Basque Electrical Laboratories Alliance

bela

Power Testing Solutions

BELA ELECTRICAL LABORATORIES

BELA is an association of owners of accredited and independent testing laboratories located close to Bilbao, in the North of Spain.

BELA´s members are:

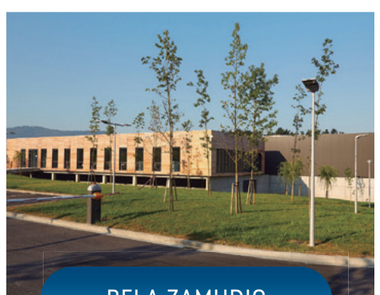
- ARTECHE Centro Tecnológico, BELA-Mungia
- ORMAZABAL Corporate Technology, BELA-Boroa
- TECNALIA Research & Innovation, BELA-Zamudio

Our mission is to perform development and type tests to accelerate the technological development of our customers and improve their competitiveness.

At BELA, we continually invest in new equipment to offer the best resources for testing in the always evolving electricity T&D sector. Cutting-edge technologies, as well as a high degree of automation, ensure effective data collection throughout all tests. This gives valuable information to comprehend the performance of the equipment during tests.

Our experienced test engineers understand both the equipment and the standards it must comply. They can help customers to interpret the effects of tests on their equipment and the causes causing them. This is key to quicker improve manufacturer designs.

BELA laboratories are active in several technical committees, which enables us to keep up to speed with test procedures and to provide state-of-the-art information on standard developments.



BELA-ZAMUDIO

BELA-BOROA

BELA-MUNGIA

EXPERIENCED, ACCREDITED AND INDEPENDENT LABORATORIES

30 years of experience

BELA brings together the facilities and expertise of three testing laboratories that complement to each other to offer a wider range of tests to international manufacturers of electrical equipment.

Our long-standing experience in the fields of high power, high voltage, temperature-rise, and environmental testing enables us to address our customers testing needs. We implement testing programs that meet individual demands for standardized type and development tests.

Worldwide recognition

BELA laboratories are accredited by ENAC - the Spanish accreditation body member of ILAC- to perform internationally recognized tests according to IEC 17025. We provide our customers with test reports globally accepted - an essential competitive advantage for the international marketing of their products.

Impartiality and confidentiality

The IEC 17025 accreditation recognises the technical competences of BELA laboratories to perform tests and guarantees the impartiality and confidentiality for all tests they perform.

As independent testing facilities we perform tests for external customers as well as for ORMAZABAL and ARTECHE. At all times, laboratories personnel are free from any undue commercial, financial and other pressures which may influence their technical judgement.

BELA ensures that all tests are carried out in an independent, neutral and non-biased manner.

- TEST PORTFOLIO AND EQUIPMENT OVERVIEW

Power test laboratories for:

- » Short-time current withstand test.
- » Short-circuit making and breaking tests.
- » Making and breaking of active loads tests.
- » Making and breaking of capacitive loads tests.
- » Internal arc test.

High voltage laboratories for:

- » Lightning impulse test.
- » Switching impulse test.
- » Chopped impulse test.
- » Power frequency voltage test.
- » Partial discharge test.
- » Radio Interference Voltage (RIV) test.
- » Measurement of capacitance and dissipation factor.
- » DC dielectric tests.
- » Dielectric tests in climatic chamber.

Temperature-rise laboratories for:

- » High-current tests at ambient & high temperature.
- » Short term internal temperature-rise tests.
- » Long term internal temperature-rise tests.
- » Measurement of the resistance of the main circuit.

Environmental laboratories for:

- » Simulation of extreme environmental conditions and temperatures, -45 ºC to 85 ºC.
- » Corrosion test.
- » UV test on silicon rubbers of composite insulators.
- » Flammability test on insulating materials.
- » Salt fog test.

We issue test reports based on tests carried out strictly in accordance with IEC standards or customer's specifications. A full overview of the standards according to which we are accredited is available on our Web site: www.bela-labs.com/labsaccreditations.html. Further standards on request.

BELA provides extensive testing facilities for the development and certification of low, medium and high voltage equipment.

