

## Case study

Energy storage system - Casablanca, Morocco

### Nidec ASI supports Italian Foreign Ministry's efforts to go green

#### Project Summary

**Project:** Italian Consulate

**Client:** FIAMM

**Application:** Solar plant and energy storage

**PV Power Installed:** 40 kW

#### Nidec ASI's role

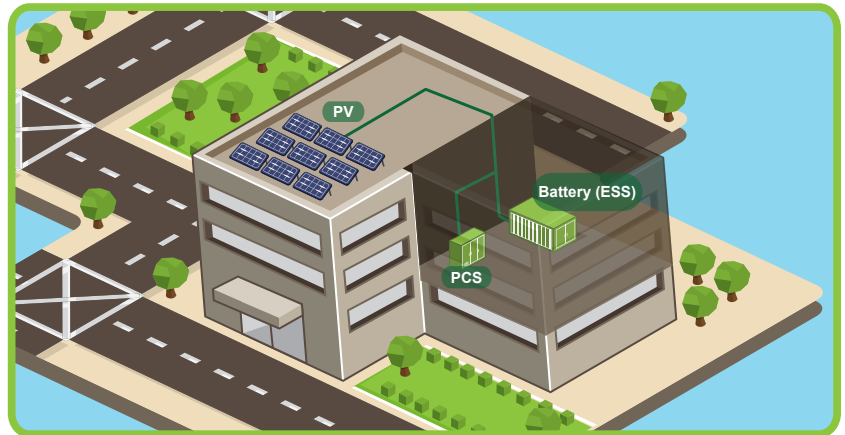
The Power Conversion System supplied by Nidec ASI enables the Italian Consulate to use power generated by its solar panels or pull electricity from the grid. Any excess power it generates is converted from AC to DC voltage and stored in three on-site batteries that can hold up to 23 kW each.

In the event of an outage, the system operates in "off-the-grid" mode, using power stored in the batteries to provide electricity to the consulate until grid power resumes. Nidec ASI's PCS includes a control system that can, if necessary, manage energy flow in real time to ensure stable power supply. The charging and discharging of the batteries, which are equipped with their own Battery Management System (BMS); are controlled by a dedicated DC/DC converter.

#### System components supplied by Nidec ASI

An air-cooled Power Conversion System (PCS), consisting of:

- a PCS Converter, including
  - an AC/DC converter in Active Front End configuration
  - a DC/DC converter for DC bus control
- a PCS Controller
- a Transformer



#### The challenge:

##### To increase renewable energy production and ensure a continuous emergency power supply

The power supply in developing nations, such as Morocco, is not always as reliable as some foreign consulates' needs demand.

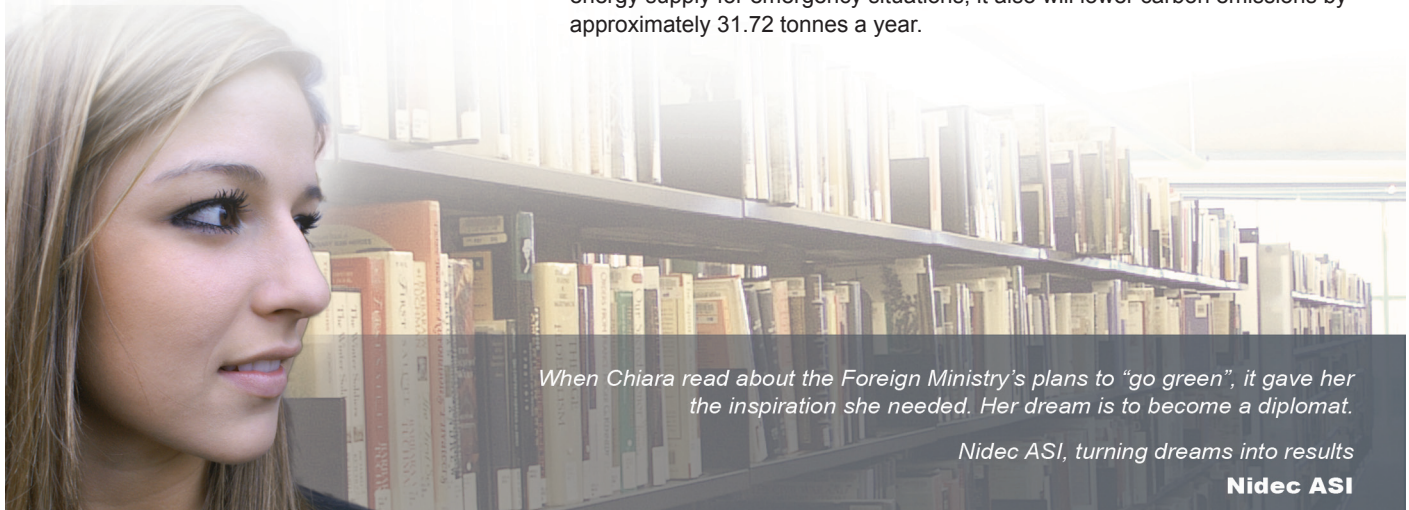
Wishing to reduce its own dependence on the local power grid, while also serving as an example to other consulates with aspirations of "going green," the Italian Foreign Ministry in Casablanca undertook a program to become a laboratory of sustainable energy production. In particular, it wished to create a source of renewable energy that could supplement the power it received from the grid and, in emergency situations, replace it.

#### The solution:

##### Solar production and energy back-up system

A green initiative launched by the Italian Foreign Ministry includes multiple projects to increase its energy independence, including a 40 kW solar plant installed on the roof of the Italian consulate in Casablanca, which connects to an Energy Storage system.

The solution not only provides the Italian consulate with its own independent energy supply for emergency situations, it also will lower carbon emissions by approximately 31.72 tonnes a year.

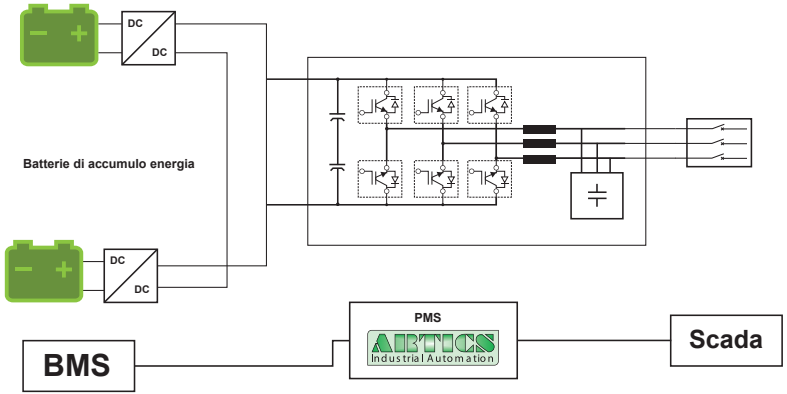


*When Chiara read about the Foreign Ministry's plans to "go green", it gave her the inspiration she needed. Her dream is to become a diplomat.*

*Nidec ASI, turning dreams into results*

**Nidec ASI**

Power Conversion System Converter technical data		
	Grid Side (AC voltage)	Battery Side (DC voltage)
Voltage	400 V	500 V
Power	30 kVA	30 kW
Cooling System	Air Cooled	



The Battery Management System (BMS) is linked to Nidec ASI's PCS controller which provides the control functions and monitoring tools to manage and optimize energy productions.