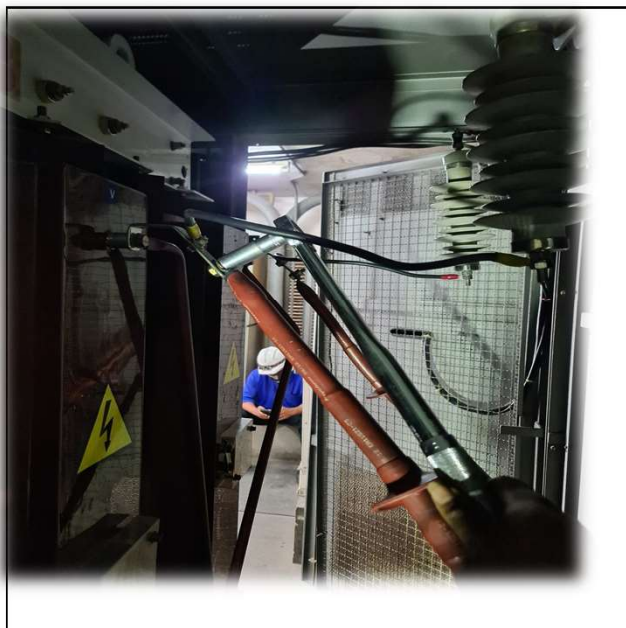
รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



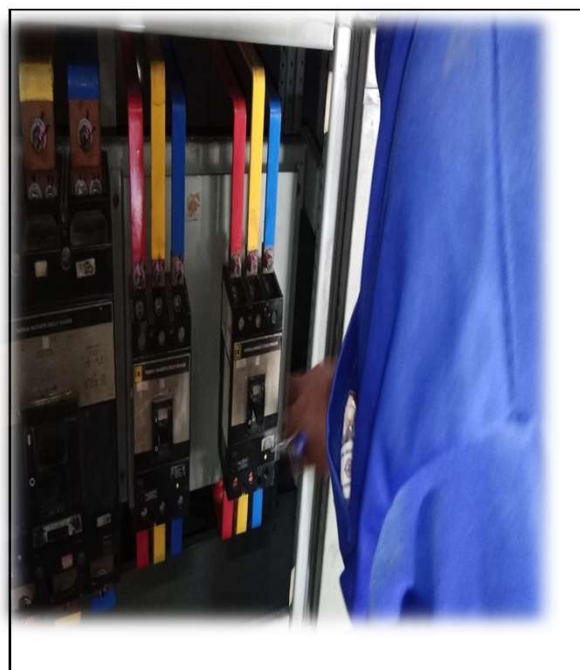
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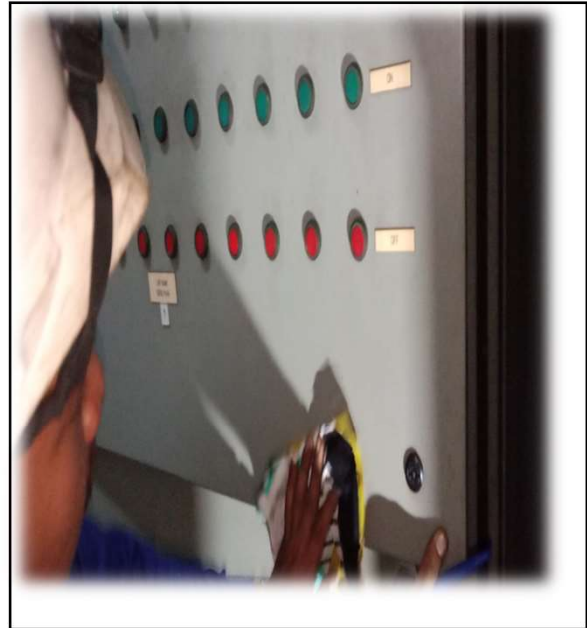
