



INESING GROUP

Power System Solution



introduction

INESING SRL is a dynamic and modern company, very well known in the design and production of oil immersed and dry type (cast resin) transformer up to 36kV -10MVA,

Since its creation has dedicated itself to design, supply and start-up of power and distribution transformers for application in industrial systems especially oriented to the generation, transmission and distribution of Electrical Power.

In 1999 was founded INESING Srl by Eng. Sami Sejdaj in San Fior (Treviso) Italy.
INESING Srl started givin **technical consultancy** in the designing of:

- Power and distribution transformers
- Furnace and special transformers
- Ovens transformers and for special applications

INESING Srl was also, **producer** of:

- Electrical equipment,
- Switchboard and switchgear MV and LV
- Shelters, lighting pole and urban and industrial solar lighting





Core

The core is constructed using thin sheets of cold rolled grain oriented magnetic silicon steel insulated on both sides.

Conventional grain oriented steel is used for transformers with normal no-load losses, while transformers with reduced no-load losses are manufactured using higher quality HiS steel. These steel sheets are 0.30mm thick.

The core sheets are cut at an angle of 45°, thus allowing maximum magnetic flux in the rolling direction. Then the sheet are stacked in layers of either single or multiple overlap or step-lap method offers additional benefits in terms of lowering no-load losses and noise level.

Active Part

LV WINDINGS:

The low voltage windings coaxial to the column of the core are realised from a sheet of aluminium vacuum impregnated with polyester resin in class F or H at a high level of cementation which guarantees the coil from a very good isolation and mechanical seal. The connection between the sheet of aluminium or copper foil and the terminal bar is made through automatic welding.

=V WINDINGS:

The Medium Voltage windings are manufactured using full automatic machines with aluminium or copper conductors, insulated with a film of polyester in class F or H in case of special projects. The resin used to encapsulate the windings is an epoxy-resin with added alumina, silicon and other additives. This is prepared in temperature controlled conditions in a special mixing machine. The cycle of polymerisation is controlled by a software in order to guarantee the two temperature values, correct jellification and therefore the polymerisation.



Testing

In the testing room, the transformers are subject to a series of measurements and test. Routine tests are carried out on all transformer prior to shipping.

Measurement of winding resistance;

Measurement of voltage ratio and check of phase displacement; Measurement of short circuit impedance and load loss; Measurement of no load and current;

Separate source voltage withstand test;

Induced over-voltage withstand test;

Once the routine test is complete, the protection instruments and other accessories are fitted and the transformer is subject to a final general check. Subsequently, the rating plate is fixed to the tank.

Options and Accessories

- Dial type thermometer with or without contacts
- Multifunction protection device
- Cable boxes
- Off-circuit tap charger with 5 positions (9 on request)
- Thermometer pocket
- Skid-base or bi-directional rollers
- Dual voltage transformers
- Galvanized tank.

Quality and Testing

At the end of the manufacturing process the transformers are individually tested in accordance with the IEC Standards.



Routine Tests

- Voltage ratio and phase displacement IEC 60076-1
- Insulation resistance IEC 60076-1
- Applied voltage test (insulation to ground) IEC 60076-3
- Induced voltage test (winding insulation) IEC 60076-3
- No load loss test IEC 60076-1
- Winding resistance IEC 60076-1
- Impedance and load loss test IEC 60076-1
- Control wiring, auxiliary operation

Special Tests

Upon request, witnessed type/special tests can be carried out:

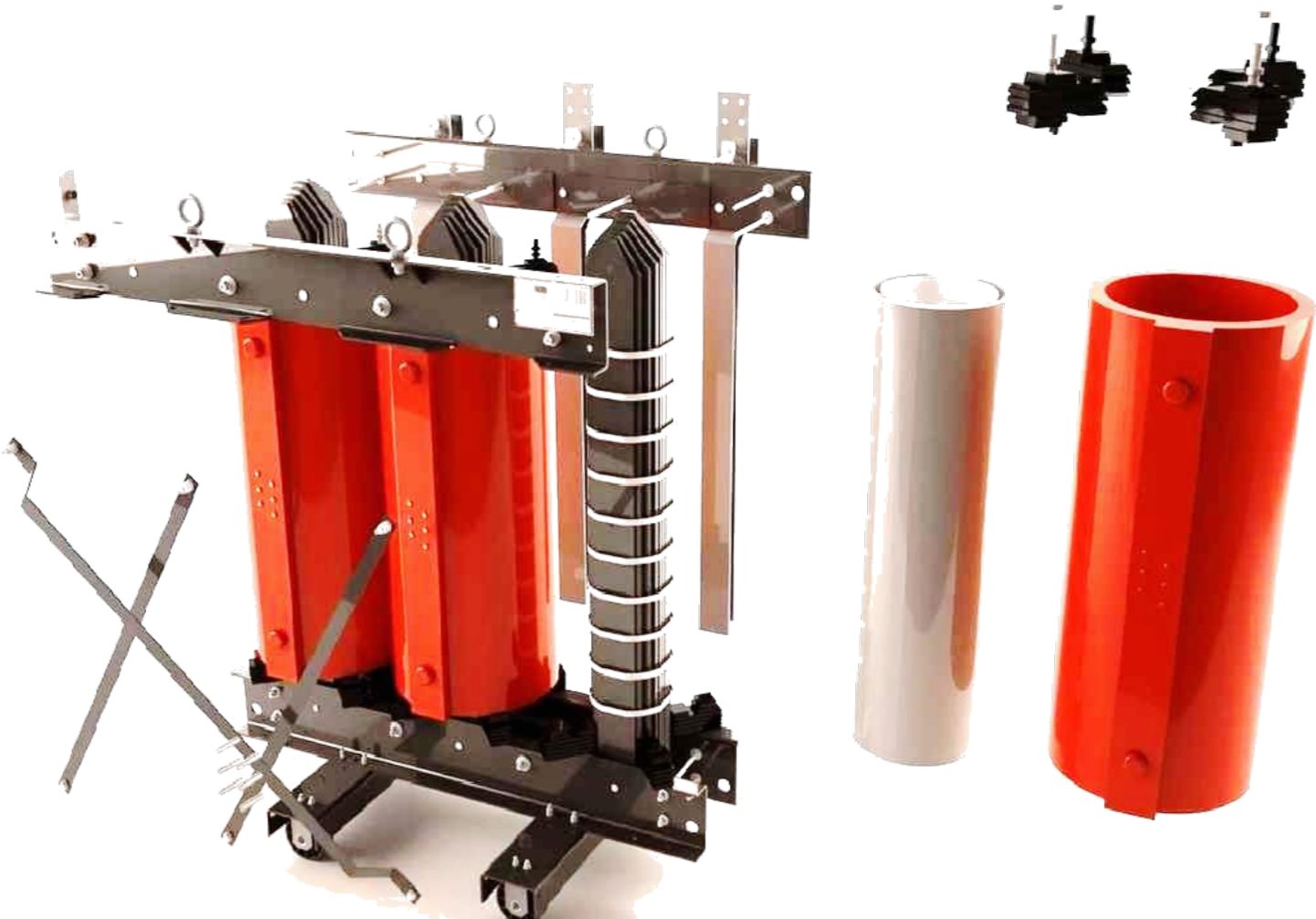
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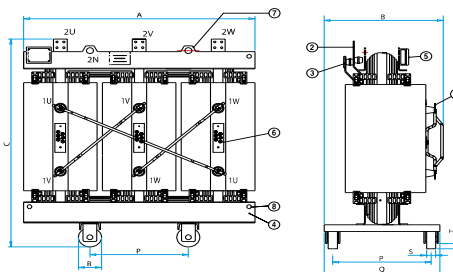
Service

Inesing tanks to its organizational, technical and operative knowledge that has obtained in more than 10 years of experience on national and international Markets is leader to manage all requested processes for offering to the client the complete and efficient service



