# SDN Investor Relations 2024



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**OVERVIEW** 

# Company Introduction

SDN Co. Ltd. contributes to the sustainable future and human society through sound management and profit-making with a challenging and pioneering spirit in compliance with global climate change and agreements.

Company	SDN Company Ltd.,
Date of Establishment	<sup>'</sup> 94. 03. 18
CEO(Each representative)	Hyeong-geun Baek, Seong-won Jeong
Head Office Location	1281, Daewangpangyo-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Business Area	PV Construction, PV manufacturing, Outboard engine, Ship-building
KOSDAQ Listing	'09. 05. 19
Employees	79
Revenue	75,600,000,000 KRW ('23) / 57,429,352.78 USD (*Exchange rate: 24/03/14)
Capital	28,100,000,000 KRW ('23) / 21,346,195.41 USD (*Exchange rate: 24/03/14)

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#### **OVERVIEW**

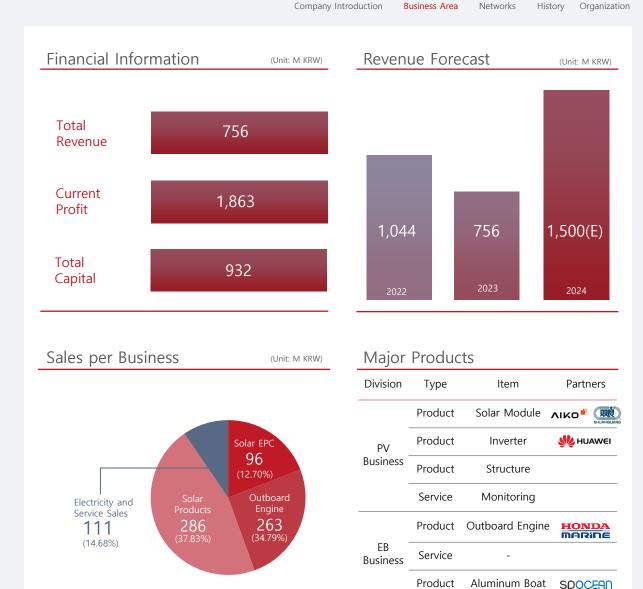
#### **Business Area**





- Exclusive Distributor of HONDA Marine
- Boat Package & Engine Components
- Smart Aluminum Shipbuilding

35% Revenue Share



Organization

**OVERVIEW** 

#### **Networks**

"Leading Localization with Advanced Technology"



With the HQ located in Seongnam, SDN assumes a true localization as one of its social responsibility and pursues achievement it with advanced technologies.

People and technologies of SDN are spread over several local cities, including Gwangju, Gangjin, and Suncheon, attaining and sharing values and profits with communities.

Sunday EU team has successfully carried out EPC and O&M of a 60 MW power plant in Bulgaria with extraordinary level of technical, financial, and legal completion.