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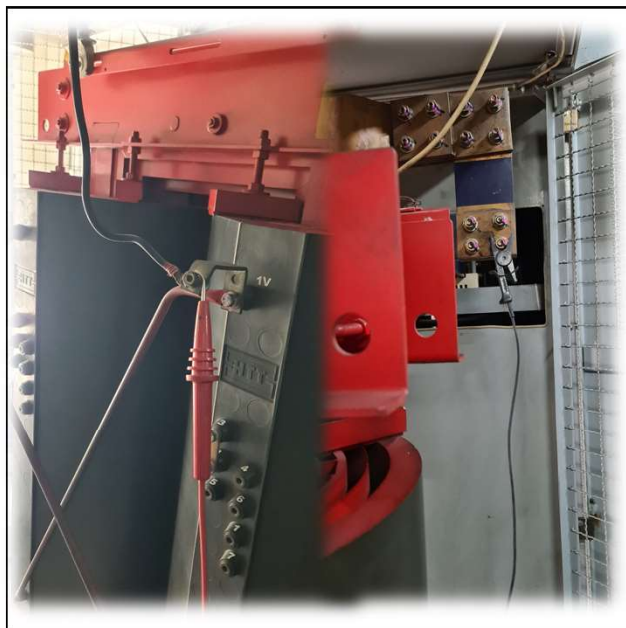
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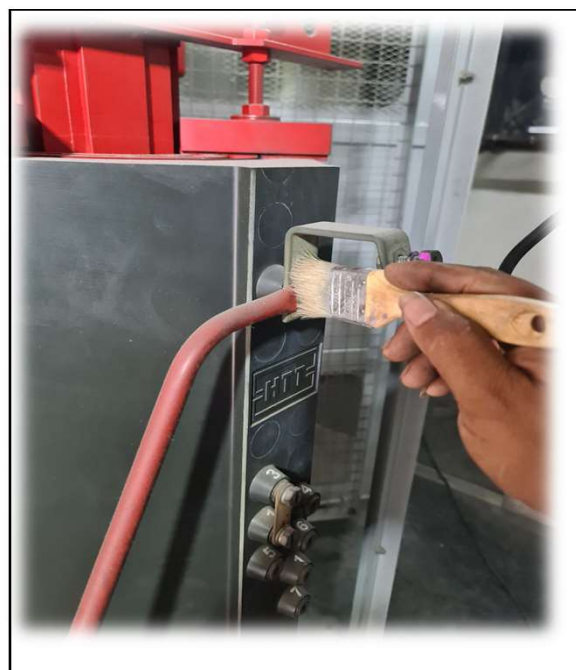
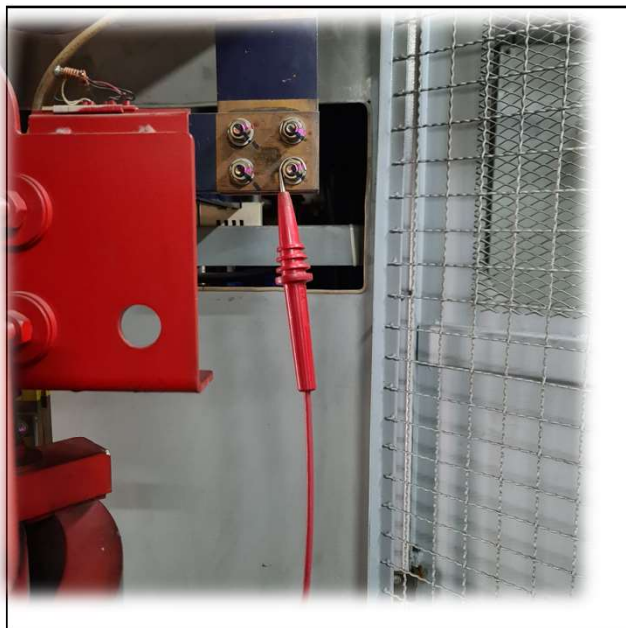
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