ALSTOM UBUNYE		REFERENCE NO AY000447628-25F1	Rev : 4.0 Date : 19/08/2018	
PO NO :	CODE:DTR DTR000036945		Final inspection check sheet for shipment/delivery	

d

Propulsion Box

FINAL INSPECTION CHECKSHEET

Manufacture	Alstom Ubunye
Equipment	Propulsion Box
Serial no	TC851
Start activity date	20/06/24
End activity date	20/06/24

This symbol indicates that
Activities are related to railway securities
in order to
- Check if the behavior of the train under specific conditions corresponds to the effects provided in safety analyzes or;
- Check if the assumptions used in the safety

Actions and verifications	checked OK / Not OK		re-checked OK / Not OK		Def. Type A,B,C
DOCUMENTS					
1. Presence of production test reports completed dated and signed.	OK				
2.Self-inspection &Component serial no	OK				
3.Ensure that the production order is closed on the system	OK				
GENERAL APPEARANCE					
4.Cleanliness / debarring / chips / filings / wastes / dust / screw / washers / rivets	OK				
5.Appearance of paintwork / retouches / inclusions / splinters / scratches / missed bits	OK				
6.Appearance of sheet metalwork / dents / self-tapping screws fastening	OK				
7.Information plate - QR Code	OK				
8.Fastening / maintaining of seals (sharp edge protection / integrity)	OK				
9.Ensure the is no sign of leaks and coolant is filled up to the last line on the gauge below maximum	OK				
MOUNTING					
9.Fastening fast lock in agate cover position	OK				
10.Fastening fast lock HV cover and PM cover	OK				

ALSTOM UBUNYE		REFERENCE NO AY000447628-25F1	Rev : 4.0 Date : 19/08/2018	
PO NO :	CODE:DTR DTBOUDD361945		Final inspection check sheet for shipment/delivery	

11.Mounting of resistors enclosure bottom cover	OK				
12.HV cover and PM cover Alignment of key lock by checking opening and closure.	OK				
Action verification	**OK**	**Not Ok**	**Recheck ok**	**Not ok**	**Defect type A,B,C**
13. Mounting of terminal box covers. Affixing of danger tag above and below.	OK				
14.Mounting of water draining lower plugs (Agate side ,HV and PM)	OK				
15.Mounting of ID plate	OK				
16.Affixing of tags Identify external and electrical connections	OK				
17.Affixing of danger tag and check that is done according to dimension on WI 5.129 and 5.130	OK				
18.Ensure correct clamp fitted on the cooling unit pipe.	OK				
WIRING					
19.Check of crimping / connections (lugs / pins / strands / insulator) and maintaining of the connectors	OK				
20.Wiring: respect for minimum radii of curvatures and lengths / no loops or chewing	OK				
21.Cable fasteners: fastening correct	OK				
22.Presence of protective measures against direct contacts: HV protective duct / flexi etc.	OK				
23.Presence and application of labels (flat and straight)	OK				
24. Check the present of LHD	OK				
25. Condition of cables: wires (damaged / no contact with sharp ends of ducts and/or rivets etc.)	OK				

COMMENTS

ALSTOM UBUNYE		REFERENCE NO AY000447628-25F1	Rev : 4.0 Date : 19/08/2018	
PO NO :	CODE:DTR DTC0000367905		Final inspection check sheet for shipment/delivery	

IN THE EVENT OF NON-CONFORMITY, ATTACHE THE NON-COMPLIANT EQUIPMENT LABEL ON THE PRODUCT			
AU EPU Ntsi	Date 20/06/24	OK / Not OK	Signature
AU Inspector Mapule	Date 20/06/24	OK / Not OK	Signature

ALSTOM UBUNYE

IDENTIFICATION & SERIALIZATION LIST

CONFIGURATION LEVEL:	0	1	2	3	4	5	9

Equipment Code	TC0851	Equipment Description	2024/06/20
DTR0000367945	TC0851	TRACTION CONVERTER	2024/06/20

