

Parallel Resonant Test Systems



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

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Parallel Resonant Test Systems

Application

Parallel resonant test systems are used as high voltage source for dielectric testing of medium voltage components with high capacitance as e.g.

- Generators and Motors
- Power Cables
- Capacitors
- Generator Bars

They can be designed for factory or on-site testing and are suitable for potential tests, C-tan δ -measurements and partial discharge measurements as well.

On-Site Testing

Transport frames, protection covers and transport housings enable easy shipping and the robust design make them insensitive against the rough environmental conditions on constructions areas.

The systems can be alternatively designed for air freight transportation or container-mounting.

Laboratory Use

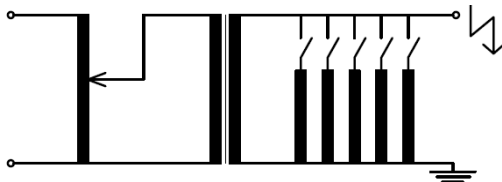
PLC control units allow remote controlled operation of the test sets, the collection of measuring data as well as automated step tests or long duration voltage stabilisation with timer function.

For aging and long duration tests, the systems will be equipped with an expansion vessel and a Buchholz-relay for additional safety.

Principle of Operation

The load capacitance, a high voltage transformer and a compensation reactor arrangement with selectable inductance are connected in parallel. This circuit is tuned close to resonance by changing the reactors inductance. The working ranges of the reactor steps overlap each other, so that a gapless compensation range is achieved.

As most of the load current is compensated by the reactors, the required input power is low.



Benefits

The user of *agea-kull* parallel resonant test sets with tapped compensation benefits from following advantages:

- input power approx. 10% of output power only
- low weight and designed for easy and frequent transportation
- robust, reliable and designed for the hard environment of construction areas, power plants and industrial factories.
- fixed ratio between output voltage and regulated voltage due to the parallel resonance principle
- no mechanical construction for core movement
- no base load required and testing of non capacitive loads with reduced power possible

Types of Test Sets

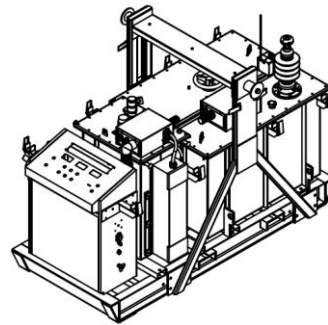
Compact Test Units

High voltage transformer, compensation reactors and a HV change-over-switch are incorporated in a common tank. For on-site use, the compact unit is mounted on a base frame, together with a regulating transformer and the control desk. A lifting triangle and transport covers enable safe transportation and storage.

Developed in the 1960ties, this kind of test set represents the classical design of *agea-kull* parallel resonant systems. Most of the built units are still in use and proof the reliability of *agea-kull* test equipment.

Example: PU30/330-35kV

Voltage: 0-35kV Load: 0-0.85 μ F Weight: 3.2t



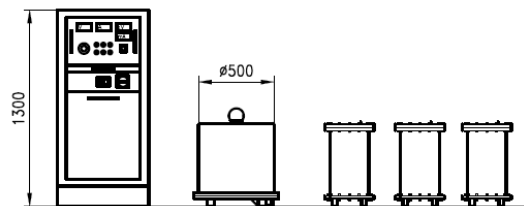
Systems with Separate Reactors

Air transportability and low components weight are the main features of this type of parallel resonance test set. Regulating transformer, high voltage transformer and several single cylinder type reactors are transported separately and connected together on-site. Such systems are very flexible and can be easily extended by adding of additional reactors.

The lowest transport weight can be achieved when bar core reactors of our DSH-series are used.

Example: PU12/80-25kV

Voltage: 0-25kV Load: 0-0.41 μ F Weight: 0.6t



Systems with Selectable Frequency

Using a sin-wave converter instead of the regulating transformer, it is possible to perform tests with other frequencies than 50/60Hz.

500Hz systems can be delivered for accelerated aging tests on power cables and reduced frequencies allow an extension of the load range of on-site units.

Frequency Tuned Resonant Test Sets

This kind of test set is tuned to resonance by changing the frequency. The system works always in the resonance point and has a three phase supply. Therefore the mains current is very low. The systems provide a wide load range and the lowest possible total weight.

Only one high voltage reactor is required, but the actual test frequency is determined by the load capacitance.