

**Nidec**

All for dreams

## DIRECTPOWER PS

EV Charging System ultra fast, modular, battery buffered and connectable with renewable sources

# Nidec a global force for the future



**Nidec is a global player in electric motors and related technologies. With more than 3 bn USD in sales in the automotive sector and over 1 bn USD in energy infrastructure technologies, Nidec is driving the future.**

Building on a strong position in Energy and Automotive, Nidec offers state-of-the-art ultrafast charging solutions that adapt for the vehicles on the road today and tomorrow. Futureproofing investments in infrastructure for electric vehicle charging means that an all-electric world was never closer than it is today.

With Nidec's ultra-fast charging systems, you can scale your investment to fit growing needs over time. Our intimate knowledge of electric vehicles, energy storage and power electronics, make our systems the most reliable on the market in terms of performance and safety.

Expertise in  
Power Systems



+

Electric motors &  
sensors for Automotive



+

Industrial Power  
Electronics



**MOST RELIABLE CHARGING  
SYSTEM AVAILABLE TODAY**

# The extraordinary power of experience

Our in depth know how in **Power Conversion, Power Management and Battery Power Storage** coupled with Nidec's vast experience in electrical systems for automotive and automotive testing, particularly electric vehicle testing, make us uniquely positioned to offer the best solution for today's and tomorrow's needs.

## POWER CONVERSION

Our Power Conversion Systems are designed and built in-house using the same components of our industrial product line, which means spare parts and upgrades will be available for the life of the equipment. Rugged and robust, these products have a proven track record for performance and efficiency.

## POWER MANAGEMENT

Our DirectPower units incorporates algorithms from our ARTICS Smart Energy platform. This proprietary, real-time integrated Power and Energy Management System, which operates on standard hardware platforms, offers precision readings on electricity consumption and accurately manages energy flow to the car batteries. Moreover, it is ready for use with renewable energy sources incorporating state-of-the-art days ahead forecasting and can be seamlessly integrated with third party accounting or supervisory software.

## POWER STORAGE

Nidec is one of the world's leading providers of battery energy storage solutions globally. With more than 1GWh of energy storage systems in operation worldwide, no one knows storage like we do. Our charging algorithms optimize charging for enhanced safety and help contribute to longer battery life. Nidec also works closely with battery manufacturers and the automotive industry to develop a more sustainable business model, including the re-use of second life batteries to reduce environmental impact.

The reliability, safety and performance of our charging systems stems from more than a century of experience in power electronics and power management systems for industrial applications.



## PLUS A GLOBAL FOOTPRINT

- Capillary Service support
- 12 Engineering and Design facilities
- 9 Manufacturing Sites
- 7 primary locations for power electronics  
Italy, France, Germany, Rumenia, China, India and USA.

# DirectPower PS - The EV Revolution

## Charge any model including the next

The EV market is evolving rapidly and the new cars coming out will be equipped with next generation batteries that can be charged in less than 15 minutes. Our System was designed with the future in mind. Working closely with battery and automotive manufacturers across the globe has given us an edge in developing a charging unit that is suitable for all brands on the market today as well as future models.

CONNECTION TO LV OR MV LINES

REDUCED OPERATING COSTS

MINIMUM INSTALLATION COST

REDUCED INSTALLATION TIME



## READY FOR THE FUTURE

- Next Gen ready, Up to 300 kW
- Parallel Charging
- Connection in highly congested areas where energy demand is already high and may not be able to support additional, unpredictable loads.
- Ultra-fast charging under 15 minutes

# Configure your investment

6 building blocks - one solution



DirectPower PS consists of the following components: a customizable ergonomic dispenser, an AFE AC/DC Power Supply Unit with high charging capacity that can be connected to a LV or network, without the need of the installation/upgrade of a MV substation, a DC/DC Power Supply Unit, an incoming line unit, a Renewable

Energy Connection Module, an Integrated battery pack. This flexible modular solution allows us to quickly configure charging infrastructure from a single 160 kW unit up to a full multicar charging station using renewable energy sources. It can also be expanded by adding additional power supply units

and energy storage units to match power requirements. This allows customers to tailor investments to their pocketbooks and demand over time. The renewable energy module can be supplied at time of original purchase or seamlessly integrated into the system at a later date.

