arteche

2. INDUCTIVE VOLTAGE TRANSFORMERS
Oil-paper insulation
Gas insulation

› 123 kV Inductive voltage transformers. Fingrid (Finland).

INTRODUCTION

Inductive voltage transformers are designed to provide a scaled down replica of the voltage in the HV line and isolate the measuring instruments, meters, relays, etc., from the high voltage power circuit.

Model UT up to 550 kV.

Model UG up to 550 kV.

› Model UTF

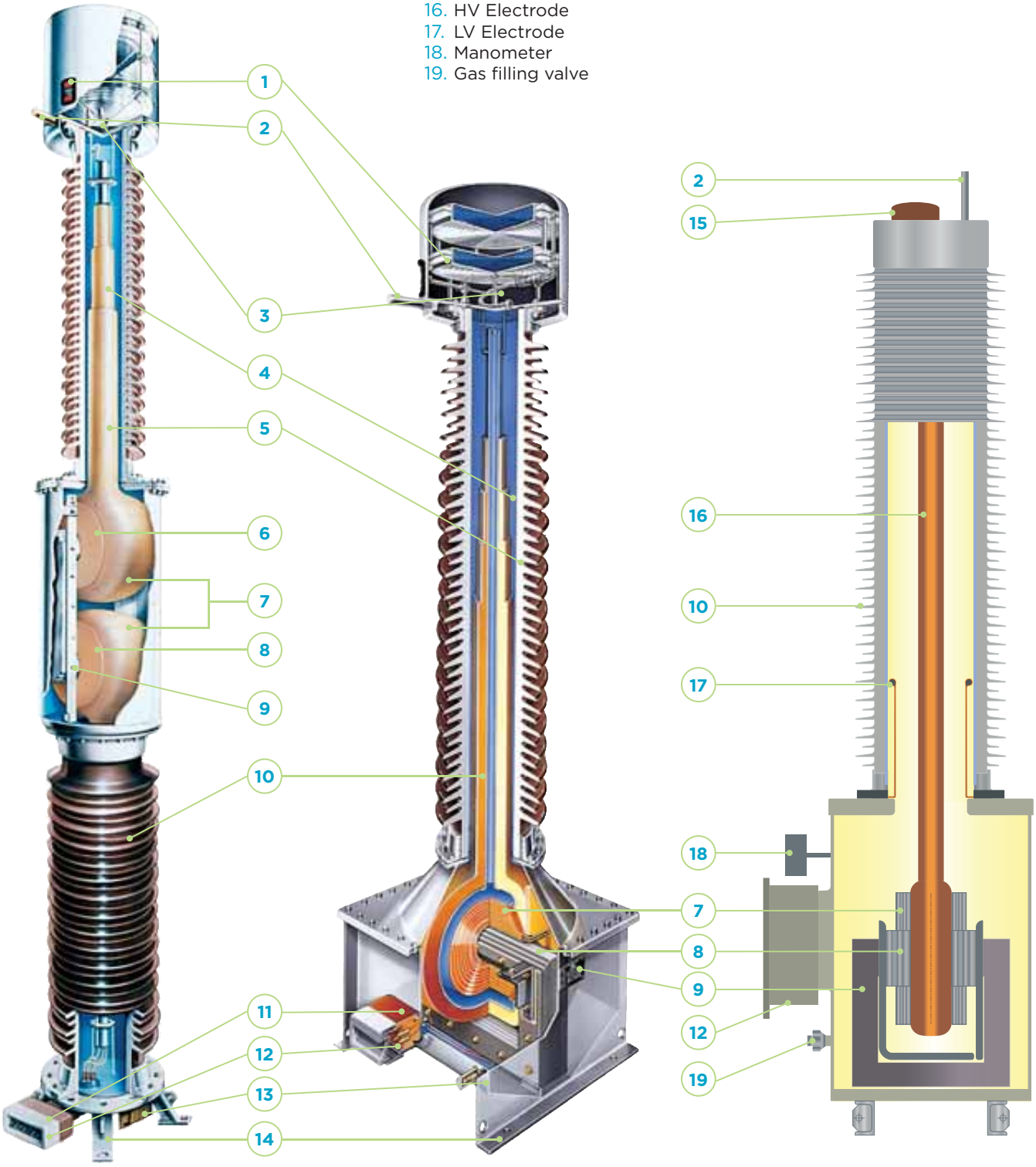
› Model UTE

› Model UTD

› Model UG

SECTIONS

1. Oil level indicator
2. Primary terminal
3. Oil volume compensating system
4. Capacitive bushing
5. Oil-paper insulation
6. Compensation windings
7. Primary windings
8. Secondary windings
9. Core
10. Insulator (porcelain or silicone rubber)
11. Tangent delta measuring tap
12. Secondary terminal box
13. Oil sampling valve
14. Grounding terminal
15. Pressure relief device
16. HV Electrode
17. LV Electrode
18. Manometer
19. Gas filling valve