Component Code	Serial Number	Qty	Rev.	Description	Drawing No. / Ref on
AY00000202906		1	E	CONVERTITORE DI TRAZIONE PRASA	553597
AYD0000233323		1	A	KIT DOCUMENTAZIONE CONVERTITORE PRASA	1000DD
AYD0000296679		1	E	ROUTINE TEST CERTIFICATE PRASA 3KV	1202CC
AYD0000296683		1	E	PROCEDURA COLLAUDO PRASA 3KV	4044PC
AYD0000296685		1	F1	ROUTINE TEST PROCEDURE PRASA 3KV	4044PC
AYD0000315036		1	E	WS PROPULSION BOX	495WS
AYD0000315038		1	C	SI PROPULSION BOX	126SI
AYD0000315040		1	B	FI PROPULSION BOX	25FI
AY00000164662		1	E	ASSIEME DI MONTAGGIO PROGETTO PRASA	556176
AY00000185895		1	D	ASSIEME BT (CUST.2) + SCAMBIATORE	554161
AY00000042588	f001401233	1	B	PULL DOWN CARD	535135
AY00000253771		1	A	ASSIEME CONTROLLO BT/MT	555235
AY00000292001	LVMV 0478	1	E	LV/MV CONTACTORS HARNESS	513DD
DTR0000174605	51691	1	B	VENTILATION RACK	
DTR0000322004	X1042	1	A	AGATE AC3ME 044	
DTR0000363028	2405MP1254004	1	B	COOLING UNIT	
DTR0000392691	2405MP1254A04	1	A	400V MOTORFAN	
DTR0000392783	1159	1	A	HEAT EXCHANGER 19 KW	
DTR0000393305	166-200/23-364	1	A	MOTOR PUMP 400V	
AY00000185945		1	D	ASSIEME PM+AT (CUST.1) + CONDOTTO CENTRALE	554162
AY00000241031		1	A	ASSIEME CONTATTORE DI LINEA	555289
DTR0000352557	2403MP1132013	1	A	CONTACTOR 4000 V/600 A	
AY00000291132		1	A	ASSIEME TV	555502
DTR0000271049	51222290010	1	A	VOLTAGE TRANSDUCER 4 KV	
DTR0000271049	51222290011	1	A	VOLTAGE TRANSDUCER 4 KV	
DTRP000321040	3276	1	U	ONIX 233 XHP	
DTRP000322040	994	1	P	ONIX 233 VHP 1R	
DTR0000050054	1240120005	1	A	CURRENT SENSOR 1000A	V13804
DTR0000050054	1233050045	1	A	CURRENT SENSOR 1000A	V13804

DTR0000050054	722099000759	1	A	CURRENT SENSOR 1000A	V13804
DTR0000050054	722099793	1	A	CURRENT SENSOR 1000A	V13804
DTR0000094298	202	1	A1	CAPACITOR 1.000 MF	V13802
DTR0000094298	316	1	A1	CAPACITOR 1.000 MF	V13802
DTR0000106563	5713	1	A	CAPACITOR BUS BAR	
DTR0000106564	2824	1	B	INTERCONNECTION BUS BAR	
DTR0000106565	3824	1	B	REDUCED INTER. BUS BAR	
DTR0000106566	6323	1	A	SHORT CAP. BUS BAR	
DTR0000352147	2311MP11900016	1	A4	CONTACTOR 4000 V/60 A	
DTR0000353584	124	1	A	CAPACITOR 1.333 MF	
DTR0000363023	2311MP0978020A/B	1	B	PIPING KIT	
AY00000219169	AU0189	1	F1	LV HARNESS	406DD
AY00000240077	AU0303	1	D1	HV HARNESS	407DD
AY00000278318	AU00182	1	E	MV HARNESS	408DD
AY00000278322	F003701106	1	C	FIRE FIGHTING HARNESS	409DD
DTR0000359897	9829355	1	C	KEY LOCK SYSTEM	
DTR0000359897	9829348	1	C	KEY LOCK SYSTEM	
AY00000251587		1	C	ASSIEME D'INGOMBRO CONVERTITORE TRAZIONE PRASA	554643

