

TRADITION - MANUFACTURING INSTRUMENT TRANSFORMERS SINCE 1947

EXTENSIVE EXPERIENCE - OVER 50.000 CT UNITS INSTALLED WORLDWIDE

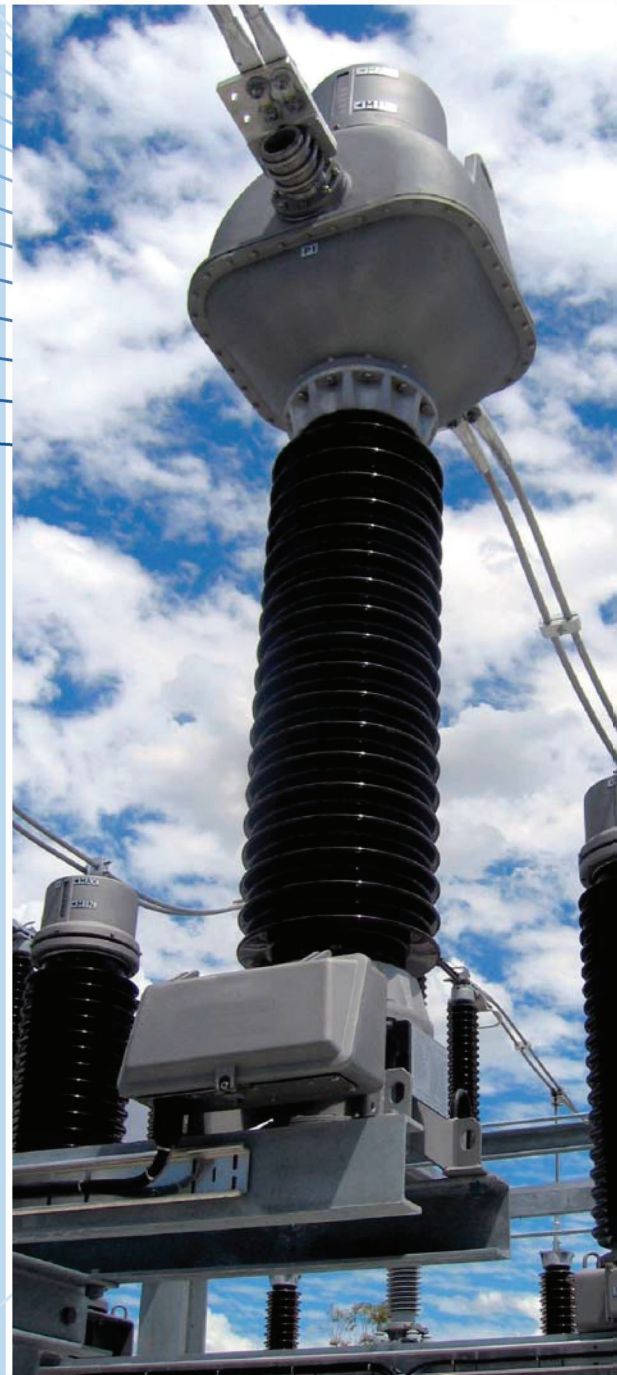
FLEXIBLE DESIGN - READINESS AND WILLINGNESS TO COMPLY WITH CUSTOMER REQUIREMENTS

