

Gas-insulated Instrument Transformers for outdoor Installation



TRENCH

Gas-insulated Instrument Transformers for outdoor Installation

Trench Germany — the former MWB, founded in 1946 — is a recognized world-wide leader in the design and manufacture of high voltage equipment for electrical and industrial systems.

In its long history — while utilizing several insulation mediums, e. g. epoxy resin, traditional oil-paper-insulation — the company decided to focus on SF₆-gas as an insulation medium for its complete production range.

Due to the good experience with SF₆-gas as an insulation medium — Trench Germany being the first supplier of SF₆-voltage transformers for GIS in 1965 — it was decided in 1985 to abandon completely the conventional oil-paper insulated instrument transformer product line for outdoor installations.

Since this milestone conventional instrument transformers with SF₆-insulation manufactured by the company have found world-wide recognition.

Today Trench is a market leader with more than 10,000 units in service under different environmental conditions.

Our full range of instrument transformers covering

- voltage (potential)
- current
- combined

units is available for system voltages from 72.5 kV up to 800 kV.



*800 kV
Voltage Transformer*

Features



- explosion-proof design by the compressible insulation medium SF₆-gas and rupture disc
- no ageing of the insulation system and minimum risk of failure
- insulation medium SF₆: non-toxic / inert / non-flammable
- gas monitoring by a densimeter
- guaranteed SF₆-leakage rate of less than 1% per year
- transformer operates at rated voltage, even in the case of loss of SF₆-pressure
- resource-saving due to ecologically beneficial insulation system and ideal recycling features
- optimum field grading is accomplished by a fine condenser grading system especially developed for this application
- meets all IEC and ANSI metering and protection classes (other standards on request)

Hollow Composite Insulator

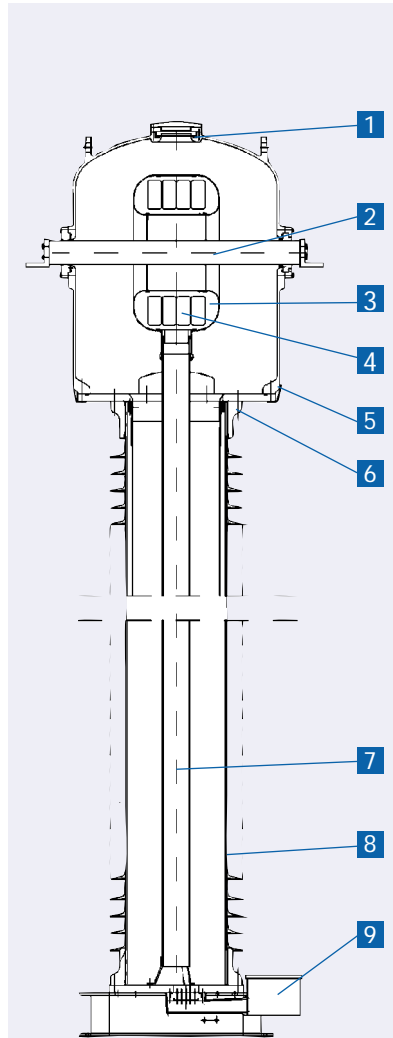
- shedded with a high quality silicone, therefore long lasting hydrophobicity transfer to pollution layers
- significant reduction of leakage currents as well as surface discharges
- cleaning not necessary
- seamless sheds based on our unique single mould method for assembling the silicone sheds
- variable shed distances without additional tool cost
- earthquake resistant
- resistant against vandalism
- easy handling during transportation and installation
- 20 years experience in greatly different climatic zones



*800 kV
Current Transformer*

Current Transformers Type SAS

- head type design
- available for the full voltage range 72.5 kV up to 800 kV and full current range 100 A up to 4800 A
- low reactance bar type primary providing optimal short-circuit performance
- multiple-turn primaries for small primary currents
- uniformly distributed secondary windings guarantee accurate transformation at both rated and high currents
- stable accuracy over a long period of time
- perfect transient performance
- maintenance free due to use of corrosion-resistant materials only
- core changes after assembly do not require the destruction of the high voltage insulation