ROUTINE TEST CERTIFICATE

PRASA TRACTION CONVERTER 3KV DTR0000367945

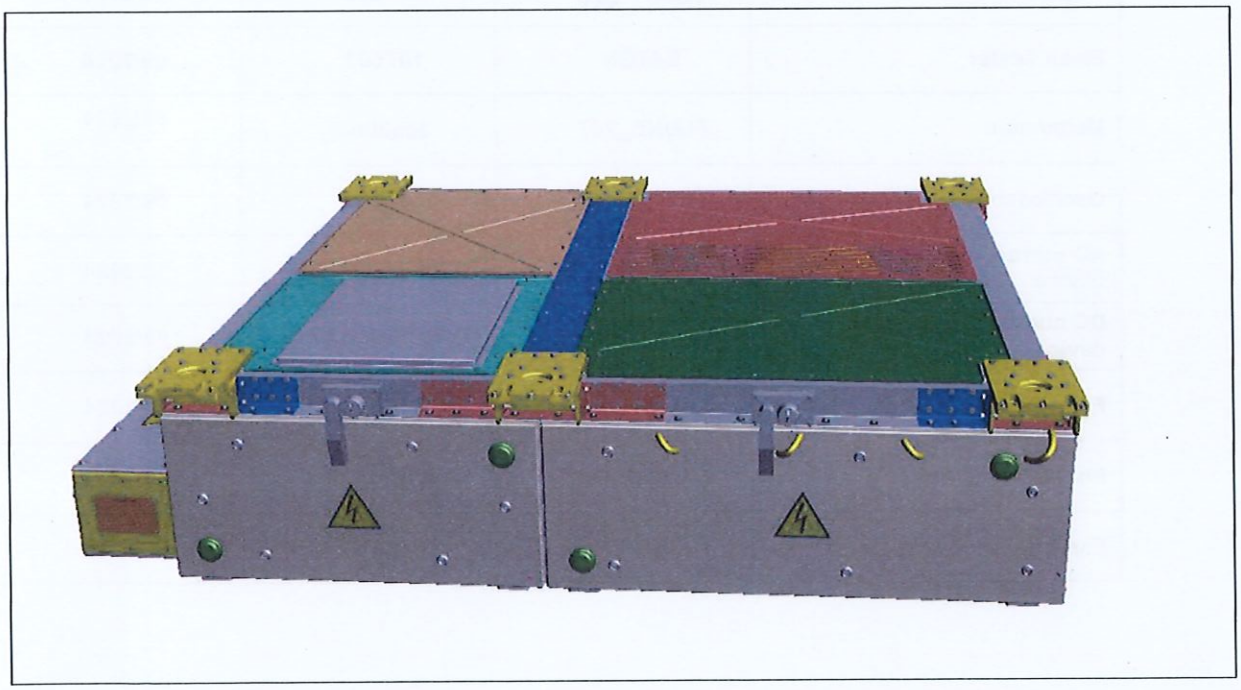
DRAWING N° 553597/...

CODICE N° AYD0000296685

PART N°

ROUTINE TEST PROCEDURE: N PC4044/...

We attest that the equipment has successfully undergone all the tests provided in the Routine Test Procedure.
JOINTED WITH THE CORRESPONDING CONFORMITY DECLARATION (DC)
THIS DOCUMENT BECOMES A CERTIFICATION ACCORDING TO EN10204 PAR. 3.1.b



PRASA TRACTION CONVERTER 3KV DTR0000367945

Choose an item. **TRACTION CONVERTER SERIAL NO:** 851

TEMPERATURA/TEMPERATURE °C. 15.4°

Choose an item.