LV	MV	HV	UHV
FEEDER PILLARS			
PANELS			
DISTRIBUTION BOARDS			
BUSBARS			
PF CORRECTION BANKS			
ENCLOSURES			
POWER CONVERTERS			
FUSE BOARDS			
SMART METERS			
RELAYS AND PROTECTION			
SWITCHGEAR			
FUSES			
TRANSFORMERS			
REACTORS			
PACKAGE SUBSTATIONS			
CIRCUIT BREAKERS			
SWITCHES			
CAPACITOR BANKS			
	CUT-OUTS		
	RECLOSERS		
	EARTH SWITCHES		
RESISTORS			
DISCONNECTORS			
VOLTAGE DETECTORS			
INSTRUMENT TRANSFORMERS			
LIVE WORKING EQUIPMENT			
	CABLES		
	INSULATORS		
	INSULATED BUSHINGS		
	OVERHEAD LINES FITTINGS		

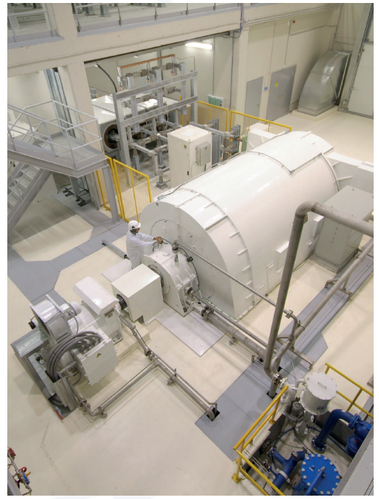
- TESTING CAPABILITIES

POWER TESTING_

HIGH POWER LABORATORY

The high power laboratory is equipped with a short circuit generator rated at 2,500 MVA (3-phase) that can operate at 50 and 60 Hz. The max. voltage output is 41.5 kV and max. current 40 kA / 3 s (MV) and 80 kA / 1 s (LV).

High Voltage Switchgear	
Ability to withstand short-circuits	40 kA / 3 s
Short-circuit making and breaking	16 kA / 40.5 kV // 20 kA / 36 kV // 31.5 kA / 24 kV // 40 kA / 12 kV
Making and breaking of active loads	up to 2,000 A / 40.5 kV
Making and breaking of capacitive loads	up to 100 A / 40.5 kV
Internal arc	40 kA / 1 s
Power transformers	
Ability to withstand short-circuits	up to 20 MVA / 36 kV // up to 25 MVA / 24 kV
Low Voltage Switchgear	
Ability to withstand short-circuits	80 kA / 1 s



MEDIUM POWER LABORATORY

The medium power laboratory is equipped with a 3-phase short circuit transformer rated at 300 MVA, 220/3÷38 kV and 50 Hz. The max. voltage output is 38.5 kV and max. current 31.5 kA / 1 s (MV) and 130 kA / 1 s (LV).

High Voltage Switchgear	
Ability to withstand short-circuits	31.5 kA / 1 s
Making and breaking of active loads	up to 800 A / 38.5 kV
Making and breaking of capacitive loads	up to 100 A / 38.5 kV
Internal arc	25 kA / 1 s
Power transformers	
Ability to withstand short-circuits	up to 15 MVA / 30 kV
Instrument transformers	
Ability to withstand short-circuits	130 kA / 1 s
Low Voltage Switchgear	
Ability to withstand short-circuits	130 kA / 1 s

HIGH VOLTAGE TESTING_

ULTRA HIGH VOLTAGE LABORATORY

Test type	Max. Voltage
Impulse testing	
Lightning impulse	3.5 MV
Switching impulse	2 MV
AC testing	
Dry	1.5 MV, 50 Hz
Wet	1.5 MV, 50 Hz
Partial discharge & RIV testing	1.5 MV, 50 Hz-120 Hz
Capacitance and tan δ testing	1.2 MV, 50 Hz-120 Hz

Dimensions: 54 m length x 30 m width x 27 m height (Faraday cage).

HIGH VOLTAGE LABORATORY

Test type	Max. Voltage
Impulse testing	
Lightning impulse	1.8 MV
Switching impulse	1.1 MV
AC testing	
Dry	550 kV, 50 Hz
Wet	550 kV, 50 Hz
Partial discharge & RIV testing	300 kV, 50 Hz
Capacitance and tan δ testing	550 kV, 50 Hz
DC testing	
Dry	100 kV
Wet	100 kV

Dimensions: 20 m length x 14 m width x 12 m height (Faraday cage).

MOBILE TEST EQUIPMENT

Type of Source: Variable Frequency Resonant Test Unit.

Ready-to-go test trailer for on-site commissioning tests on HV underground and submarine cables and gas insulated substations. Capacity to energize cables from 45 kV to 400 kV rated voltage and maximum lengths up to 12 km (*). Possibility of testing higher voltage cables and longer lengths using various resonant systems through collaborative agreements with other entities.

Ratings: 260 kV, 80 A, 20-300 Hz.

Tests performed:

- Voltage withstand tests.
- Partial discharge measurement (off-line and on-line).
- Oversheath test.
- Measurement of electrical resistance of conductor and screen.
- Line impedances measurement.
- Capacitance measurement.
- Tan Delta measurement.

