

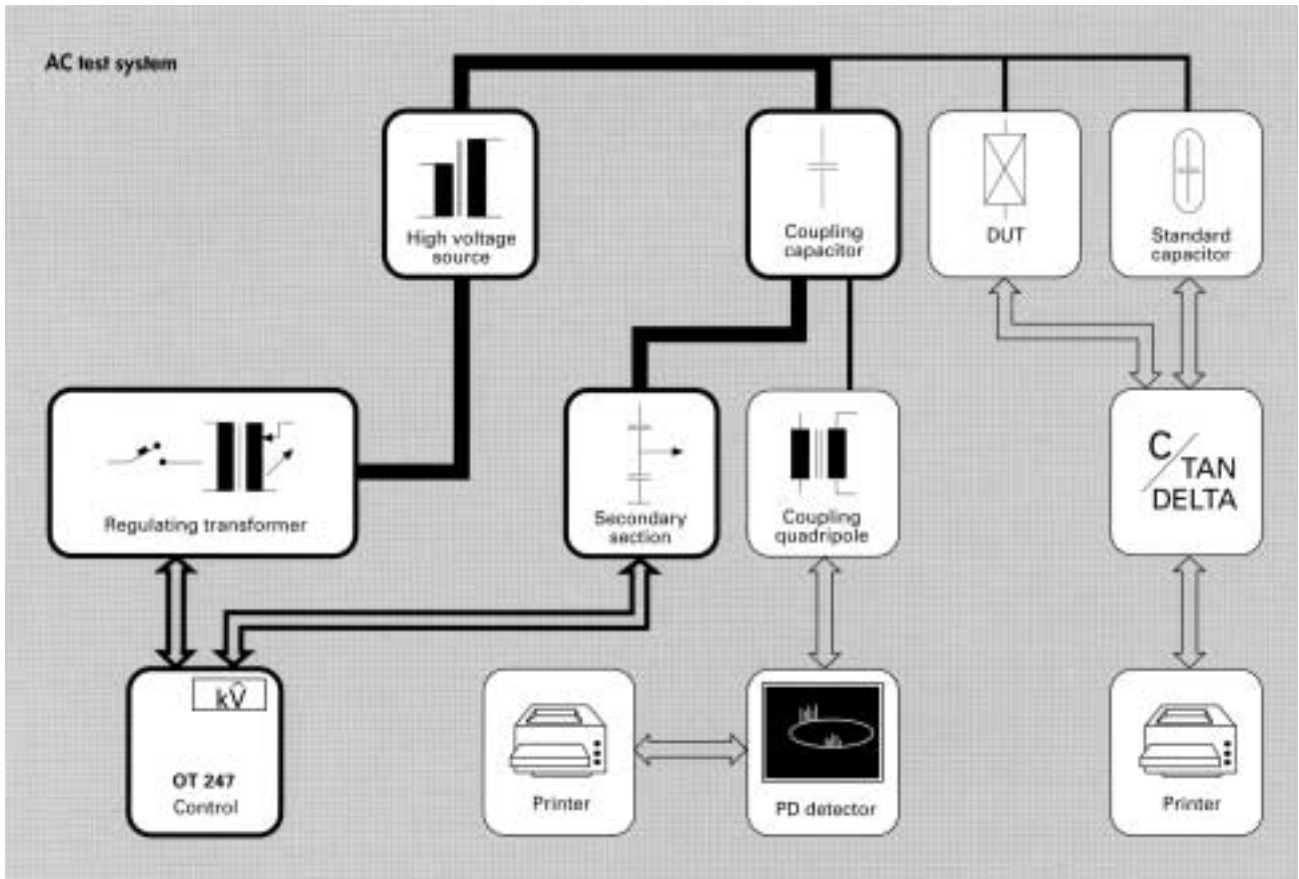
# Modular AC Test System

ACS 100 kV–200 kV–300 kV–0.25 A



Modular system with transformer cascade  
Mobile for on-site testing  
Small dimension and light weight  
Safe and easy computer controlled operation

# Application



The ACS is used as AC high voltage source for the dielectric testing of high voltage components such as CTs, VTs, transformers, switchgears, bushings, motors, cable terminations as well as complete switchgear arrangements. All these components represent mainly capacitive loads for the AC source, ranging from approx. 10 nF for 110/ $\sqrt{3}$  kV material to approx 1.5 nF for 400/ $\sqrt{3}$  kV.

The dielectric tests consist mainly of capacitance and tan delta measurements, partial discharges measurements and high potential voltage tests. These tests are often made on site in the substations for the periodic check of components with test voltages up to 300 kV.

The requirements for the high voltage source are:

- stepless regulation of the output voltage
- low partial discharge level
- low weight for mobility
- easy and safe operation
- high voltage sine wave with low distortion

These requirements were taken in account when designing the system.

## User Benefits

### Modular System with Transformer Cascade

The adaptation of the configuration to the ratings of the object to be tested by cascade or parallel connection of the transformer modules increases the load range of the system.

The system can be extended later by adding one or more modules.

### Small Dimensions and Light Weight of the System

The single transformer module weighs 385 kg only, including the mobile base frame. It can be easily moved in the test lab.