HUMIDITY RELATIVE.....% 28.3

1. **List of measuring devices used**

Equipment name	Type	Serial no.	Next calibration date
Megger Tester	FLUKE 1550C_5KV	381963	09/2024
Flash Tester	EATON	107563	09/2024
Multimeter	FLUKE_287	3563062	09/2024
Oscilloscope	TEKTRONIX	C05196	09/2024
AC current measuring device	DISPLAY_PANEL	DTR01000043228	12/2024
DC current measuring device	DISPLAY_PANEL	DTR01000043228	09/2024
Frequency generator	TT1_(TG153)	493240	09/2024
Phase rotation device	FLUKE_9063	412096105	09/2024
Earth continuity tester	KIKUSUI	YG006883	09/2024

Point	*Description*		Value	Result
2.1	Visual inspection		/	DONE
2.2	Cabling verification		/	DONE
2.2.1	Measure values resistance			
	RS1		119.3KΩ	PASSED
	RS2		118.8KΩ	PASSED
	RS3		119.0KΩ	PASSED
	R_CCZ1		67.4Ω	PASSED
	RCCZ2		67.4Ω	PASSED
	R_CCZ3		67.6Ω	PASSED
2.2.2	Adjust of time Relay Q1-GMV Q2-GMV Q1-WP			DONE
2.3.1	1° Insulation test High Voltage Group **A**	Value	114MΩ	PASSED
2.3.1	Dielectric strength test High Voltage Group **A**	Value	27.6mA	PASSED
2.3.1	2° Insulation test High Voltage Group	Value	2.09GΩ	PASSED
2.3.2	1° Insulation test Low Voltage Group without shields **B**	Value	397MΩ	PASSED
2.3.2	Dielectric strength test Low Voltage without shields Group **B**	Value	0.4mA	PASSED
2.3.2	2° Insulation test Low Voltage Group **B** without shields	Value	6.76GΩ	PASSED
2.3.3	1° Insulation test Low Voltage Group **C** with shields	Value	1.13GΩ	PASSED
2.3.3	Dielectric strength test Low Voltage Group **C**	Value	10.3mA	PASSED
2.3.3	2° Insulation test Low Voltage Group **C**	Value	49.8GΩ	PASSED
2.3.4	1° Insulation test Medium Voltage Group **D**	Value	18.9GΩ	PASSED
2.3.4	Dielectric strength test Medium Voltage Group **D**	Value	0.6mA	PASSED
2.3.4	2° Insulation test Screen and MVB/Ethernet Group **D**	Value	30.6GΩ	PASSED
2.6.1	Filled volume during Pre-Test and record how many litres		17.763ℓ	OK
2.6.2	Verify the tightness of the glycol			OK

PRETEST TEST OPERATORS

THABO SISHANGE

LUCKY KGWADI

DATE OF PRETEST: 19/06/2024

FUNCTIONAL TESTING LOGIC INPUT TEST

Install software on the TBCU using a USB key or Ethernet cable (version:9.1.0) and launch the TrainTracer.

Connector/pin	Project Ref	Value transition
XCB2/8	LI_NOT_INHIB	TRUE
XCB2/7	LI_NEB	TRUE
XCB1/4	LI_CAR_ID1	FALSE
XCB1/5	LI_CAR_ID2	TRUE
XCB1/6	LI_CAR_ID3	TRUE
XCB1/7	LI_CAR_ID4	TRUE
XCB1/8	LI_EDM	TRUE
XCB1/9	LI_TRACTION	TRUE
XCB1/18	LI_REVERSE	TRUE
XCB1/28	LI_DEMCL_HSCB	TRUE
XCB1/29	LI_HSCB_OP	TRUE
XCB1/30	LI_HSCB_CL	TRUE
XCB1/19	LI_MCB_400V_SUPPLY	TRUE
XCB1/20	LI_TH1_LC	TRUE
XCB1/21	LI_TH2_LC	TRUE
XCB1/17	LI_FORWARD	TRUE
XCB1/16	LI_NOBRAKE	TRUE
XCB1/45	LI_PBRAKE_STAT	TRUE
XCB1/43	LI_ISOL	TRUE
XCB1/31	LI_HSCB_HOLD	TRUE
XCB1/44	LI_BRAKE_ISO	TRUE
XCB1/52	LI_SERVICE_BR_DC	TRUE
XCB1/53	LI_RESERVOIR_PS_OK	TRUE
XCB1/54	LI_PARK_BR_DC	TRUE
XCB1/55	LI_PARK_BRAKE_RELEASE	TRUE
XCB1/56	LI_REGULATOR_STAT	TRUE
XCB1/64	LI_SUSP_DC	TRUE
XCB1/42	LI_PARK_BRPS_NOK(ebt6_in/ebt 21)	TRUE

