

GENERAL INFORMATION

At present, the improvement of the energy efficiency cannot be considered a slogan anymore, but a need of our time. TO-eco series high efficiency transformers are created for this purpose guaranteeing:

- in conformity with all features of EU-Norm 4548/14
- savings in operating costs of the plant, due to low values of losses.
- consumption reduction of energy resources.
- reduction of CO₂ emissions



ERP | ECO DESIGN | HIGH EFFICIENCY | LOW LOSSES

ANNUAL SAVINGS (MAXIMUM) COMPARED TO TRANSFORMERS IEC 21001

RATED POWER kVA	50	100	160	250	400	630	800	1000	1250	1600	2000	2500
LOW CONSUMPTION MWh	0,9	1,5	2,2	3,1	4,4	6,2	7,8	8,2	23,3	30,2	39,3	45,0

PARTICULARITIES OF AN OIL-FILLED TRANSFORMER

The extreme flexibility of the heat reducing waves present on the transformer tank, allows to compensate the volume increases of the insulating fluid related to its operating temperature.

The leak-proofness of the transformer tank prevents the absorption of humidity, making it "Maintenance free".

Reference Norms :

- UE 548/2014
- CEI EN 60067-1 to 10
- CEI EN 50464-1

The phases of design and building, in addition to their compliance with IEC EN norms, take into account the following rules:

- ISO 9001 : 2008 regarding the quality standards and procedures.
- ISO 14001 : 2004 regarding the environmental issues.

MF TRASFORMATORI guarantees the use of PCB free insulating fluids.

The magnetic core is built of grain-oriented electrical steel sheets and they use the step lap technique for their cut and assembly to reduce the abnormal overheating risks and to decrease the noise.

The coils are designed and built so that the transformer may operate on full-load conditions in strict compliance with A thermal class.

Note: on request, we may provide transformers with the same electrical features but with a conservator.

DESCRIPTION

The oil-filled distribution transformers have the following features

- Cooling ONAN.
- They may be installed either inside or outside.
- Anti-corrosion surface treatment.
- Suitable for heavy working conditions.
- Tested according to IEC 60296 standards.



PROVIDED STANDARD ACCESSORIES

- Bushings for MV and LV connections.
- Primary voltage regulator with 5 positions installed on the tank.
- Rating plate.
- Lifting lugs.
- 2 Earthing points.
- 4 Bi-directional flat rollers.
- Filling valve.
- Drain valve according to IEC EN 50216-4.

RATED POWER kVA		50	100	160	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
NO-LOAD LOSSES	W	90	145	210	300	360	430	510	600	650	770	950	1.200	1.450	1.750	2.200
LOAD LOSSES AT 75 °C	W	1.100	1.750	2.350	3.250	3.900	4.600	5.500	6.500	8.400	10.500	11.000	14.000	18.000	22.000	27.500
NO-LOAD CURRENT I _o	%	1	0,9	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4
SHORT CIRCUIT VOLTAGE VCC	%	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6
INPUT CURRENT I _e /I _N		11,6	10,6	10,1	9,2	9,2	9,4	9	9	8,4	8,4	8,8	8	7,6	7,5	7,5

OUTPUT AT 75°C

COSφ 1 100% LOAD	%	97,68	98,14	98,43	98,6	98,67	98,76	98,81	98,89	98,88	98,89	99,05	99,06	99,04	99,06	99,07
COSφ 1 75% LOAD	%	98,15	98,52	98,74	98,88	98,93	99	99,05	99,11	99,11	99,12	99,24	99,25	99,23	99,25	99,26
COSφ 0,9 100% LOAD	%	97,42	97,94	98,25	98,45	98,52	98,62	98,68	98,76	98,76	98,76	98,95	98,96	98,93	98,96	98,96
COSφ 0,9 75% LOAD	%	97,94	98,35	98,6	98,75	98,81	98,89	98,94	99,01	99,01	99,02	99,16	99,17	99,15	99,17	99,18

