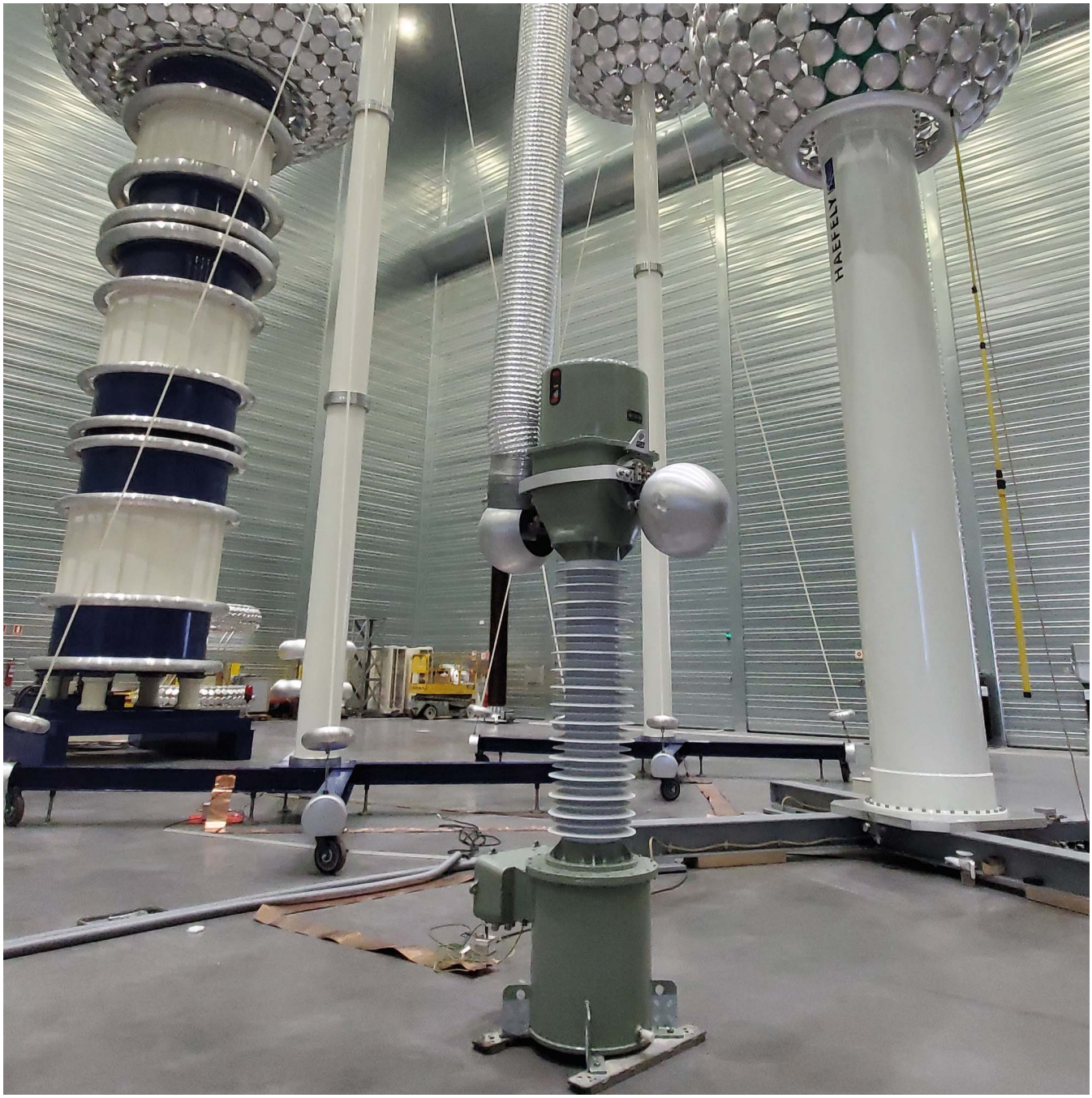
arteche

COMBINED TRANSFORMERS

_KA Series



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

APPLICATIONS

Combined transformers are suitable for use in substations where space or installation costs make using independent transformers difficult.

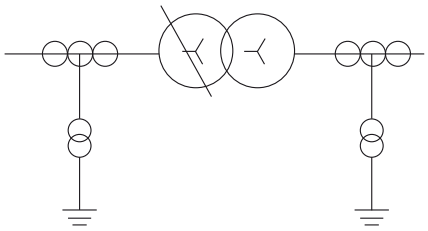
Ideal for installation at metering points due to their very high accuracy class, both in current and voltage.