FUNCTIONAL TESTING LOGIC OUTPUT TEST

Refer to the Test Procedure (2.5.2)

Confirm Status		Variable to force / action to do	Check
CLOSE		LO_CK_CCC=1	Check that capacitor charging contactor K-CCC closes LI_K_CCCC=1 ;LED 43&53 OFF(digital input.xml)
OPEN		LO_CK_CCC=0	Check that capacitor charging contactor K-CCC opens LI_K_CCCC=0; LED 43&53 ON(digital input.xml)
CLOSE		LO_CK_IC=1	Check that isolation contactor K-IC close LI_K_ICC=1; LED 43&53 OFF(digital input.xml)
OPEN		LO_CK_IC=0	Check that isolation contactor K-IC opens LI_K_ICC=0; LED 43&53 ON(digital input.xml)
OK	NOK	LO_CK_WP=1	Check the command to start water pump LI_K_WPC=1(digital input.xml) Check also that the variable ai_cps = 1,6 bar +/-5% (analog input.xml)
☒	☐		
OK	NOK	LO_CK_WP=0	Check the command to stop water pump LI_K_WPC=0(digital input.xml); Check also that the variable ai cps = 0 bar +/-5% (analog input.xml)
☒	☐		
OK	NOK	LO_CK1_GMV=1	Check the half-speed command to the fan LI_K1_GMVC=1(digital input.xml) -Check with a rotation sense measurement instrument that the rotation sense is anti-clockwise 
☒	☐		
OK	NOK	LO_CK1_GMV=0	Check the removal of the half-speed command to the fan LI_K1_GMVC=0(digital input.xml)
☒	☐		
OK	NOK	LO_CK2_GMV=1	Check the full-speed command to the fan LI_K2_GMVC=1(digital input.xml) -Check with a rotation sense measurement instrument that the rotation sense is anti-clockwise 
☒	☐		
OK	NOK	LO_CK2_GMV=0	

Confirm Status		Variable to force / action to do	Check
☒	☐		Check the removal of the full-speed command to the fan LI_K2_GMVC=0(digital input.xml)
☒	☐	LO_CK_WP=1	Start pump LI_K_WPC=1(digital input.xml)
☒	☐	LO_CK1_GMV=1	Check the half-speed command to the fan LI_K1_GMVC=1(digital input.xml)
☒	☐	LO_CK2_GMV=1	Check the full-speed command to the fan Don't start LI_K2_GMVC=0(digital input.xml)
☒	☐	LO_CK1_GMV=0	Check the removal of the half-speed command to the fan LI_K1_GMVC=0(digital input.xml)
☒	☐	LO_CK2_GMV=0	Check the removal of the full-speed command to the fan LI_K2_GMVC=0(digital input.xml)
☒	☐	LO_CK2_GMV=1	Check the full-speed command to the fan LI_K2_GMVC=1(digital input.xml)
☒	☐	LO_CK1_GMV=1	Check the half-speed command to the fan Don't start LI_K1_GMVC=0(digital input.xml)
☒	☐	LO_CK2_GMV=0 LO_CK1_GMV=0 LO_CK_WP=0	Pump and fans stop
		Switch OFF 400 VAC on the simulator box	
☒	☐	SBT7_9 =1	Check that there is continuity between pin 32 and 33 of XCB2; LED "LO_TRAC IN" ON
☒	☐	SBT7_9 =0	Check that there is no continuity between pin 32 and 33 of XCB2 ; LED "LO_TRAC IN" OFF
☒	☐	SBT7_10 =1	Check that there is continuity between pin 40 and 41 of XCB2 ; LED "LO_BRAKE IN" ON
☒	☐	SBT7_10 =0	Check that there is no continuity between pin 40 and 41 of XCB2; LED "LO_BRAKE IN" OFF
☒	☐	LO_AC_FAN=1	Check the start of the TBCU fans on the top of AGATE
☒	☐	LO_AC_FAN=0	Check the stop of the TBCU fans on the top of AGATE
☒	☐	LO_INH_TR=1 LO_CK_IC=1	Check the presence of 110 V on pin 31 of XCB2 ; LED "LO_INH_TR" ON

