

TAKING-OVER CERTIFICATE

In terms of FIDIC Red Book (1999), Paragraphs 10.1, 10.2

PROJECT:	TASEZ - The supply, delivery, installation and commissioning of the Bulk, Link and Internal Electrical Reticulation, Street Lighting and Telecoms Containment	CONTRACT NO:	CDC/579/20, (iX Project No. 301856)
CONTRACTOR:	Enzani Technologies (Pty) Ltd	DATE / REV:	22 November 2021, Revision 2
DESCRIPTION:	Section 2: Phase 1-External and Phase 1-Internal		
Description of Material and Equipment Included:			
Metering type RMU's: Thai Summit - MRMU (T4)			
Ring Main Units: Sefatanaga T3, Ford Frame Line T3, Aeroklasduys T3			
Miniature substations: Gatehouse - 315kVA miniature substation, Hesto - 315kVA miniature substation, Central Hub - 500kVA miniature substation			
Tests and Inspection Sheets: Completed and Attached			
Pressure tests: MV Cables - Singel Feeder a. N/A	<input checked="" type="checkbox"/>	Inspection Sheets: Meter boxes, Streetlights a. N/A	<input type="checkbox"/>
Earthing Tests: Substations, RMU's and Miniature Substations a. Thai Summit - MRMU (T4) b. Sefatanaga T3 c. Ford Frame Line T3 d. Aeroklasduys T3 e. Gatehouse - 315kVA miniature substation f. Hesto - 315kVA miniature substation g. Central Hub - 500kVA miniature substation	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Lighting Levels: a. N/A	<input type="checkbox"/>
Inspection Sheets: Substations, RMU's and Miniature Substations a. Thai Summit - MRMU (T4) b. Sefatanaga T3 c. Ford Frame Line T3 d. Aeroklasduys T3 e. Gatehouse - 315kVA miniature substation f. Hesto - 315kVA miniature substation g. Central Hub - 500kVA miniature substation	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	CoC's: a. SANS 10142-2: Phase 1	<input type="checkbox"/>

The above portion of the work complies with the specified requirements as per drawings and specification and is completed, as of **22 November 2021**, provided that any items listed on the snag list are completed.

Remarks (portion of works included):

Medium Voltage Installation as detailed above and below.

Enzani: MRMU's, T3's and miniature substations

ACCEPTANCE OF COMPLETED WORK/AREA

The work has been inspected by Lucas Muller of iX engineers on (date) dates as per the inspection sheets and is:

TAKEN OVER



REJECTED

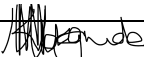

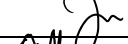
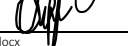


Remarks:

The taking-over of the section of the works is done to enable CDC to energise the portion of the works to enable switching on of tenants

Defects (Snag list):

Refer to attached inspection sheets for Defect/s

Enzani	Name	K Ntuli	Signature		Date	02 December 2021
iX Engineers	Name	JH Sadie	Signature		Date	02 December 2021
CDC	Name	T Jack	Signature		Date	02 December 2021
TASEZ	Name	M Donatus	Signature		Date	02 December 2021

1. EARTHING TEST CERTIFICATES



Earthing & Lightning Protection Systems

(Pty) Ltd Reg No: 2000/027276/07



B-BBEE Level 3

JOHANNESBURG – HEAD OFFICE

HHK House
Cnr Ruth Cres. & Ethel Ave
Northcliff Ext 12, 2195

Tel: +27 11 4766917
Fax: +27 11 476 2251
E-mail: info@hkh.co.za



Client: Enzani Technologies	Job Ref No. J.40545
PO Box 31950	Date: 23/11/2021
Braamfontein	Date System Tested: 16/11/2021
2017	

RESISTANCE TEST CERTIFICATE

1. Contracts Location:

Tshwane Automotive Sez (COEGA Tshwane) Willows – Pretoria

2. Type of System Installed:

Maximum Resistance (Ohm)

2.1. Earthing System

Required

Single Electrode

Compl System

	Required	Single Electrode	Compl System
a. Phase 1 Thai Summit T4 RMU	√ < 10.0 Ω	57.4 Ω	6.76 Ω
b. Sefatanga T3 RMU Switch	√ < 10.0 Ω	48.2 Ω	5.29 Ω
c. Ford Summit T4 MRMU	√ < 10.0 Ω	26.1 Ω	1.48 Ω
d. Phase 1 Sefatanaga Gatehouse Minisub 315kVa	√ < 3.0 Ω	48.5 Ω	5.38 Ω

The resistance achieved is considered suitable for the purpose for which it is intended.

3. Type of Structure:

Reinforced Concrete	Brick	√	Steel Frame	Transformer
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4. Type of Roof:

Non-Metallic	√	Thatch	With Parapet Walls
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5. System installed and tested in accordance with:

SANS 10313 (2018)		SANS 62305: 1-4 (2011)	
SANS 10199 (2016)	√	SANS 62561: 1-7 (2012) - (2018)	√

6. System tested/installed by: HHK Johannesburg

HHK	√
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7. Earthing & Lightning Protection Association (ELPA Registered)

Yes	√	No	
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8. Weather conditions:

Sunny	√	Overcast	Raining
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9. Soil conditions:

Dry	√	Moist	Wet	Pickable	√	Rocky
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10. Method of Test employed:

a. Fall of Potential method – 2 aux electrodes	√
b. Reference to metal water pipe (dead earth)	
c. Reference to electrical building earth	

11. Remarks: Annual Maintenance Test Recommended

Signature of acceptance

for Client (Municipality, Cons Eng, etc)

[Handwritten Signature]

N/A

for HHK EARTHING & LIGHTNING PROTECTION SYSTEMS (PTY) LTD

Signature (if required)

2. THAI SUMMIT - MRMU (T4)

JOB NUMBER:	3475/2
TANK TYPE:	Tshwane
DATE:	26/7/2021

FABRICATION CHECK SHEET

RECEIVING.

MARK WITH (X)

All parts received from Steelcor?	YES	<input checked="" type="checkbox"/>	NO	
All parts cut to correct size?	YES	<input checked="" type="checkbox"/>	NO	
All parts bent correctly?	YES	<input checked="" type="checkbox"/>	NO	
CHECKED AND SIGNED OFF BY: <i>Leza.</i>				
DATE: <i>26/7/2021</i>				

ASSEMBLY.

MARK WITH (X)

Front, back and sides of the tanks aligned correctly? (Corner to corner and square)	YES	<input checked="" type="checkbox"/>	NO	
Switch stand and back plate installed correctly? (flat and square)	YES	<input checked="" type="checkbox"/>	NO	
Are all internal parts installed correctly? (According to drawing)	YES	<input checked="" type="checkbox"/>	NO	
Dimensions checked and according to drawing?	YES	<input checked="" type="checkbox"/>	NO	
ASSEMBLERS NAME: <i>Leza.</i>				
STARTING DATE: <i>29/7/2021</i>	STARTING TIME: <i>12:00</i>			
FINISHING DATE: <i>29/7/2021</i>	FINISHING TIME: <i>16:00</i>			

WELDING.