HQ : Seognam



Factory/ R&D Center : Gwangju



On Site R&D Complex : Suncheon





SDN Energy Complex : Gangjin



Fishery Marina Complex : Gangjin



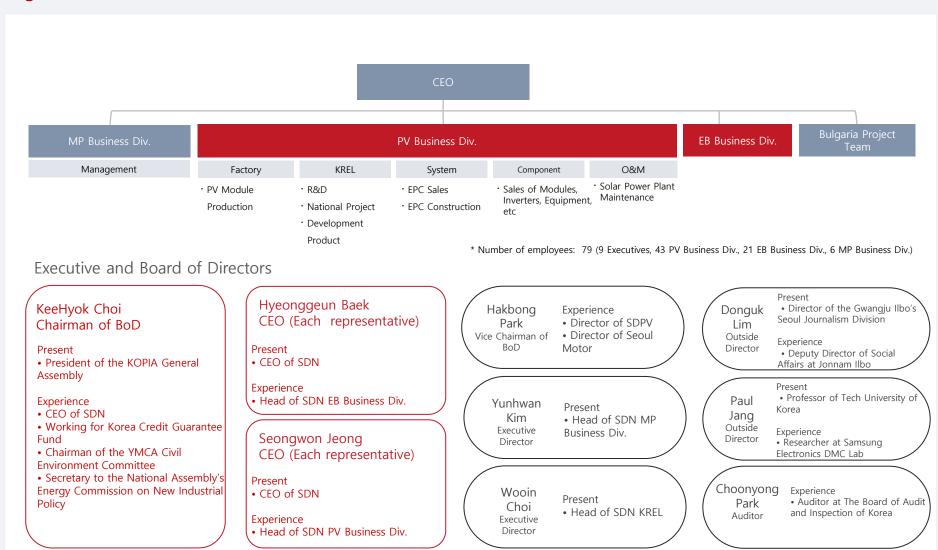
Sunday EU (60 MW) : Bulgaria

Business Area

# History

1994	~2004	~2006	~2009
Establishment Exclusive Contract with HONDA Marine	Renewable Energy R&D center Establishment First Grid Connected Solar Plant in Korea Establishment of Energy Farm Co., Ltd.	Diversification of Solar System Design 34% Market Share and Achieving #1 in the Outboard Marketplace	Changing Name to SDN CO., Ltd Completion of the First Automated PV Module Production Line in Korea(Factory H1) Listed on KOSDAQ
~2012	~2013	~2016	~2018
Overseas Development-Design-Con struction- Operation-O&M Completion of 60MW Power Plant in Bulgaria	RPS Roof-top Solar Plant System Design On-shore Floating Solar Plant System 99 kW	Dominate the Domestic RPS Market Huawei Inverter Sales Contract	Singing a Vale-Added Partnership with Huawei (Korea No.1) Construct POSCO 45 MW Solar Power Plant Project
2019	2020	~2022	2023
Gangjin Energy Complex Project, Marina Project Kick-off MOU Signed with Gangjin-gun and Jeonnam Development Corporation Gangjin Service Campaign & Expo Held	Expansion of Module Manufacturing Facility (Factory H2)	450 W Module (Sunday6) Production 550 W Module (Sunday10) Production Relocation of the Headquarters Building	600 W Module (Sunday10+) Production  Floating Module(Sunday10+ Wave Production KS Certification Completed

## Organization





Overview PV Business Div. EB Business Div. Appendix

Introduction Manufacturing Products EPC O&M R&D ODA

PV Business Div.

#### Introduction

# ' Total Solusions for PV Plants'

Providing total solutions optimized for customer requirements



#### **PV Products**

PV module manufacturing with high-efficiency and highquality for the best customer experience

Distributor of Huawei's world-best string inverters



#### **Project Development, Construction and Operation**

Domestic and global projects developments

Renewable energy system design for PV, fuel-cell and bioenergy technologies



#### **0&M**

Technical due diligence Improving the performance of old power plants Real-time monitoring, long-term maintenance



#### **R&D** on Solar Product and System

Development of high-efficiency solar module production technology

BIPV, floating solar module and system development

0&M

Overview

PV Business Div.

PV Business Div.

# Manufacturing





#### Domestic production of high-output modules

640 MW-yr Establishment of R&D center, conducting research



#### **Automated Production**

First automated PV module production line in Korea High productivity and flexibility



#### Roof-Top PV Generation

(SDN Plant)1 MW roof-top plant for on site validation Annual electricity sales: 1 billion KRW

# SDN PV Module Production Facility





Area	26,654 m²	
Date of Construction	2009.04.26	
Address	Gwangju Advanced Science Industrial Complex	
Production Capacity	Max. 400 MW-yr	
Flagship Product	~605 W Solar Module	

SDN solar module manufacturing plant located in Gwangju Metropolitan City started producing 230W modules in 2009 and has to new facilities in 2021 and is currently producing high-power modules of 600W.



# SDPV PV Module Production Facility



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Overview

PV Business Div.

# Manufacturing

# Cutting-Edge **Technologies**

- Manufacturing highly efficient
  - / output solar module
  - Diversifying the cell size (156mm to 230mm)

#### Production Automation

- Production efficiency ↑
  - Product quality 1
    - Error rate ↓

#### Manufacturing Equipment



#### Cell Cutter and Stringer Full-cell to half-cell and to String

- Specifications: M3 to M12 cells / 5BB to 12BB
- Speed: Max 6,000 Cell/hour (x 2)



#### Auto Bussing Automatic soldering of wires and busbars

- Specifications: 60/72/78 Cell Module
- Speed: Max 120 pieces/hour



#### Two-Stage Laminator EVA adhesion at high temperature/vacuum

- Laminating Area: 2700 mm x 7800 mm
- Speed: Max 30 pieces/hour (x 4)



Solar Simulator Check the power generation characteristics



Auto String Layup Loading strings on glass/EVA

- Auto Taping Machine String tape fixing
- Edge Sealing Machine Glass alignment
- JB Soldering Machine Automatic soldering
- Labelling Machine Automatic labeling
- Sorter Machine Module loading
- Paper Corner Machine Automatic insertion of module

Overview PV Business Div.

