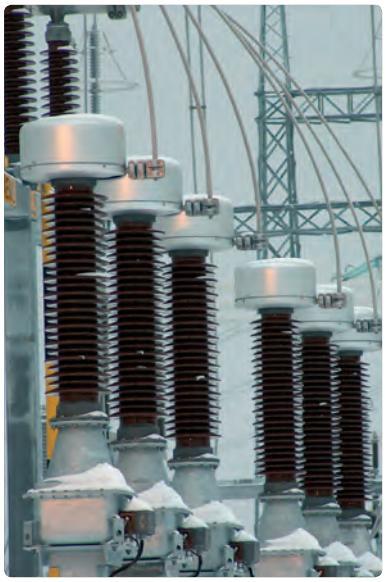
CASE STUDY

3MWh Storage & STATCOM
Aldea de San Nicolás (Spain)



Applications:

- Managing the line's demand peak (peak shaving).
- Frequency Regulation.
- Voltage Control.
- Reduce / eradicate losses in short-term supply (voltage dips).

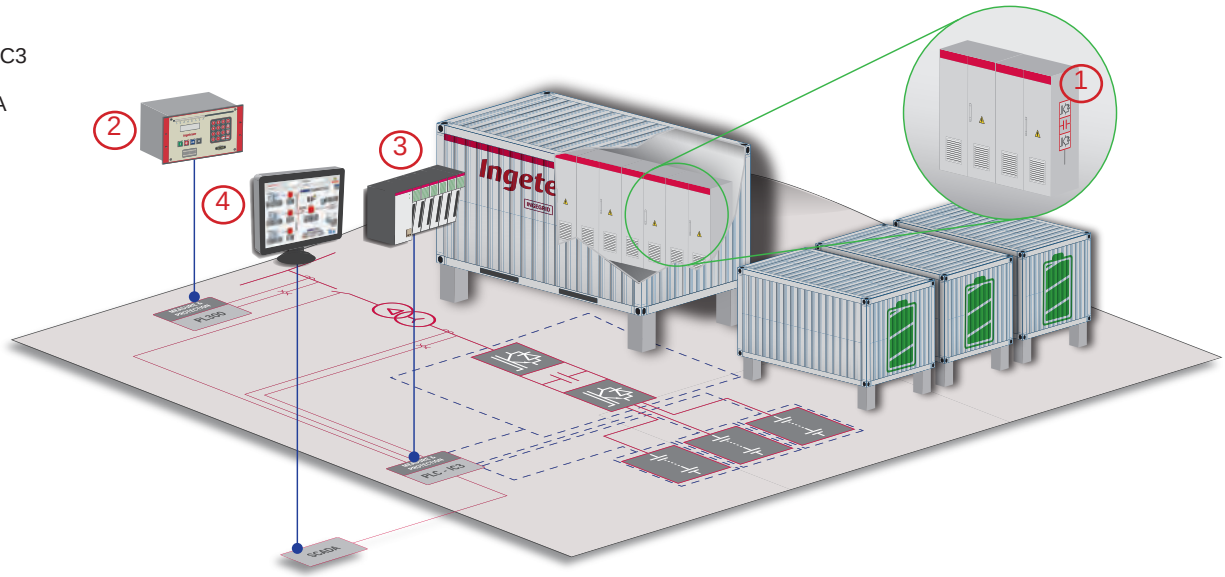
This is the first electrical storage plant in Spain, created by Endesa and located in the town of La Aldea de San Nicolás (Gran Canarias), one of the Spanish islands in the Atlantic Ocean.

Ingeteam's contribution has been the design, manufacturing, testing, assembly and commissioning of a smart storage system built into an airtight, transportable container, ensuring the least possible environmental impact in the area surrounding the plant, as well as supplying a totally "closed" system tested in factory, minimising installation and commissioning times. The selected storage technology for this project was Lithium-Ion batteries.

The system was installed by Endesa in 2013 with the aim of managing the line's demand peak and using it for frequency regulation and voltage control.

STATCOM and Energy Storage System with Lithium Ion Batteries

1. Converter
2. PL300
3. PLC - IC3
4. SCADA



www.ingeteam.com
ingegrid.info@ingeteam.com

Ingeteam

General Description

INGEGRID

INGETEAM® Equipment Supplied for the Installation

Converter

1 x INGEGRID SH-B: Power Conversion System (PCS), liquid cooled, LV 400.

- 1MW 3 x 335 kW DC inputs between 500 to 800V.
- The system makes it possible to manage the charging/discharging of three battery containers separately.
- The total energy stored in the batteries is 3MWh

1 x INGESYS IT: Local SCADA.

1 x INGESAS PL300: Protection relay.

Others

1 x 20 ft air-tight container.

1 x integrated fire prevention system (detection and extinction).

Services Provided

Electrical and electronic system specification.

System container specification.

Power flow simulation and modelling.

Electromagnetic modelling and simulations.

Substation automation system configuration and integration with the utility´s SCADA.

SCADA monitoring system configuration.

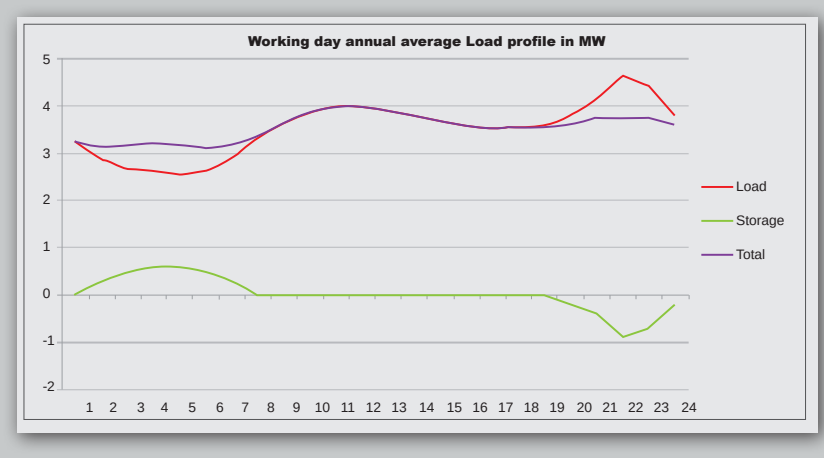
Comprehensive system tests in the Ingeteam Power Electronics laboratory , including the integration of one battery rack provided by the battery manufacturer.

Protection system.

Commissioning.

Others

Aldea de San Nicolás is situated on the western side of Gran Canary island and it is connected to the generation power plants via a single overhead transmission line which runs across a protected area - the Tamadaba Nature Park.



The village is located in an industrial area. Consumption using the existing line is at its maximum limit and investment into new infrastructure (generation plant, new transmission line, etc.) is restricted by both financial costs and by the environmental impact that it may have.

Under such conditions, optimising the use of existing energy has become the best solution to the problem: Storing energy at the Aldea de San Nicolas plant when demand is lower so that it can be supplied when demand is greater. It is therefore a fine example of peak shaving/load shifting.

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