› Model UT. From 362 kV

› Model UT. Up to 300 kV

› Model UG. Up to 550 kV

APPLICATIONS

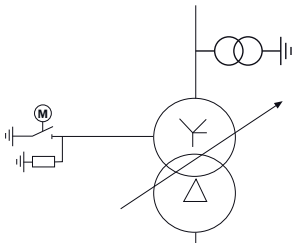
Ideal for installation at metering points due to its very high accuracy class.

Suitable for the discharge of high-voltage lines and capacitor banks.

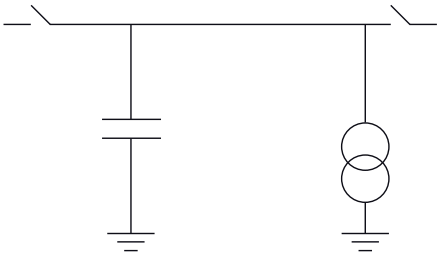
Excellent frequency response; ideal for monitoring power quality and measuring harmonics.

Examples of applications:

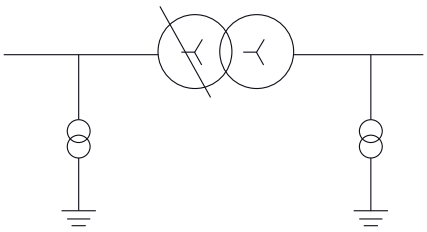
1. Revenue metering.



2. Discharge of capacitor lines and banks.



3. Protection for high voltage lines and substations.



4. Supply for auxiliary services.

1. 123 kV Inductive voltage transformers (Bosnia).

2. 123 kV Inductive voltage transformers. Transpower (New Zealand).

3. 420 kV Inductive voltage transformers. Rede Eléctrica Nacional (Portugal)

4. 420 kV Inductive voltage transformer. R.E.E. (Spain).

DESIGN AND MANUFACTURE

Voltage transformers can have several secondary windings for metering and/or protection. The primary winding and all the secondary windings are wound around the same core, which is loaded with the total burden.

The core and the windings are located inside a metallic tank. The windings have an anti-resonant design, which makes the transformer work properly both at power frequency and during temporary high frequency transients.

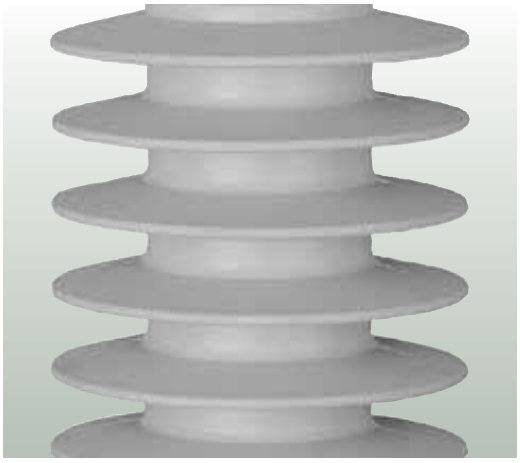
ADVANTAGES

- Very high and invariable accuracy (up to 0.1%) steady for the operational life of the equipment, with maximum reliability.
- Anti-resonant winding design.
- Safe design in case of internal fault thanks to:
  - Active parts located inside metallic tank, separated from the insulator.
  - Pressure relief devices.
  - Electrical connections resistant to short circuit.
- Robust mechanical strength and reduced size due to a compact design that is easy to transport, store and install, and which reduces visual impact.
- Hermetically sealed to guarantee complete water tightness with the minimum volume of oil or gas (Each unit is tested individually).
- Maintenance-free throughout their lifespan.
- Excellent response under extreme weather conditions, altitudes over 1,000 m.a.s.l., seismic hazard areas, violent winds, etc.
- Each transformer is routine tested for partial discharges, tangent delta (DDF), insulation and accuracy and designed to withstand all the type tests included in the standards.
- Compliance to any international standards: IEC, IEEE, UNE, BS, VDE, SS, CAN/CSA, AS, NBR, JIS, GOST, NF.
- Officially homologated in-house testing facilities.
- May be transported and stored horizontally or vertically.