TECHNICAL DATA DISTRIBUTION



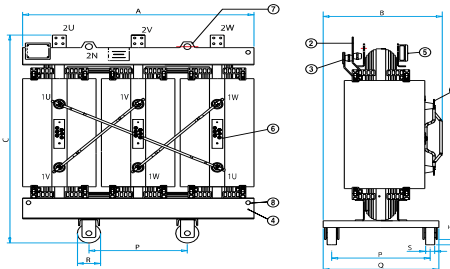


CL24 kV

| Rated Power | Series | Po | Pcc 75°C | Pcc 120°C | Vcc 75°C | Io | Efficiency | | Voltage Drop | | LpA | LwA | A | B | C | P | Q | R | S | T | Weight | |
|--------------|-----------|------|----------|-----------|----------|-----|------------------|-----------------|------------------|--------------------|-----|-----|------|------|------|------|------|-----|----|----|--------|----|
| | | | | | | | cosφ 1 load 100% | cosφ 1 load 75% | cosφ 1 load 100% | cosφ 0,9 load 100% | | | | | | | | | | | | |
| kVA | | W | W | W | % | % | % | % | % | % | dB | dB | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | Advanced | 480 | 1700 | 1955 | 6 | 2,3 | 97,62 | 97,94 | 2,13 | 4,48 | 48 | 61 | 1200 | 760 | 1240 | 520 | 620 | 125 | 40 | 35 | 580 | |
| | Ecodesign | 280 | 1850 | 2050 | 6 | 2,3 | 97,72 | 98,12 | 2,23 | 4,56 | 39 | 51 | 1130 | 750 | 1250 | 520 | 620 | 125 | 40 | 35 | 650 | |
| 160 | Basic | 700 | 4000 | 4600 | 6 | 2,0 | 96,79 | 97,33 | 3,05 | 5,29 | 54 | 67 | 1100 | 710 | 1240 | 520 | 620 | 125 | 40 | 35 | 700 | |
| | Advanced | 650 | 2500 | 2850 | 6 | 2,0 | 97,86 | 98,16 | 1,96 | 4,33 | 51 | 64 | 1240 | 750 | 1250 | 520 | 620 | 125 | 40 | 35 | 800 | |
| 250 | Ecodesign | 400 | 2600 | 2900 | 6 | 2,0 | 97,98 | 98,34 | 1,99 | 4,35 | 42 | 54 | 1270 | 770 | 1250 | 520 | 620 | 125 | 40 | 35 | 850 | |
| | Basic | 960 | 4400 | 5060 | 6 | 1,8 | 97,65 | 98,01 | 2,20 | 4,54 | 54 | 67 | 1240 | 755 | 1310 | 520 | 620 | 125 | 40 | 35 | 950 | |
| 315 | Advanced | 880 | 3300 | 3800 | 6 | 1,8 | 98,16 | 98,42 | 1,70 | 4,10 | 54 | 67 | 1290 | 775 | 1410 | 520 | 620 | 125 | 40 | 35 | 1050 | |
| | Ecodesign | 520 | 3400 | 3800 | 6 | 1,8 | 98,30 | 98,60 | 1,70 | 4,10 | 45 | 57 | 1270 | 790 | 1420 | 520 | 620 | 125 | 40 | 35 | 1150 | |
| 400 | Basic | 1100 | 4700 | 5405 | 6 | 1,7 | 97,98 | 98,28 | 1,90 | 4,27 | 56 | 70 | 1290 | 775 | 1325 | 520 | 620 | 125 | 40 | 35 | 1050 | |
| | Advanced | 1030 | 4000 | 4600 | 6 | 1,7 | 98,24 | 98,49 | 1,64 | 4,04 | 56 | 70 | 1290 | 770 | 1525 | 520 | 620 | 125 | 40 | 35 | 1200 | |
| 500 | Ecodesign | 630 | 3950 | 4400 | 6 | 1,7 | 98,43 | 98,70 | 1,58 | 3,99 | 46 | 59 | 1340 | 790 | 1530 | 520 | 620 | 125 | 40 | 35 | 1300 | |
| | Basic | 1350 | 5400 | 6210 | 6 | 1,5 | 98,15 | 98,41 | 1,73 | 4,12 | 57 | 71 | 1320 | 850 | 1405 | 670 | 770 | 125 | 40 | 35 | 1250 | |
| 630 | Advanced | 1200 | 4800 | 5500 | 6 | 1,5 | 98,35 | 98,59 | 1,55 | 3,97 | 57 | 71 | 1320 | 845 | 1565 | 670 | 770 | 125 | 40 | 35 | 1300 | |
| | Ecodesign | 750 | 4950 | 5500 | 6 | 1,5 | 98,46 | 98,73 | 1,55 | 3,97 | 47 | 60 | 1340 | 860 | 1630 | 670 | 770 | 125 | 40 | 35 | 1450 | |
| 800 | Basic | 1600 | 6600 | 7600 | 6 | 1,4 | 98,19 | 98,46 | 1,70 | 4,10 | 57 | 71 | 1320 | 850 | 1505 | 670 | 770 | 125 | 40 | 35 | 1400 | |
| | Advanced | 1400 | 5900 | 6780 | 6 | 1,4 | 98,39 | 98,63 | 1,54 | 3,95 | 57 | 71 | 1430 | 850 | 1620 | 670 | 770 | 125 | 40 | 35 | 1550 | |
| 1000 | Ecodesign | 900 | 5750 | 6400 | 6 | 1,4 | 98,56 | 98,81 | 1,46 | 3,88 | 48 | 61 | 1400 | 880 | 1640 | 670 | 770 | 125 | 40 | 35 | 1650 | |
| | Basic | 1900 | 7900 | 9085 | 6 | 1,3 | 98,29 | 98,54 | 1,62 | 4,03 | 58 | 72 | 1430 | 870 | 1600 | 670 | 770 | 125 | 40 | 35 | 1650 | |
| 1250 | Advanced | 1650 | 6800 | 7800 | 6 | 1,3 | 98,52 | 98,74 | 1,42 | 3,85 | 58 | 72 | 1430 | 885 | 1760 | 670 | 770 | 125 | 40 | 35 | 1800 | |
| | Ecodesign | 1100 | 6850 | 7600 | 6 | 1,3 | 98,64 | 98,88 | 1,39 | 3,82 | 49 | 62 | 1400 | 880 | 1760 | 670 | 770 | 125 | 40 | 35 | 1850 | |
| 1600 | Basic | 2300 | 9500 | 10925 | 6 | 1,1 | 98,37 | 98,61 | 1,55 | 3,96 | 59 | 73 | 1430 | 870 | 1765 | 670 | 770 | 125 | 40 | 35 | 1900 | |
| | Advanced | 2000 | 8000 | 9200 | 6 | 1,1 | 98,62 | 98,82 | 1,33 | 3,77 | 59 | 73 | 1500 | 890 | 1810 | 670 | 770 | 125 | 40 | 35 | 2150 | |
| 2000 | Ecodesign | 1300 | 7200 | 8000 | 6 | 1,1 | 98,85 | 99,04 | 1,18 | 3,64 | 50 | 64 | 1490 | 890 | 1880 | 670 | 770 | 125 | 40 | 35 | 2400 | |
| | Basic | 2600 | 11000 | 12650 | 6 | 1,0 | 98,50 | 98,72 | 1,44 | 3,87 | 60 | 74 | 1500 | 1000 | 1950 | 820 | 1000 | 125 | 40 | 35 | 2300 | |
| 2500 | Advanced | 2300 | 9400 | 10800 | 6 | 1,0 | 98,71 | 98,90 | 1,26 | 3,71 | 60 | 74 | 1500 | 1000 | 1960 | 820 | 1000 | 125 | 40 | 35 | 2500 | |
| | Ecodesign | 1550 | 8100 | 9000 | 6 | 1,0 | 98,96 | 99,13 | 1,08 | 3,55 | 51 | 65 | 1630 | 1020 | 1950 | 820 | 1000 | 125 | 40 | 35 | 3050 | |
| 3150 | Basic | 2900 | 13000 | 14950 | 6 | 0,9 | 98,59 | 98,81 | 1,38 | 3,81 | 62 | 76 | 1500 | 1000 | 1975 | 820 | 1000 | 125 | 40 | 35 | 2650 | |
| | Advanced | 2700 | 11500 | 13100 | 6 | 0,9 | 98,75 | 98,94 | 1,23 | 3,68 | 62 | 76 | 1600 | 1000 | 1975 | 820 | 1000 | 125 | 40 | 35 | 2850 | |
| 4000 | Ecodesign | 1800 | 9900 | 11000 | 6 | 0,9 | 98,99 | 99,16 | 1,06 | 3,53 | 53 | 67 | 1670 | 1040 | 2080 | 820 | 1000 | 125 | 40 | 35 | 3500 | |
| | Basic | 3500 | 16500 | 18975 | 6 | 0,9 | 98,61 | 98,83 | 1,37 | 3,80 | 62 | 76 | 1680 | 1030 | 2210 | 820 | 1000 | 200 | 70 | 50 | 3300 | |
| 5000 | Advanced | 3100 | 14000 | 15800 | 6 | 0,9 | 98,83 | 99,01 | 1,17 | 3,63 | 62 | 76 | 1680 | 1025 | 2265 | 820 | 1000 | 200 | 70 | 50 | 3450 | |
| | Ecodesign | 2200 | 11700 | 13000 | 6 | 0,9 | 99,06 | 99,21 | 0,99 | 3,47 | 54 | 68 | 1700 | 1040 | 2380 | 820 | 1000 | 200 | 70 | 50 | 4150 | |
| 6300 | Basic | 4100 | 20500 | 23575 | 6 | 0,8 | 98,64 | 98,86 | 1,36 | 3,80 | 63 | 78 | 1770 | 1135 | 2370 | 1070 | 1200 | 200 | 70 | 50 | 4100 | |
| | Advanced | 4000 | 16000 | 18000 | 6 | 0,8 | 98,91 | 99,07 | 1,08 | 3,55 | 63 | 78 | 1830 | 1140 | 2420 | 1070 | 1200 | 200 | 70 | 50 | 4250 | |
| 8000 | Ecodesign | 2600 | 14400 | 16000 | 6 | 0,8 | 99,08 | 99,23 | 0,98 | 3,46 | 55 | 70 | 1840 | 1200 | 2420 | 1070 | 1200 | 200 | 70 | 50 | 4850 | |
| | Basic | 5200 | 25000 | 28750 | 6 | 0,7 | 98,66 | 98,87 | 1,33 | 3,77 | 65 | 80 | 1940 | 1165 | 2465 | 1070 | 1200 | 200 | 70 | 50 | 4850 | |
| 10000 | Advanced | 5000 | 19000 | 21850 | 6 | 0,7 | 98,94 | 99,09 | 1,05 | 3,53 | 65 | 80 | 1940 | 1170 | 2470 | 1070 | 1200 | 200 | 70 | 50 | 5000 | |
| | Ecodesign | 3100 | 17100 | 19000 | 6 | 0,7 | 99,12 | 99,27 | 0,94 | 3,43 | 56 | 71 | 1960 | 1200 | 2470 | 1070 | 1200 | 200 | 70 | 50 | 5700 | |
| 12500 | Advanced | 5600 | 21000 | 24150 | 8 | 0,6 | 99,06 | 99,19 | 1,09 | 4,41 | 66 | 81 | 2160 | 1200 | 2510 | 1070 | 1200 | 200 | 70 | 50 | 6300 | |
| | Ecodesign | 3800 | 19800 | 22000 | 8 | 0,6 | 99,19 | 99,32 | 1,02 | 4,35 | 58 | 74 | 2150 | 1200 | 2530 | 1070 | 1200 | 200 | 70 | 50 | 6700 | |

