



# Explosion Proof SF<sub>6</sub> Gas Instrument Transformers with Silicone Composite Insulators

## High-Voltage Instrument Transformers

[www.siemens.com/energy](http://www.siemens.com/energy)

**SIEMENS**









## Safe and Maintenance-free Instrument Transformers

Siemens instrument transformers are based on technology from Trench, one of the global leaders in the field of Instrument Transformers and now an integral part of Siemens.

With an expertise and experience of all common insulation mediums like epoxy resin, traditional oil - paper insulation, the SF<sub>6</sub> technology was added to our portfolio and we were the first supplier of gas insulated voltage transformers for GIS switchgear in 1965.

Due to the excellent experience and overwhelming customer demand for SF<sub>6</sub> gas insulation medium in GIS, this insulation medium was also applied to Instrument Transformers for outdoor installations.

Since then, our instrument transformers with SF<sub>6</sub> insulation have found world-wide recognition with thousands of units installed all over the world having broad range of applications and under greatly varying environmental conditions.

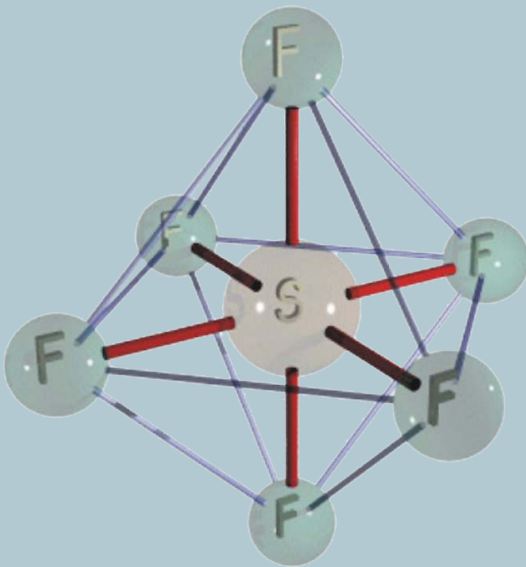
Today, we are a world leader with an entire range of instrument transformers from 72.5 kV to 800 kV covering:

- Current transformers
- Voltage (Potential) transformers
- Combined units (Combined Current & Voltage transformers);

The factory at Aurangabad fulfills the demand of our customers for maintenance-free, reliable and explosion-free Instrument Transformers.

# Insulated for the most extreme conditions

Our design of Instrument Transformers combines the characteristics of the  $\text{SF}_6$  gas to meet the internal insulation requirement and a Silicone composite insulator to meet the external insulation requirements, thus offering the most reliable, safest and EXPLOSION PROOF Instrument Transformers.