Confirm Status		Variable to force / action to do	Check
☒	☐	LO_INH_TR=0 LO_CK_IC=0	Check that there is no 110 V on pin 31 of XCB2; LED "LO_INH_TR" OFF
☒	☐	LO_BRK_FLT=1	Check that there is continuity between pin 29 and 30 of XCB2 ; LED "LO_BRK_FLT" ON
☒	☐	LO_BRK_FLT=0	Check that there is no continuity between pin 29 and 30 of XCB2; LED "LO_BRK_FLT" OFF

Signal Label	Check variable	Power supply Measured on the simulator AY317642 test point	Current / voltage to apply	TrainTracer must read	Record the Value
AI_FVMD	ai_uf_fil	48 vdc	Apply 100 Vrms	670 Vrms +/-5%	48.53V
AI_LVMD	ai_vline	30 vdc	Apply 100 Vrms	450 Vrms +/-5%	29.89V
AI_IR	ff7_events_fault_recorder1/ai_ir	48 vdc	Apply 20 Arms	35 Arms +/-5%	48.51V
AI_IS	ff7_events_fault_recorder1/ai_is	48 vdc	Apply 20 Arms	35 Arms +/-5%	48.51V
AI_IDC	ai_idc	48 vdc	Apply 20 Arms	35 Arms +/-5%	48.52V
AI_IDIFF	ai_idiff	48 vdc	Apply 20 Arms	35 Arms +/-5%	48.50V
AI_LOAD_PRES	AI_LOAD_PRES	+15Vdc	Put a 1k Ω resistor between XCSB/53-54	15 mA +/-5%	17V
AI_BR_CTR_PRES	AI_BR_CTR_PRES	+15Vdc	Put a 1k Ω resistor between XCSB/5-6	15 mA +/-5%	14.323V
AI_CTS	ai_cts	+15Vdc		Check that the temperature read is the same of the temperature of the environment (measured with an	16.541V

Signal Label	Check variable	Power supply Measured on the simulator AY317642 test point	Current / voltage to apply	TrainTracer must read	Record the Value
				external thermometer	
AI_CPS	ai_cps	+15Vdc		Verify pump pressure 1,6 bar +/-5%	1.68bar
XMD_Diode	Put the DMM on DIODE mode and test PIN-42 & PIN-44 on XCB plug and measure the Voltage drop across the DIODE.			A_DIODE VS K_DIODE	0.517
XMD_Diode	Put the DMM on DIODE mode and test PIN-42 on XCB plug and PIN-19 on XCB_F plug and measure the Voltage drop across the DIODE.			A_DIODE VS K_DIODE	0.517
XMD_Diode	Swap the DMM leads to verify if the DIODE is blocking			K_DIODE VS A_DIODE	OPEN

TESTING THE SPEED SENSORS

NB: Refer to the test procedure (2.5.4)

Speed sensor	Pins on connector XCST	Voltage to be measured	STATUS	
MOT1_SP1/SP2	8, 11	15V (+/- 5%) (led M1 on simulator ON	☒	☐
MOT2_SP1	42, 44	15V (+/- 5%) (led M2 on simulator ON	☒	☐
MOT3_SP1	64, 66	15V (+/- 5%) (led M3 on simulator ON	☒	☐
MOT4_SP1	98, 100	15V (+/- 5%) (led M4 on simulator ON	☒	☐

ANALOG OUTPUT TEST

Reset the TBCU and execute the service brake is controlled by generating a PWM signal, 0/15V 500 Hz. The waveform can be verified with an oscilloscope or with a multimeter in AC volt connecting the multimeter cable to the test point (29-39) on the simulator box.