Different design (i.e. ambient temperatures and different conducting material) are available on request.

We reserve the right to change the technical data without advising.



CL36 kV

| Rated Power | Series | Po | Pcc 75°C | Pcc 120°C | Vcc 75°C | Io | Efficiency | | Voltage Drop | | LpA | LwA | A | B | C | P | Q | R | S | T | Weight | |
|-------------|-----------|------|----------|-----------|----------|-----|------------------|-----------------|------------------|--------------------|-----|-----|------|------|------|------|------|-----|----|----|--------|----|
| | | | | | | | cosφ 1 load 100% | cosφ 1 load 75% | cosφ 1 load 100% | cosφ 0,9 load 100% | | | | | | | | | | | | |
| kVA | | W | W | W | % | % | % | % | % | % | dB | dB | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 160 | Advanced | 1000 | 2900 | 3340 | 6 | 2 | 97,36 | 97,66 | 2,27 | 4,59 | 51 | 64 | 1500 | 800 | 1550 | 520 | 620 | 125 | 40 | 35 | 1120 | |
| | Ecodesign | 460 | 2880 | 3190 | 6 | 2 | 97,77 | 98,16 | 2,17 | 4,51 | 42 | 54 | 1600 | 850 | 1600 | 520 | 620 | 125 | 40 | 35 | 2900 | |
| 250 | Advanced | 1300 | 4000 | 4600 | 6 | 1,8 | 97,69 | 97,97 | 2,02 | 4,38 | 54 | 67 | 1550 | 850 | 1600 | 520 | 620 | 125 | 40 | 35 | 1350 | |
| | Ecodesign | 600 | 3770 | 4180 | 6 | 1,8 | 98,12 | 98,45 | 1,85 | 4,23 | 45 | 57 | 1625 | 900 | 1750 | 520 | 620 | 125 | 40 | 35 | 3050 | |
| 315 | Advanced | 1500 | 4600 | 5290 | 6 | 1,7 | 97,89 | 98,14 | 1,86 | 4,24 | 56 | 70 | 1600 | 850 | 1700 | 520 | 620 | 125 | 40 | 35 | 1600 | |
| | Ecodesign | 730 | 4370 | 4840 | 6 | 1,7 | 98,26 | 98,56 | 1,72 | 4,11 | 46 | 59 | 1650 | 900 | 1850 | 520 | 620 | 125 | 40 | 35 | 3150 | |
| 400 | Advanced | 1650 | 5000 | 5750 | 6 | 1,5 | 98,18 | 98,40 | 1,62 | 4,02 | 57 | 71 | 1650 | 900 | 1820 | 670 | 770 | 125 | 40 | 35 | 1900 | |
| | Ecodesign | 870 | 5460 | 6050 | 6 | 1,5 | 98,30 | 98,60 | 1,69 | 4,09 | 47 | 60 | 1700 | 950 | 1950 | 670 | 770 | 125 | 40 | 35 | 3300 | |
| 500 | Advanced | 1950 | 6000 | 6900 | 6 | 1,4 | 98,26 | 98,47 | 1,56 | 3,97 | 57 | 71 | 1700 | 900 | 1850 | 670 | 770 | 125 | 40 | 35 | 2100 | |
| | Ecodesign | 1040 | 6350 | 7040 | 6 | 1,4 | 98,41 | 98,68 | 1,59 | 4,00 | 48 | 61 | 1725 | 975 | 2100 | 670 | 770 | 125 | 40 | 35 | 3450 | |
| 630 | Advanced | 2200 | 7000 | 8050 | 6 | 1,3 | 98,40 | 98,60 | 1,46 | 3,88 | 58 | 72 | 1730 | 950 | 2000 | 670 | 770 | 125 | 40 | 35 | 2450 | |
| | Ecodesign | 1270 | 7540 | 8360 | 6 | 1,3 | 98,49 | 98,75 | 1,51 | 3,93 | 49 | 62 | 1750 | 1000 | 2150 | 670 | 770 | 125 | 40 | 35 | 3650 | |
| 800 | Advanced | 2700 | 8200 | 9430 | 6 | 1,1 | 98,51 | 98,68 | 1,36 | 3,80 | 59 | 73 | 1750 | 1000 | 2100 | 670 | 770 | 125 | 40 | 35 | 2850 | |
| | Ecodesign | 1500 | 7930 | 8800 | 6 | 1,1 | 98,73 | 98,94 | 1,28 | 3,73 | 50 | 64 | 1875 | 1050 | 2300 | 670 | 770 | 125 | 40 | 35 | 3800 | |
| 1000 | Advanced | 3300 | 10500 | 12075 | 7 | 1 | 98,49 | 98,67 | 1,45 | 4,30 | 60 | 74 | 1800 | 1100 | 2350 | 820 | 1000 | 125 | 40 | 35 | 3200 | |
| | Ecodesign | 1790 | 8920 | 9900 | 7 | 1 | 98,84 | 99,03 | 1,23 | 4,11 | 51 | 65 | 1950 | 1050 | 2450 | 820 | 1000 | 200 | 70 | 50 | 4350 | |
| 1250 | Advanced | 3700 | 13000 | 14950 | 8 | 1 | 98,53 | 98,72 | 1,52 | 4,79 | 62 | 76 | 1850 | 1100 | 2400 | 820 | 1000 | 125 | 40 | 35 | 3400 | |
| | Ecodesign | 2070 | 10910 | 12100 | 8 | 0,9 | 98,88 | 99,06 | 1,29 | 4,59 | 53 | 67 | 2000 | 1100 | 2600 | 820 | 1000 | 200 | 70 | 50 | 5000 | |
| 1600 | Advanced | 4200 | 15000 | 17250 | 8 | 0,9 | 98,68 | 98,85 | 1,40 | 4,68 | 62 | 76 | 2000 | 1100 | 2450 | 820 | 1000 | 200 | 70 | 50 | 4450 | |
| | Ecodesign | 2530 | 12890 | 14300 | 8 | 0,9 | 98,96 | 99,13 | 1,21 | 4,52 | 54 | 68 | 2050 | 1100 | 2650 | 820 | 1000 | 200 | 70 | 50 | 5450 | |
| 2000 | Advanced | 5000 | 18500 | 21275 | 8 | 0,8 | 98,70 | 98,88 | 1,38 | 4,67 | 63 | 78 | 2150 | 1250 | 2600 | 1070 | 1200 | 200 | 70 | 50 | 5400 | |
| | Ecodesign | 2990 | 15860 | 17600 | 8 | 0,8 | 98,98 | 99,15 | 1,20 | 4,51 | 55 | 70 | 2200 | 1200 | 2650 | 1070 | 1200 | 200 | 70 | 50 | 6250 | |
| 2500 | Advanced | 5800 | 22000 | 25300 | 8 | 0,7 | 98,77 | 98,94 | 1,33 | 4,63 | 65 | 80 | 2200 | 1250 | 2700 | 1070 | 1200 | 200 | 70 | 50 | 6300 | |
| | Ecodesign | 3570 | 18830 | 20900 | 8 | 0,7 | 99,03 | 99,19 | 1,16 | 4,47 | 56 | 71 | 2300 | 1200 | 2750 | 1070 | 1200 | 200 | 70 | 50 | 6500 | |
| 3150 | Advanced | 6800 | 24000 | 27600 | 8 | 0,6 | 98,92 | 99,06 | 1,20 | 4,51 | 66 | 81 | 2450 | 1250 | 2700 | 1070 | 1200 | 200 | 70 | 50 | 7650 | |
| | Ecodesign | 4370 | 21810 | 24200 | 8 | 0,6 | 99,10 | 99,24 | 1,09 | 4,41 | 58 | 74 | 2350 | 1200 | 2800 | 1070 | 1200 | 200 | 70 | 50 | 7400 | |