OPTIONS:

- Wide range of primary and secondary terminals.
- Sealable secondary terminals.
- Secondary terminal protection devices inside the terminal box.

High and steady accuracy, combined with safe design and maximum reliability.



- Oil level indicator.
- Various types of insulators available (silicone, gray porcelain, coloured porcelain...).

2. INDUCTIVE VOLTAGE TRANSFORMERS > Oil-paper and gas insulation

OIL-PAPER INSULATION:

- Oil level compensating system that effectively regulates changes in oil volume mainly caused by temperature.
- Oil sampling valve for periodic analysis.
- Environmental-friendly design through the use of high quality insulating oils free of PCB. The materials used are recyclable and resistant to the elements.

OPTIONS:

- Silicone rubber insulator.
- Oil compensation system with metallic bellows. Option for rubber diaphragm up to 170 kV.
- Current through connection to the HV: line.

GAS INSULATION:

- Total safety in case of internal arc: Overpressure is relieved by the pressure relief device (rupture disc) in the top part of the transformer.
- Designed to minimize gas volume, pressure and leaks, with a leakage rate <0.5%/year (lower values available upon request), thus reducing its environmental impact.
- Online monitoring of the insulation status with a manometer alarm.
- Tanks and insulators are designed, manufactured and tested according to international pressure vessel standards.
- Designed to withstand rated voltage with internal atmospheric gas pressure.

› 420 kV Inductive voltage transformers. R.E.E. (Spain).

RANGE

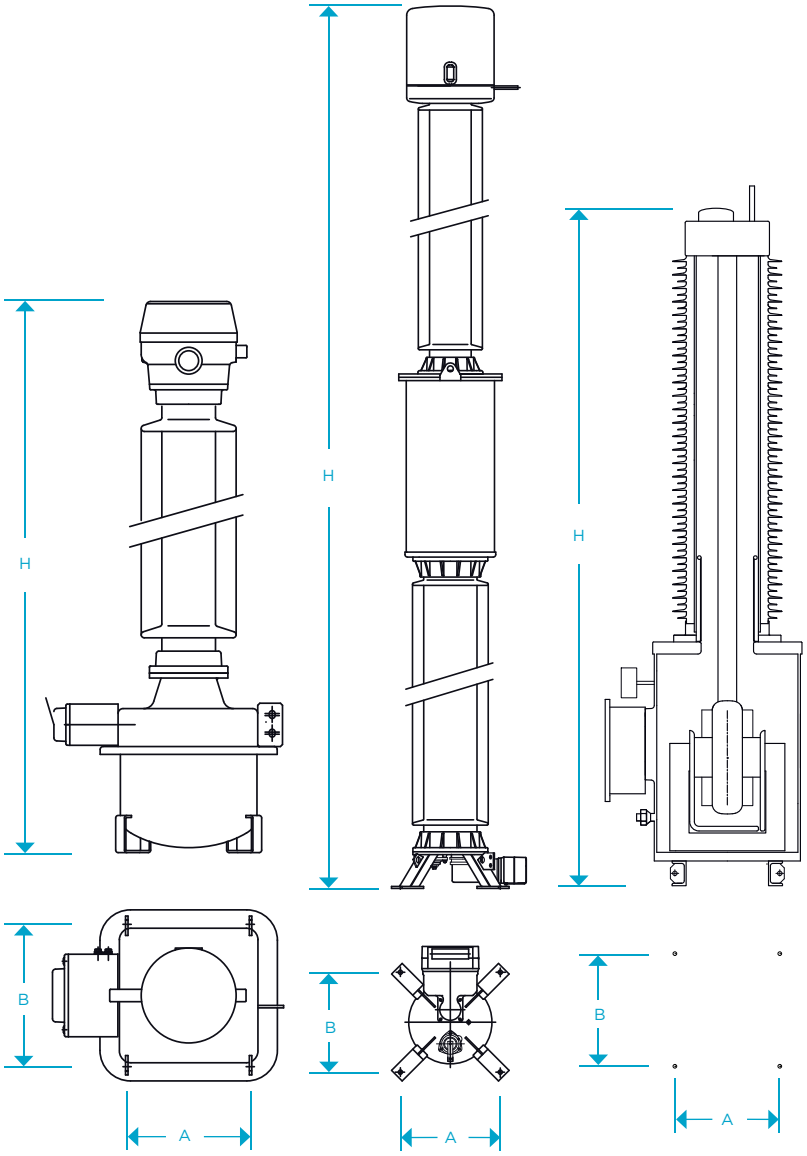
ARTECHE inductive voltage transformers are named with the letters (UT oil-paper or UG gas) followed by 1 additional letter (oil paper only), and 2 or 3 numbers indicating the maximum voltage of the network for which they are designed.