Variable to force	Pins on connector XCSB where to connect oscilloscope	Expected value Check with multimeter	Results

Mech_a_pwm_brake= 50	29,30(test point on simulator) Between "-" and "PWM_brake_TEST"	Square wave 0/15 V 500Hz and 50% duty-cycle(7,5V) VAC measured with a multimeter	DONE

Send Parameters	Verify if the varable is TRUE or FALSE	Results
Send parameter file setup valvole.xml	Verify that the variable CEV3_RetourC1 and CEV3_RetourC2 in dashboard "check _WDG_relay.xml" are TRUE	TRUE
Send parameter file AO_WSP_ADM1.xml	Verify that LED on simulator AO_WSP_ADM1 lamp	TRUE
Send parameter file AO_WSP_ADM2.xml	Verify that LED on simulator AO_WSP_ADM2 lamp	TRUE
Send parameter file AO_WSP_DUMP1.xml	Verify that the LED's AO_WSP_ADM1/AO_WSP_DUMP1 blinking on simulator	TRUE
Send parameter file AO_WSP_DUMP2.xml	Verify that the LED's AO_WSP_ADM2/AO_WSP_DUMP2 blinking on simulator	TRUE

HIGH VOLTAGE TEST

Execute the below action to prepare for High Volgate and Modules testing	Results
Power off 110V supply on simulator to reset the TBCU	DONE
Switch off the Function wave generator	DONE
Connect +HV(TR1) and –HV(TR5), and the L load for the inverter (TR7,TR9,TR11, according with page 2 of the traction converter schematics	DONE
Connect the Brake rheostat to point TR12,TR15 of the traction converter	DONE
Connect the fast discharge resistor (from cubicle HV4) to pin2 of CF1 Dc link filter condenser	DONE
Select the product under test to TC on the Control Desk	DONE
Select the HV catenary type to DC on the Control Desk	DONE
Close the switch K400 on the Control Desk	DONE
Close the switch FAN TC on the Control Desk	DONE
Switch on the main switch of the HVPS	DONE
Switch on the battery simulator	DONE
Press the reset button on the front of the HVPS	DONE
Close the Switch HVPS Authorization on the control desk	DONE
Press the Button "start infrared" on the control desk	DONE
Press the button "OUT of earth" on the control desk	DONE
Switch on the 110volt DC on the simulator and make the connection to the TBCU with Train tracer	DONE
Send the High voltage.xml on Train_Tracer dashboard	DONE
Close the switchs on the simularor:, LI_NOT_INHIB, LI_TH1_LC, LI_TH2_LC, LI_CAR_ID1,LI_MCB400 ,LI_HSCB_OP , (Check with that the related variable goes "TRUE" with TrainTracer dashboard "Digital input")	TRUE
Send the prm file "PRM_MAINT_AUTHOR"	DONE

Send the prm file" LOW VOLTAGE TEST" and verify that the precharge is done(K_ICC and K-IC closed) and after 30 second fans and pump of the cooling unit start.	TRUE
Close the switch LI_NEB on the simulator	DONE
Send a prm file "OPEN LINE CONTACTOR" and verify that K_ICC(LI_K_CCC=0,LI_K_ICC=0) open and pump and fan stop.	TRUE
Close the LI_HSCB_HOLD switch on simulator	DONE
Verify that the orange light "Ready to start" on the HVPS remote control, placed on the side of the control desk, is light up.	TRUE
Press the button start on the HVPS remote control	DONE
Press the button "CLOSE HVC"	DONE
Press the button V> ;V< for regulate the HV output	DONE
Supply the traction converter with high voltage, at around 2200 volt	DONE
Verify that the variable ai_vline =3000V	TRUE
The precharge sequence must start (LI_K_ICC=TRUE)	TRUE
Raise voltage to 3kV then wait until the start of half speed ventilation and the pump	DONE