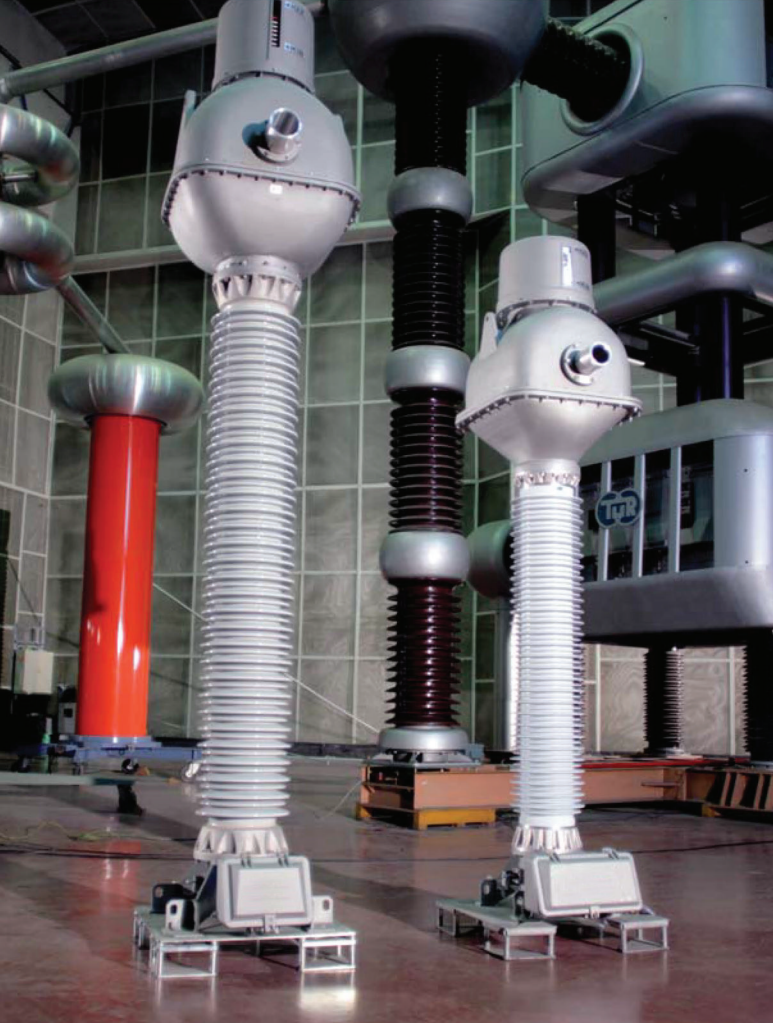
LONGEVITY AND RELIABILITY - DESIGNED FOR AT LEAST 50 YEARS OF SERVICE LIFE

CT

CURRENT TRANSFORMERS

72.5 to 800 kV





Application

Current instrument transformers are used to step-down current to defined values, and thus provide standardized, useable levels of current in a variety of power monitoring, measurement and protection applications while insulating the measurement and protection equipment from high system voltage.

Performance

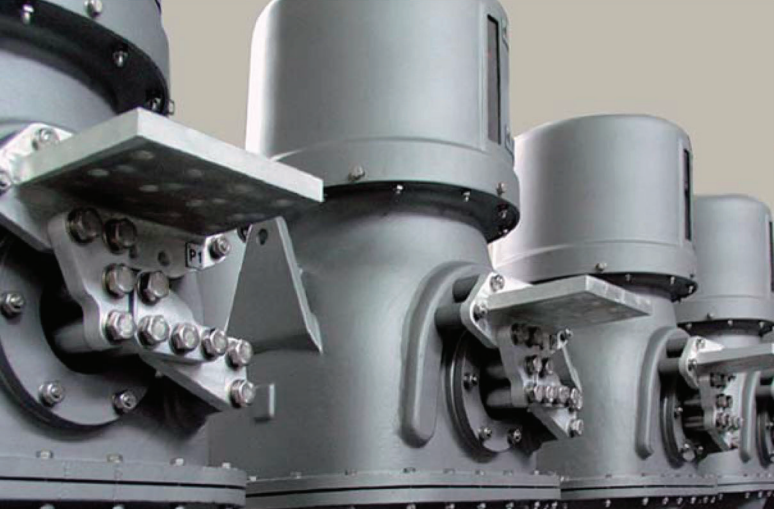
- Um: 36 to 800 kV
- In: up to 6000 A
- Short circuit: up to 100 kA (Idyn: 250 kA peak)
- Secondary cores: up to 10
- All metering and protection classes

Main Features

- Top core design - ensuring low primary winding losses
- Primary and/or secondary transformation ratio selection
- Low leakage reactance
- High quality paper-oil insulation
- Partial discharge free on power-frequency withstand voltage
- Stainless steel bellows oil expansion system
- Sealing for life - every single transformer is vacuum tested with helium
- Nitrogen free
- Standard ambient temperatures from -35 to +40 °C (extreme ranges upon request)
- High quality porcelain or composite (silicone shed) insulator
- Extensive experience in seismically active regions
- Minimum oil design and PCB free - environment friendly
- Internal ground conductors for handling fault current
- Explosion-safe design
- Non-corrosive hardware
- Maintenance free

Accessories

- Terminal for measuring dielectric dissipation factor ($\tan \delta$)
- Oil level indicator
- Surge arresters on secondary windings (optional)
- Revenue metering secondary terminals can be separately sealed
- Transport shock indicators (standard for $U_m \geq 362$ kV, optional for other voltage levels)
- Internal overpressure indicator (optional)



DESIGN

Primary Winding

The advantage of the top core design lies in having the primary winding uniformly and symmetrically spread around the cores. In this way, local saturation is avoided and minimal leakage reactance is ensured. Additionally, the top core design results in minimal primary winding losses.