MARK WITH (X)

Are all chimneys welded correctly? (No gaps between plates and sealed correctly)	YES	<input checked="" type="checkbox"/>	NO	
welding neat and according to standard?	YES	<input checked="" type="checkbox"/>	NO	
space welding (where needed) done correctly?		<input checked="" type="checkbox"/>		
Corners of the gutters welded closed?	YES	<input checked="" type="checkbox"/>	NO	
WELDERS NAME: <i>Andrew</i>				
STARTING DATE: <i>29/7/21</i>	STARTING TIME: <i>07:00</i>			
FINISHING DATE: <i>30/7/21</i>	FINISHING TIME: <i>13:00</i>			

GRINDING & POLISHING.

MARK WITH (X)

All splatter removed from the inside and outside of the tank?	YES	<input checked="" type="checkbox"/>	NO	
Are all corners ground square?	YES	<input checked="" type="checkbox"/>	NO	
Welding ground flat? (where needed)	YES	<input checked="" type="checkbox"/>	NO	
Is the polishing acceptable?	YES	<input checked="" type="checkbox"/>	NO	
CHECK THAT THERE ARE NO HOLES IN THE CORNERS OF THE GUTTERS				
NAME OF GRINDER: <i>Buans</i>				
STARTING DATE: <i>31/7/2021</i>	STARTING TIME: <i>07:00</i>			
FINISHING DATE: <i>31/7/2021</i>	FINISHING TIME: <i>13:00</i>			

JOB NUMBER:	3475/2
TANK TYPE:	TSAWANE
DATE:	26/07/2021

FABRICATION CHECK SHEET

FINISHING OFF.

MARK WITH (X)

Are the doors placed and spaced correctly?	YES	X	NO	
Do the hinges have space washers?	YES	X	NO	
Are the hinges welded neatly and according to standard?	YES	X	NO	
Are the door rod guides fitted and spaced correctly?	YES	X	NO	
Are the M8 bosses for the earth strap fitted and spaced correctly?	YES	X	NO	
Are all suds fitted where needed?	YES	X	NO	
Is the canopy fitted to tank correctly? (square & aligned with tank)	YES	X	NO	
Blast vent covers fitted to canopy?	YES	X	NO	
Both canopy and tank marked with the same number?	YES	X	NO	
NAME OF FINISHER: <i>Lepta.</i>				
STARTING DATE: <i>24/5/2021</i>		STARTING TIME: <i>07:00</i>		
FINISHING DATE: <i>24/5/2021</i>		FINISHING TIME: <i>12:00</i>		

SHOT BLASTING.

MARK WITH (X)

Is the entire tank correctly shot blasted?	YES	X	NO	
Is the corresponding canopy correctly shot blasted?	YES	X	NO	
NAME OF SHOT BLASTER: <i>Mx065.</i>				
STARTING DATE: <i>24/5/2021</i>		STARTING TIME: <i>12:00</i>		
FINISHING DATE: <i>24/5/2021</i>		FINISHING TIME: <i>18:00</i>		

PAINT.

MARK WITH (X)

Was body filler applied where needed?	YES	X	NO	
Was the body filler flattened correctly?	YES	X	NO	
Was silicone applied where needed?	YES	X	NO	
Was the silicone left to dry before paint was applied?	YES	X	NO	
Does the first coat meet the required thickness?	YES	X	NO	
Does the final coat meet the required thickness?	YES	X	NO	
Is the paint finish even?	YES	X	NO	
Are there any runs or imperfections?	YES	X	NO	
NAME OF PAINTER: <i>Mawdler</i>				
STARTING DATE: <i>25/5/2021</i>		STARTING TIME: <i>07:00</i>		
FINISHING DATE: <i>25/5/2021</i>		FINISHING TIME: <i>12:00</i>		

STEELCOR POWER TEST CERTIFICATE

TEST DATE: 03/09/2021	SWITCH SERIAL NO: SF-2020-W32-3-0061
CUSTOMER: ENZANI	SWITCH TYPE: 1Δ1
ORDER NUMBER: 9968	CIRCUIT BREAKER AMPRAGE: 630 AMPS
JOB NUMBER: 3475/2	SYSTEM VOLTAGE: 11 000 VOLTS
V.T RATIO: 11 000 - 110 VOLTS	PROTECTION C.T RATIO: 630:1
V.T SERIAL NUMBER 623-2	PROTECTION RELAY: VIP 400
METERING C.T RATIO: 300/600-5	PROTECTION RELAY SERIAL NO: 212029 0480
RED METERING C.T SERIAL NO: 253-9	MOTOR VOLTAGE: N/A
WHITE METERING C.T SERIAL NO: N/A	SWITCH OPEN'S AND CLOSES VIA REMOTE: N/A
BLUE METERING C.T SERIAL NO: 253-8	

PRESSURE TEST

RED TO WHITE & BLUE EARTHED	28 KV	1 MINUTE: OK
RED TO BLUE & WHITE EARTHED	28 KV	1 MINUTE: OK
WHITE TO BLUE AND RED EARTHED	28 KV	1 MINUTE: OK

MEGGER

RED TO WHITE: 100 G Ω	RED TO BLUE: 100 G Ω	WHITE TO BLUE: 100 G Ω
R, W, B TO EARTH: 100 G Ω		

CONTINUITY OF BUSBAR

RED PHASE: OK	WHITE PHASE: OK	BLUE PHASE: OK
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OVERCURRENT TRIP TEST


PHASE	O/C SETTING	CURVE	TIME MULTIPLIER	INJECTED AMPS	TRIP TIME
RED	40 AMPS	SIT1A	0,5 MS	90 AMPS	4,54 sec
WHITE	40 AMPS	SIT1A	0,5 MS	84 AMPS	4,89 sec
BLUE	40 AMPS	SIT1A	0,5 MS	97 AMPS	4,10 sec

EARTH FAULT TRIP TEST

PHASE	E/F SETTING	CURVE	TIME MULTIPLIER	INJECTED AMPS	TRIP TIME
RED	32 AMPS	SIT1A	0,25 MS	68 AMPS	2,43 sec
WHITE	32 AMPS	SIT1A	0,25 MS	68 AMPS	2,45 sec
BLUE	32 AMPS	SIT1A	0,25 MS	69 AMPS	2,38 sec

NEONS AND METER CHECK

NEONS WORKED CORRECTLY:	YES
METERING CHECKED AND TESTED:	YES

TESTED BY: JETHAO
CHECKED BY: LEONARD
WAYBILL REQUESTED BY: 

STEELCOR POWER Q/C TEST REPORT

CUSTOMER:	ENZAMI
JOB NUMBER:	3475/2
SWITCH SERIAL NO:	SF-2020-W32-3-0061
SWITCH TYPE:	1D1

VOLTAGE RATING	NEONS
6.6KV	404
11KV ✓	406 ✓
22KV	408

RELAY	RELAY (A) SERIAL NUMBER	RELAY (B) SERIAL NUMBER	RELAY (C) SERIAL NUMBER	RELAY SET TO
VIP 400	2120290480	-	-	200/1
VIP 410	-	-	-	630/1 ✓
SEPAM	-	-	-	

