

Versatile AC test system for GIS testing in the factory and on-site

The problem

Any GIS manufacturer must carry out routine tests (dielectric and partial discharge) in the factory and must sometimes carry out acceptance tests on-site.

„Test across open switch“

Some customers require special tests on the breakers. This is a „test across open switch“ on the open breaker. Each of its contacts is energised separately. One of the voltage is phase shifted by 180 degrees, which allows to reach test voltage levels higher than the test transformer nominal ratings. The manufacturer thus needs 2 test transformers

in his works and one for on-site tests.

Tests at 180 Hz

In order to keep the instruments transformers in the circuit, tests have to be carried out with a higher frequency, for example 180 Hz.

The solution

There are 4 different tests and configurations to be realised. Table 1 gives the configuration details of the components.

Two SF6 insulated test transformers (TES) are used. A regulating transformer (STL) and a frequency converter (FC) feed either one TES for the PD tests and for the 180 Hz tests, or feed both TES during the „test across open switch“.

For the on-site tests, the second TES can be flanged directly to the GIS and is supplied by a special control unit, the TKMT.

It can be equipped with a SF6 - air bushing for test objects which cannot be flanged directly to a GIS bus. The bushing also allows an easy HV calibration (e.g. by independent lab).



Test system in the works with encapsulated coupling capacitor and connection flange.

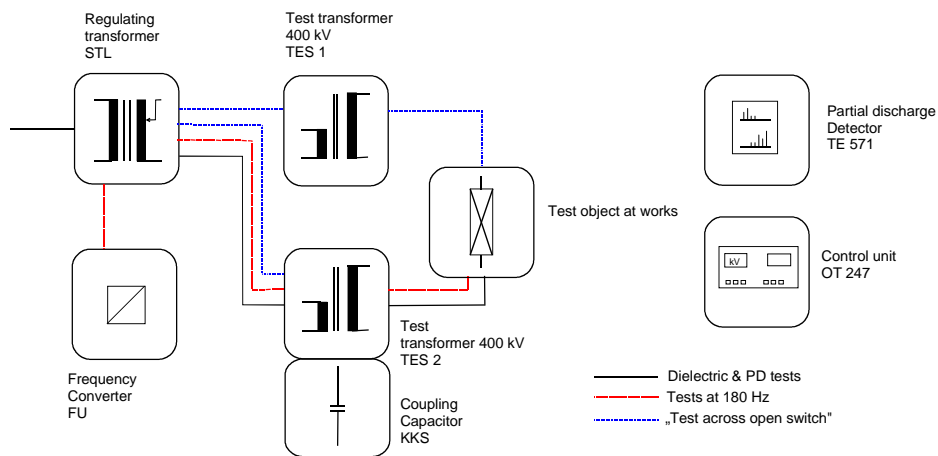


„On-site“ test system with SF6 - air bushing.

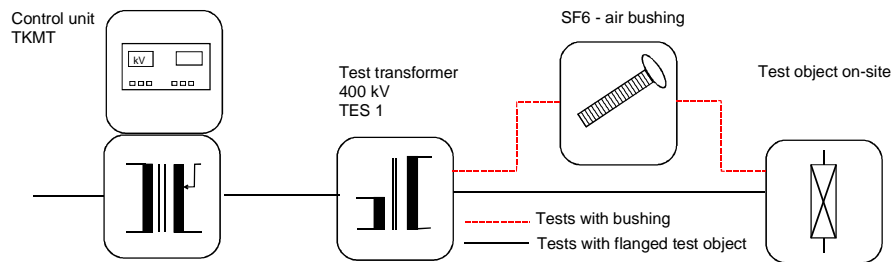


Control unit TKMT for on-site tests.

Block-diagram for test at works



Block diagram for on-site tests



Combination Diagram

Components		PD test	180 Hz test	Test across open switch	On-site test
Desk	OT 247	X	X	X	
	TE 571	X			
STL		X	X	X	
TES 1		X	X	X	
	KKS	X			
FU	180 Hz		X		
TES 2				X	X
TKMT					X
	DMI 551			X	X

Table 1

Test across open switch with both TES outputs phase shifted by 180 degrees

