



Cesit Ingegneria S.P.A.
www.cesit.net

Commissioning and Diagnostics

HV, MV and LV Systems Commissioning

The Cesit Ingegneria S.P.A. team has been working in the energy sector for over 40 years, on electricity generation, transmission and distribution systems for the leading power generation companies, utilities and industrial complexes. With several decades of experience in the design, construction, commissioning, start-up, operation and maintenance of systems, we are a dependable partner and proven supplier of services, wherever Customers need a technical, practical approach to their requirements.

The high degree of know-how of our personnel and our extensive fleet of state-of-the-art measuring and diagnostic instruments enable us to conduct all the necessary tests and inspections to commission any type of high-, medium- or low-voltage system.



Circuit tests

- Primary injection testing of HV, MV and LV line modules, transformers and generators for the purpose of checking CT and VT ratio and verifying correct use of secondary systems and protection and measurement circuits and the alignment of differential protection devices
- Checking of correct installation of differential protection devices by means of primary injection with 400 A, 1000 A or 5000 A boosters
- Circuit testing prior to powering up the circuits of control and monitoring equipment
- Activation and testing of protection systems for generator sets, motors, transformers, lines and busbar systems

Transformer testing

- Insulation measurement
- On-load tap changer testing
- Measurement of winding resistance
- Measurement of short-circuit impedance
- Measurement of short-circuit inductance
- Measurement of no-load current consumption
- Transformation ratio measurement
- Measurement of the capacity and loss angle of bushing insulators
- Dielectric strength of transformer oil
- Dissolved gas analysis (DGA) of transformer oil
- Sweep Frequency Response Analysis (SFRA)
- Measurement of permeability of winding insulation paper

CT and VT testing

- Primary injection up to 5,000 A and 24,000V
- Polarity testing
- Insulation measurement
- Transformation ratio measurement
- Angle error measurement
- Magnetisation curve measurement
- Burden measurement

Circuit breakers and disconnectors

- Measurement of the opening and closing times of circuit breakers and disconnectors
- Testing of correct opening and closing cycles
- Inspection and mechanical testing of disconnectors
- Measurement of pole discordance
- Measurement of contact resistance
- Measurement of motor power consumption

MV and LV cable testing

- DC applied voltage tests up to 80 kV
- VLF applied voltage tests at frequency $f = 0.1$ Hz up to 54 kV
- Partial discharge measurement
- Measurement of loss angle $\tan \delta$

MV panel testing

- Applied voltage tests at industrial frequency up to 75 kV
- Measurement of auxiliary and control circuit insulation

Alternator testing

- Continuous low-voltage insulation testing of temperature detectors, bearings, supports and seals
- Insulation testing of rotor and stator windings
- Determination of polarization index
- Insulation testing with applied voltage
- Measurement of rotor and stator resistance
- Measurement of rotor impedance under deceleration and with machine stationary
- Measurement of shaft voltage and harmonic spectrum
- Reflectometry measurement

Measuring instruments

- Activation and testing of power measurement devices (measuring converters, power meters)

Earthing systems

- Measurement of soil resistivity
- Measurement of ground resistance
- Measurement of step voltage and touch voltage
- Measurement and testing of earthing mesh continuity

Asynchronous motors

- Insulation testing
- Determination of polarization index
- Insulation testing with applied voltage
- Measurement to detect bar failure on rotor squirrel cages
- Noise measurement

Railway installations

- Measurement of potential difference, of sections of tunnel, caused by stray current
- Continuity testing of protective conductors and equipotential bonding conductors
- Measurement of insulation resistance of return circuits
- Measurement of resistance of low-conductivity tunnel joints
- Testing of short-circuiting devices
- Measurement of total ground resistance and step and touch voltage