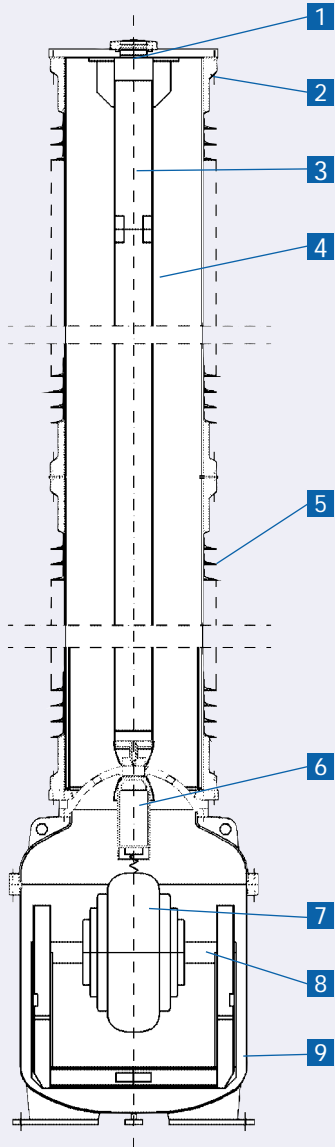


- 1 Rupture Disc
- 2 Primary Conductor
- 3 Secondary Housing
- 4 CT Cores
- 5 Head Housing
- 6 Flange
- 7 Outlet Tube
- 8 Composite Insulator
- 9 Terminal Box

Voltage Transformers Type SVS

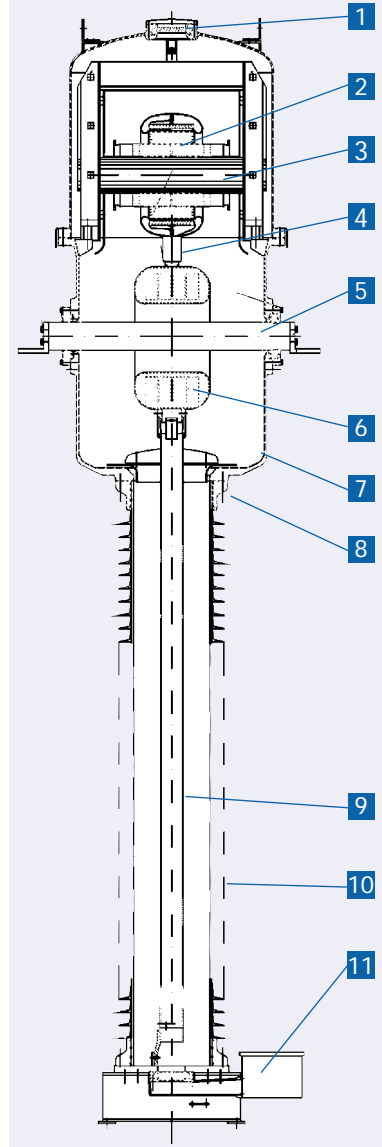
- available for the full voltage range 72.5 kV up to 800 kV
- wide range ferroresonance free design without the use of an external damping device (please ask for details)
- essentially unaffected by external stray magnetic fields
- stable accuracy over a long period of time
- suitable for line-discharging
- optimized high voltage coil assures identical electric stresses under both transient and steady state conditions
- maintenance free due to use of corrosion-resistant materials only

Combined Transformers Type SVAS



- 1 Rupture Disc
- 2 Flange
- 3 Outlet Tube
- 4 Capacitive Grading
- 5 Composite Insulator
- 6 Spacer
- 7 HV-Winding
- 8 Magnetic Core
- 9 Core Housing

- low weight and compact SF₆-design
- the single-section high voltage coil (not cascaded) of the voltage transformer section enables a product range for combined instrument transformers up to 800 kV
- head type design with voltage transformer section located on top of the current transformer
- wide range ferroresonance free design without the use of an external damping device (please ask for details)
- low reactance type primary conductor allows for high short-circuit currents and covers all core standards
- less foundation space required compared to the use of individual current transformers and voltage transformers
- suitable for line-discharging
- essentially unaffected by external stray magnetic fields
- maintenance free due to use of corrosion-resistant materials only



