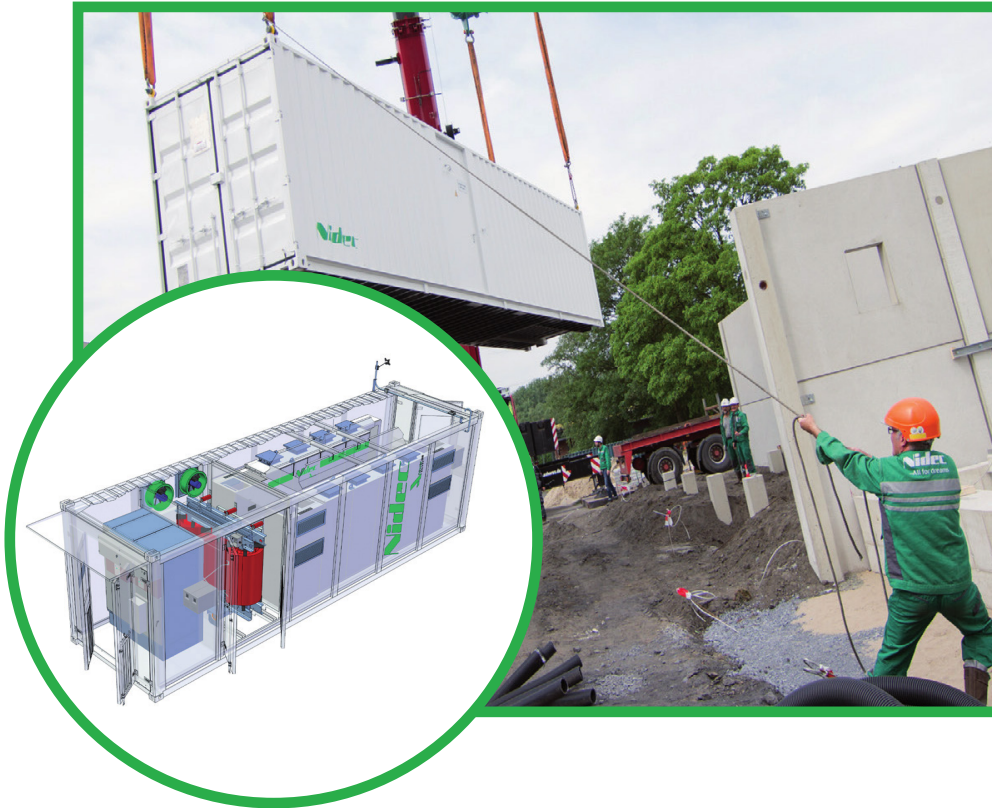


ES1000i

1000Vdc Inverter Battery Energy Storage

Nidec

All for dreams



Typical Users

- Solar & Wind Farm Operators
- Power Producers
- Transmission & Distribution System Operators
- Smart Microgrids

Advantages

- Max Efficiency: 98.84%
- EU Efficiency: 98.62%
- Indoor or outdoor application
- Effective integration of renewable sources
- Seamless integration

Nidec

ES1000

Ensure stable power supply with active grid support for greater reliability and efficiency

The basic building block of our Power Conversion Systems for Battery Energy Storage is our very own Active Front End inverter technology. The ES1000i was specifically designed for smart storage & microgrids. These multilevel inverters offer greater efficiency (European efficiency 98.62%, maximum efficiency 98.84%)

General Overview

Nidec has more than forty years of experience in the design and manufacture of inverters and Power Quality solutions. The ES1000i, our next generation smart inverter, is the building block of our advanced Power Conversion Systems (PCS) for Battery Energy Storage and smart microgrids. Thanks to its modular design we can quickly configure Power Conversion Systems for both large commercial & industrial plants as well as utility scale units with one of the highest power densities available on the market. This translates into very compact solutions that can be installed with minimal space requirements. Our PCS come in two standard configurations: the **Town & Country** and the **Urban Compact**.

ES1000:Town & Country – a modular cabinet based solution for internal and external installations (cabinets are NEMA 3R for external installation)

ES1000:Urban Compact – a fully containerized plug and play solution available in either 20' or 40' containers according to power requirements.

Specifically designed with the grid in mind

All of our Power Conversion Systems offer bi-directional power conversion and can be configured for both on-grid and off-grid use. Thanks to the sophisticated algorithms and open control platform the PCS seamlessly integrate with any Battery management System (BMS) regardless of type or brand. The PCS consists of fully integrated inverter, control system, transformer and switch gear (where needed) and was specifically designed to maximize grid performance offering primary, secondary and tertiary frequency regulation.

Enhanced grid availability

Primary frequency regulation can be met by either droop control or in isochronous mode, emulating a diesel generator. Furthermore, the PCS provides short circuit capability by injecting a controlled current whenever a short occurs, giving the grid's protection system time to react in order to avoid black outs. These parameters can be set to meet local grid standards and regulations.

INDUSTRIAL SOLUTIONS

Technical Data ES1000i

1000Vdc inverter for Battery Energy Storage

Real time control

One of the key features on our systems is their advanced control system which allows real-time control and includes functions for energy management as well as full power control, making it the ideal choice not only for primary frequency regulation but also for integrating renewables, like wind and solar, to the grid. The system allows for local and remote access and contains a full set of diagnostic tools for predictive and preventive maintenance including historic data logger and performance reports. It also seamlessly interfaces with existing control platforms which is key asset for power producers and grid operators.

The ES1000 series is designed to support the following functions:

- Black start operation
- Frequency regulation
- Voltage regulation
- Load balancing
- Peak shaving
- Spinning reserve
- Load levelling
- Demand management
- Load prioritization



Inverter size	Rated Power $T_{(RAW_WATER)=40^{\circ}C}$ (1)	AC Rated Voltage	DC Voltage Range	Maximum DC Voltage	DC Max Power $T_{(RAW_WATER)=40^{\circ}C}$ (2)
	[kW]				[V _{rms}]
ES645W38	540	320	485÷1000	1100	553
	645	380	575÷1000		657
ES1K3W38	1080	320	485÷1000	1100	1106
	1290	380	575÷1000		1314
ES1K9W38	1620	320	485÷1000	1100	1660
	1935	380	575÷1000		1971

(1) @ $\cos\phi=1$

(2) Inverter is water cooled

Environmental Conditions	Characteristics
Installation	Indoor
Degree of protection	IP31 – NEMA 1
Working temperature	-20° + 40° C
Storage temperature	-20° + 70° C
Altitude	≤2000 m a.s.l. (4000 with de-rating)
Relative umidity	5%÷85% (non condensing)
Painting cycle	Standard cycle category
Pollution degree	2

Electrical Data	Characteristics
Rated AC Voltage	320/380 Vac
Rated Frequency	50÷60 Hz
THDi	≤3% @ P _{nom}
Distribution system	IT – Unearthed
European efficiency	98.62%