Different design (i.e. ambient temperatures and different conducting material) are available on request.

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INESING SPA - ITALY



● BUSINESS AREAS

Inesing Group - Italy



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Inesing SpA

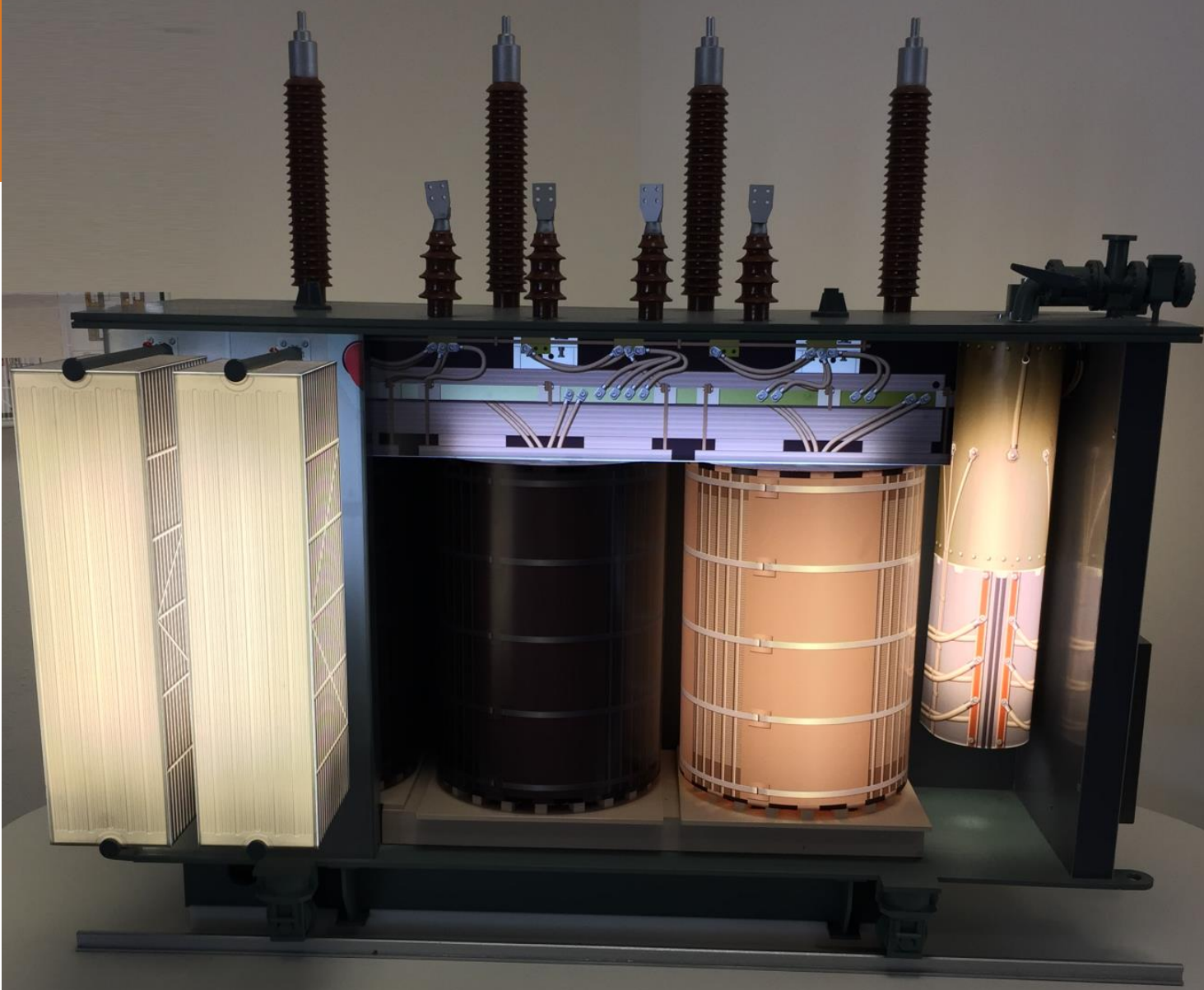
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INESING GROUP

Power System Solution



introduction

INESING SRL is a dynamic and modern company, very well known in the design and production of oil immersed and dry type (cast resin) transformer up to 36kV -10MVA,

Since its creation has dedicated itself to design, supply and start-up of power and distribution transformers for application in industrial systems especially oriented to the generation, transmission and distribution of Electrical Power.

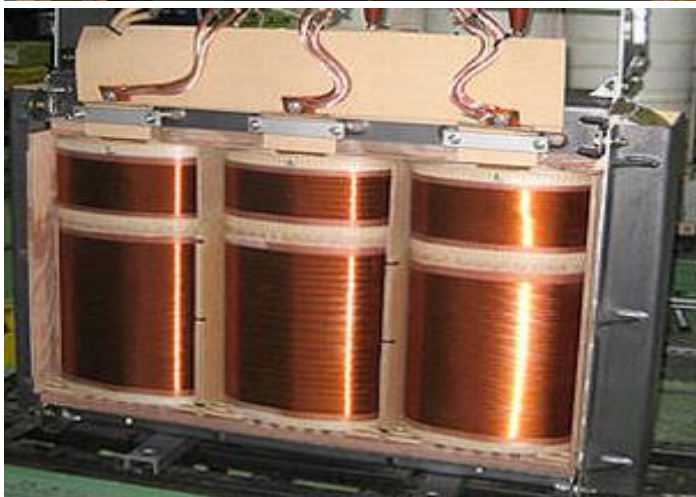
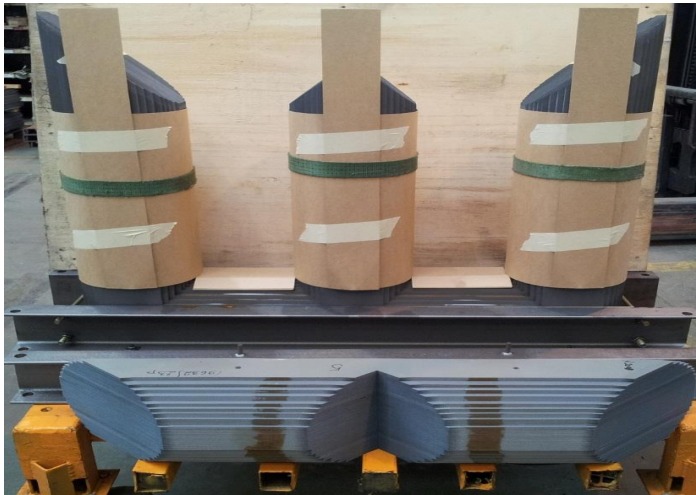
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- Electrical equipment,
- Switchboard and switchgear MV and LV
- Shelters, lighting pole and urban and industrial solar lighting





Core

The core is constructed using thin sheets of cold rolled grain oriented magnetic silicon steel insulated on both sides.

