

Frequency Variable Series Resonant Test Systems For GIS and GIL On-Site Testing



**THE ADVANCED SOLUTION FOR
HIGH VOLTAGE AC TESTING**

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General

agea-kull on site GIS test sets work according the series resonant principle. They are modular constructed and especially designed for the requirements of on-site testing. Easy to handle and robust reactors with the possibility of series and parallel connection of more units allow an optimised adaptation of the system to the load capacitance

The systems cover a wide load range and test frequencies above 100Hz prevent saturation of the instrument transformer cores. Therefore testing with installed instrument transformers and cable connections is possible.

The systems are in line with IEC 60060-3

Partial Discharge Measurements

The testing can be accompanied by a partial discharge measurement (conventional, non-conventional or UHF). The static frequency converter generates only four switching impulses per cycle which do not disturb the PD-pattern or can be suppressed by gating if a suitable measuring system is used.

Ambient Conditions

The test sets are designed to be operated at fine weather conditions all over the world - on the land or off shore.

Transient Protection

Discharges in SF6 can cause high transient impulses. Damping elements and a number of surge arrestors are installed to improve the withstand capability of the systems.

Transportation and Erection

Transport housings or containers enable a world-wide transportation by ship, truck or air freight. For the erection on site, only a common truck crane is required.

Design of Components

Reactor Coils

The bar core reactors are oil impregnated and built-in a hermetical closed resin cylinder. Up to four units can be stacked to increase the output voltage of the system. The reactors are of low weight design with fix inductance.

Exciting Transformer

Tank type transformers with surge arrestor protection and an automatic grounding are used to excite the resonant circuit. Voltage and power are adapted to the requirements of the system.

Frequency Converter

The converter generates a square wave voltage of adjustable frequency between 15Hz and 250Hz. This voltage energises the exciting transformer. Due to the series resonance principle, the test voltage is however of a perfect sin-wave shape. The system is tuned to resonance by varying the frequency.

Control Unit / Voltage Measurement

The control unit with touch screen panel is integrated in the frequency converter housing and enables automatic and manual testing. A separate computer stores the measured data and generates the test protocol. The high voltage is measured by a built-in peak voltmeter in collaboration with the high voltage divider which works at the same time as base load capacitor.

Damping Impedances

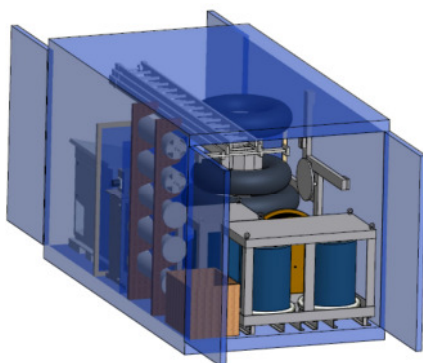
Are available in different diameters and lengths. They are of modular design and can be connected in series or parallel. They do not only protect the reactors from transients, but also work as a filter impedance to reduce the pd-level of the system. The active parts are covered with silicone to protect them from moisture and mechanical impacts.

Examples of Test Sets

540kV 10A Test Set

Converter	75kVA
Exciter	15kV 75kVA
Reactors	3x DSH1 30H, 180kV
Divider	600kV, 5nF
Frequency	92-250Hz

Max. Load	300nF	up to 180kV
	33nF	up to 540kV

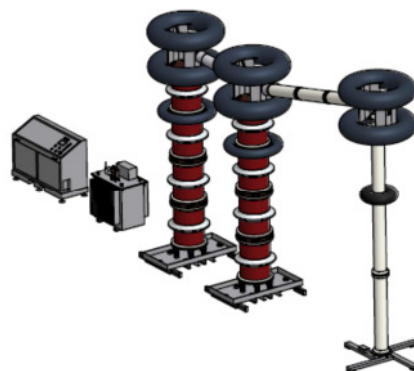


System in transport container

800kV 6A Test Set

Converter	150kVA
Exciter	25kV 150kVA
Reactors	8x DSH2W 200H, 230kV
Divider	800kV, 1nF
Frequency	50-250Hz

Max. Load	280nF	up to 230kV
	53nF	up to 460kV
	25nF	up to 800kV



System in 800kV test configuration