The ultimate solution for total ASDS

Last Generation electric Motor Test Bays.

In partnership with ABB, CESI has developed an innovative and flexible test bed facility for large adjustable speed drive systems. In this area it's possible to carry out tests and checks on transformers, MV electric motors and Variable Speed Drives of various capacities along with measuring the performance of customer's full system.
Type and routine tests are performed according to national and international standards and R&D tests can be managed as well. In these bays it's possible to carry out accurate assessments and functionality tests for industrial electric motors/VSD, with a complete service check attesting efficiency at all regime levels. A focus is well put on everything related to energy recovery by means of AFE (Active Front End) regeneration toward the grid with low harmonic distortion and unitary power factor.
Two types of test arrangements are possible:

- Back to Back test up to 45 MW (or higher)
- Full load test up to or 30 MW.

CESI is worldwide leader in Testing and Certification of electromechanical components; test certificates and report by CESI are internationally recognized by utilities and electromechanical manufacturers. CESI is a well-recognized Certification Body according to EN45011 and performs Inspections according to ISO/IEC 17020 Standard. CESI, and the subsidiaries IPH and FGH are all accredited in compliance with ISO/IEC 17025.

CESI

Trust the Power of Experience

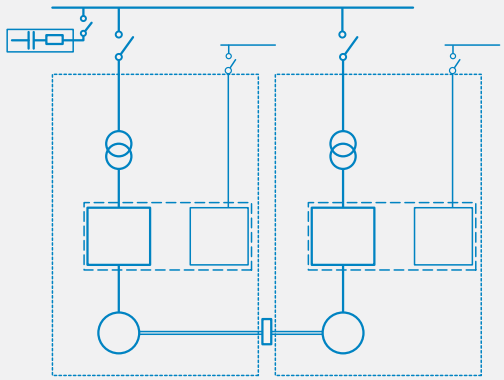
Testing • Consulting • Engineering • Environment

Last Generation electric Motor Test Bays

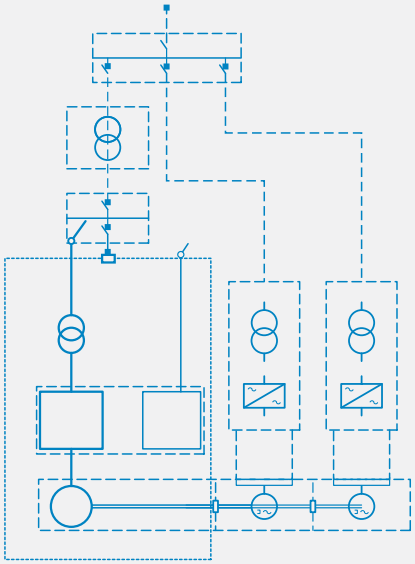
The bays have a computerized motor testing room with performance test certification, thanks to which test performance is safely guaranteed with high quality test and measurement data.
Two types of test arrangements are possible:

- Back to Back test in case of two regenerative VSD systems.
- Full load test with load machines when the VSD system is not regenerative.

Back to Back



Full load test (with load machines)



A thorough testing session shall be preferably held on the complete variable speed drive systems line-up before delivery at site in order to:

- verify that the system design and integration have been properly done;
- ensure that the required performances are met;
- check that the protection devices and settings work effectively;
- test adjustable speed drive system (ASDS) rated power and any overloads the system is designed for;
- run the temperature rise tests with the actual distorted currents;
- evaluate system efficiency (full load system test is the only way to obtain the real losses of the system, and it is also the only way to measure the real temperature rises before commissioning).

CESI Testing Area

Main features:

- Two test bays, 4000 sqm facility with two inertial platforms for rotating machinery.
- Rotating machinery inertial platform. A detailed mechanical analysis and study was carried out to determine correct sizing of iron and concrete necessary to compensate for motor vibrations, providing a perfectly isolated area for all tests.
- Back to Back test, up to 45 MW.
- Full load combined test, up to 30 MW.

Test Bay – Back to Back Testing up to 45 MW

- Back to Back test for two regenerative VSD systems up to 45 MW shaft power or more.
- 1900 sqm area.
- 240 sqm inertial platform for rotating machinery.
- Supply voltages: standard MV levels and higher on request.
- Testing procedures for:
  - performance measurements at full load;
  - vibrations;
  - noise.