Variable transformation ratios are achieved through reconnection on either the primary (HV) or the secondary (LV) winding. Reconnection on both sides is also possible.

When having a single primary winding turn, the winding consists of a straight bar type conductor. Where multiple turns are necessary, external conductors or internal cables are used.

Paper-Oil Insulation

The high voltage primary side is insulated from the low voltage secondary side by means of oil impregnated paper of high dielectric strength.

At first, a substantial number of conductive capacitive screens are inserted into the layers of paper insulation so as to adequately distribute the high-frequency overvoltages. The paper insulation is then dried in high vacuum and impregnated with high grade inhibited and degassed (moisture content of no more than 2 ppm) mineral transformer oil.

We guarantee the oil in our transformers not to contain polychlorinated biphenyls and terphenyls (PCB & PCT).

The paper-oil insulation is closed in and hermetically sealed off from ambient air by means of a stainless steel bellows. The stainless steel bellows compensates the thermal oil expansion and thus also serves as an expansion mechanism and an oil level indicator.

All of the above ensure excellent and long lasting dielectric properties of the transformers main insulation.

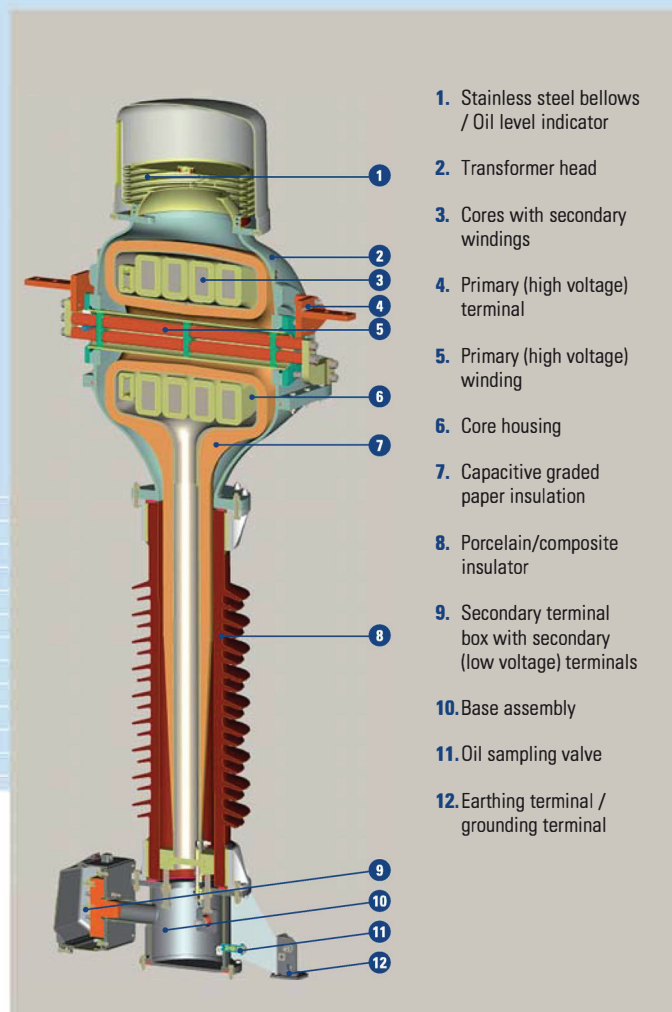
Cores and Secondary Windings

The transformer can accommodate up to 10 cores of various size and material.

The cores can, depending on the required accuracy class, be made of cold-rolled grain-oriented magnetic steel, soft magnetic materials and nanocrystalline alloys.

