

WORLD LEADER IN TESTING

THREE INTEGRATED PLATFORMS ABLE TO RESPOND RAPIDLY AND EFFICIENTLY TO CUSTOMER REQUIREMENTS WITH EXCELLENCE IN QUALITY

The strength of a Group



CESI Group has three testing platforms distributed in Europe. We offer a broad range of testing services covering a comprehensive range of equipments (from low to extra high voltage). Platform specialisation provides customers with the best possible testing conditions and technical knowledge.

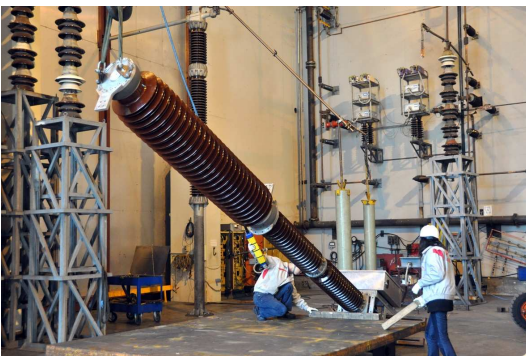
Excellent flexibility, constant sharing of know-how among different platforms, up-to-date facilities, responsive customer assistance during testing and a very broad offering of testing shifts to reduce booking time, makes CESI Group laboratories a very attractive prospect.

CESI boasts hundreds of satisfied Customers worldwide. The Group has a sales network of more than 15 agents to maintain in close contact with its customers and is always ready to collaborate in finding the optimum solution to their needs. All CESI Group laboratories are accredited in compliance with ISO/IEC 17025 standards and are members of STL. In the low voltage testing field, IPH is additionally accredited by ASTA BEAB as per ASTA Publication No. 1, as well as being an ALPHA member laboratory of the LOVAG organisation.

CESI Group is **independent**,
as no single shareholder or group controls the Company.
CESI Group is **third party organisation**,

as it is not involved in the manufacturing and utility businesses.

CESI Group provides **high quality** services, issuing documents that are recognised worldwide (Type Test Certificates, Type Test Reports and Test Reports)



CESI

Excellence in high power techniques and pre-qualification tests on high voltage cables

Established in 1956 by Italy's leading electromechanical manufacturers and utilities, CESI began its life as a testing company and set up its own large-scale test facilities.

From the outset CESI has pursued a policy of development designed to keep it at the state of the art. A founding member of STL, in 1969 CESI was the first company to apply the synthetic method in circuit-breaker testing in an industrial context. Today, following its acquisition of IPH and FGH, two German laboratories, CESI runs the world's most extensive international testing group.

Two of the Group's key strengths are the expertise of its technical staff and the flexibility of its laboratories, which can cater for both non standard tests and unexpected occurrences.

Our success draws on 50 years' experience.

Professional services and facilities

CESI provides a reliable point of reference in the testing market to satisfy the product qualification requirements of electromechanical equipment manufacturers.

Type/development testing and third-party inspections are key factors to success on international markets.

CESI high power facilities test the capability of electrical equipment to withstand the electrodynamic and thermal stresses generated by high currents occurring in service due to unexpected faults, as well as verifying the capability of circuit-breakers to clear short-circuit currents.

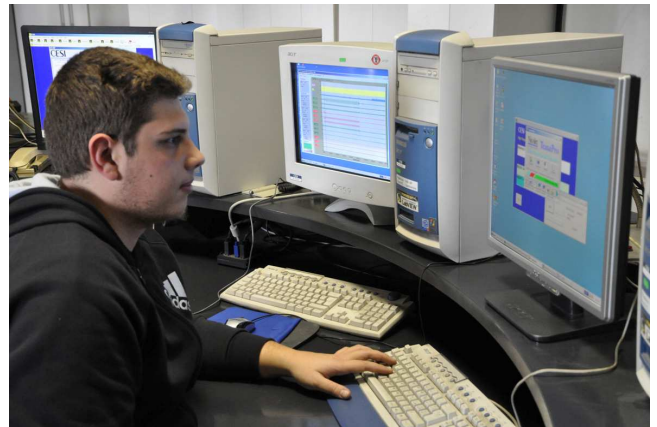
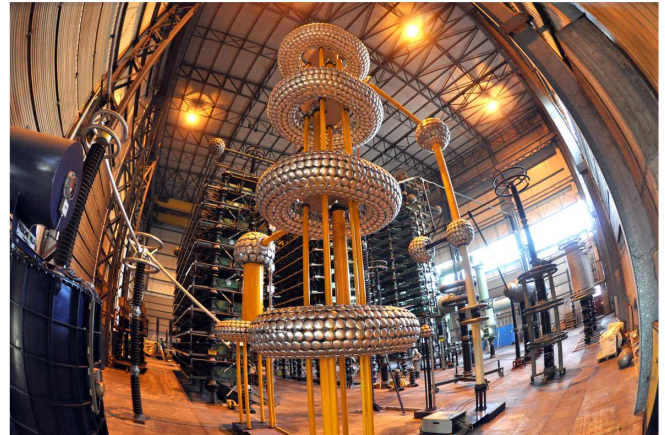
- A 2.000 MVA 50/60 Hz short-circuit generator, available for direct testing, adequately covers more than the 95% of requirements in the MV short-circuit testing field.
- Single and three-phase synthetic circuits for short-circuit tests on HV circuit-breakers are available up to an equivalent power of 22 000 MVA (i.e. full pole testing of a 420 kV – 70 kA circuit-breaker) with current injection parallel circuits and 30 000 MVA with voltage injection circuits.