Additional services

Climatic Tests

Tests	Ratings
Damp heat according to IEC 60068-2-30	Up to 500 kV
Dry heat according to IEC 60068-2-2	
Cold according to IEC 60068-2-1	
Ice test (IEC 62271-102)	Up to –30 °C

Pollution Tests

Tests	Ratings
Pollution test (IEC 60507)	Up to 600 kV AC
Pollution test (IEC 61245)	Up to 600 kV DC
Tracking and erosion test (IEC 62217)	Up to 120 kV
Weather ageing test (IEC 60099-4)	Up to 120 kV
Humidity test (IEC 61442)	Up to 120 kV 1 ph; 45 kV 3 ph
Salt fog test (IEC 61442)	Up to 120 kV 1 ph; 45 kV 3 ph

Structural Tests

Tests / Applicable Standards	Laboratory general characteristics		
IEEE / IEC / EDF / TRANSELEC / MIL STD BELLCORE / ASTM / LR / RINA ENEL / EDF	Laboratory dimensions		56 x 14 m
	Table dimensions		4 x 4 m (holes M 30 at 0.3 x 0.3 m)
	Max specimen dead weight		300 kN
	Bridge cranes		2 (200/100 kN)
	Height under hook		11.35 m
	Oleodynamic plant:	– flow rate	1000 l/min
		– rated pressure	21 MPa

EMC Tests

Tests	Ratings
Radiated Emission and Susceptibility (MIL 461– RTCA DO160 – EN55022– EN61000-4-3)	From 10 kHz to 40 GHz
Conducted Emission and Susceptibility (MIL 461- EN55022- RTCA DO160)	From 10 Hz to 400 MHz
Indirect lightning effect (RTCA DO160 Sec. 22)	3 kV and 5 kA
Electrostatic Discharge (MIL 461 – EN61000-4-2)	Up to 25 kV

Product Certification services

EX & IECEx Certification For equipment and systems (e.g. electric motors, pumps and so on) intended for use in potentially explosive areas. Notified Body for ATEX Directive 94/4/CE authorized by Italian Government – Ministry of Economic Development. ExCB (Certification Body) and ExTL (Testing Lab) according to IEC-Ex Scheme.

ATEX services Assessment of industrial plants related to the potentially explosive atmosphere (in Italy under requirements of D.Lgs. 81/08).

ATEX and IECEx services in CESI:

- Tests in explosive mixture (Explosion proof and Flameproof tests);
- Impact tests;
- Static overpressure tests;
- Ex-i spark ignition tests;
- Ingress Protection Tests (IP code);
- Environmental Exposure Tests;
- Thermal Tests;
- Dimensional Checks;
- Non-Electrical Product Tests;
- CESI Explosion proof laboratory is accredited according to IECEx Certification Scheme and according to ATEX Directive 94/9/CE.

Electric & Dielectric tests on HV, MV and LV Equipment

Type conformity certification of electrical equipment according to national and international standards and to technical specifications, following different schemes (LV, MV, HV).

Tests	Ratings
Dielectric test (IEC 60060-1)	AC up to 1.2 MV
	LI up to 3.5 MV
	SI up to 2.5 MV
	RIV/Corona test up to 600 kV AC
	DC up to 1.2 MV
AC short-circuit current tests	Up to AC 120 kA, max. 3s, 50 Hz, 1-&3-phase
DC short-circuit current tests	Up to DC 120 kA sustained & 200 kA peak
Temperature rise test	Up to AC 40 kA, (16.7 – 50 & 60 Hz)
Internal arc tests	Up to AC 65 kA, 50 Hz, 690 V
Electrical and mechanical endurance tests	Up to AC 6 kA, 50 Hz
Degree of protections and climatic tests	IP1X, 2X, 3X, 4X (1)
	IPX1, X3, X4, X5, X6 (1)
Dielectric tests	Up to 12.3 kV (test voltage)

Product Certification for HV, MV and LV equipment

Inspections to testing (test witnessing) Third party inspections to tests performed in external laboratories, according to national and international standards and to technical specifications on Low, Medium and High Voltage equipment.
In production inspections (quality assurance) Assessment, control and surveillance of suppliers according to customer's tech specs.

CESI's Business Areas:

- Testing, Inspection and Certification services for HV, MV and LV electrical components;
- Engineering and Consulting services for power systems and markets, transmission and distribution grids, generation plants, renewable and hydro plants;
- Environmental Consulting and Structural Engineering services for Energy, T&D, Industry and Transport sectors;
- Production of Solar Cells for Space and Terrestrial (CPV) applications.

For further information please visit **www.cesi.it** or e-mail at **info@cesi.it**.

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