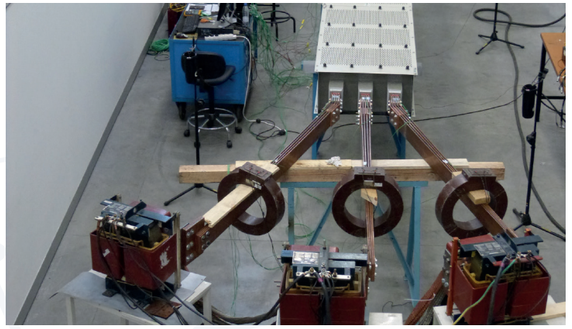
(*) Depending on the capacitance of the cable.

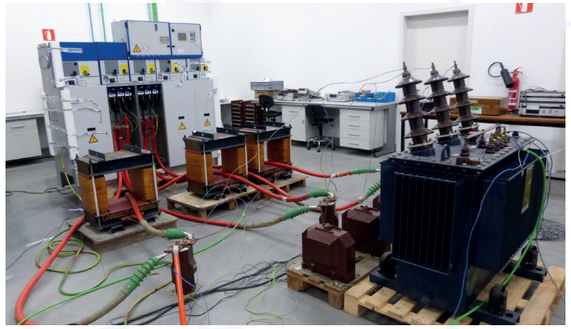
TEMPERATURE-RISE AND ENVIRONMENTAL TESTING_

TEMPERATURE-RISE LABORATORY

High-continuous current up to 12 kA / 3-phase (50 Hz/60 Hz) for temperature rise tests. Temperature-rise tests can be carried out at ambient or high temperature in large climatic chambers. 2 test bays for testing of all kind of industrial LV equipment and MV switchgear, cables, transformers, etc.

- **Dimensions of Main Test Bay:** 12 m length x 5 m width x 15 m height.
- **Dimensions of Secondary Test Bay:** 15 m length x 6 m width x 10 m height.





ENVIRONMENTAL LABORATORIES

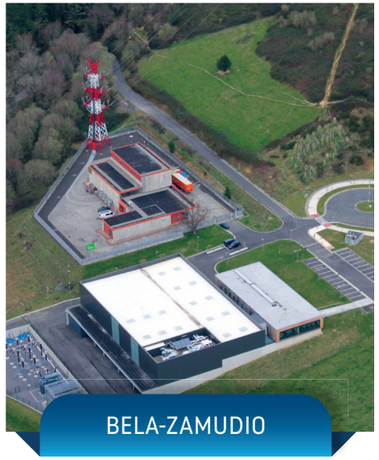
- **Large climatic chambers:**
  - » Chamber 1 (4.2 m length x 3.0 m width x 2.6 m height): Temperature: -45 to 85 ºC; Humidity 10 to 98 %.
  - » Chamber 2 (5.5 m length x 4.0 m width x 4.0 m height): Temperature: -25 to 70 ºC.
- **Salt fog chamber** (2.5 m length x 2.5 m width x 1.5 m height) for testing of polymeric HV insulators according to IEC 62217.
- **Dust, salt spray corrosion chambers.**
- **1 chamber for UV test** on silicon rubbers of composite insulators.
- **1 chamber for flammability tests** on insulating materials.

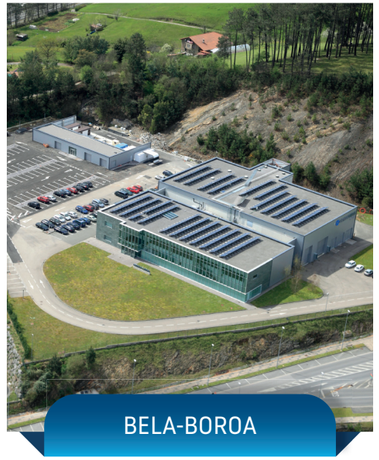
- LABORATORY LOCATIONS

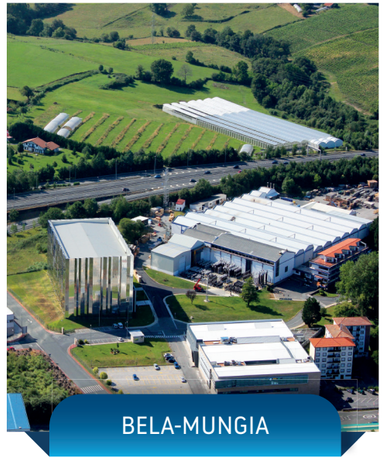
BELA-ZAMUDIO
Parque Científico y Tecnológico
de Bizkaia,
Laida bidea - Edificio 413
48170 Zamudio (Bizkaia)
SPAIN

BELA-BOROA
Parque Empresarial Boroa,
Parcela 24
48340 Amorebieta (Bizkaia)
SPAIN

BELA-MUNGIA
Derio Bidea 28
48100 Zabalondo (Bizkaia)
SPAIN


BELA-ZAMUDIO


BELA-BOROA


BELA-MUNGIA

We provide the testing services you need!

GET IN TOUCH

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