Conventional grain oriented steel is used for transformers with normal no-load losses, while transformers with reduced no-load losses are manufactured using higher quality HiS steel. These steel sheets are 0.30mm thick.

The core sheets are cut at an angle of 45°, thus allowing maximum magnetic flux in the rolling direction. Then the sheet are stacked in layers of either single or multiple overlap or step-lap method offers additional benefits in terms of lowering no-load losses and noise level.

Active Part

The E-shaped cores and the windings from their various departments are transported to the assembly area. The windings are pushed over the core legs and wedged up to fill the spaces between the core and winding as much as possible. Interleaving the laminations of the upper yoke with the laminations of the core legs completes the magnetic circuit. The bushings are mounted on the cover, which is then fixed onto the assembled active part. The next step consists of connecting the windings to the bushings. The transformers are often fitted with an off-circuit tap changer. This switch allows the increase or decrease of a certain number of turns while the transformer is disconnected from the electric system. The voltage ratio of the active part is then tested, and the assembly is dried in a forced air oven to remove the moisture from the insulating materials. Once the active part has been dried in the forced-air oven, it is given a final comprehensive quality inspection and placed into the tank. The top cover is then either bolted or welded onto the tank. The transformers are placed in a vacuum chamber and filled with pre-treated oil (filtered, dried and degassed) under deep vacuum. This ensures optimum impregnation of the insulation materials by the oil, giving the insulation structure maximum dielectric strength. The transformers are filled with a high quality mineral oil, which fully complies with the requirements of IEC standards 296.

Testing

In the testing room, the transformers are subject to a series of measurements and test. Routine tests are carried out on all transformer prior to shipping.

Measurement of winding resistance;

Measurement of voltage ratio and check of phase displacement; Measurement of short circuit impedance and load loss; Measurement of no load and current;

Separate source voltage withstand test;

Induced over-voltage withstand test;

Once the routine test is complete, the protection instruments and other accessories are fitted and the transformer is subject to a final general check. Subsequently, the rating plate is fixed to the tank.

Options and Accessories

- Plug-in bushings on HV side
- Dial type thermometer with or without contacts
- Oil level indicator
- Pressure relief valve with or without contacts
- Multifunction protection device
- Cable boxes
- Off-circuit tap charger with 3-7 positions (9 on request)
- Thermometer pocket
- Skid-base or bi-directional rollers
- Intergraded pole brackets on tank
- Arcing horns
- Dual voltage transformers
- Galvanized tank.



INESING Group

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Routine Tests

- Voltage ratio and phase displacement IEC 60076-1
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- Applied voltage test (insulation to ground) IEC 60076-3
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Special Tests

Upon request, witnessed type/special tests can be carried out:

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- Control wiring, auxiliary operation

Specially designed reinforced transformers suitable for pole mounting, protected with arcing horns are tested in accordance with to SFS 2646 steep wave execution.

TECHNICAL DATA DISTRIBUTION

TRANSFORMERS CEI EN 60076

Enel, MEC (B-C'), Norma (B-A'), TA55 Series v

| Rated Power | Max. rated volt. HV side | Impedance voltage | Type | | Series | Combination of losses acc. CENELEC | Bushings | | No-load losses | Load losses | Sound press. level 1m tolerance +3dB | Sound power level | Total weight | | Dimensions | | | | | | Oil | | | |
|-------------|--------------------------|-------------------|---------------|---------------|--------|------------------------------------|----------|----|----------------|-------------|--------------------------------------|-------------------|--------------|--------|------------|----------|--------|-----------|--------|-----------------------------|---------|--------|---------|--------|
| | | | TI-CONS | TI-ERM | | | HV | LV | | | | | TI-CONS | TI-ERM | Length A1 | Width B1 | | Height H1 | | Dist. between wheel centers | TI-CONS | TI-ERM | | |
| | | | | | | | | | | | | | | | | TI-CONS | TI-ERM | TI-CONS | TI-ERM | | | | TI-CONS | TI-ERM |
| Pn [kVA] | Um [kV] | U2 [%] | Type | | | | Type | | Po [W] | Pk75* [W] | Lpa [dB] | Lwa [dB] | [Kg] | | [mm] | | [mm] | | [mm] | | E [mm] | | [Kg] | |
| 50 | 12 | 4 | CTRRQ11001-G | - | TA55 | - | 1 | 1 | 210 | 1250 | 40 | 48 | 330 | - | 906 | - | 505 | - | 1086 | - | 422 | 77 | 70 | |
| | 24 | 4 | CTRRQ20001-E | ETRRQ20001-E | Enel | - | 1 | 1 | 150 | 850 | 34 | 47 | 420 | 420 | 835 | 835 | 660 | 700 | 1220 | 1100 | 520 | 92 | 88 | |
| | 4 | 4 | CTRRQ20001-M | ETRRQ20001-M | Mec | B-C' | 1 | 1 | 190 | 1100 | 45 | 55 | 420 | 450 | 835 | 950 | 660 | 590 | 1220 | 1100 | 520 | 92 | 85 | |
| | 4 | 4 | CTRRQ20001-N | ETRRQ20001-N | Norma | B-A' | 1 | 1 | 190 | 1350 | 42 | 55 | 420 | 410 | 835 | 1000 | 660 | 550 | 1220 | 1100 | 520 | 92 | 85 | |
| 75 | 12 | 4 | CTRRSE11001-G | - | TA55 | - | 1 | 1 | 265 | 1710 | 42 | 51 | 407 | - | 996 | - | 595 | - | 1106 | - | 422 | 88 | - | |
| 100 | 12 | 4 | CTRRCE11001-G | - | TA55 | - | 1 | 1 | 320 | 2150 | 45 | 51 | 457 | - | 976 | - | 596 | - | 1186 | - | 422 | 100 | - | |
| | 24 | 4 | CTRRCE20001-E | ETRRCE20001-E | Enel | - | 1 | 1 | 250 | 1400 | 39 | 48 | 650 | 592 | 1200 | 960 | 530 | 715 | 1360 | 1250 | 400 | 110 | 100 | |
| | 4 | 4 | CTRRCE20001-M | ETRRCE20001-M | Mec | B-C' | 1 | 1 | 320 | 1750 | 48 | 59 | 550 | 560 | 980 | 1000 | 680 | 610 | 1360 | 1120 | 520 | 120 | 110 | |
| | 4 | 4 | CTRRCE20001-N | ETRRCE20001-N | Norma | B-A' | 1 | 1 | 320 | 2150 | 45 | 59 | 520 | 530 | 1020 | 1140 | 685 | 660 | 1360 | 1245 | 520 | 110 | 105 | |
| 160 | 12 | 4 | CTRRCS10001-M | ETRRCS10001-M | Mec | B-C' | 1 | 1 | 460 | 2350 | 54 | 62 | 660 | 750 | 1150 | 1200 | 695 | 700 | 1400 | 1320 | 520 | 155 | 150 | |
| | 4 | 4 | CTRRCS10001-N | ETRRCS10001-N | Norma | B-A' | 1 | 1 | 460 | 3100 | 47 | 62 | 620 | 610 | 1150 | 1150 | 695 | 660 | 1440 | 1320 | 520 | 165 | 150 | |
| | 24 | 4 | CTRRCS20001-E | ETRRCS20001-E | Enel | - | 1 | 1 | 360 | 1850 | 43 | 50 | 805 | 770 | 1250 | 925 | 630 | 745 | 1400 | 1390 | 520 | 165 | 150 | |
| | 4 | 4 | CTRRCS20001-M | ETRRCS20001-M | Mec | B-C' | 1 | 1 | 460 | 2350 | 54 | 62 | 660 | 750 | 1150 | 1200 | 695 | 700 | 1400 | 1320 | 520 | 155 | 150 | |
| | 4 | 4 | CTRRCS20001-N | ETRRCS20001-N | Norma | B-A' | 1 | 1 | 460 | 3100 | 47 | 62 | 660 | 640 | 1150 | 1150 | 695 | 660 | 1440 | 1320 | 520 | 165 | 150 | |
| 200 | 12 | 4 | CTRRDU11001-G | - | TA55 | - | 1 | 1 | 520 | 3600 | 47 | 55 | 830 | - | 1236 | - | 736 | - | 1281 | - | 520 | 168 | - | |
| | 4 | 4 | CTRRDU10001-M | ETRRDU10001-M | Mec | B-C' | 1 | 1 | 550 | 2800 | 49 | 64 | 800 | 890 | 1290 | 1250 | 820 | 700 | 1595 | 1350 | 520 | 230 | 220 | |
| | 4 | 4 | CTRRDU10001-N | ETRRDU10001-N | Norma | B-A' | 1 | 1 | 550 | 3600 | 48 | 63 | 720 | 710 | 1190 | 1190 | 680 | 680 | 1450 | 1285 | 520 | 240 | 230 | |
| | 24 | 4 | CTRRDU20001-M | ETRRDU20001-M | Mec | B-C' | 1 | 1 | 550 | 2800 | 49 | 64 | 800 | 890 | 1290 | 1250 | 820 | 700 | 1595 | 1350 | 520 | 230 | 220 | |
| | 4 | 4 | CTRRDU20001-N | ETRRDU20001-N | Norma | B-A' | 1 | 1 | 550 | 3600 | 48 | 63 | 800 | 780 | 1290 | 1290 | 820 | 800 | 1595 | 1425 | 520 | 240 | 230 | |