The table on the next page shows the range of both types of transformers currently manufactured by ARTECHE. These characteristics are merely indicative; ARTECHE can manufacture inductive voltage transformers to comply with any domestic or international standard.

Standard accuracy classes and burdens:

- According to IEC standards
  - 100 VA Class 0,2 / 3P
  - 250 VA Class 0,5 / 3P
- According to IEEE standards
  - 0.3 WXYZ
  - 1.2 WXYZ, ZZ

Higher accuracy classes and burdens available.



- Models UTB/UTD/UTE/ UTF/UTG up to 300 kV
- Model UTF from 362 kV
- Model UG up to 550 kV

- 123 kV Inductive voltage transformers. Electronet Services (New Zealand).
- 420 kV Inductive voltage transformers. Elia (Belgium).

2. INDUCTIVE VOLTAGE TRANSFORMERS > Oil-paper and gas insulation

Oil-paper insulation > Model UT

Model	Highest voltage (kV)	Rated insulation level			Thermal burden (VA)	Standard creepage distance (mm)	Dimensions		Weight (kg)
		Power frequency (kV)	Lightning impulse (BIL) (kVp)	Switching impulse (kVp)			A x B (mm)	H (mm)	
UTB-52	52	95	250	-	1500	1300	300x300	1335	95
UTD-52	52	95	250	-	2000	1300	330x300	1395	150
UTB-72	72.5	140	325	-	1500	1825	300x300	1335	108
UTD-72	72.5	140	325	-	2000	1825	330x300	1395	150
UTE-72	72.5	140	325	-	2500	1825	400x430	1645	285
UTD-100	100	185	450	-	2000	2500	330x300	1690	165
UTD-123	123	230	550	-	3000	3075	350x475	2120	292
UTE-123	123	230	550	-	3500	3075	350x475	2120	355
UTE-145	145	275	650	-	3500	3625	350x475	2105	335
UTE-170	170	325	750	-	3500	4250	350x475	2235	350
UTF-245	245	460	1050	-	3500	6125	450x590	3210	650
		395	950						
UTG-245	245	460	1050	-	3500	6125	500x640	3260	800
		395	950						
UTG-300	300	460	1050	850	3500	7500	500x640	3660	910
UTF-420	420	630	1425	1050	3500	10500	600x600	5210	1315
		575	1300	950					
UTF-525	550 (525)	680	1550	1175	3500	13125	600x600	6070	1700

Approximate dimensions and weights. For special requirements, please consult.

Gas insulation > Model UG

Model	Highest voltage (kV)	Rated insulation level			Thermal burden (VA)	Standard creepage distance (mm)	Dimensions		Weight (kg)
		Power frequency (kV)	Lightning impulse (BIL) (kVp)	Switching impulse (kVp)			A x B (mm)	H (mm)	
UG-123	123	230	550	-	1000	3813	315x315	2400	450
UG-145	145	275	650	-	1000	4495	315x315	2400	450
UG-170	170	325	750	-	1000	5270	315x315	2600	470
UG-245	245	460	1050	-	1000	7595	450x450	3200	650
UG-300	300	460	1050	850	1000	9300	450x450	3550	700
UG-362	362	510	1175	950	1000	11222	600x600	3900	1100
UG-420	420	630	1425	1050	1000	13020	600x600	4600	1200
UG-550	550	680	1550	1175	1000	17050	600x600	5100	1300

Approximate dimensions and weights. For special requirements, please consult.