- 1 Rupture Disc
- 2 HV Winding
- 3 Magnetic Core
- 4 Spacer
- 5 Primary Conductor
- 6 CT Cores
- 7 Head Housing
- 8 Flange
- 9 Outlet Tube
- 10 Composite Insulator
- 11 Terminal Box

Gas-insulated Current Transformers

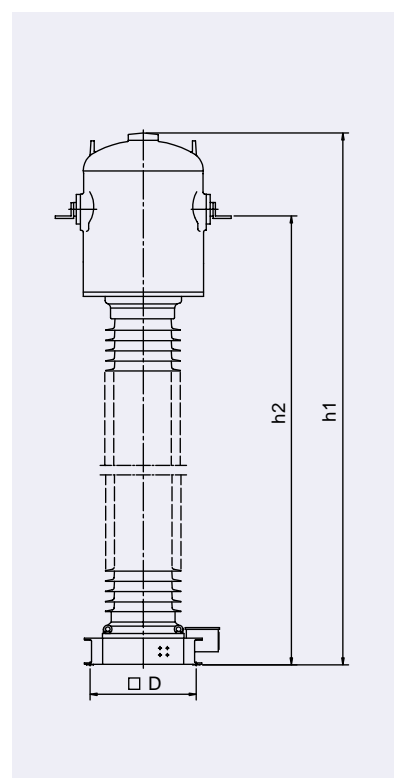
Electrical and Mechanical Data

Voltage range	Max. system voltage	Test voltage 50/60 Hz, 1 min dry/wet	Impulse withstand 1.2/50 μ s	Switching impulse test withstand	Min. flashover distance	Standard creepage distance
kV	kV	kV	kV	kV	mm	mm
123	123	230	550	—	1216	2880
123	123	230	550	—	1216	2880
123	123	230	550	—	1216	2880
145	145	275	650	—	1396	3300
145	145	275	650	—	1396	3300
145	145	275	650	—	1396	3300
170	170	325	750	—	1636	3780
245	245	460	1050	—	2350	6135
245	245	460	1050	—	2350	6135
300	300	460	1050	—	2350	6135
300	300	460	1050	—	2350	6135
362	362	575	1300	1050/1175	3728	10155
420	420	630/680	1425/1550	1050/1175	3728	10155
550	550	680	1550	1175	3728	10155
550	550	800	1800	1300	4020	11755
800	800	920	2050	1425/1550	6000	14112



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Net weight (approx.)	Dimensions		
	h1	h2	□ D
kg	mm	mm	mm
350	2660	1950	450
645	2760	2035	450
260	2480	1865	450
360	2840	2130	450
655	2940	2215	450
270	2660	2045	450
720	3180	2455	450
880	4110	3350	600
1250	4280	3450	600
880	4110	3350	600
1250	4280	3450	600
1550	5780	4940	900
1550	5780	4940	900
1550	5780	4940	900
2580	6670	5790	1100
4000	9605	8650	1100



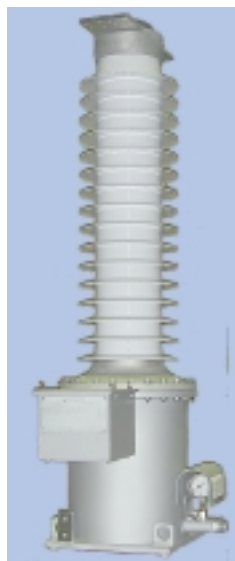
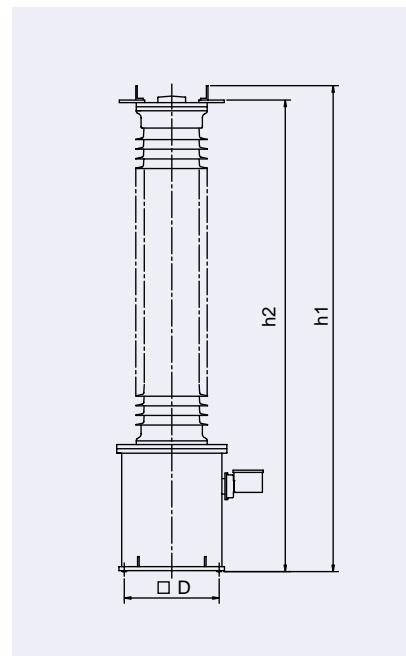
Current Transformer
123 kV