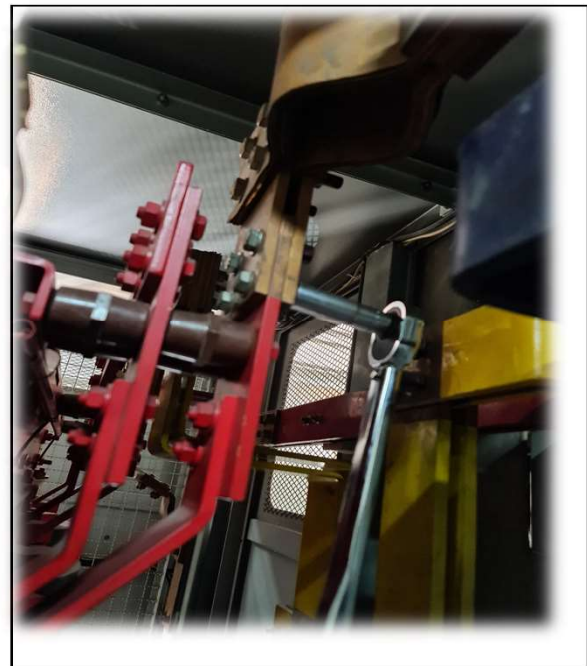
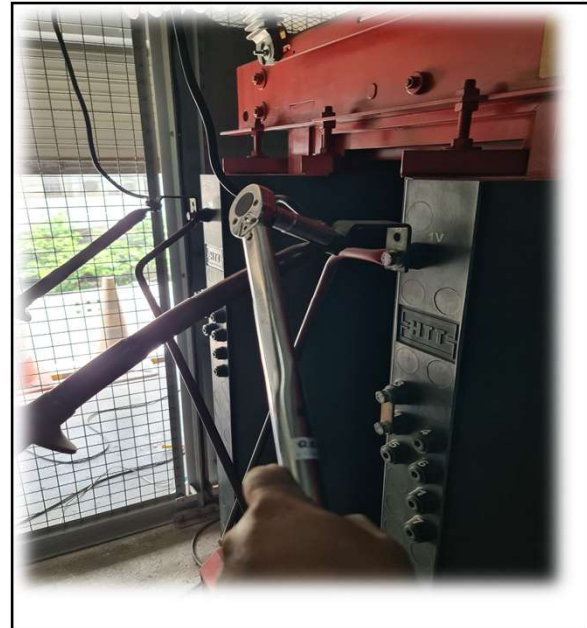
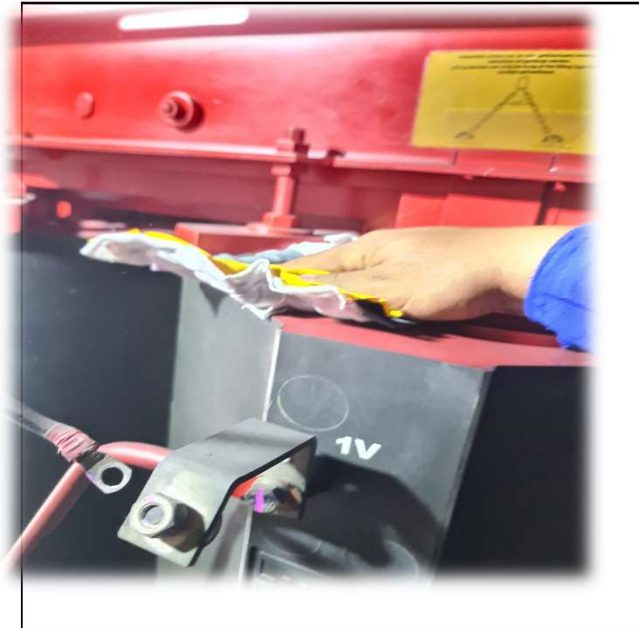
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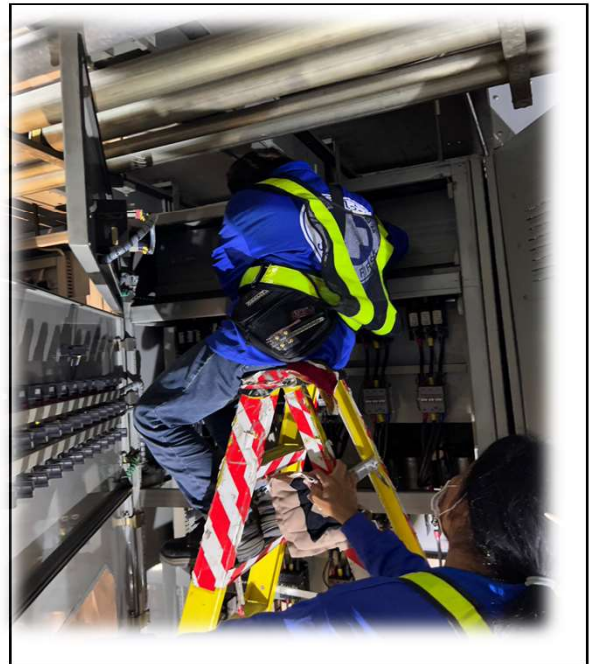