CESI has a special set up to pre-qualify power cables rated up to 500 kV.

The Group also operates the high performance Rondissone facility, which provides short-circuit tests

on 420 kV and 245 kV power transformers rated up to 800 MVA.

The ISMES seismic laboratory conducts state-of-the-art tests on equipment subject to vibration and seismic stresses.



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FGH

Excellence in high voltage and pollution

FGH was established in 1921 by German utility companies, with a mission to improve power supply efficiency and safety through research. Today FGH Engineering & Test is one of the world's most reliable independent test laboratories.

The laboratories run by FGH offer services catering for the entire HV electrical testing area.

Our key strength is the implementation of type tests on all electrical devices and components, for the purposes of improving the safety of the supply of electric energy from power stations to people's homes.

As an STL member laboratory, many companies have for years placed their trust in our competence by commissioning us to test their products. Our main customers are both manufacturers of electrical equipment and systems and power grid operating authorities.

Up-to-date facilities

FGH high-voltage laboratory can perform all types of dielectric tests up to the 1100 kV level, in both normal and special conditions, including artificial rain and extreme climates.

At our modern cable testing sites, we conduct type- and pre-qualification tests, as well as long term tests and tests to assure the quality of the manufacturing process.

FGH also has one of the **most well-equipped pollution test laboratories in the world**. This versatile laboratory can conduct tests under the most varied environments, including pollution, salt fog, icing and extreme climatic conditions. Power frequency voltage up to 600 kV and direct voltage up to 650 kV are available.

Our experts will gladly advise on tests in accordance with particular specifications.

FGH has been conducting high-voltage and high-power tests at its Mannheim site since 1967. We are accredited by DKD (the German Calibration Service) to calibrate high-voltage measuring equipment both in our laboratory and on-site. We also offer consulting services and prepare expert technical reports on electrical components and energy supply networks.

We conduct in-factory inspections to verify customer tests at their facilities. FGH independent specialists also perform assessments of damage, check the condition of equipment and prepare

technical reports. Our staff have many years' experience and specialist competence, guaranteeing unparalleled quality and an impartial testing service.



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IPH

Excellence in low-voltage, medium-voltage and high-voltage switchgear and cables

IPH was established in 1956 by a group of German industrial partners, with a mission to perform basic research and testing in close to real conditions for power supply development and electrical equipment manufacturing purposes.

Over the years IPH has gradually extended its testing facilities and range of services, which now comprise tests on HV, MV and LV switchgear, in addition to consulting and expert advice. Today, IPH is the world's leading provider of LV DC and on-site cable testing.

Over the past decades, IPH has constantly built up its testing service and customer base, from companies in Germany and Europe, to a broad international portfolio today.

IPH offers a wide range of innovative services for the electric power industry by using powerful, modern facilities. Highly qualified and committed staff with extensive experience work to provide customer-oriented services.



IPH conducts type and development tests on electrical equipment to specified international standards and/or customer requirements, and provides on-site tests for cables and transformers as well as consulting and fault analysis.

Laboratory and on-site tests



Major facilities of IPH include

- 1200 MVA grid power and 2300 MVA short-circuit generator power.
- A screened HV hall with 2.4 MV impulse voltage generator, 600 kV test transformer and a outdoor bay for pre-qualification test on high voltage cables.
- **The largest mobile cable testing facility** in the world for test voltages up to 500 kV and test currents up to 240 A.
- A diode rectifier module with 3-phase bridge connection to comply with all DC test standard requirements.



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