## Proven technology

At the heart of our charging infrastructure are the power supply units which are based on our industrial power conversion systems and active front end technology. The technology in these systems has

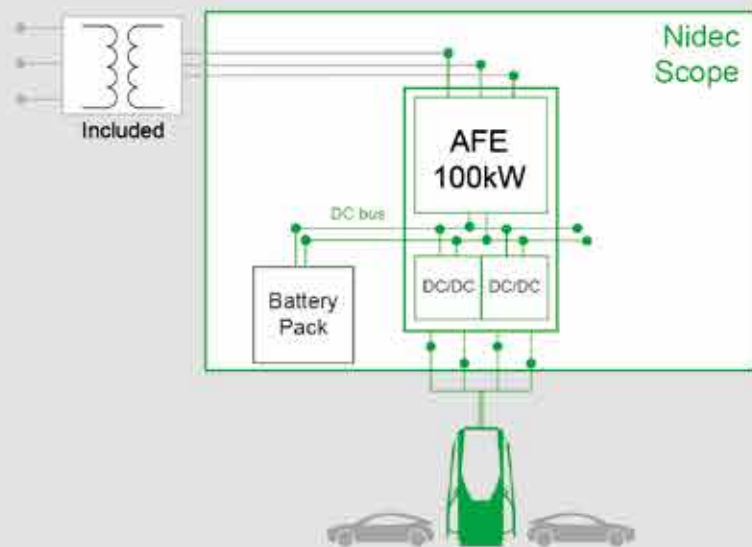
been widely used and tested in numerous industrial applications across the globe. This means our solutions are robust, reliable, efficient and safe.

## Customize the dispenser

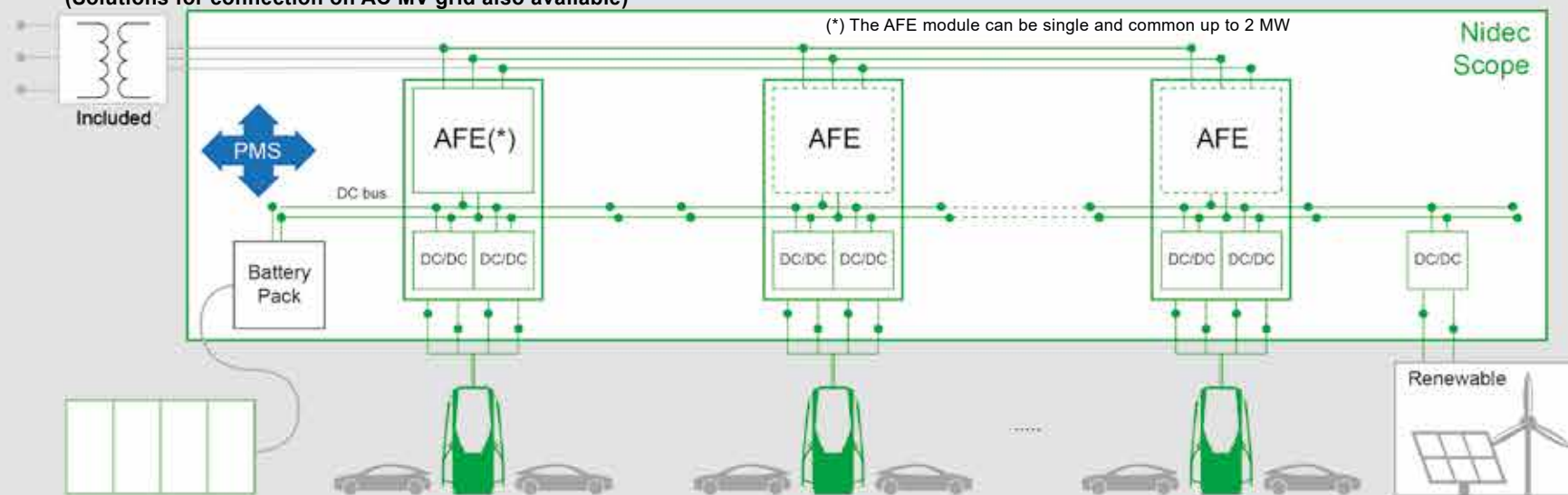
Powered by Nidec, the colors of the dispenser can be customized to fit your branding strategy and company logo. We offer a wide variety of options to choose from as an option. Our standard units are white and light grey