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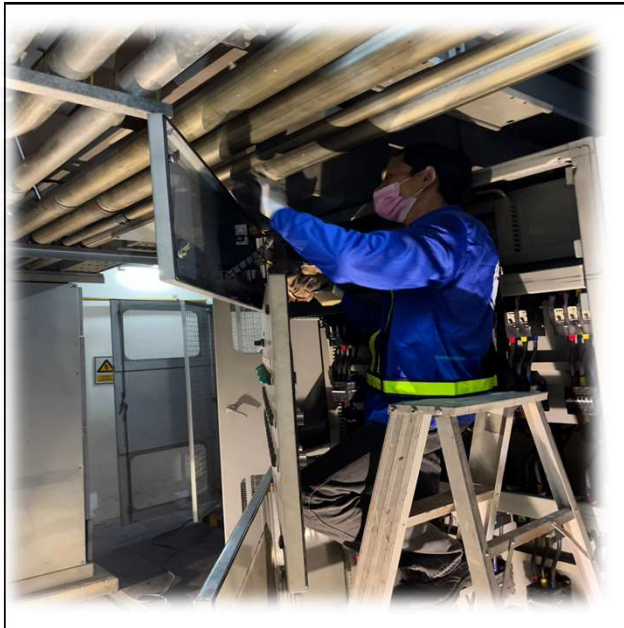
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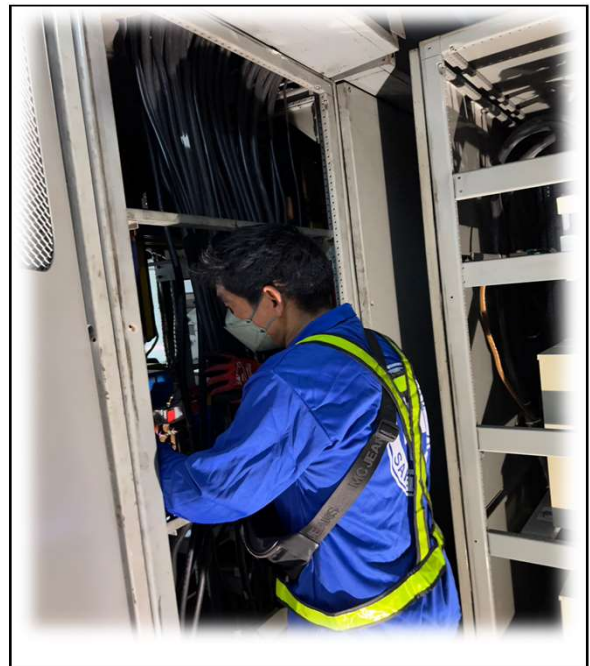
รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า



รูปภาพบางส่วนขณะทำการบำรุงรักษาตู้เมนไฟฟ้า