INVERTER TEST

Open on the Dashboard INVERTER TEST

Execute the below action to prepare for INVERTER testing	Results
Write the variables: Inh_dtcomp_open = 1	DONE
Open the dashboard speed sensors1.xml and verify the variables are TRUE: Flt_speed_axle_0 to 5	TRUE
Force dsp2_wr_inv_b_manual_inv=1	DONE
Force dsp2_WR_inv_A_mod_manual=0,05	DONE
Force dsp2_wr_inv_b_fs_manual=1	DONE
Force dsp2_wr_inv_fq_fs_manual=45	DONE
Force tcu_b_dem_start_inv=1	DONE
Record the value of ai_ir_rms=200A +/- 15A	207.606A
Record the value of ai_is_rms=200A +/- 15A	206.828A
Run the INVERTER Test for 5min	DONE

CHOPPER TEST

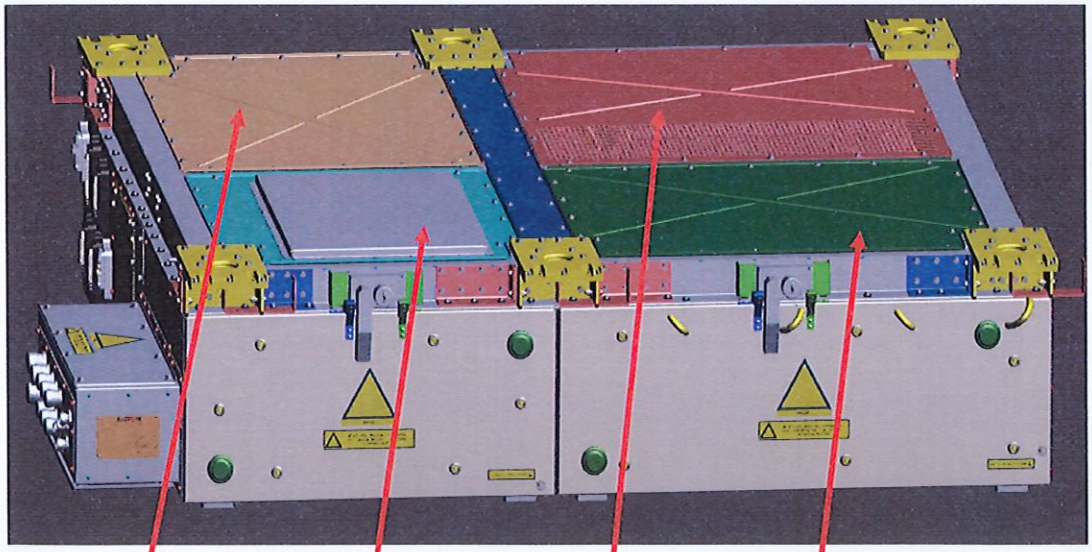
Open on the Dashboard CHOPPER TEST

Execute the below action to prepare for CHOPPER testing	Results
Force the variable K_BC_DC_OL_FORCED =0,03 to enable in open loop the rheostatic chopper after opening the Dashboard "anello aperto chopper.xml"	DONE
Verify that the variables ai_idc= 10Amp ± 5° and record the Value	9.664A
Run the Chopper for 3 minutes	DONE

Force K_BC_DC_OL_FORCED =0 for stop chopper test	DONE
Send a prm file "OPEN LINE CONTACTOR" and verify that the precharge/line contactors are opens and pump-fans stops and the DC bus is discharged: ai_uf_fil < 50	DONE
Stop the HVPS with the button "STOP" on the remote control and switch off the 400 VAC and 110 Vdc.	DONE
Disconnect the TC from the test bench	DONE
Verify the level of the **COOLANT,** top up and record	0ℓ
Total **COOLANT** on the TRACTION CONVERTER	15,763ℓ

COVER TEST

Record the values of the cover test on the blocks provided below.



0.025MΩ	0.021MΩ	0.022MΩ	0.019MΩ
0.023MΩ	0.022MΩ	0.025MΩ	0.023MΩ

FUNCTIONAL TEST OPERATORS

THABO SISHANGE

LUCKY KGWADI

DATE OF FUNCTIONAL TEST: 19/06/2024

1. Updated by:

A N. Mawelela B M.Mokheseng
C S. Matlala