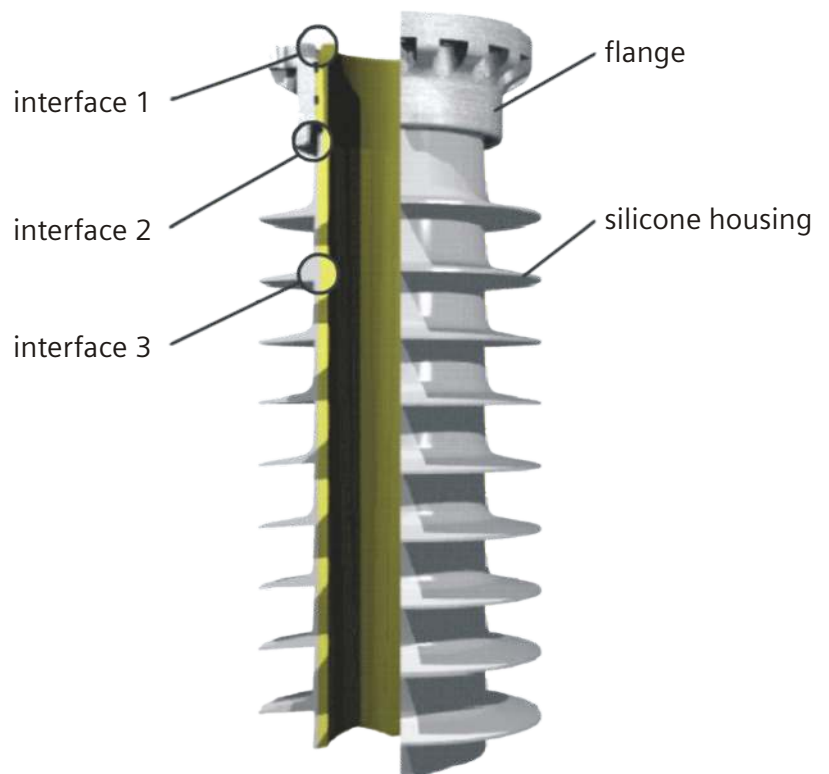


## Internal Insulation Medium: $\text{SF}_6$ gas

- Permanent constant quality according to IEC 60376
- No aging of the insulation system - longer lifetime and minimum risk of failures
- Self-healing insulation - no insulation impairment through partial discharges
- Non-toxic and non-flammable
- Re-usable and therefore replacement of insulating material is always possible
- Remote and online gas monitoring possible

## External Insulation: Composite Insulator

- Shatter Proof Insulator - Explosion Proof design
- Trouble-free performance in heavily polluted conditions due to hydrophobic properties and its transfer to pollution layers
- Totally maintenance-free - no cleaning or hot line washing required
- Lesser creepage distance requirement as compared to ceramic insulators
- Easily repairable at site
- Significant reduction of leakage currents as well as dry band arcing
- High mechanical strength of the fiberglass tube provides earthquake resistance and resistance against vandalism



# SF<sub>6</sub> Instrument Transformers

## have been proved.....



### **...to suit all Environmental Conditions**

- ... to withstand the most aggressive natural or industrial pollutants
- ...to operate in all extreme climatic conditions
- ...to provide an excellent seismic withstand capability
- ...to be the first choice for sensitive sites e.g. areas with steel and cement industries, mines and water protection restrictions

### **...to give you best Economical Advantages**

- ...to save cost of routine cleaning of insulators and periodic testing.
- ...to avoid shut downs required for carrying out capacitance and tan delta measurement tests.

- ...to save space, foundation support structures, etc. by using combined current and voltage transformers

- ...to easily change or add cores or windings even after years of service (e.g. additional metering cores)
- ...to save due to lesser leakage currents

### **...to provide safety for Personnel and Operation**

- ...to totally avoid any explosion or fire caused by internal flashover or any other failure
- ...to be the safest kind of high voltage instrument transformer even for installations at frequented sites
- ...to have self monitoring system – density monitor contacts can be wired up to control room for real time annunciation

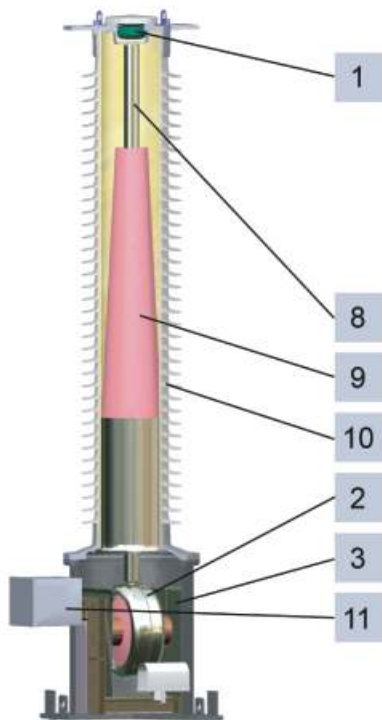
- ...to guarantee best reliability by using the non-aging insulation medium - SF<sub>6</sub> gas

### **...to meet your Special Requirements**

- ...to avoid Ferro resonance in sensitive networks
- ...to work on highest voltage levels (800kV)
- ...to use customer designed insulators with a large variety of numbers and shapes of the silicone sheds
- ...to be increasingly used as an independent small power transformer for users situated beyond all low voltage networks