MV ADAPTATION	YES	NO	N/A
SWITCH VOLTAGE CORRECT?	✓		
SWITCH AMPERAGE CORRECT?	✓		
SF6 GAS GAUGE POINTER IN GREEN?	✓		
NEONS WORKING?	✓		
NEON VOLTAGE CORRECT?	✓		
INTERLOCKING WORKING CORRECTLY?	✓		
EARTH BOX WORKING CORRECTLY?			✓
EARTHING INSTALLED CORRECTLY?	✓		
SWITCH RATING PLATE INFO CORRECT?	✓		
ALL SIGNAGE FITTED AND CORRECT?	✓		
CORRECT DRAWING FITTED?	✓		
BOOK HOLDER FITTED?	✓		
2 SCHNEIDER BOOKLETS SUPPLIED?	✓		
CABLE CLAMPS FITTED CORRECTLY?	✓		
SWITCHING HANDLE SUPPLIED?	✓		
RED BOOTS SUPPLIED?	✓		
ALL SWITCH FASTENING DOWN BOLTS TIGHT?	✓		
PHASE DOTS INSTALLED?	✓		
ELECTRICAL CONNECTIONS TORQUED CORRECTLY?	✓		
LUGS CRIMPED CORRECTLY?	✓		
CORRECT SIZE LUG FOR WIRE SIZE?	✓		
NO GAP BETWEEN SWITCH AND TANK?	✓		
SERIAL NUMBERS ON C.T & V.T SAME AS RATING PLATE? (METERING)	✓		
V.T VOTAGE CORRECT?	✓		
COPPER WASHER FITTED IN V.T SPOUT?			✓
SWING TYPE V.T INSTALLED CORRECTLY?			✓
UNIT CLEAN AND READY FOR DESPATCH	✓		
PAINT WORK SATISFACTORY?	✓		

CHECKED BY:	JETHRO
WITNESSED BY:	SENRO
DATE:	03/09/2021



RM6 QUALITY CONTROL TEST REPORT

DATE:20-07-2021	P/ L NO.: N/A	WORKS ORDER NO.:
RATED: 11KV/200A	R.I.S NO.: N/A	JOB NO: 1051160096
CUSTOMER'S NAME: STEELCOR POWER PTY LTD		TYPE: RM6 11NEIDI400UE
RM6 : SERIAL NUMBER: SF-2020-W32-3-0061		QC RELEASE NUMBER : 77098

PROTECTION

VAP.5/6 Trip Check okay

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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PRIMARY CURRENT INJECTION

RELAY :VIP 400 S/N 2120290480

OVERCURRENT SETTING I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 1.00

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED & WHITE	RED & BLUE	WHITE&BLUE
40A	40A	1-3sec	OK	OK	OK

EARTH FAULT SETTING
EARTH FAULT

I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 0.02

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED PHASE	WHITE PHASE	BLUE PHASE
40A	40A	INST	INST	INST	INST

ELECTRICAL FUNCTION

- ◆ MOTOR MECH CB. VoltageN/A.....VAC
- ◆ MOTOR MECH ISOL. Voltage.....N/A.....VAC
- ◆ NEONS (VIPS) Voltage.....8.8 – 16.....KV
- ◆ SHUNT TRIP Voltage.....N/A.....VAC
- ◆ VOLT DROP RED PHASE...11.mV WHITE PHASE...11..mV BLUE PHASE....11mV
- ◆ PRESSURE TEST.....28..... KV for 60seconds

Is customer inspection required?	Yes	No
	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Customers Name:	Signature:	Date:
QC Name : MATOME MOTALAOTA	Signature:	Date: 20-07-2021



RM6 CHECK SHEET

Customer:	STEELCOR POWER PTY LTD	
Job No :	1051160096	PROD ORDER :103390888
Type :	RM6 11NEIDI400UE	

RM6-Serial Number

S F - 2 0 2 0 - W 3 2 - 3 - 0 0 6 1

Type	Rating	Relays	Ser. No. R1	Ser. No. R2	Ser. No. R3	RATING
X C/B	6.6 Kv	VIP45				X D=200 A
Fuse	X 11 Kv	X VIP 400	2120290480			B=630A
X Isol.	22 Kv	VIP 410E				
	3.3KV	SEPAM 10				

MV ADAPTATION	Fitted		Comments
	Yes	No	
Unpack material	✓		
Checked for defects (water / transport)	✓		
Check gauge for SF6 Gas Green	✓		
Fit gland plates	✓		
Neons: VIPS <input type="checkbox"/> VDS <input checked="" type="checkbox"/> WEGA 1,2 <input type="checkbox"/>	✓		
Neons Voltage = 3.3-7.7KV (6.6-KV) -VPI62404		✓	
Neons Voltage = 8.8-16kV (11-KV)-- VPI62406	✓		
Neons Voltage = 16-23kv (22-KV) -- VPI62408		✓	
Fit CT's- Part No: (D)=S1B3558 <input checked="" type="checkbox"/> (B)=S1B31559 <input type="checkbox"/>	✓		
Fit motor on Breaker Voltage = VDC = VAC		✓	
Fit motor on Isolator Voltage = VDC = VAC		✓	
Fit bushing bolts, flat & ring M16 x 40 (Brass)	✓		
Fit shunt trip Voltage = VDC = VAC		✓	
Fit Auxiliaries		✓	
Fit Eskom or City Power Labels (orange labels)		✓	
Fit interlock keys		✓	
Fit fusion extension		✓	
Mechanical operation & checking of interlocking	✓		
Fit earth box (as per spec)		✓	
Fit injection rods & copper bars (as per spec)	✓		
Supply extension kit (if it's extendable unit)		✓	
Supply operating handle: Short <input type="checkbox"/> Long <input checked="" type="checkbox"/>	✓		
Supply two instructions booklets (attached outside RM6)	✓		
(QC Stickers)	✓		
Clean unit before despatch	✓		

Engrave Job Number Rating Label and Voltage	6.6 kV <input type="checkbox"/>	11 kV <input checked="" type="checkbox"/>	22 kV <input type="checkbox"/>
Item Tested Label			

Adapted	<i>[Signature]</i>	Signature	<i>[Signature]</i>	Date	01/4	MONTH	2021
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Final	<i>[Signature]</i>	Signature	<i>[Signature]</i>	Date	02/0	MONTH	2021
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PAINT THICKNESS TEST

JOB NO:	3475/2
DATE:	06/09/21

AREA OF HOUSING TO BE TESTED	AVERAGE MEASURED MICRONS	MINIMUM REQUIRED MICRONS	DATE PAINT WAS TESTED	TESTED BY
INSIDE	121	120<	02/09/21	JETHRO
LEFT HAND SIDE	143	120<	02/09/21	JETHRO
RIGHT HAND SIDE	135	120<	02/09/21	JETHRO
FRONT	124	120<	02/09/21	JETHRO
REAR	144	120<	02/09/21	JETHRO
CANOPY	256	120<	02/09/21	JETHRO