VOLTAGE DROP AT 75°C

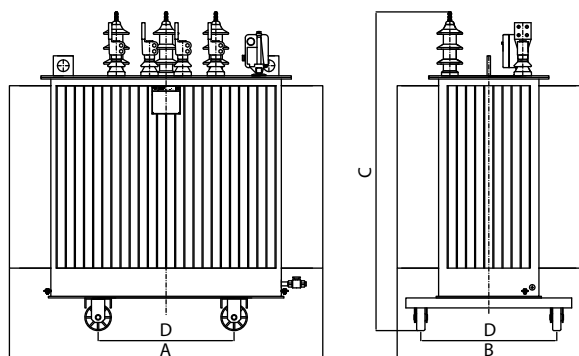
COSφ 1 100% LOAD	%	2,26	1,81	1,54	1,37	1,31	1,22	1,17	1,21	1,22	1,22	1,06	1,05	1,08	1,06	1,05
COSφ 0,9 100% LOAD	%	3,46	3,17	2,98	2,86	2,81	2,75	2,71	3,62	3,64	3,64	3,5	3,5	3,52	3,5	3,5

NOISE

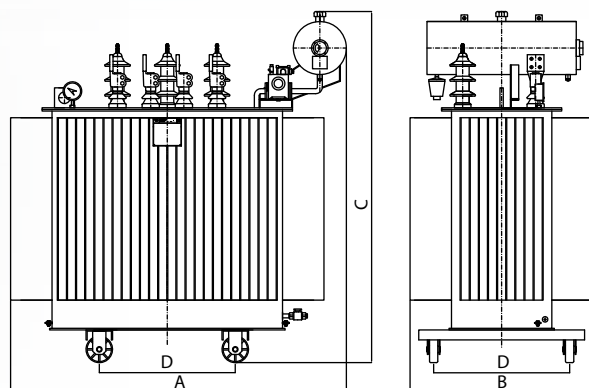
SOUND POWER LEVEL (L _{wa})	dB(A)	39	41	44	47	49	50	51	52	53	55	56	58	60	63	76
--------------------------------------	-------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

SIZES AND WEIGHTS (APPROXIMATE)

Hermetically Sealed Transformer



Transformer with conservator



HERMETICALLY SEALED TRANSFORMER kVA		50	100	160	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
LENGTH (A)	mm	950	1.090	1.150	1.200	1.200	1.250	1.250	1.550	1.660	1.800	1.820	1.850	2.200	2.230	2.260
DEPTH (B)	mm	500	600	600	680	680	800	900	900	1.000	1.030	1.050	1.050	1.150	1.250	1.250
HEIGHT (C)	mm	1.200	1.260	1.320	1.430	1.320	1.550	1.600	1.740	1.880	1.950	1.950	2.000	2.170	2.260	2.300
WHEEL INTERAXIS (D)	mm	400	520	520	520	520	670	670	670	670	670	820	820	820	1.000	1.000
WHEEL DIAMETER	mm	100	100	100	100	100	100	100	160	160	160	160	160	160	160	160
OIL WEIGHT	kg	100	150	170	240	270	290	330	440	490	610	660	760	1.060	1.090	1.210
TOTAL WEIGHT	kg	615	820	1.050	1.200	1.320	1.490	1.750	1.950	2.340	3.080	3.250	3.900	5.060	5.450	6.040

TRANSFORMER WITH CONSERVATOR kVA		50	100	160	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
LENGTH (A)	mm	1.100	1.200	1.280	1.300	1.320	1.390	1.420	1.660	1.750	1.960	1.950	2.200	2.340	2.320	2.350
DEPTH (B)	mm	500	600	600	680	680	800	900	900	1.000	1.030	1.050	1.050	1.150	1.250	1.250
HEIGHT (C)	mm	1.290	1.350	1.430	1.520	1.600	1.650	1.700	1.890	2.020	2.150	2.150	2.200	2.400	2.500	2.550
WHEEL INTERAXIS (D)	mm	400	520	520	520	520	670	670	670	670	670	820	820	820	1.000	1.000
WHEEL DIAMETER	mm	100	100	100	100	100	100	100	160	160	160	160	160	160	160	160
OIL WEIGHT	kg	105	160	180	250	280	295	345	460	515	640	690	800	1.110	1.150	1.270
TOTAL WEIGHT	kg	665	870	1.100	1.200	1.370	1.540	1.800	2.000	2.390	3.130	3.300	3.950	6.010	5.500	6.090