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

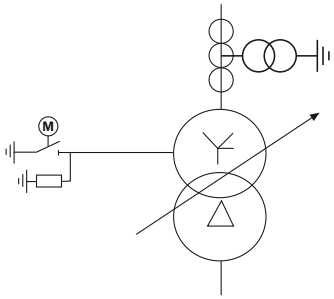
Excellent frequency response; ideal for monitoring power quality and measuring harmonics.

Examples of applications:

1. Protection for high voltage lines and substations.



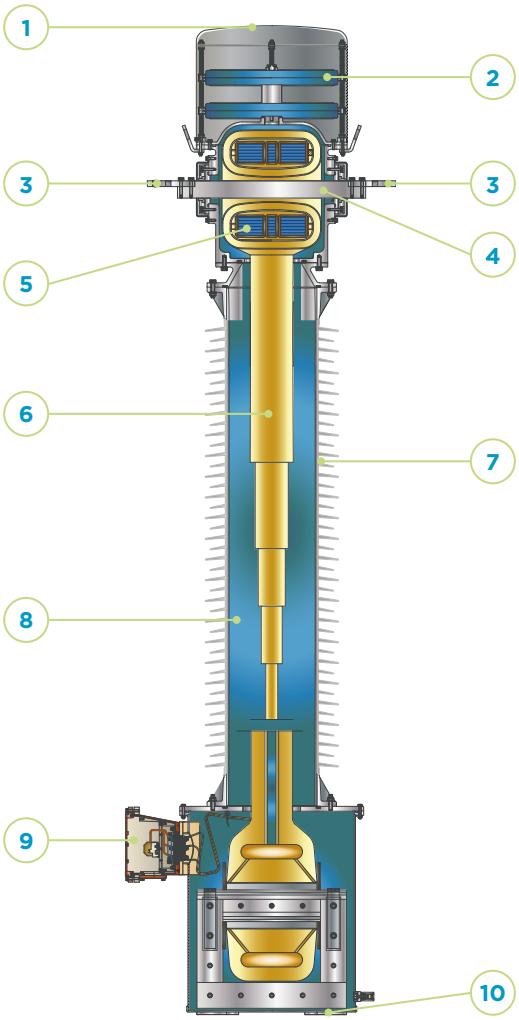
2. Revenue metering.



KA SERIES

Oil-paper insulation: model KA up to 245 kV.

1. Top cover
2. Oil volume compensating system
3. Primary terminals
4. Primary winding
5. Core and secondary windings
6. Capacitive bushing
7. Insulator
8. Insulating oil
9. Secondary terminal box
10. Grounding terminal



DESIGN AND MANUFACTURING

These Transformers combine the characteristics of current transformers (CA series) and inductive voltage transformers (UT series).

The current transformer primary conductor is usually a pass-through bar (with or without external reconnections) or sometimes a winding. The secondaries, which are one or several cores with their corresponding windings, are located in the top section of the unit within the external aluminum enclosure. These active parts are inside a metal enclosure that acts as a low-voltage shield, with the main oil-paper insulation wrapped around, ending up with a high-voltage shield. The gap between this shield and the external enclosure is filled with oil. The secondary cable outputs run into the secondary terminal box through an oil-paper insulated capacitive bushing with several shields for proper electrical field distribution.

The voltage transformer primary conductor runs from the primary terminal through an oil-paper insulated capacitive bushing with several shields for proper electrical field distribution. Then it is wounded thousands of times around the magnetic core. The secondary winding(s) are wounded around the same core, which is loaded with their combined burden, and located in the bottom part of the transformers within a metallic external enclosure. The windings have an antiresonant design, which makes the transformer work properly both at power frequency and during temporary high frequency transients. Electrical insulation is made through layers of papers impregnated with oil.