Gas-insulated Voltage Transformers

Electrical and Mechanical Data

Voltage range	Max. system voltage	Test voltage 50/60 Hz 1 min dry/wet	Impulse withstand 1.2/50 μ s	Switching impulse test withstand	Min. flashover distance	Standard creepage distance
kV	kV	kV	kV	kV	mm	mm
123	123	230	550	—	1216	2880
145	145	275	650	—	1396	3300
170	170	325	750	—	1636	3780
245	245	460	1050	—	2350	6135
300	300	460	1050	850	2350	6135
362	362	575	1300	1050/1175	3728	10155
420	420	630/680	1425/1550	1050/1175	3728	10155
550	550	680	1550	1175	3728	10155
550	550	800	1800	1300	4020	11755
800	800	920	2050	1425/1550	6000	14112

Net weight (approx.)	Dimensions		
	h1	h2	□ D
kg	mm	mm	mm
330	2150	2075	450
340	2330	2255	450
420	2910	2815	450
790	3685	3565	600
790	3685	3565	600
1600	5440	5350	900
1600	5440	5320	900
1600	5440	5320	900
2150	5940	5820	900
3570	9400	9325	1250



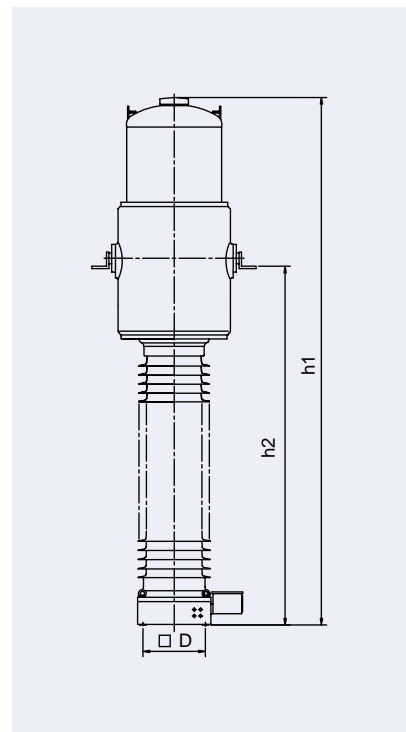
*Voltage Transformer
123 kV*

Gas-insulated Combined Current and Voltage Transformers

Electrical and Mechanical Data

Voltage range	Max. system voltage	Test voltage 50/60 Hz 1 min dry/wet	Impulse withstand 1.2/50 μ s	Switching impulse test withstand	Min. flashover distance	Standard creepage distance
kV	kV	kV	kV	kV	mm	mm
123	123	230	550	—	1216	2880
123	123	230	550	—	1216	2880
123	123	230	550	—	1216	2880
145	145	275	650	—	1396	3300
145	145	275	650	—	1396	3300
145	145	275	650	—	1396	3300
170	170	325	750	—	1636	3780
245	245	460	1050	—	2350	6135
245	245	460	1050	—	2350	6135
300	300	460	1050	—	2350	6135
300	300	460	1050	—	2350	6135
362	362	575	1300	1050/1175	3728	10155
420	420	630/680	1425/1550	1050/1175	3728	10155

Net weight (approx.)	Dimensions		
	h1	h2	□ D
kg	mm	mm	mm
430	3275	1950	450
820	3370	2035	450
420	3070	1865	450
440	3455	2130	450
830	3550	2215	450
430	3250	2045	450
840	3840	2520	500
1500	4950	3350	600
1870	5150	3450	600
1500	4950	3350	600
1870	5150	3450	600
2500	6900	4940	600
2500	6900	4940	600



*Combined Current and
Voltage Transformer
123 kV*

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