## WE CAN ENGINEER THE SYSTEM TO YOUR NEEDS

### NIDEC DIRECTPOWER PS - SINGLE UNIT



### CHARGING PARKS WITH STORAGE & RENEWABLE ON DC (Solutions for connection on AC MV grid also available)



## Plug connector



# Steady, Stable Power Supply

Nidec's DirectPower PS is a modular solution with high charging capacity that can be connected to a LV or MV grid network. Another key feature is that our charging units can be powered by an integrated energy storage system.

## The benefits of an integrated Energy Storage System

The ability to power the chargers from the grid and from renewable energy sources such as PV or Wind allow the operator to maximize profit as energy can be bought, sold or stored based on time of day tariffs and availability of renewable sources. Our highly advanced Energy Management System can help set the optimal charging time and includes options for day ahead and three day ahead predictivity on energy production from renewable sources. In addition, the batteries can act as a buffer, shaving the peaks of recharging requests for better power management and enhanced grid stability. Nidec is one of the

world's leading suppliers of energy storage solutions both on land and at sea. The energy storage systems provided with our EV charging units offer the highest power density and safety standards on the market today. Our battery systems come in four standard configurations

**100 kW FROM THE GRID UP TO 320kW CHARGING**

### MAXIMIZE REVENUE

since batteries can be recharged when the cost of the energy is more convenient

**NO MV INFRASTRUCTURE INVESTMENTS**

### ENERGY STORAGE

according to the needs, eventually containerized



# Easy Maintenance & Remote Diagnostics

The DirectPower PS draws on our experience in heavy industry. With over half a century of experience in designing power electronics for remote and hazardous areas, our cabinets are built to the maximum safety standards and were developed to keep the Mean Time to Repair to a minimum. All components are easily accessible for inspection and repair in the unlikely event that the need arise. Moreover, the system is equipped with a state-of-the-art remote diagnostics system that allows maintenance managers to troubleshoot from anywhere on the globe. The average MTBF on our power electronics is 100,000 hours with proper usage and maintenance.

## Precise, Real-Time Control

In addition to offering functions for remote diagnostic, our real-time control system offers highly accurate, precise information on energy consumption and usage. The charge adapts automatically to the type of vehicle connected and the state-of-charge of the battery to ensure an optimal charge. The smart charging algorithms balance the total capacity of the grid to the number of vehicles charging. The charger adapts charging automatically, depending on the vehicles connected, priorities and the available energy. Our system includes remote control monitoring which gives visibility to how long and how fast a vehicle charges.

## No Risk Charging

Overcharging a car battery or charging at the wrong voltage can lead to premature degradation of the car battery. Thanks to our significant experience in energy storage, our charging algorithms optimize the depth of charge, protecting the car battery.



