

CASE

STUDY

70kWh Storage & STATCOM
STORE PROJECT: High Temperature Batteries



STORE is a research project lead by Endesa Generación (belonging to the group ENEL), along with six participating companies from the electrical sector and various universities and development centres.

The aim of Endesa is to diversify the generation mix by integrating pumping technologies, batteries and other storage technologies which enable higher generation efficiency and energy management. Ingeteam's objective has been to design an advanced, hybrid system associated to the existing diesel generation plant.

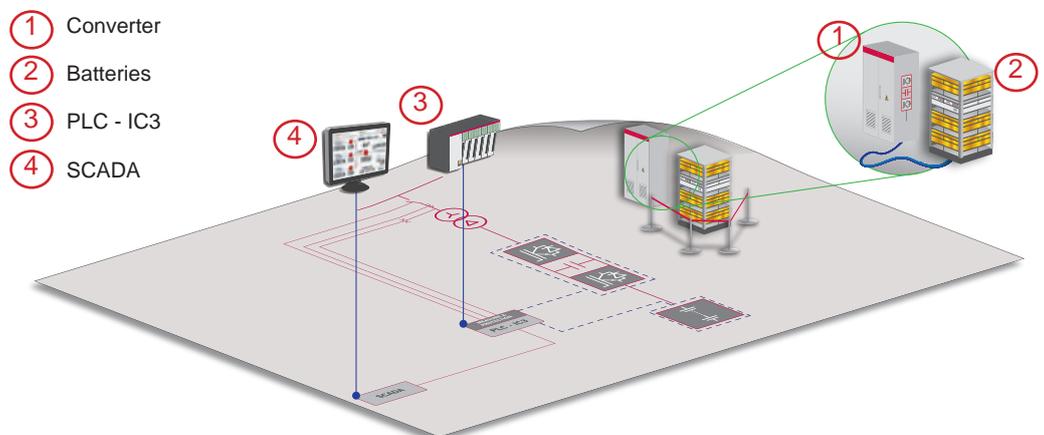
- Ultra-rapid response energy storage system based on super-capacitor technology, with a peak capacity of 4 MW for up to 6 seconds.
- **Slow response storage** system based on high-temperature batteries (ZEBRA) with up to 100 kW of power.

This Case Study describes the Slow Response storage solution .

STATCOM & Energy Storage System with high temperature batteries

Applications:

- Tests with high temperature batteries in slow response storage applications.





*Supplied as an integrator



INGETEAM® Equipment Supplied for Laboratory Tests

- 1 x INGEGRID SH-B Power Conversion System (PCS), air-cooled, LV 400 (400V 156kVA 100kW).
- 1 x high-temperature battery rack. *

Services Provided

- Electrical and electronic system specification.
- Power flow simulation and models.
- SCADA monitoring system configuration.
- Comprehensive system tests in the Ingeteam Power Electronics laboratory.

Others

Ingeteam's contribution has been to design, manufacture and test the storage system using high-temperature batteries.

- Z37-620-ML3X-38 batteries were used, with a rated voltage of 619 V and 38 Ah capacity.
- The total energy stored was 70.566 kWh (3 modules x 38 Ah x 619 V)
- The usable energy was 49.396 kWh (70% depth of discharge (DOD) at 0.5C or 25 kW)
- Maximum discharge power at 0.5 C (2 discharge hours) was 35.530 W