

TECHNICAL DATA SHEET

Commissa <i>Job</i>		N°	17EN043	Serial N°	67015
Year of manufaturing			2018		
Trasformatore trifase in olio <i>Oil three phase Transformer</i>		Tipo <i>Type</i>	TTO	-	
Potenza nominale <i>Rated power</i>		A_n	130 / 165		MVA
Tensione nominale <i>Rated voltage</i>	Avvolgimento AT <i>HV Winding</i>	V_{1n}	400 ± 10 x1.25%		kV
	Avvolgimento MT <i>MV Winding</i>	V_{2n}	33		kV
Collegamento avvolgimenti <i>Windings connection</i>		HV ⇒ Star + N		YNd11	
		MV ⇒ Delta			
Frequenza <i>Frequency</i>		f	50		Hz
Raffreddamento <i>Cooling type</i>		ONAN / ONAF			

Description	UM	Values
Quantity	Nr.	1
Manufacturer	-	Tamini Trasformatori S.r.l.
Factory		Legnano (MI – ITALY)
Type	-	Three phase oil immersed TTO
Standards	-	IEC EN 60076
Operation mode	-	Continuous duty
Nominal rated power	MVA	130 / 165
Cooling	-	ONAN / ONAF
Frequency	Hz	50
N. of phases	Nr.	3
Rated voltage ratio at no-load	kV	400 ± 10 x 1.25% / 33
Vector group	-	YNd11
Insulation levels HV side	kV	420 / 1425 / 630
Insulation levels HVN side	kV	72.5 / 325 / 140
Insulation levels MV / NMV side	kV	36 / 170 / 70
Nominal current HV side	A	187.6 / 238.2
Nominal current MV side	A	2274.4 / 2886.8
Windings material	-	Cu / Cu
Insulation class	-	A
Insulating oil type	-	NYNAS LIBRA
HV / MV / TR bushings location	-	long side / long side
Protection degree HV side	-	IP00
Protection degree MV side		IP00
Oil temperature rise @ 42° C	K	56
Windings temperature rise @ 42° C	K	61
Winding hot spot @ 42° C	K	74
OUTDOOR ENVIRONMENTAL CONDITION		
Ambient temperature Min/Max	°C	-25 / +42
Altitude	m a.s.l.	≤ 1300

GUARANTEED DATA - Reference rating 165 MVA		
No load losses at nominal ratio e frequency	kW	82 (IEC 76 tolerance)
Load-losses at nominal ratio and at 75°C	kW	420 (IEC 76 tolerance)
Short Circuit Impedance at max ratio and at 75°C	%	12.7 (IEC 76 tolerance)
Short Circuit Impedance at nominal ratio and at 75°C	%	12.7 (IEC 76 tolerance)
Short Circuit Impedance at min ratio and at 75°C	%	13.3 (IEC 76 tolerance)
OVERALL DIMENSIONS		
Length	Mm	14'300
Width	Mm	6'700
Height	Mm	10'600
WEIGHTS		
Oil	kg.	55'000
Transport (without oil)	kg.	134'000
Total	kg.	205'000
FITTINGS AND ACCESSORIES		
Bushings		
OIP condenser type bushings HV side type 420 kV / 800 A	Nr.	3
OIP condenser type bushings HV-N side type 72.5 kV / 800 A	Nr.	1
RIP condenser type bushings MV side type 36 kV – 7500 A	Nr.	3
On Load Tap Changer		
Quantity	Nr.	1
Manufacturer	-	MR
Type of tap changer	-	On load tap changer on HV-N side
Number of positions	Nr.	21 (20 steps)
Type		VACUTAP®
Model	-	VM III 350 72.5
Drive type / model	-	TAPMOTION® ED / ED100S
Supply voltage	V	400
Tank		
Bolted cover type tank	Nr.	1

<i>Bi-directional wheels</i>	Nr.	4
<i>Lifting lugs for core and coils</i>	Nr.	4
<i>Lifting lugs for the complete transformer</i>	Nr.	4
<i>Pulling eyes</i>	Nr.	4
<i>Jacking points</i>	Nr.	4
<i>Holes for cover lifting</i>	Nr.	8
<i>Grounding pads</i>	Nr.	2
<i>Thermometer pocket for oil temperature indicator</i>	Nr.	1
<i>Thermometer pocket for WTI indicator</i>	Nr.	1
<i>I conservator, divided in two sections (one for the main tank oil and one for the oil of the tap changer-diverter switch)</i>	Nr.	1
<i>Oil conservator-accessories:</i>		
<i>Oil-air separation membrane in main tank section</i>	Nr.	1
<i>Oil filling plug</i>	Nr.	1+1
<i>Oil drain valve</i>	Nr.	1+1
<i>Oil level indicator with contacts</i>	Nr.	1+1
<i>Silica gel breather</i>	Nr.	1+1
<i>Inspection handhole</i>	Nr.	1+1
<i>Lifting lug</i>	Nr.	4
<i>Radiators</i>	Nr.	16
<i>Radiators-accessories:</i>		
<i>Drain plug</i>	Nr.	16
<i>Air vent plug</i>	Nr.	16
<i>Lifting lug</i>	Nr.	16
<i>Fans for forced air cooling</i>	Nr.	8
<i>Fans supply voltage</i>	V	400
<i>Frequency</i>	Hz	50
<i>Buchholz relay with contacts</i>	Nr.	1
<i>Gas collector for Buchholz relay</i>	Nr.	1
<i>Oil temperature indicator with contacts</i>	Nr.	1
<i>WTI indicator on MV winding with contacts</i>	Nr.	1

<i>Pressure relief valve for main tank with contacts</i>	<i>Nr.</i>	1
<i>OLTC oil flow relay RS 2001 with contact</i>	<i>Nr.</i>	1
<i>Current transformer for MV WTI 2000/2 – 30VA – CI 3</i>	<i>Nr.</i>	1
Valves		
<i>Oil drain valve</i>	<i>Nr.</i>	1
<i>Oil upper filter-press valve / Oil lower filter-press valve</i>	<i>Nr.</i>	1+1
<i>Oil sampling valve</i>	<i>Nr.</i>	1
<i>Conservator OLTC / Main tank by-pass valve</i>	<i>Nr.</i>	1
<i>Butterfly valves for radiators</i>	<i>Nr.</i>	32
<i>Butterfly valves for Buchholz relay</i>	<i>Nr.</i>	2
<i>Butterfly valves for OLTC oil flow relay</i>	<i>Nr.</i>	2
Panels		
<i>Signalling, control and protection circuits auxiliary box</i>	<i>Nr.</i>	1
<i>OLTC motor drive panel</i>	<i>Nr.</i>	1
Space heaters		
<i>Space heater set installed in the OLTC motor unit drive panel</i>	<i>Nr.</i>	1
<i>Space heater set installed in the control panel</i>	<i>Nr.</i>	1
<i>Rating plate</i>	<i>Nr.</i>	1
<i>Manufacturer plate</i>	<i>Nr.</i>	1
<i>First filling insulating oil uninhibited type according to IEC 60296</i>		Nynas Libra
<i>Transformer painting color</i>		RAL 7031