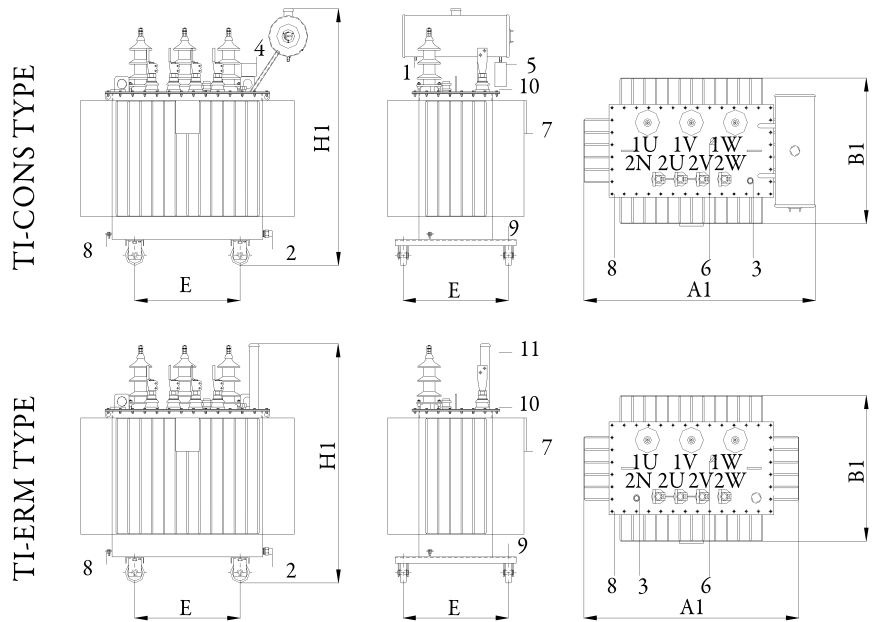
| Rated Power | Max. rated volt. HV side | Impedance voltage | Type | | Series | Combination of losses acc. CENELEC | Bushings | | No-load losses | Load losses | Sound press. level 1m tolerance +3dB | Sound power level | Total weight | | Dimensions | | | | | | Oil | | |
|-------------|--------------------------|-------------------|---------------|---------------|--------|------------------------------------|---------------------|----------------------------|----------------|-------------|--------------------------------------|-------------------|--------------|--------|------------|------|----------|------|-----------|--------|-----------------------------|---------|--------|
| | | | TI-CONS | TI-ERM | | | (1=D11006; 2=D1111) | (1=IMEI; 38128/74 2=D1107) | | | | | TI-CONS | TI-ERM | Length A1 | | Width B1 | | Height H1 | | Dist. between wheel centers | TI-CONS | TI-ERM |
| | | | | | | | | | | | | | | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | | | |
| Pn [kVA] | Um [kV] | U2 [%] | | | | | Type | Po [W] | Pk75* [W] | Lpa [dB] | Lwa [dB] | [Kg] | | [mm] | | [mm] | | [mm] | | E [mm] | [Kg] | | |
| 250 | 24 | 4 | CTARDC10001-M | ETARDC10001-M | Mec | B-C' | 1 | 1 | 650 | 3250 | 56 | 64 | 1000 | 950 | 1340 | 1250 | 800 | 740 | 1620 | 1350 | 520 | 220 | 230 |
| | | 4 | CTARDC10001-N | ETARDC10001-N | Norma | B-A' | 1 | 1 | 650 | 4200 | 50 | 65 | 830 | 820 | 1300 | 1300 | 810 | 810 | 1450 | 1285 | 520 | 230 | 240 |
| | 24 | 4 | CTARDC20001-E | ETARDC20001-E | Enel | - | 1-2 | 1 | 520 | 2600 | 43 | 52 | 1080 | 968 | 1300 | 985 | 753 | 753 | 1430 | 1145 | 520 | 200 | 182 |
| | | 4 | CTARDC20001-E | ETARDC20101-E | Enel | - | 1-2 | 1 | 520 | 2600 | 43 | 52 | 1080 | 968 | 1300 | 985 | 753 | 753 | 1430 | 1145 | 520 | 200 | 182 |
| | | 4 | CTARDC20001-M | ETARDC20001-M | Mec | B-C' | 1 | 1 | 650 | 3250 | 56 | 64 | 1000 | 950 | 1340 | 1250 | 800 | 740 | 1620 | 1350 | 520 | 220 | 230 |
| | 4 | CTARDC20001-N | ETARDC20001-N | Norma | B-A' | 1 | 1 | 650 | 4200 | 49 | 65 | 920 | 900 | 1340 | 1340 | 800 | 760 | 1620 | 1450 | 520 | 230 | 240 | |
| 315 | 12 | 4 | CTARTQ10001-M | ETARTQ10001-M | Mec | B-C' | 1 | 1 | 780 | 3850 | 54 | 66 | 1210 | 1190 | 1450 | 1300 | 840 | 760 | 1655 | 1430 | 670 | 260 | 250 |
| | | 4 | CTARTQ10001-N | ETARTQ10001-N | Norma | B-A' | 1 | 1 | 780 | 5000 | 50 | 66 | 980 | 960 | 1440 | 1230 | 820 | 820 | 1655 | 1385 | 670 | 270 | 260 |
| | 24 | 4 | CTARTQ20001-M | ETARTQ20001-M | Mec | B-C' | 1 | 1 | 780 | 3850 | 54 | 66 | 1210 | 1190 | 1450 | 1300 | 840 | 760 | 1655 | 1430 | 670 | 260 | 250 |
| | | 4 | CTARTQ20001-N | ETARTQ20001-N | Norma | B-A' | 1 | 1 | 780 | 5000 | 50 | 66 | 1050 | 1030 | 1450 | 1350 | 840 | 840 | 1655 | 1510 | 670 | 270 | 260 |
| 400 | 12 | 4 | CTARQU10001-M | ETARQU10001-M | Mec | B-C' | 1 | 2 | 930 | 4600 | 52 | 68 | 1320 | 1300 | 1350 | 1300 | 900 | 830 | 1500 | 1450 | 670 | 300 | 265 |
| | | 4 | CTARQU10001-N | ETARQU10001-N | Norma | B-A' | 1 | 2 | 930 | 6000 | 52 | 68 | 1180 | 1160 | 1470 | 1390 | 930 | 930 | 1700 | 1425 | 670 | 310 | 280 |
| | 24 | 4 | CTARQU20001-E | ETARQU20001-E | Enel | - | 2 | 2 | 740 | 3650 | 48 | 54 | 1360 | 1382 | 1400 | 1440 | 970 | 990 | 1210 | 1220 | 670 | 230 | 244 |
| | | 4 | CTARQU20101-E | ETARQU20101-E | Enel | - | 2 | 2 | 740 | 3650 | 48 | 54 | 1360 | 1382 | 1400 | 1440 | 970 | 990 | 1210 | 1220 | 670 | 230 | 244 |
| | | 4 | CTARQU20001-M | ETARQU20001-M | Mec | B-C' | 1 | 2 | 930 | 4600 | 52 | 68 | 1300 | 1300 | 1350 | 1300 | 900 | 830 | 1500 | 1450 | 670 | 300 | 265 |
| | 4 | CTARQU20001-N | ETARQU20001-N | Norma | B-A' | 1 | 2 | 930 | 6000 | 52 | 68 | 1240 | 1220 | 1570 | 1570 | 940 | 940 | 1655 | 1510 | 670 | 310 | 280 | |
| 500 | 12 | 4 | CTRRCI11001-G | - | TA55 | - | 1 | 2 | 950 | 6430 | 52 | 68 | 1500 | - | 1510 | - | 880 | - | 1420 | - | 670 | 340 | - |
| | | 4 | CTRRCI10001-M | ETRRCI10001-M | Mec | B-C' | 1 | 2 | 1100 | 5500 | 53 | 70 | 1500 | 1510 | 1450 | 1350 | 880 | 880 | 1600 | 1495 | 670 | 330 | 290 |
| | | 4 | CTRRCI10001-N | ETRRCI10001-N | Norma | B-A' | 1 | 2 | 1100 | 7100 | 53 | 69 | 1410 | 1380 | 1500 | 1430 | 840 | 840 | 1710 | 1440 | 670 | 340 | 300 |
| | 24 | 4 | CTRRCI20001-M | ETRRCI20001-M | Mec | B-C' | 1 | 2 | 1100 | 5500 | 53 | 70 | 1500 | 1510 | | 1350 | 880 | 880 | 1600 | 1495 | 670 | 330 | 290 |
| | | 4 | CTRRCI20001-N | ETRRCI20001-N | Norma | B-A' | 1 | 2 | 1100 | 7100 | 53 | 69 | 1460 | 1440 | 1470 | 1430 | 835 | 850 | 1755 | 1610 | 670 | 340 | 300 |
| 630 | 12 | 6 | CTRST10001-M | ETRST10001-M | Mec | B-C' | 1 | 2 | 1300 | 6500 | 53 | 70 | 1935 | 1925 | 1400 | 1350 | 890 | 870 | 1535 | 1530 | 670 | 410 | 375 |
| | | 6 | CTRST10001-N | ETRST10001-N | Norma | B-A' | 1 | 2 | 1200 | 8700 | 53 | 70 | 1750 | 1760 | 1780 | 1580 | 880 | 880 | 1760 | 1610 | 670 | 425 | 380 |
| | 24 | 6 | CTRST20001-E | ETRST20001-E | Enel | - | 2 | 2 | 900 | 5600 | 50 | 56 | 1880 | 2150 | 1600 | 1620 | 950 | 850 | 1600 | 1310 | 670 | 420 | 370 |
| | | 6 | CTRST20101-E | ETRST20101-E | Enel | - | 2 | 2 | 900 | 5600 | 50 | 56 | 1880 | 2150 | 1600 | 1620 | 950 | 850 | 1600 | 1310 | 670 | 420 | 370 |
| | | 6 | CTRST20001-M | ETRST20001-M | Mec | B-C' | 1 | 2 | 1300 | 6500 | 53 | 70 | 1935 | 1925 | 1400 | 1350 | 890 | 870 | 1535 | 1530 | 670 | 410 | 375 |
| | | 6 | CTRST20001-N | ETRST20001-N | Norma | B-A' | 1 | 2 | 1200 | 8700 | 53 | 70 | 1730 | 1720 | 1780 | 1580 | 880 | 880 | 1760 | 1610 | 670 | 425 | 380 |