The reduced floor space requirements and the mobility allow an on-site transport with a small truck, even for a 300 kV system.

### Computer Aided Operation with OT 247

Safe and easy operation with continuous automatic control of the voltage and current values on low voltage and high voltage side.

Automatic testing with preset voltage, rate of rise and time increases the quality and the reproducibility of the tests.

The permanent display of the measured output voltage on a large LCD allows clear reading and easy control of the actual situation by the operator.

## Design of Components

### High Voltage Transformer

The single phase test transformer is of the cylinder type. It is oil insulated and is housed in a fiberglass reinforced resin cylinder with metallic base and cover. The magnetic core is provided with an air gap for the compensation of the capacitive load.

The primary winding is divided in 2 parts which can be connected in series or in parallel. This allows to set lower test voltages with high accuracy.

Each transformer has a tertiary winding for cascade connection. The lower transformer is always fixed on a mobile base with castors.

### Regulating Transformer

The column type air insulated regulating transformer is housed in a steel cubicle. It includes an input power breaker and a contactor for the high voltage ON/OFF.

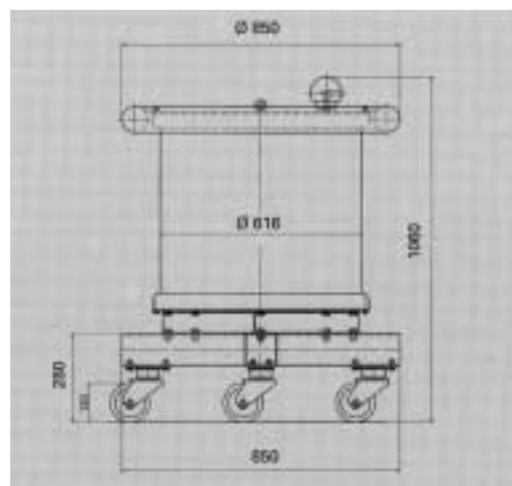
### Coupling Capacitor

The coupling capacitor serves as high voltage part of the voltage divider and for partial discharges measurement. At its low voltage end, a secondary part SEK GC is mounted for voltage measurement and control.

### Control Unit OT 247

The system is controlled by OT 247 which provides a safe and easy computer aided operation of the system. It is built in a standard 19" desktop housing. It offers a menu-controlled operation via a 4-line alphanumeric LC display.

The value of the high voltage is permanently displayed, either as peak value/ $\sqrt{2}$  or as RMS value.



Test Transformer  
Type PZTL 100-0.25

## Extent of Delivery

Code	Units	H.V. Transformer Cylinder type	Switching and Regulating Cubicle	Coupling Capacitor
ACS 100 - 0.25	1 x	PZTL 100 - 0.25	STL 12	KK 100 - 1
ACS 200 - 0.25	2 x	PZTL 100 - 0.25	STL 25	KK 200 - 1
ACS 300 - 0.19	3 x	PZTL 100 - 0.25	STL 25	KK 300 - 1
ACS 300 - 0.25	4 x	PZTL 100 - 0.25	STL 50	KK 300 - 1

### Complete System, including

Partial discharge level of the system  $\leq 10$  pC at rated voltage


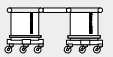

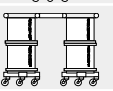


- h.v. transformer 100 kV, 250 mA with 50 % reactive power compensation, mobile base frame
- switching and regulating cubicle
- coupling capacitor with secondary part for voltage measurement
- control unit OT 247, desktop version
- flexible h.v. connection between transformer and coupling capacitor
- set of control and measuring cables
- set of earthing connections

### Option

Partial discharge level of the system  $\leq 2$  pC at rated voltage

ACS 100 - 2PC	Partial discharge level $\leq 2$ pC for ACS 100 - 0.25
ACS 200 - 2PC	Partial discharge level $\leq 2$ pC for ACS 200 - 0.25
ACS 300 - 2PC	Partial discharge level $\leq 2$ pC for ACS 300 - 0.19 / 0.25

### Technical Data of the Transformer Cascade

Configuration	Short-time duty at 50 Hz 15 min ON, 1 h OFF				Continuous duty at 50 Hz				weight / kg
	Rated Voltage	Rated Current	Output at $U_N$	Short-circuit impedance	Rated Current	Output at $U_N$	Short-circuit impedance	Compen- sation	
	$U_N$ / kV	$I_N$ / mA	$P_N$ / kVA	$u_k$ / %	$I_N$ / mA	$P_N$ / kVA	$u_k$ / %	/ kVA	
	100	250	25	ca. 5	175	17.5	ca. 3	12.5	385
	100	500	50	ca. 5	350	35	ca. 3	25	800
	200	250	50	ca. 15	160	32	ca. 7	25	800
	200	500	100	ca. 15	320	64	ca. 7	50	1600
	300	190	57	ca. 30	155	46.5	ca. 24	37.5	1200
	300	250	75	ca. 20	160	48	ca. 13	50	1600

Note:  $u_k$  is given without regulating transformer. The reactive power consumption of the coupling capacitor has to be subtracted from the cascade output.

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