HONDA

The Power of Dreams

Managing energy using EV cars

Honda Motor Europe LTD
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Project leader
Electrification & Energy management

WORLD EFFICIENCY SOLUTIONS

Paris, December 13th 2017

HONDA
The Power of Dreams

Products

Developing, producing and selling a unique range of products

CARS

MOTOR CYCLES

POWER PRODUCTS

AVIATION R&D

FORMULA 1
POWER UNIT

ENVIRONMENTAL
TECHNOLOGY

Honda is more than a car manufacturer

Honda's Energy Society concept
"GENERATE", "USE" and "GET CONNECTED" with Hydrogen

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Japan Resilience Award ※1 2015

Locally produced and consumed energy

Renewable Energy

For public facilities (schools, community centers, etc.) and commercial facilities.

Using various types of energy sources including energy from mobility, contributes to a stable electricity supply.

Generate Hydrogen

Creating a New Era of Hydrogen Energy

SHS (Smart Hydrogen Station)
Packaged Hydrogen Station Unit

Honda's original Power Creator is a compressor-less, high differential pressure electrolyzer system. From the electric power of renewable energies, manufacturing, storage, and recharging of low-carbon, high pressurized hydrogen gas is possible. And by utilizing the energies specific to certain regions such as electrical power from solar power, power generated from regional waste, and bioenergy, local production for local consumption can be realized.

SHS (Smart Hydrogen Station)

Power Creator
(Honda's original High differential pressure electrolyzer system)

SHS equipped with a compressor-less high differential pressure electrolyzer system.

Power Creator

Use Hydrogen

Towards the next generation with hydrogen.

CLARITY FUEL CELL
(Fuel Cell Vehicle)

Hydrogen runned power generation system on board

Instead of combusting hydrogen like gasoline engines, a chemical reaction generates electricity that powers the motor, providing a powerful yet quiet driving experience.

CLARITY FUEL CELL

Get Connected with Hydrogen

Connect with NEW ENERGY VEHICLE and power your life.

Power Exporter
(V2L Compatible portable external power output device)

Inverter that converts electricity from mobility

CEATEC AWARD 2015 ※2

CEATEC Award 2015 Green Innovation Category Grand Prix
The CEATEC INNOVATION AWARDS, "As Selected by U.S. Journalists" Transportation Category Prize

Easily connect to a new energy vehicle* with an external power output function to provide electricity for home appliances. It can be used as a source of electrical power in case of emergency such as disaster or power outage as well as in daily life for outdoor events.

Power Exporter 9000

*EV/Plug-in Hybrid/Fuel Cell Vehicle with external power output function

Connect mobility and daily life and lead to the future.

Power Manager
(V2H compatible DC normal charger)

Power Manager

The power conditioner that connects mobility to your home.

Honda Power Manager is a wall mounted inverter that can not only supply electricity to EV's from residential or public facilities (schools, community centers, etc.), but also enables EV's or FCV's to supply electricity back to those facilities.

H2

Honda Smart Community
Initiatives, Inquiries Here

Please scan the QR code on the right, or access via the below URL.

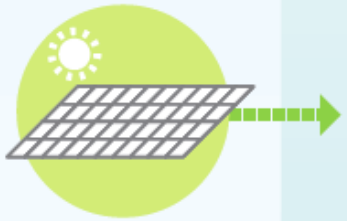
http://www.honda.co.jp/smartcommunity/

※1 Japan Resilience Award: The award given to organizations / groups for activities contributing to enhance national resilience
※2 Recipient of both "CEATEC 2015 Award:Green Innovation Category Grand Prix" and "The CEATEC INNOVATION AWARDS, 'As Selected by U.S. Journalists' Transportation Category Prize". (http://www.ceatec.com/en/award/)

The above information is as of June, 2017.

Honda is creating the link between mobility and energy systems

Residential Renewable Energy



Solar power

Solar power is the most common type of renewable energy for residential-use.

Wind power

Small-size wind generator systems for household use can be installed easily.

Power Manager

Conversion from DC power to AC power

Power Manager converts DC power generated from sources such as renewable energy to AC power which is of similar quality to office and residential outlets.

Optimal energy supply during power outage

During power outages, the Power Manager can use electricity not only from solar power and EV but also from gas engine cogeneration systems and engine generators for optimal energy supply.

※ For electrical load during a power outage, prior confirmation is required.

Next Generation Zero Emission Vehicle (ZEV)

Electric Vehicle (EV)

Expectations to expanded usage of V2H (Vehicle to Home) which utilizes EV battery power at home.

Fuel Cell Vehicle (FCV)

Clarity FUEL CELL can supply approximately 7 days※ worth of electricity to an average household.

Electricity Flow

Electric Power Company

Generator

Can generate power from both gasoline and portable gas cartridges and is used as the most familiar power source during a power outage.