| Rated Power | Max. rated volt. HV side | Impedance voltage | Type | | Series | Combination of losses acc. CENELEC | Bushings | | No-load losses | Load losses | Sound press. level 1m tolerance +3dB | Sound power level | Total weight | | Dimensions | | | | | | Oil | | |
|-------------|--------------------------|-------------------|---------------|---------------|--------|------------------------------------|---------------------|----------------------------|----------------|-------------|--------------------------------------|-------------------|--------------|--------|------------|------|----------|------|-----------|--------|-----------------------------|---------|--------|
| | | | TI-CONS | TI-ERM | | | (1=D11006; 2=D1111) | (1=IMEI; 38128/74 2=D1107) | | | | | TI-CONS | TI-ERM | Length A1 | | Width B1 | | Height H1 | | Dist. between wheel centers | TI-CONS | TI-ERM |
| | | | | | | | | | | | | | | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | | | |
| Pn [kVA] | Um [kV] | U2 [%] | | | | | Type | Po [W] | Pk75* [W] | Lpa [dB] | Lwa [dB] | [Kg] | | [mm] | | [mm] | | [mm] | | E [mm] | [Kg] | | |
| 800 | 12 | 6 | CTRROT10001-M | ETRROT10001-M | Mec | B-C' | 1 | 2 | 1500 | 9000 | 55 | 70 | 2040 | 1990 | 1550 | 1500 | 1220 | 1300 | 1590 | 1500 | 670 | 380 | 330 |
| | | 6 | CTRROT10001-N | ETRROT10001-N | Norma | B-A' | 1 | 2 | 1450 | 10700 | 55 | 72 | 1990 | 1960 | 1780 | 1540 | 1000 | 1000 | 1905 | 1660 | 670 | 400 | 350 |
| | 24 | 6 | CTRROT20001-M | ETRROT20001-M | Mec | B-C' | 1 | 2 | 1500 | 9000 | 55 | 70 | 2040 | 2000 | 1550 | 1500 | 1220 | 1300 | 1590 | 1500 | 670 | 380 | 330 |
| | | 6 | CTRROT20001-N | ETRROT20001-N | Norma | B-A' | 1 | 2 | 1450 | 10700 | 55 | 72 | 1990 | 1960 | 1780 | 1540 | 1000 | 1000 | 1905 | 1660 | 670 | 400 | 350 |
| 1000 | 12 | 6 | CTRRI10001-M | - | TA55 | - | 1 | 2 | 1815 | 12200 | 45 | 58 | 2775 | - | 1746 | - | 1162 | - | 1946 | - | 820 | 670 | - |
| | | 6 | CTRRI10001-M | ETRRI10001-M | Mec | B-C' | 1 | 2 | 1700 | 10500 | 54 | 72 | 2450 | 2650 | 1780 | 1620 | 1240 | 1240 | 1650 | 1600 | 820 | 450 | 400 |
| | | 6 | CTRRI10001-N | ETRRI10001-N | Norma | B-A' | 1 | 2 | 1700 | 13000 | 55 | 73 | 2450 | 2640 | 1790 | 1630 | 1000 | 1000 | 2095 | 2070 | 820 | 480 | 430 |
| | 24 | 6 | CTRRI20001-M | ETRRI20001-M | Mec | B-C' | 1 | 2 | 1700 | 10500 | 54 | 72 | 2450 | 2650 | 1780 | 1620 | 1240 | 1240 | 1650 | 1600 | 820 | 450 | 400 |
| | | 6 | CTRRI20001-N | ETRRI20001-N | Norma | B-A' | 1 | 2 | 1700 | 13000 | 55 | 73 | 2450 | 2640 | 1790 | 1630 | 1000 | 1000 | 2095 | 2070 | 820 | 480 | 430 |
| | | 4 | CTARQU20001-N | ETARQU20001-N | Norma | B-A' | 1 | 2 | 930 | 6000 | 52 | 68 | 1240 | 1220 | 1570 | 1570 | 940 | 940 | 1655 | 1510 | 670 | 310 | 280 |
| 1250 | 12 | 6 | CTRMD10001-M | ETRMD10001-M | Mec | B-C' | 1 | 2 | 2200 | 14000 | 56 | 74 | 2900 | 3080 | 1900 | 1850 | 1350 | 1050 | 1790 | 2050 | 820 | 520 | 480 |
| | | 6 | CTRMD10001-N | ETRMD10001-N | Norma | B-A' | 1 | 2 | 2100 | 16000 | 56 | 74 | 2900 | 3080 | 1930 | 1850 | 1260 | 1100 | 2110 | 2070 | 820 | 560 | 500 |
| | 24 | 6 | CTRMD20001-M | ETRMD20001-M | Mec | B-C' | 1 | 2 | 2200 | 14000 | 56 | 74 | 2900 | 3080 | 1900 | 1850 | 1350 | 1050 | 1790 | 2050 | 820 | 520 | 480 |
| | | 6 | CTRMD20001-N | ETRMD20001-N | Norma | B-A' | 1 | 2 | 2100 | 16000 | 56 | 74 | 2900 | 3080 | 1930 | 1850 | 1260 | 1100 | 2110 | 2070 | 820 | 560 | 500 |
| | | 4 | CTRRCI20001-N | ETRRCI20001-N | Norma | B-A' | 1 | 2 | 1100 | 7100 | 53 | 69 | 1460 | 1440 | 1470 | 1430 | 835 | 850 | 1755 | 1610 | 670 | 340 | 300 |
| 1500 | 12 | 4 | CTRSEI1001-G | - | TA55 | - | 1 | 2 | 2460 | 16500 | 58 | 74 | 2900 | 3080 | 1930 | 1850 | 1600 | 1600 | 2110 | 2070 | 820 | 560 | 500 |
| 1600 | 12 | 6 | CTRMS10001-M | ETRMS10001-M | Mec | B-C' | 1 | 2 | 2600 | 17000 | 57 | 76 | 3250 | 3400 | 1980 | 1875 | 1480 | 1140 | 1880 | 2095 | 820 | 630 | 580 |
| | | 6 | CTRMS10001-N | ETRMS10001-N | Norma | B-A' | 1 | 2 | 2600 | 20000 | 57 | 76 | 3450 | 3590 | 1970 | 1870 | 1220 | 1140 | 2315 | 2095 | 820 | 650 | 610 |
| | 24 | 6 | CTRMS20001-M | ETRMS20001-M | Mec | B-C' | 1 | 2 | 2600 | 17000 | 57 | 76 | 3250 | 3400 | 1980 | 1875 | 1480 | 1140 | 1880 | 2095 | 820 | 630 | 580 |
| | | 6 | CTRMS20001-N | ETRMS20001-N | Norma | B-A' | 1 | 2 | 2600 | 20000 | 57 | 76 | 3450 | 3590 | 1970 | 1870 | 1220 | 1140 | 2315 | 2095 | 820 | 650 | 610 |