# Technical data

TECHNICAL SPECIFICATION	
<b>BASE CONFIGURATION</b>	AFE 100kW, 2x160kW (1x200kW) DC/DC modules, 1x55kWh battery rack AFE 100kW, 2x160kW (1x300kW) DC/DC modules, 2x55kWh battery racks
<b>COMPLIANCE &amp; CERTIFICATION</b>	CE: IEC 61851-1, IEC 62196, IEC 61851-21-2,
<b>INSTALLATION</b>	Outdoor/Indoor
<b>OPERATING TEMPERATURE</b>	Over 40°C with De-rating characteristics apply.
<b>HUMIDITY</b>	5% to 95%
<b>MAXIMUM OPERATING ALTITUDE</b>	2000 mt (6562 ft) - Higher on request
<b>MAX. DISTANCE BETWEEN POWER UNIT &amp; DISPENSER</b>	100 mt
<b>NOISE</b>	< 60 dB(A)
<b>PERSONALISATION</b>	Yes. According to Customer Logo & Colors
DISPENSER UNIT	
<b>UNIT CONNECTORS</b>	CCS Type 1, CCS Type 2, and CHAdeMO   Single or dual cable option
<b>OUTPUT POWER</b>	Up to 200 kW with 1 battery rack - Up to 300 kW with 2 battery racks
<b>OUTPUT VOLTAGE</b>	200-950 Vdc
<b>OUTPUT CURRENT</b>	
<b>CCS:</b>	Up to 400A continuous with liquid-cooled cables; air-cooled cables also available
<b>CHAdeMO:</b>	Up to 125A
<b>IP RATING</b>	IP54
<b>IK RATING</b>	IK10
<b>DISPLAY</b>	15 Inches High Brightness Touch Screen (Custom display messages available)
<b>DIMENSIONS</b>	Base Width 780 mm, Depth 475 mm, Height 2153 mm Overall Width 820 mm, Depth 552 mm, Height 2153 mm
<b>WEIGHT</b>	200kg
<b>MATERIAL</b>	Metallic (Zinc coated steel, powder coating)
<b>RFID READER</b>	NFCIP-1, NFCIP-2, ISO/IEC 14443, ISO/IEC 15693, MIFARE Classic, FeliCa card
<b>CREDIT CARD INTERFACE</b>	Available upon request
<b>CABLE LENGTH</b>	3 meters standard. Longer cables available as an option
POWER UNIT	
<b>INPUT POWER</b>	CE Models: max.100 kW, 400V, 3ph + N, 170A@400V (any output)
<b>OUTPUT</b>	DC: 2x160kW - 1x300kW AC: 22kW AC plug on request
<b>EFFICIENCY</b>	>94% at full load
<b>THD</b>	<3%
<b>POWER FACTOR</b>	0.98
<b>BATTERIES</b>	about 55kWh each rack. Modular & Expandable configuration.
<b>IP RATING</b>	IP54
<b>IK RATING</b>	IK10
<b>DIMENSIONS</b>	2,275mm (H) x 1650mm (*) (W) x 800mm (**) (D) (*) + 600mm for each battery rack
<b>WEIGHT</b>	1200 kG + 650kG each battery rack
<b>MATERIAL</b>	Metallic
CONTROL FEATURES	
<b>WIRELESS CONNECTIVITY</b>	3G/4G cellular communications with failover redundancy IEEE 802.11 b/g/n Bluetooth Low Energy
<b>WIRED CONNECTIVITY</b>	10/100 Base-T Ethernet - RS485 interfaces
<b>COMMUNICATION PROTOCOL</b>	OCPP 1.6 Json (support for management and billing)
<b>IT SECURITY</b>	SSH protocols, password protected for remote diagnostics
<b>POWER SHARING</b>	Configurable site-level energy demand management according to the battery state of charge
<b>POWER CONTROL</b>	Power sharing algorithms included to manage the available energy from batteries
<b>CONTROL PLATFORM</b>	Provides owner/operators real-time information on the performance of the charging station
<b>POWER SUPPLY</b>	Battery-backed UPS functionality on request for reliable telemetry at all times





**INDUSTRIAL SOLUTIONS**