Cogeneration system

Can generate power from gas and utilizes the generated heat for hot-water supply or heating.

Specification of Power manager

Main Specifications

Power Supply Unit

Name	V2H Compatible DC Normal Charger
Model	UEAJ
Rated Voltage / Frequency	AC200V (Single Phase, 3-Wire), 50Hz / 60Hz
External AC Input Terminal (During Power Outage)	O※1
Solar Power Capacity	Rated 5.5kW
Protection	Earth Leakage Breaker Function, Lightning Surge Protection
Power Supply Unit Weight	Approximately 80kg
External Dimensions	W900 × H600 × D300 (mm)
Environmental Conditions	-15℃～40℃
Dustproof and Waterproof	JIS C 0920 IP44 Equivalent
Installation Area (Method)	Outdoor (Wall-Mounted Type)
Communication Interface	Ethernet
Communication Protocol	ECHONET Lite™
Applicable Standards	IEC 62909-1

Charge / Discharge Unit

Charge / Discharge Unit Method	DC Charging / Electric Vehicle Specific Charge and Discharge System Guideline V2H DC Version 2.1 (Category 3) Compliance※2
Rated Output	Maximum 5.5kW
Charging Unit Weight	Approximately 14kg
External Dimensions	W190 × H600 × D200 (mm)
Charging Cable Length	CHAdeMO Protocol Approximately 4m
Functions	Start / Stop Button, Operation Mode Switch, Error lamp, Emergency Stop Button, Connector Holder with a lock, EVPS Supply Terminal

Switch

External Dimensions	W590 × H320 × D110 (mm)
Switch weight	Approximately 7kg
Power Outage Response	O※3 (Automatic switch)

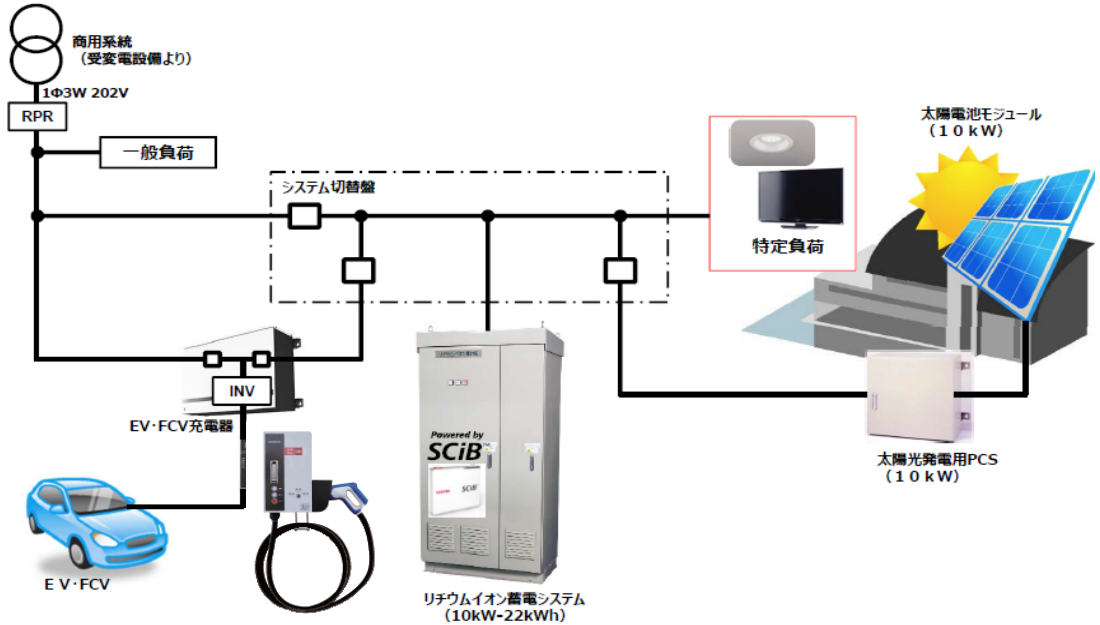
※1 Maximum 1kW / 100V Household-use Cogeneration System, Power generator connection possible※4
※2 Some of the functions are not available on vehicles with different versions of the V2H Guideline.
※3 Automatic switch single phase 3-wire 100V, 200V Maximum 4kVA compatible ※4 Dependent on adaptor equipment

Potential applications of Power manager

PV carport installation (office)

PV Carport installation (home use)

Public building installation



different applications can be identified

IAA Frankfurt

Honda's presence at IAA Frankfurt 2017

Honda’s Power Manager

Nedo introduced Honda to the SMILE project in France

The Smile project, what is it about?