**Products** 

EPC

0&M

R&D

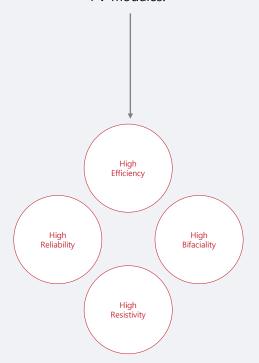
ODA

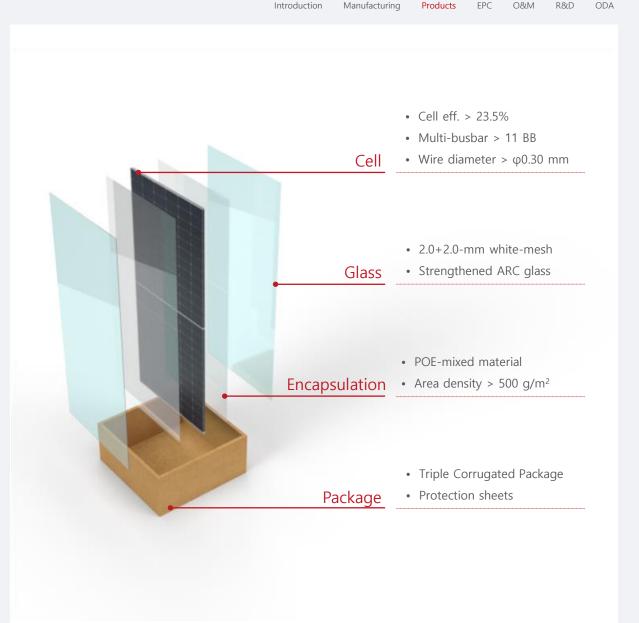
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PV Business Div.

# Products - SunDay Series

"The key objective of SunDay Series is customer satisfaction through high performance and quality. Production process, specifications and materials are designed for a world-best class of PV modules."





Overview
Introduction Ma

Manufacturing

Products

EPC

0&M

R&D

ODA

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PV Business Div.

# Products - SunDay Series

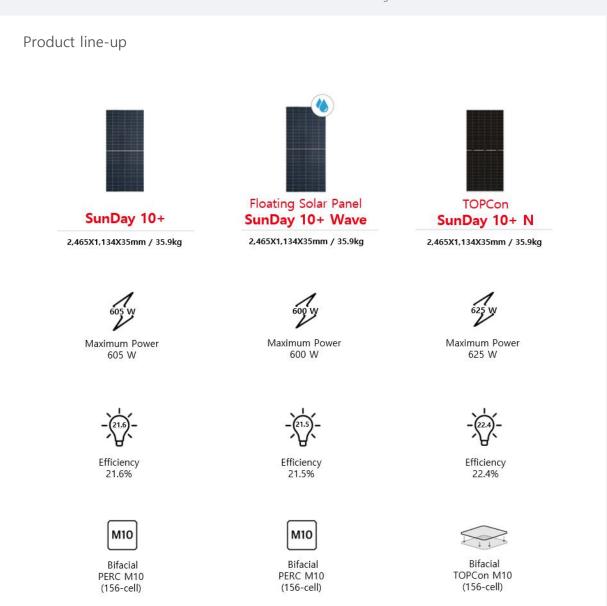
Produced up to 600 W high-power modules

Half-Cut, Bi-Facial, and G to G Technique

Highest Efficiency up to 21.6%

Diversified Product Line-up: 1st and 2nd CFP Grades and Floating Applications





Overview

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PV Business Div.

# Products - SunDay A & S Series

615 ~ 630 W range high-power module

Incorporation of the latest technologies such as ABC and TOPCon

Up to 23.9% effciency

Diversification of product line-up: Expansion of product line by launching ABC and TOPCon module



### 상품 라인업



Manufactured by **AIKO** SunDay A10 2,323\*1,134\*35 mm / 29kg

- Using ABC cells => Highest efficiency 23.9%
- Interannual change < 0.35% (2 to 30 years)
- Up to 630 W high power module



Maximum Power 630 W



Efficiency 23.9%



Back Contact N-Type ABC (144-cell)



Manufactured by **Shuangliang** SunDay S10+

2,465\*1,134\*35 mm / 35.9kg

- Using TOPCon cells => Highest efficiency 22.5%
- Application of PID minimization technology
- Up to 630 W high power module



Maximum Power 630 W



Efficiency 22.5%



Bifacial N-Type Topcon (156-cell)

**MAWEI** 

ODA

PV Business Div.