High-grade enamelled wire is uniformly wound on the core so as to achieve minimum leakage reactance which, in turn, enables accurate software computation of CT response in transient network states (IEC acc. classes: PR, TPS, TPX, TPY and TPZ)

Cross-section Drawing



Insulator

As per request, the external insulation can be either porcelain or composite. The porcelain insulators are made of the highest quality C130 aluminous porcelain, while the composite insulators are composed of a glass-fibre reinforced resin tube and silicone rubber sheds.

The insulator creepage distance is based on the ambient air pollution and is to be quoted in the inquiry.

The CT current transformer has been seismically tested and meets all of the IEEE Standard 693-2005 requirements.

Housing

The transformer housing consists of a base, insulator, head and bellows cover.

The active part of the transformer is located inside the aluminium cast head which is designed in such a way so as to achieve minimal oil capacity.

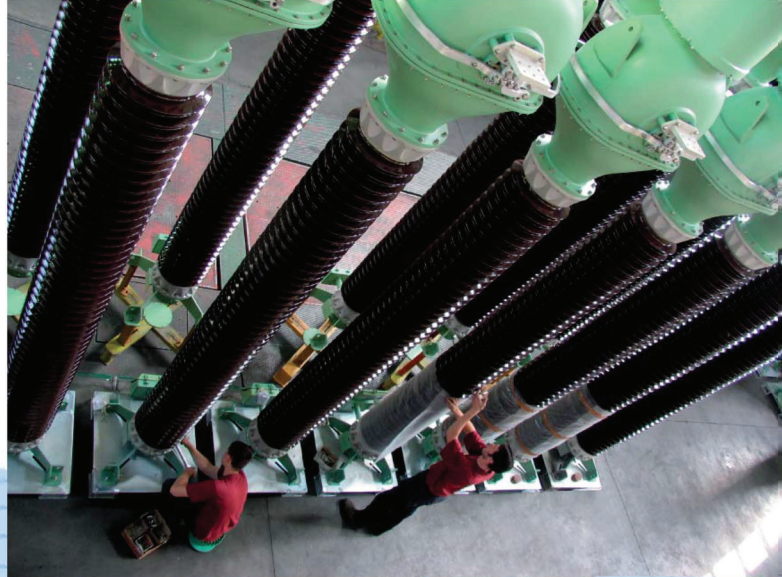
During production, before the oil-filling process, a vacuum sealing test is performed on every transformer, ensuring perfect hermetical sealing of the enclosure.

The transformer base is made of high quality steel, which is hot dip galvanized and additionally painted for long-lasting corrosion resistance, or of cast aluminium. The secondary terminal box is located on it, along with various other accessories, such as name plate, an oil sampling and filling valve, lifting lugs, earthing terminals, insulation tgδ measurement terminal and an optional oil overpressure indicator.

Earthing terminal size and type are to be defined in the inquiry. The standard connection is screw type (M12 x 35) or a stranded copper conductor clamp.

Dimensions

Type	Maximum System Voltage	Total Height	Terminal Height	Total Weight	Oil Weight	Base Mounting	Minimal Creepage Distance
	kV	mm	mm	kg	kg	mm	mm
CT-72,5	72,5	2050	1600	280	55	400x400	1815
CT-123	123	2300	1900	320	65	400x400	3075
CT-145	145	2650	2200	350	75	400x400	3625
CT-170	170	2850	2350	420	85	520x520	4250
CT-245	245	3700	3050	600	190	520x520	6125
CT-300	300	3700	3050	620	190	520x520	7500
CT-362	362	4750	4000	1000	320	650x650	9050
CT-420	420	5400	4600	1300	380	650x650	10500
CT-525	550	6000	5100	1450	470	650x650	13750
CT-765	800	8135	6940	3100	950	900x900	20000



Terminals

The primary terminals are made of aluminium or, alternatively, of corrosion protected (tin or silver plated) electrolytic copper. The terminal shape and type are designed according to the current ratings and applicable standards, unless specified otherwise in the inquiry.

Standard secondary terminals are M8 in size and are of the threaded bolt type. They are made of stainless steel. Other terminal types, materials and dimensions are available on request.

The secondary terminals, along with protective devices and tariff terminal sealing, reside in the secondary terminal box. Cable glands or plates provide entry to the box and are designed in accordance with the customers needs.

The given indicative values refer to our standard porcelain versions and vary depending on electrical, mechanical and environmental parameters specified in the customers' inquiry.

The values are susceptible to change in the course of technical developments.