| Rated Power | Max. rated volt. HV side | Impedance voltage | Type | | Series | Combination of losses acc. CENELEC | Bushings | | No-load losses | Load losses | Sound press. level 1m tolerance +3dB | Sound power level | Total weight | | Dimensions | | | | | | Oil | | |
|-------------|--------------------------|-------------------|---------------|---------------|--------|------------------------------------|----------|----------|----------------|-------------|--------------------------------------|-------------------|--------------|--------|------------|----------|--------|-----------|--------|-----------------------------|---------|--------|-----|
| | | | TI-CONS | TI-ERM | | | HV | LV | | | | | TI-CONS | TI-ERM | Length A1 | Width B1 | | Height H1 | | Dist. between wheel centers | TI-CONS | TI-ERM | |
| | | | | | | | | | | | | | | | | TI-CONS | TI-ERM | TI-CONS | TI-ERM | | | | E |
| Pn [kVA] | Um [kV] | U2 [%] | Type | | Po [W] | Pk75* [W] | Lpa [dB] | Lwa [dB] | [Kg] | | [mm] | | [mm] | | [mm] | | E [mm] | [Kg] | | | | | |
| 2000 | 12 | 6 | CTRRDM10001-M | ETRRDM10001-M | Mec | B-C' | 1 | 2 | 3200 | 22000 | 59 | 78 | 4400 | 4550 | 2100 | 1890 | 1600 | 1330 | 1950 | 1540 | 1070 | 780 | 730 |
| | | | CTRRDM10001-N | ETRRDM10001-N | Norma | B-A' | 1 | 2 | 2900 | 25300 | 58 | 78 | 4390 | 4450 | 2100 | 1890 | 1330 | 1330 | 2555 | 2540 | 1070 | 800 | 760 |
| | 24 | 6 | CTRRDM20001-M | ETRRDM20001-M | Mec | B-C' | 1 | 2 | 3200 | 22000 | 59 | 78 | 4400 | 4550 | 2100 | 1890 | 1600 | 1330 | 1950 | 1540 | 1070 | 780 | 730 |
| | | | CTRRDM20001-N | ETRRDM20001-N | Norma | B-A' | 1 | 2 | 2900 | 25300 | 58 | 78 | 4390 | 4450 | 2100 | 1890 | 1330 | 1330 | 2555 | 2540 | 1070 | 800 | 760 |
| 2500 | 12 | 6 | CTRRDE10001-M | ETRRDE10001-M | Mec | B-C' | 1 | 2 | 3800 | 26500 | 60 | 80 | 4800 | 4750 | 2115 | 2030 | 1345 | 1330 | 2685 | 2550 | 1070 | 850 | 810 |
| | | | CTRRDE10001-N | ETRRDE10001-N | Norma | B-A' | 1 | 2 | 3500 | 29000 | 61 | 81 | 5200 | 5090 | 2115 | 2030 | 1345 | 1330 | 2685 | 2550 | 1070 | 840 | 800 |
| | 24 | 6 | CTRRDE20001-M | ETRRDE20001-M | Mec | B-C' | 1 | 2 | 3800 | 26500 | 60 | 80 | 4800 | 4750 | 2115 | 2030 | 1345 | 1330 | 2685 | 2550 | 1070 | 850 | 810 |
| | | | CTRRDE20001-N | ETRRDE20001-N | Norma | B-A' | 1 | 2 | 3500 | 29000 | 61 | 81 | 5200 | 5090 | 2115 | 2030 | 1345 | 1330 | 2685 | 2550 | 1070 | 840 | 800 |
| 3150 | 12 | 6 | CTRRTE10001-M | - | Mec | B-C' | 1 | 2 | 4400 | 30500 | 66 | 85 | 5100 | - | 2500 | - | 1900 | - | 2350 | - | 1070 | 920 | - |
| | | | CTRRTE10001-N | - | Norma | B-A' | 1 | 2 | 4400 | 35000 | 65 | 84 | 5000 | - | 2700 | - | 1750 | - | 2450 | - | 1070 | 1050 | - |
| | 24 | 6 | CTRRTE20001-M | - | Mec | B-C' | 1 | 2 | 4400 | 30500 | 66 | 85 | 5100 | - | 2500 | - | 1900 | - | 2350 | - | 1070 | 920 | - |
| | | | CTRRTE20001-N | - | Norma | B-A' | 1 | 2 | 4400 | 35000 | 65 | 84 | 5000 | - | 2700 | - | 1750 | - | 2450 | - | 1070 | 1050 | - |

TECHNICAL DATA DISTRIBUTION TRANSFORMERS CEI EN 60076 Enel, MEC (B-C'), Norma (B-A'), TA55 Series

The standards HD 428.1.S1 (DIN 42500 Part 1) applies to three-phase oil-immersed distribution transformers 50 Hz, from 50 kVA to 2500 kVA, Um to 24 kV. For load losses (Pk), three different listings (A, B and C) were specified. There were also three listings (A', B' and C') for no-load losses (Po) and corresponding sound levels. Due to the different requirements, pairs of value were proposed which, in the national standard, permit one or several combinations of losses. DIN 42500 specifies the combinations A-C', B-C' and B-A' as being most suitable. The combinations B-A' (normal losses) and A-C' (reduced losses) are approximately in line with previous standards. In addition there is the C-C' combination.



General Features:

| | |
|--------------------|--|
| Standard: | DIN 42500 |
| Rated power: | 50-2500 kVA |
| Rated frequency: | 50 Hz |
| HV rating: | up to 24 KV |
| Taps on HV side: | ° 2 x 2,5% |
| LV rating: | 400-720 V (special design can be built) |
| Connection: | HV winding: delta LV winding: star |
| Impedance voltage: | 4% (only for rated power ° 800KVA) |
| at rated current: | 6% (with rated power ≥ 630 KVA) |
| Cooling: | ONAN |
| Protection class: | IPO0 (IP 65 it is also possible) |
| Final coating: | RAL7031 |

- Oil level indicator
- Oil drain plug
- Thermometer pocket
- Buchholz relay
- Dehydrating breather
- Off-load tap changer
- Rating plate
- Grounding terminals
- Towing eye, 30 mm dia.
- Lashing lug
- Filler pipe



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