+ - 20 POINT'S ON EACH SIDE OF THE TANK IS TO BE TESTED AND THE AVERAGE IS TO BE CALCULATED AND NOTED ABOVE. (IF A READING IS LESS THAN 120 DO NOT ACCEPT)

STEELCOR

TRANSFORMER TECHNOLOGIES (PTY) LTD

Reg. No.: 2017/140525/07

Design, development, manufacture, importation, sales, erection and repair of transformers, line equipment and transformer accessories

36 Field Road, Lilianton, Boksburg. PO Box 13547, Witfield 1467 REPUBLIC OF SOUTH AFRICA

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E-mail: p.zondo@steelcor.co.za Web-site: www.steelcor.co.za

TEST CERTIFICATE

Customer : STEELCOR POWER
Cust order No : 7367/8617
Model : BTU CT & VT
Applied Standard : IEC 61869/2 - IEC 61869/3

Serial No:	VT 623/2
Serial No:	CT 253/8-9
Date:	01-09-2021

VOLTAGE TRANSFORMER DETAIL

Phase	3 Phase	3 Limb	Rated Pry Voltage (V)	11000V
BIL:		12/28	Rated Sec. Voltage (V)	110V
Rated frequency (Hz)		50	Burden (VA)	100VA
Vf		1.9	Class	0.5

INSULATION TEST

		Tested by	Date
Overvoltage Induced Test	100HZ for 60 seconds	<i>P.B</i>	01-09-2021
Pressure Test	28kV for 60 Seconds	<i>P.B</i>	01-09-2021

3kV AC INSULATION TESTS

		Tested	Date
Secondary's to Earth	3kV for 60 secs	<i>P.B</i>	01-09-2021
Between HV to Earth	3kV for 60 secs	<i>P.B</i>	01-09-2021
Between HV and LV	3kV for 60 secs	<i>P.B</i>	01-09-2021

V.T. RATIO TEST 623/2

11000/110 100VA Class 0.5

	Ratio	I mA	P ⁰	Δ%
A	99.543:1	0.0	0.00	-0.46
B	99.666:1	0.0	-0.06	-0.33
C	99.572:1	0.0	0.00	-0.43

STEELCOR

TRANSFORMER TECHNOLOGIES (PTY) LTD

Reg. No.: 2017/140525/07

Design, development, manufacture, importation, sales, erection and repair of transformers, line equipment and transformer accessories
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Tel: +27-11-823-4105 / +27-11-032-7000 Fax: +27-11-826-5329
E-mail: p.zondo@steelcor.co.za Web-site: www.steelcor.co.za

CURRENT TRANSFORMER DETAIL

3kV AC INSULATION TESTS

		Tested	Date
Secondary's to Earth	3kV for 60 secs	<i>P.B</i>	01-09-2021

C.T. RATIO TEST


	Terminals	Ratio	VA	Class	Polarity	Ratio	I-kn mA	P ^o	Δ%
253/9	AS1 - AS2	300/5	5	0.5	ok	60.171:1	6.7	-0.35	0.28
	AS1 - AS3	600/5	5	0.5	ok	120.11:1	2.7	-0.39	0.09
253/8	CS1 - CS2	300/5	5	0.5	ok	60.208:1	5.7	-0.31	0.35
	CS1 - CS3	600/5	5	0.5	ok	120.10:1	2.2	-0.31	0.09


FINAL RELEASE INSPECTION

	Inspected	Date	Signature
Unit to drawing	<i>P.B</i>	01-09-2021	<i>JB</i>
Operation of unit	<i>P.B</i>	01-09-2021	<i>JB</i>
Rating Plate detail	<i>P.B</i>	01-09-2021	<i>JB</i>
Stamping and Markings	<i>P.B</i>	01-09-2021	<i>JB</i>
Terminal Assembly	<i>P.B</i>	01-09-2021	<i>JB</i>
Terminal Markings	<i>P.B</i>	01-09-2021	<i>JB</i>
Oil Level	-	01-09-2021	-
Paint Final Colour	<i>P.B</i>	01-09-2021	<i>JB</i>

Tested	Date	Inspected	Date	Approved	Date
<i>P.B JB</i>	01-09-2021	<i>PZ</i>	01-09-2021	<i>[Signature]</i>	01-09-2021

3. SEFATANAGA T3

ACTOM MV SWITCHGEAR	SUBJECT	DOCUMENT NO:	RMU006
	RING MAIN UNIT (RMU)	REVISION NO.:	0
	ROUTINE	PAGE:	1 OF 1
	TEST RECORD	REVISED BY:	R KELLY
		APPROVED BY:	G WHYTE
		DATE:	01/08/2017
		SIGNATURE:	

RMU SERIAL NUMBER	SF-2020-W367-0025	RMU TYPE	NE111
TEST TECHNICIAN NAME	T-EPHASHA	SIGNATURE	
DATE	30/09/2021	JOB NO.	FP0682-2
CUSTOMER	Actom Dniehoet		

RELAY FUNCTIONAL TEST				R	W	B
EFS/N-23862				CT S/N	N/A	N/A
RELAY SERIAL NUMBER	N/A			CT RATIO	N/A	
DEFAULT SETTINGS APPLIED	Y	N				
	O/C	TRIP TIME		E/F	TRIP TIME	
	I> SET	R-W	W-B	I _E > SET	R	W
WIC1 / WIB1 / WIP1 / RMV OCR / VIP 45 / VIP 400 / DPX-1	N/A	N/A	N/A	N/A	N/A	N/A

MAIN CIRCUIT RESISTANCE (DUCTOR / MILLIVOLT) TEST			
SWITCHING FUNCTIONS	R	W	B
	N/A	N/A	N/A

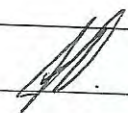
POWER FREQUENCY VOLTAGE WITHSTAND TEST		
RATED VOLTAGE OF RMU	TEST VOLTAGE	
12 & 17.5 kV	17.5 kV	
24 kV	N/A	

MV METERING CIRCUIT TESTS (If applicable)			
VT	N/A	POLARITY	N/A
RATIO	N/A	SERIAL NUMBER	N/A
VT	N/A	POLARITY	N/A
RATIO	N/A	SERIAL NUMBER	N/A

MV SWITCHGEAR
Medium Voltage & Protection

Subject	DOCUMENT NO:	SHEQ-FL-114
VT TEST SHEET	REVISION NO:	4
	EFFECTIVE DATE:	05/09/2019

Unit 1

V.T. PRIMARY INJECTION (SINGLE PHASE)				
PRIMARY VOLTAGE		SECONDARY VOLTAGE		
ELEMENT	VOLT	R-W	W-B	B-R
R-W	110V	1,109V	0	1,108V
W-B	110V	1,106V	1,107V	0
B-R	110V	0	1,103V	1,104V
Phase-N	110V	0,740V	0,738V	0,736V
VT TYPE	cable			
CLASS	εL05			
RATIO	11000 / 110V			
VA/PH	3ph			
TESTED BY	T. E PRASHA	DATE	29/09/2021	