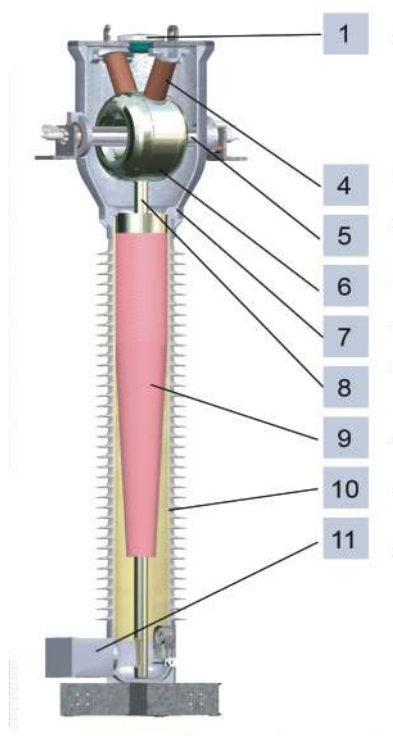


## Voltage Transformer Type SVS

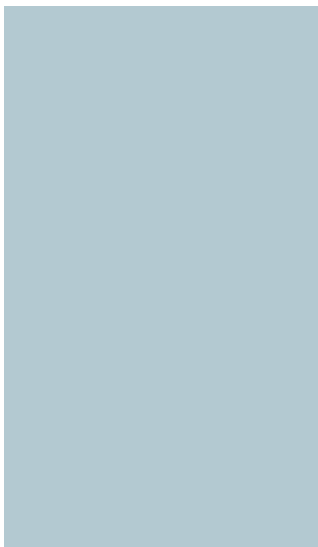


- Available from 72.5 to 800 kV
- Single high voltage coil design upto 800 kV ensures measurement accuracy
- Suitable for line-discharging
- Ideal for power plants for tariff metering as accuracy does not depend on the system frequency
- Rupture Disc at the top makes it explosion proof
- Possibility of remote monitoring of insulation
- Completely maintenance-free PT

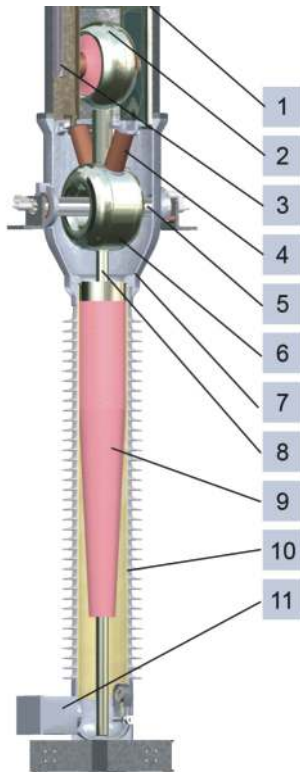
## Current Transformer Type SAS



- Available from 72.5 to 800 kV
- Low reactance bar type primary conductor provides optimal short-circuit performance
- Perfect transient response
- Well supported core housing avoids undue stress due to core weights on primary winding
- Rupture Disc at the top makes it explosion proof
- No fire risk
- Possibility of remote monitoring of insulation
- Freedom from capacitance and tan delta measurement
- Completely maintenance-free CT



## Combined Transformers Type SVAS



- Available from 72.5 to 800 kV
- Single high voltage coil design upto 800 kV ensures measurement accuracy
- Provides the advantages of a current and inductive voltage transformer at a competitive price
- Less foundation space required results in significant reduction in overall switchyard cost
- Savings in handling, installation and maintenance cost

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

All types of Current, Voltage and Combined Transformers are available for all insulation levels and meet the metering and protection classes according to international standards (IEC 60044).

**Note:** \*Not required for 245 kV and below rated Current Transformer

Highest System voltage kV (r.m.s)	Rated Power Frequency withstand voltage kV (r.m.s)	Rated Lightning Impulse withstand voltage kV (peak)	Rated Switching Impulse withstand voltage kV (peak)
72.5	140	325	--
123	230	550	--
145	275	650	—
170	325	750	--
245	460	1050	--
300	460	1050	850
362	510	1175	950
420	630	1425	1050
525	680	1550	1175
765	975	2100	1550

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