SMILE : SMart Ideas to Link Energies

- Tender from the government as part of the « Plans pour une Nouvelle France Industrielle » on smart grids
- Show case of French excellence in smart grids technologies to ensure energy transition and sustainable growth
- Deployment on large scale of smart grids industrial solutions

Why West of France? (1/3)
A need for deployment of smart grids projects

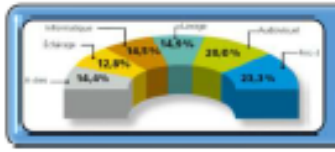
Structural deficit of power production and fragility of electrical grid

SMILE is a government supported program on smart grids

The Smile project, goals

SMILE : Main goals

Integrate massively renewable energy and improve their integration into the markets and networks



Fully control and limit power demand and establish the best possible match between consumption and production

Develop the interconnection of platforms gathering data from various sources

Integrate EV in grids

Reinforce the security of the grid through lab and live tests and labels (cybersecurity)

Overall check of the business models and technology

SMILE is aiming for a wide variety of goals

The Smile project, how does it work?

17 industrials projects on 5 topics

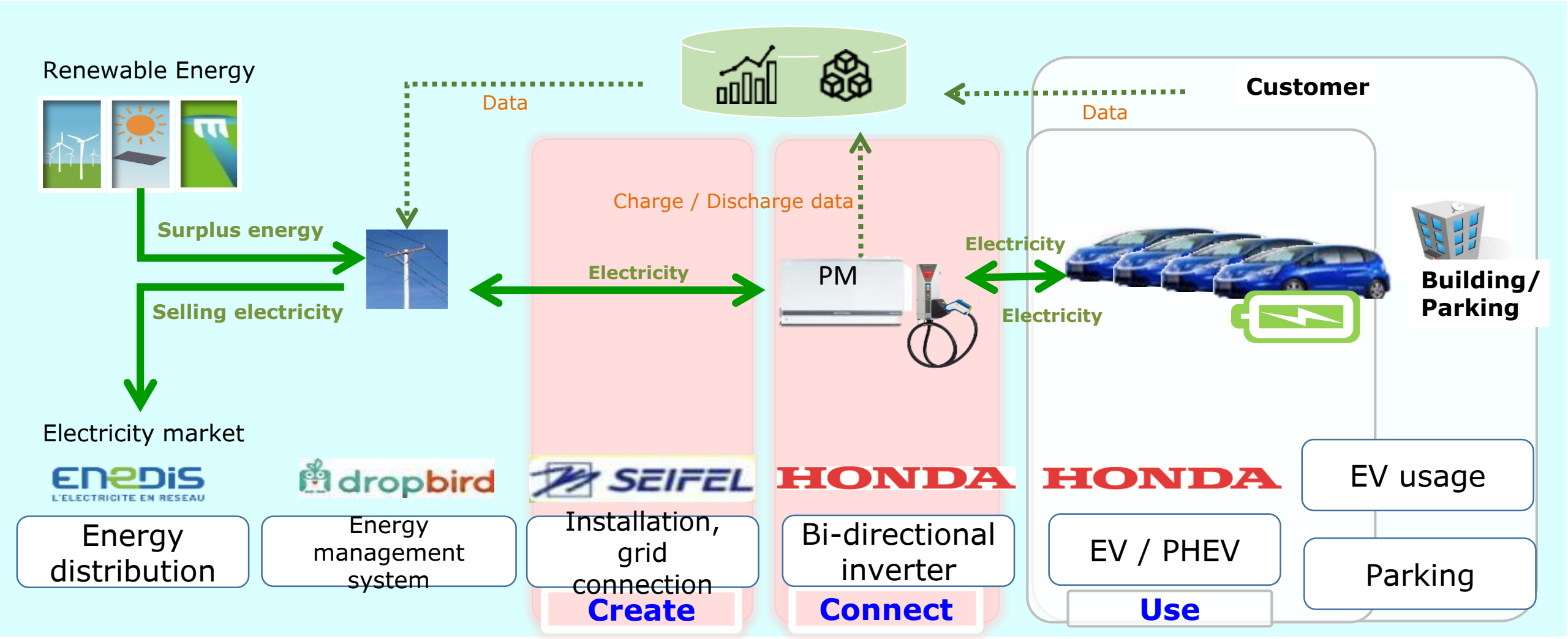
- Smart Cities
- Awareness-raising
- Digital technologies and IoT
- Smart territories
- Electric mobility

The main program SMILE has many sub projects in different area's

The Smile project, Feasibility study structure

BRETAGNE DÉVELOPPEMENT INNOVATION

NEDO



Honda is creating the link between mobility and energy systems

Honda's participation in SMILE

Pilot Phase:

Project partners: Dropbird & Honda

Installation in Parking garage in Rennes, Nantes & St Malo

EFFIA Parking near SNCF station

Honda Power manager

Solar panels from EFFIA

Grid from ENEDIS

Bidirectional charging station

- Connect to Grid and Charge/Discharge from EV to Grid
- Gather charge / discharge data
- Demonstrate power manager to the market

SMILE is Honda 's first powermanager demonstrator in Europe

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END