Compiled By: QA MANAGER

Approved By: SHEQ MANAGER

PAGE 1 OF 1

4. FORD FRAME LINE T3

STEELCOR POWER TEST CERTIFICATE

TEST DATE: 03/09/2021	SWITCH SERIAL NO: SF-2020-W29-5-0038
CUSTOMER: ENZANI TECHNOLOGIE	SWITCH TYPE: 101
ORDER NUMBER: 9968	CIRCUIT BREAKER AMPRAGE: 630 AMPS
JOB NUMBER: 347511	SYSTEM VOLTAGE: 11000 VOLTS
V.T RATIO: 11000-110 VOLTS	PROTECTION C.T RATIO: 630:1
V.T SERIAL NUMBER 623-5	PROTECTION RELAY: VIP 400
METERING C.T RATIO: 300/600-5	PROTECTION RELAY SERIAL NO: 2120300616
RED METERING C.T SERIAL NO: 654-6	MOTOR VOLTAGE: N/A
WHITE METERING C.T SERIAL NO: N/A	SWITCH OPEN'S AND CLOSES VIA REMOTE: N/A
BLUE METERING C.T SERIAL NO: 654-7	

PRESSURE TEST

RED TO WHITE & BLUE EARTHED	28	KV	1 MINUTE: OK
RED TO BLUE & WHITE EARTHED	28	KV	1 MINUTE: OK
WHITE TO BLUE AND RED EARTHED	28	KV	1 MINUTE: OK

MEGGER

RED TO WHITE: 100 G Ω	RED TO BLUE: 100 G Ω	WHITE TO BLUE: 100 G Ω
R, W, B TO EARTH: 100 G Ω		

CONTINUITY OF BUSBAR

RED PHASE: OK	WHITE PHASE: OK	BLUE PHASE: OK
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OVERCURRENT TRIP TEST

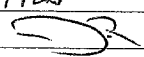
PHASE	O/C SETTING	CURVE	TIME MULTIPLIER	INJECTED AMPS	TRIP TIME
RED	40 AMPS	SITIA	0,5 MS	91 AMPS	4,54 Sec
WHITE	40 AMPS	SITIA	0,5 MS	99 AMPS	3,98 sec
BLUE	40 AMPS	SITIA	0,5 MS	91 AMPS	4,60 Sec

EARTH FAULT TRIP TEST

PHASE	E/F SETTING	CURVE	TIME MULTIPLIER	INJECTED AMPS	TRIP TIME
RED	32 AMPS	SITIA	0,25 MS	68 AMPS	2,58 Sec
WHITE	32 AMPS	SITIA	0,25 MS	78 AMPS	2,09 sec
BLUE	32 AMPS	SITIA	0,25 MS	63 AMPS	2,89 Sec

NEONS AND METER CHECK

NEONS WORKED CORRECTLY:	YES
METERING CHECKED AND TESTED:	YES

TESTED BY: JETHRO
CHECKED BY: LEONARD
WAYBILL REQUESTED BY: 



RM6 QUALITY CONTROL TEST REPORT

DATE:03-08-2021	P/ L NO.: N/A	WORKS ORDER NO.:
RATED: 11KV/200A	R.I.S NO.: N/A	JOB NO: 1051160096
CUSTOMER'S NAME: STEELCOR POWER PTY LTD		TYPE: RM6 11NEIDI400UE
RM6 : SERIAL NUMBER: SF-2020-W29-5-0038		QC RELEASE NUMBER : 77217

PROTECTION

VAP.5/6 Trip Check okay

		X
--	--	----------

PRIMARY CURRENT INJECTION

RELAY :VIP 400 N/S 2120300616

OVERCURRENT SETTING I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 1.00

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED & WHITE	RED & BLUE	WHITE&BLUE
35A	140A	1-3sec	OK	OK	OK

EARTH FAULT SETTING
EARTH FAULT

I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 0.02

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED PHASE	WHITE PHASE	BLUE PHASE
25A	25A	INST	INST	INST	INST

ELECTRICAL FUNCTION

- ◆ MOTOR MECH CB. VoltageN/A.....VAC
- ◆ MOTOR MECH ISOL. Voltage.....N/A.....VAC
- ◆ NEONS (VIPS) Voltage.....8.8 – 16.....KV
- ◆ SHUNT TRIP Voltage.....N/A.....VAC
- ◆ VOLT DROP RED PHASE...11.mV WHITE PHASE...11.mV BLUE PHASE....11mV
- ◆ PRESSURE TEST.....28..... KV for 60seconds

Is customer inspection required?	Yes	No
		X

Customers Name:	Signature:	Date:
QC Name : MATOME MOTALAOTA	Signature:	Date: 03-08-2021



FL0269/A
05/12/2012

RM6 CHECK SHEET

Customer:	STEELCO POWER PTY LTD	
Job No :	1051160096	PROD ORDER :103567179
Type :	RM6 11NEIDI400UE	

RM6-Serial Number

S F - 2 0 2 0 - W 2 9 - 5 - 0 0 2 8

Type *	Rating*	Relays *	Ser. No. R1	Ser. No. R2	Ser. No. R3	RATING
X C/B	6.6 Kv	VIP45				X D=200 A
Fuse	X 11 Kv	X VIP 400	2120300616			B=630A
X Isol.	22 Kv	VIP 410E				
	3.3KV	SEPAM 10				

MV ADAPTATION	Fitted		Comments
	Yes	No	
Unpack material	✓		
Checked for defects (water / transport)	✓		
Check gauge for SF6 Gas Green	✓		
Fit gland plates	✓		
Neons: VIPS <input checked="" type="checkbox"/> VDS <input type="checkbox"/> WEGA 1,2 <input type="checkbox"/>	✓		
Neons Voltage = 3.3-7.7KV (6.6-KV) -VPI62404		✓	
Neons Voltage = 8.8-16kv (11-KV)-- VPI62406	✓		
Neons Voltage = 16-23kv (22-KV) -VPI62408	✓	✓	
Fit CT's- Part No: (D)=S1B3558 <input type="checkbox"/> (B)=S1B31559 <input type="checkbox"/>	✓		
Fit motor on Breaker Voltage = VDC = VAC		✓	
Fit motor on Isolator Voltage = VDC = VAC		✓	
Fit bushing bolts, flat & ring M16 x 40 (Brass)	✓		
Fit shunt trip Voltage = VDC = VAC		✓	
Fit Auxiliaries		✓	
Fit Eskom or City Power Labels (orange labels)		✓	
Fit interlock keys		✓	
Fit fusion extension		✓	
Mechanical operation & checking of interlocking	✓		
Fit earth box (as per spec)		✓	
Fit injection rods & copper bars (as per spec)	✓		
Supply extension kit (if it's extendable unit)		✓	
Supply operating handle: Short <input checked="" type="checkbox"/> Long <input checked="" type="checkbox"/>	✓		
Supply two instructions booklets (attached outside RM6)	✓		
(QC Stickers)	✓		
Clean unit before despatch	✓		