CHARACTERISTICS

- Very high and invariable accuracy (up to 0.1%) steady for the operational life of the equipment, with maximum reliability.
- CT: All types of measurement and protection cores: multi-ratio, linear...
- VT: Up to 4 secondary windings with or without taps, with metering, protection, or dual function.
- Wide range of primary currents: from 1 to 5000 A.
- Primary and/or secondary reconnection.
- Very high rated currents and short-circuit currents.
- Anti-resonant winding design.
- Reinforced safety design.
- Robust mechanical strength.
- Excellent response under extreme environmental conditions: Temperatures from -60°C up to +60°C, high altitudes, seismic hazard areas, violent winds, etc.
- Maintenance-free throughout their complete lifespan of more than 30 years. Only periodic monitoring is recommended.
- Oil sampling valve and oil level indicator for monitoring.
- Hermetically sealed to guarantee complete water tightness with the minimum volume of oil. Each unit is tested individually.
- Metallic oil level compensating system that effectively regulates changes in oil volume mainly caused by temperature.
- Officially homologated in-house testing facilities.
- Quality management system certifications: ISO 9001, ISO 14001 and OHSAS 18001.
- Each unit is routine tested following applicable standards.
- Complete type tests reports following international standards.
- Compliance to any international or domestic standards.
- Environmentally friendly. The materials used for construction are recyclable and resistant to the elements. Its advanced design adheres to environmental regulations using high-quality insulating oils, free of PCBs.
- Reduced size due to a compact design that is easy to transport, store and install, and which reduces visual impact.
- May be transported and stored horizontally or vertically.

OPTIONS:

- Tangent Delta (DDF) tap for on-site testing.
- Internal arc test compliant as per IEC 61869 and other standards.
- Porcelain or polymeric insulators.
- Sealable secondary terminals.
- Different cable glands and accessories.
- Wide range of primary and secondary terminals.
- Secondary protection devices inside the terminal box (spark gaps, fuses, MCBs...).

RANGE

This series is named with the letters KA followed by 2 or 3 numbers indicating the maximum service voltage for which they have been designed.

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

Ratio: Multiple combinations possible in a single device.

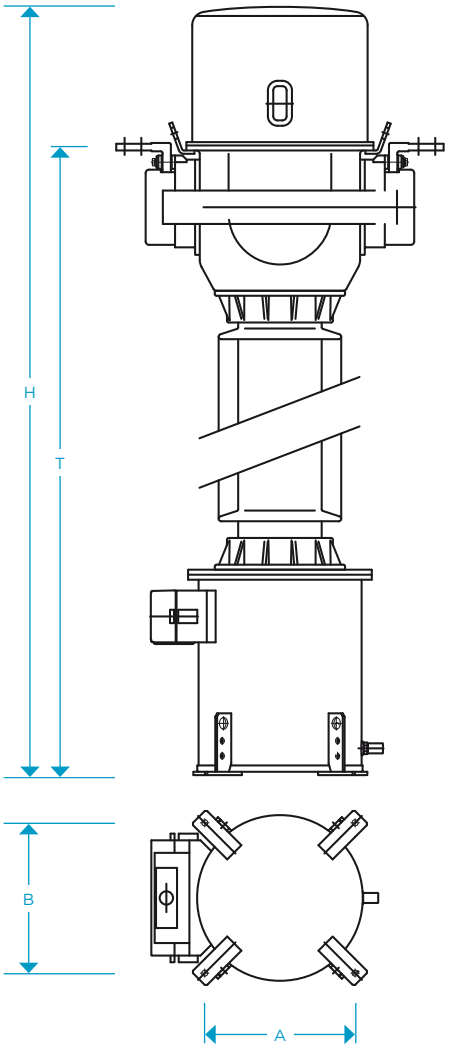
Secondary windings for:

- Protection: all possible types, including linear cores, low induction, etc.
- Metering: accuracy classes for any metering/billing need (including high accuracy class 0.1 / 0.15 with extended range in current).

Number of secondary windings: up to 6 current and 4 voltage secondary windings are possible in a single device.

Primary currents: from 1 A to 5000 A.

Short circuit current: up to 120 kA/1s.



Oil-paper insulation > Model KA

Model	Highest voltage (kV)	Rated insulation level			Standard creepage distance (mm)	Dimensions			Weight (kg)
		Power frequency (kV)	Lightning impulse (BIL) (kVp)	Switching impulse (kVp)		AXB (mm)	T (mm)	H (mm)	
KA-72	72.5	140	325	-	1825	350x350	1655	2270	375
KA-123	123	230	550	-	3075	450x450	2055	2655	570
KA-145	145	275	650	-	3625	450x450	2055	2655	580
KA-170	170	325	750	-	4250	450x450	2455	2945	755
KA-245	245	395	950	-	6125	450x450	3185	3820	1050
	300	460	1050	-					
		460	1050	850	7500	600x600	4340	5050	1520

These dimensions and weights are approximate based on standard requirements.

For detailed values please consult with Arteche.