Engrave Job Number Rating Label and Voltage	6.6 kv <input type="checkbox"/>	11 kv <input checked="" type="checkbox"/>	22 kv <input type="checkbox"/>
Item Tested Label			

Adapted	MUSHE	Signature		Date	03	NOV	2021
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Final	SEN	Signature		Date	03	NOV	2021
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STEELCOR

TRANSFORMER TECHNOLOGIES (PTY) LTD

Reg. No.: 2017/140525/07

Design, development, manufacture, importation, sales, erection and repair of transformers, line equipment and transformer accessories

36 Field Road, Lilianton, Boksburg. PO Box 13547, Witfield 1467 REPUBLIC OF SOUTH AFRICA

Tel: +27-11-823-4105 / +27-11-032-7000 Fax: +27-11-826-5329

E-mail: p.zondo@steelcor.co.za Web-site: www.steelcor.co.za

TEST CERTIFICATE

Customer : STEELCOR POWER
Cust order No : 7367/8617
Model : BTU CT & VT
Applied Standard : IEC 61869/2 - IEC 61869/3

Serial No:	VT 623/5
Serial No:	CT 254/6&7
Date:	01-09-2021

VOLTAGE TRANSFORMER DETAIL

Phase	3 Phase	3 Limb	Rated Pry Voltage (V)	11000V
BIL:	12/28		Rated Sec. Voltage (V)	110V
Rated frequency (Hz)	50		Burden (VA)	100VA
Vf	1.9		Class	0.5

INSULATION TEST

		Tested by	Date
Overvoltage Induced Test	100HZ for 60 seconds	<i>P.B</i>	01-09-2021
Pressure Test	28kV for 60 Seconds	<i>P.B</i>	01-09-2021

3kV AC INSULATION TESTS

		Tested	Date
Secondary's to Earth	3kV for 60 secs	<i>P.B</i>	01-09-2021
Between HV to Earth	3kV for 60 secs	<i>P.B</i>	01-09-2021
Between HV and LV	3kV for 60 secs	<i>P.B</i>	01-09-2021

V.T. RATIO TEST 623/5

11000/110 100VA Class 0.5

	Ratio	I mA	p ^o	Δ%
A	99.583:1	0.0	-0.00	-0.41
B	99.744:1	0.0	-0.09	-0.26
C	99.592:1	0.0	-0.02	-0.41

STEELCOR

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Tel: +27-11-823-4105 / +27-11-032-7000 Fax: +27-11-826-5329
E-mail: p.zondo@steelcor.co.za Web-site: www.steelcor.co.za

CURRENT TRANSFORMER DETAIL 3kV AC INSULATION TESTS


		Tested	Date
Secondary's to Earth	3kV for 60 secs	<i>P.B</i>	01-09-2021

C.T. RATIO TEST

	Terminals	Ratio	VA	Class	Polarity	Ratio	I-kn mA	P ^a	Δ%
254/6	AS1 - AS2	300/5	5	0.5	ok	60.171:1	6.1	-0.65	0.30
	AS1 - AS3	600/5	5	0.5	ok	120.09:1	2.3	-0.75	0.07
254/7	CS1 - CS2	300/5	5	0.5	ok	60.114:1	5.6	-0.69	0.19
	CS1 - CS3	600/5	5	0.5	ok	120.11:1	2.2	-0.79	0.09


FINAL RELEASE INSPECTION

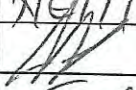
	Inspected	Date	Signature
Unit to drawing	<i>P.B</i>	01-09-2021	<i>P.B</i>
Operation of unit	<i>P.B</i>	01-09-2021	<i>P.B</i>
Rating Plate detail	<i>P.B</i>	01-09-2021	<i>P.B</i>
Stamping and Markings	<i>P.B</i>	01-09-2021	<i>P.B</i>
Terminal Assembly	<i>P.B</i>	01-09-2021	<i>P.B</i>
Terminal Markings	<i>P.B</i>	01-09-2021	<i>P.B</i>
Oil Level	-	01-09-2021	-
Paint Final Colour	<i>P.B</i>	01-09-2021	<i>P.B</i>

Tested	Date	Inspected	Date	Approved	Date
<i>P.B</i> <i>P.B</i>	01-09-2021	<i>PZ</i>	01-09-2021		01-09-2021

5. AEROKLASDUYS T3

Unit 3

ACTOM MV SWITCHGEAR	SUBJECT	DOCUMENT NO:	RMU006
	RING MAIN UNIT (RMU)	REVISION NO:	0
	ROUTINE	PAGE:	1 OF 1
	TEST RECORD	REVISED BY:	R KELLY
		APPROVED BY:	G WHYTE
		DATE:	01/08/2017
		SIGNATURE:	

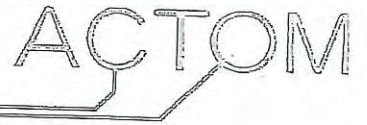
RMU SERIAL NUMBER	SF-2070-W36-7-0029	RMU TYPE	NEW
TEST TECHNICIAN NAME	T-E PHASHA	SIGNATURE	
DATE	30/09/2021	JOB NO.	EP0682-2
CUSTOMER	ACTOM PREHECK		

RELAY FUNCTIONAL TEST				R	W	B
EFSLN-23903				CT S/N	N/A	N/A
RELAY SERIAL NUMBER	N/A			CT RATIO	N/A	
DEFAULT SETTINGS APPLIED	Y	N				
	O/C	TRIP TIME		E/F	TRIP TIME	
	I> SET	R-W	W-B	I _e > SET	R	W
WIC1 / WIB1 / WIP1 / RMV OCR / VIP 45 / VIP 400 / DPX-1	N/A	N/A	N/A	N/A	N/A	N/A

MAIN CIRCUIT RESISTANCE (DUCTOR / MILLIVOLT) TEST				R	W	B
SWITCHING FUNCTIONS				N/A	N/A	N/A

POWER FREQUENCY VOLTAGE WITHSTAND TEST		
RATED VOLTAGE OF RMU	TEST VOLTAGE	
12 & 17.5 kV	17.5 kV	22 kV
24 kV	N/A	N/A

MV METERING CIRCUIT TESTS (If applicable)			
VT	N/A	POLARITY	N/A
RATIO	N/A	SERIAL NUMBER	N/A
VT	N/A	POLARITY	N/A
RATIO	N/A	SERIAL NUMBER	N/A



MV SWITCHGEAR
Medium Voltage & Protection

Subject VT TEST SHEET	DOCUMENT NO:	SHEQ-FL-114
	REVISION NO:	4
	EFFECTIVE DATE:	05/09/2019

unit 3

V.T. PRIMARY INJECTION (SINGLE PHASE)				
PRIMARY VOLTAGE		SECONDARY VOLTAGE		
ELEMENT	VOLT	R-W	W-B	B-R
R-W	110V	1.113V	0	1.111V
W-B	110V	1.113V	1.115V	0
B-R	110V	0	1.110V	1.110V
Phase-N	110V	0,743V	0,743V	0,742V
VT TYPE	Cable.			
CLASS	0.5			
RATIO	11000/110V			
VAPH	3ph			
TESTED BY	T. EPHASHA	DATE 30/09/2021		

Compiled By: QA MANAGER

Approved By: SHEQ MANAGER

PAGE 1 OF 1

6. GATEHOUSE - 315KVA MINIATURE SUBSTATION



Test Report

Serial Number
WEG: M01699/1
TAG:

WEG Transformers Africa

Quality Control - Test Bay

3B Van Deventer Street, Wadeville, Germiston, GP, South Africa - <http://www.zest.com>

1. Equipment Data

Customer: ENS964 - ENZANI TECHNOLOGIES

Material: MS000354 - TRANSFORMER 315.0 KVA

Production Order: -

Phase: Three-phase

Frequency (Hz): 50

PEP Element: -

Insulation: Oil

Connection Type: Dyn11

Sales Order: -

Customer Material: -

2. Withstand voltage at industrial frequency

Winding	Voltage Class (kV)	Applied Voltage (kV)	Duration (s)
High	12.0	28.0	60
Low	1.0	2.5	60

3. Induced Voltage

Winding	Nominal Voltage (V)	Induced Voltage (kV)	Frequency (Hz)	Duration (s)
Low	420.0	0.84	120	50

4. Insulation Resistance

Amb. Temp. (°C): 19.8

Ambient Humidity (%): 40.0

Applied Voltage (kVdc): 5.0

Measurement	Measured Values (MΩ)	Duration (s)	Subtitle
HV/G	12212.00	60	HV: High
HV/LV	23532.00	60	LV: Low
LV/G	15953.00	60	G: Ground

5. Winding Resistance

High		Phase 1: A-B (Ω)		Phase 2: B-C (Ω)		Phase 3: C-A (Ω)	
Tap	Voltage (V)	19.8 (°C)	75 (°C)	19.8 (°C)	75 (°C)	19.8 (°C)	75 (°C)
3	11000.0	4.419800	5.377308	4.365500	5.311244	4.367800	5.314042
Low		Phase 1: a-n (Ω)		Phase 2: b-n (Ω)		Phase 3: c-n (Ω)	
Tap	Voltage (V)	19.8 (°C)	75 (°C)	19.8 (°C)	75 (°C)	19.8 (°C)	75 (°C)
1	420.0	0.002905	0.003534	0.002831	0.003444	0.002906	0.003536

6. Transformer Turns Ratio

Connection: Dyn11

Polarity: Subtractive

Phase Displac.: OK

Phase Sequence: OK

High		Low		Nom. Val. Ratio	Phase 1 A-B/a-n		Phase 2 B-C/b-n		Phase 3 C-A/c-n	
Tap	Voltage (V)	Tap	Voltage (V)		Ratio	Error (%)	Ratio	Error (%)	Ratio	Error (%)
1	11550.0	1	420.0	47.6314	47.6470	0.033	47.6020	-0.062	47.6550	0.050
2	11275.0	1	420.0	46.4973	46.5230	0.055	46.4840	-0.029	46.5300	0.070
3	11000.0	1	420.0	45.3632	45.4070	0.096	45.2850	-0.172	45.3990	0.079
4	10725.0	1	420.0	44.2292	44.2680	0.088	44.2870	0.131	44.2760	0.106
5	10450.0	1	420.0	43.0951	43.1530	0.134	43.1550	0.139	43.1510	0.130

7. No-load Losses

PT Ratio: 1.0

CT Ratio: 1.0

P0 Factor: 1.0

Power (kVA): 315.0

Low (V): 420.0

Applied (%)	Phase	Voltage (Vmed)	Voltage (Vrms)	Current (A)	Io (%)	Losses (W)
100	Phase 1	239.8	239.8	5.354	1.258	264.80
	Phase 2	244.9	244.9	5.303		140.90
	Phase 3	242.9	242.9	5.688		222.70
	Average	420.1	420.1	5.448		628.40

8. Load Losses and Short Circuit Impedance



Test Report

Serial Number
WEG: M01699/1
TAG:

WEG Transformers Africa

Quality Control - Test Bay

3B Van Deventer Street, Wadeville, Germiston, GP, South Africa - <http://www.zest.com>

Power (kVA): 315.0

Winding	Voltage (V)	Phase Current (A)	Condition	Reference Temperature (°C): 75.0	
High	11000.0	9.545	Application	Ohmic Losses (W)	Impedance (%)
Low	420.0	433.013	Short Circuit	High: 2186.92	Inductive: 4.27
				Low: 1971.38	Resistive: 1.38
				Sum :	4158.30
				Additional Losses (W): 198.80	
	Tp Factor	Tc Factor	Pe Factor	Summary	
	1.0	1.0	1.0	Excitation Current [I0] (%):	1.258
	Ambient Temperature (°C): 19.8			No Load Losses [P0] (W):	628.40
Phases	Voltage (V)	Line Current (A)	Losses (W)	Load Losses [Pe] (W):	4357.10
Phase 1	277.0	16.771	1244.50	Total Losses [Pt] (W):	4985.50
Phase 2	284.3	16.317	1223.00	Impedance [Ez] (%):	4.49
Phase 3	282.5	16.545	1197.00		
Average	487.1	16.544	3664.50		

Result

All tests performed and recorded in this test report have been approved in accordance with the requirements of the standard(s) SANS 780.

WEG

Customer

Mugwari Abigail Mashudu
Test Date: 8/16/2021

Inspector

7. HESTO - 315KVA MINIATURE SUBSTATION

101699-2

FL 0318/C



RM6 QUALITY CONTROL TEST REPORT

DATE: 26-07-2021	P/ L NO.: N/A	WORKS ORDER NO.:
RATED: 11KV/200A	R.I.S NO.: N/A	JOB NO: 1051163114
CUSTOMER'S NAME: ZEST WEG MANUFACTURING		TYPE: RM6 11NEIDI45UE
RM6 : SERIAL NUMBER: SF-2020-W31-1-0024		QC RELEASE NUMBER : 77138

PROTECTION

VAP.5/6 Trip Check okay

		X
--	--	---

PRIMARY CURRENT INJECTION

RELAY :VIP 45 S/N 2120320740
 OVERCURRENT SETTING I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 1.00

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED & WHITE	RED & BLUE	WHITE&BLUE
35A	140A	OK	OK	OK	OK

EARTH FAULT SETTING I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 0.02
 EARTH FAULT

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED PHASE	WHITE PHASE	BLUE PHASE
25A	25A	INST	INST	INST	INST

ELECTRICAL FUNCTION

- ♦ MOTOR MECH CB. VoltageN/A.....VDC
- ♦ MOTOR MECH ISOL. Voltage.....N/A.....VDC
- ♦ NEONS (VIPS) Voltage.....8.8 -16.....KV
- ♦ SHUNT TRIP Voltage.....N/A.....VDC
- ♦ VOLT DROP RED PHASE...11.mV WHITE PHASE...11..mV BLUE PHASE....11mV
- ♦ PRESSURE TEST.....28..... KV for 60seconds

Is customer inspection required?

Yes	No
	X

Customers Name:	Signature:	Date:
QC Name : MATOME MOTALAOTA	Signature:	Date: 26-07-2021

8. CENTRAL HUB - 500KVA MINIATURE SUBSTATION

~~MATOME~~
MOT00-2



RM6 QUALITY CONTROL TEST REPORT

DATE: 26-07-2021	P/ L NO.: N/A	WORKS ORDER NO.:
RATED: 11KV/200A	R.I.S NO.: N/A	JOB NO: 1051163114
CUSTOMER'S NAME: ZEST WEG MANUFACTURING		TYPE: RM6 11NEIDI45UE
RM6 : SERIAL NUMBER: SF-2020-W30-5-0060		QC RELEASE NUMBER : 77134

PROTECTION

VAP.5/6 Trip Check okay

		X
--	--	---

PRIMARY CURRENT INJECTION

RELAY :VIP 45 S/N 2120300311
OVERCURRENT SETTING I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 1.00

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED & WHITE	RED & BLUE	WHITE&BLUE
35A	140A	OK	OK	OK	OK

EARTH FAULT SETTING I >: SIT/A DT ONLY: N/A I >> OFF TMS >: 0.02
EARTH FAULT

CURRENT SETTINGS	INJECTED CURRENT	TRIP TIME LIMITS	TRIPPING TIME		
			RED PHASE	WHITE PHASE	BLUE PHASE
25A	25A	INST	INST	INST	INST

ELECTRICAL FUNCTION

- ♦ MOTOR MECH CB. VoltageN/A.....VDC
- ♦ MOTOR MECH ISOL. Voltage.....N/A.....VDC
- ♦ NEONS (VIPS) Voltage.....8.8 – 16.....KV
- ♦ SHUNT TRIP Voltage.....N/A.....VDC
- ♦ VOLT DROP RED PHASE...11.mV WHITE PHASE...11..mV BLUE PHASE....11mV
- ♦ PRESSURE TEST.....28..... KV for 60seconds

Is customer inspection required?

Yes	No
	X

Customers Name:	Signature: _____	Date:
QC Name : MATOME MOTALAOTA	Signature:	Date: 26-07-2021

9. COST OF MATERIAL & EQUIPMENT

PROJECT NAME : TASEZ PRECINCT (CDC/579/20)					Taking Over Certificate No.2 - Phase 1 (2021-11-22)	
BILL OF QUANTITIES						
ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL PRICE
				Material	Labour	
1.	BILL NO. 3 : MEDIUM VOLTAGE RETICULATION - Phase 1 (Ext)					
1.1	MV CABLE					
	Supply, deliver and installation of 11/11kV, general purpose belted cables, steel wire armoured to SANS 97-1991, Table 18 (CoT specification: ESMS0001)					
1.1.1	70mm ² x 3-Core, Cu	m				
1.1.2	150mm ² x 3-Core, Cu	m				
1.1.3	185mm ² x 3-Core, Cu	m				
1.1.4	240mm ² x 3-Core, Cu	m	1725	1 895.00		3 268 875.00
1.1.5	300mm ² x 3-Core, Aluminium	m	4878	1 874.38		9 143 225.64
	Cable joints for use on above type 11kV cables complete with all accessories to join the following cables					
1.1.6	Up to 70mm ²	No		2 492.50	1 152.01	
1.1.7	95mm ² and bigger	No	23	3 242.50	1 188.01	101 901.73
1.1.8	Complete termination of 11kV cable in termination box of equipment with all accessories - heat shrink type sleeves	No	28	1 708.75	1 584.01	92 197.28
1.1.9	Supply and installation of pot end for 11kV cable	No		1 347.63	1 152.01	
1.2	BARE COPPER EARTH WIRE (BCEW)					
	Supply, deliver, jointing and installation					
1.2.1	35mm ² BCEW	m		104.50	110.89	
1.2.2	70mm ² BCEW	m	6603	213.50	110.89	2 141 947.17
	Terminate BCEW					
1.2.3	35mm ² BCEW	No		104.50	267.91	
1.2.4	70mm ² BCEW	No	28	213.50	368.38	16 292.64
1.3	RING MAIN UNITS (RMU's) & MV SWITCHES					
	Supply, deliver and installation of outdoor kiosk type RMU c/w plinth (CoT specification: ESMS0065)					
1.3.1	Outdoor Three-way Switch (non-metering) c/w OC/EF T3 (SD, SD, SD, 3x 200A)	No	3	211 355.00		634 065.00
1.3.2	SF6 RMU c/w 2x 630A SD, 1x 200A CB T-off (SD, CB, SD) ESMS0065, Item 1 - Outdoor metering RMU (TX loads <4MVA)	No	1	388 539.16		388 539.16
1.3.3	SF6 RMU c/w 2x 630A SD, 1x 630A CB (SD, SD, CB) ESMS0065, Item 1 (alt A) - Outdoor metering RMU (TX loads >4MVA)	No	2	269 592.50		539 185.00
1.3.4	SF6 RMU c/w 2x 630A SD, 2x 630A CB (SD, SD, CB, CB) ESMS0065, Item 1 (alt B) - Outdoor metering RMU (TX loads >4MVA)	No	2	269 592.50		539 185.00
1.4	MINIATURE SUBSTATION					
	Supply, deliver, installation and commission of Type B, 11000/420V miniature substation c/w Streetlight Control Panel (CoT spec: ESMS0029)					
1.4.1	315kVA c/w 500A MCCB (main LV)	No	2	502 458.75		1 004 917.50
1.4.2	500kVA c/w 800A MCCB (main LV)	No	1	654 625.84		654 625.84
1.4.3	800kVA c/w 1200A MCCB (main LV)	No		678 368.75		
1.4.4	150A, 20kA MCCB's (Including lugs & tails)	No		5 961.25		
1.4.5	Concrete plinth	No	3	15 000.00		45 000.00
	SUB-TOTAL A					18 569 956.96
	ADD VAT : 15% ON SUB-TOTAL B					2 785 493.54
	TOTAL COST CARRIED FORWARD TO SUMMARY PAGE					21 355 450.50

10. PHOTO'S



Thai Summit - MRMU (T4)



Phase 1: Sefatanaga T3



Phase 1: Ford Frame Line T3



Phase 1: Aeroklasduys T3



Phase 1: Gatehouse - 315kVA miniature substation



Phase 1: Hesto - 315kVA miniature substation



Phase 1: Central Hub - 500kVA miniature substation