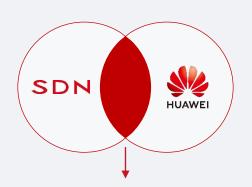
# Products - Huawei String Inverter

Value Added Partner (VAP) Partner for Huawei Inverter

Multi MPPTs, reduced mismatch, increased power generation by 0.5% to 1.5%

One-to-one replacement 5-year commodity free warranty (Extend by up to 20 years)

Combining SunDay Series to deliver optimal solar solutions





SDN+HUAWEI > Maximize Efficiency



SDN+HUAWEI > Optimize System Management



SDN+HUAWEI > Safety Assurance

### Product line-up



#### **SUN2000-**100KTL-M1

1,035 X 700 X 365 mm



10 MPP Trackers



98.8% (@480V) Max. Efficiency



Fuse Free Design



Smart I-V Curve Diagnosis Supported



Overview

Introduction

#### **SUN2000-**50/60KTL-M0

1.075 X 555 X 300 mm



12 strings intelligent monitoring



98.7% (@480V) Max. Efficiency



Fuse Free Design



Type II Surge arresters for DC &AC



**SUN2000-36KTL-M3** 

640 X 530 X 270 mm



8 strings intelligent monitoring



98.7% (@480V) Max. Efficiency



Fuse Free Design



Type II Surge arresters for DC &AC

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Manufacturing

**Products** 

EPC

0&M

R&D

**WAWEI** 

ODA

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PV Business Div.

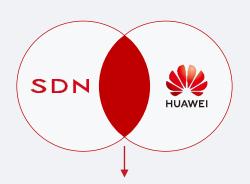
# New Product - Huawei String Inverter

286 KTL, 330KTL new models applicable to large-scale power plants

99KW power plant tolerance secured with launch of 110KTL

5 year free quality warranty with 1:1 replacement (extendable up to 20 years)

Maxzimize efficiency by applying Huawei Fusion Solar System





SDN+HUAWEI > Maximize Efficiency



SDN+HUAWEI > Optimize System Management



SDN+HUAWEI > Safety Assurance

#### Product line-up



SUN2000-330KTL-H1



1,048 X 732 X 395 mm



28 strings intelligent monitoring



99.0% Max. Efficiency



Type II Surge arresters for DC &AC



Smart I-V Curve Diagnosis Supported



**SUN2000-**286KTL-H0

925 X 820 X 365 mm



High frequency susppression



99.05% Max. Efficiency



Fuse free design



Smart I-V Curve Diagnosis Supported



**SUN2000-**110KTL-M2

1,035 X 700X 365 mm



10 MPPT Trackers



98.6% Max. Efficiency



Fuse free design



Smart I-V Curve Diagnosis Supported



**SUN2000-50KTL-M3** 

640 X 530 X 270 mm



WLAN, Fast, Ethernet, 4G Communication method support



98.5% Max. Efficiency



Type II Surge arresters for DC &AC



Al Arc protection

Overview

Introduction

R&D

ODA

PV Business Div.

## **EPC Domestic Projects**



























#### Major SDN EPC Sites

SK Roof Rental Solar Plant 2.9 MW Roof Capacity Type



Korea Rural Community Corporation Solar Plant

Capacity 3 MW Breakwater Type





#### Korea Engineering Corporation 6MW Solar Plant



	YFIZ	Solar Plant	
Capacity	499 kW	Туре	Parking Lot

# Eocheon-ri Solar Plant



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Products

EPC

ODA

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PV Business Div.

# **EPC Global Projects**



# 42 MW PV Plant Constructed in Bulgaria

: Project Development, EPC, and O&M





Project	ASM 21 MW	RES 21 MW
Area	618,294m²	629,287m²
Date of Construction	2010.08	2010.12
Date of Completion	2011.06	2012.01
Date of Operation	2011.12	2012.02

#### Financing

Total Investment Size	154 million € (approximately 220 billion won)		
Equity	SDN 23.1 million € / Korea South-East Power Co., Ltd. 23.1 million €		
Financing	KDB →Unicredit bank Refinancing		
Annual Electricity Sales	About 21 billion won		











# Project Development, EPC and O&M

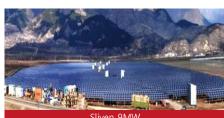
Overview

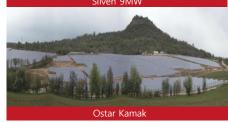
Introduction

: Sliven, Ostar Kamak, Katunitza, Shumen, Razlog Total 25 MW

Manufacturing







	Ostar Kamak	Sliven	Katunitsa
Capacity	5 MW	9 MW	4 MW
Project Scale	20 million €	30 million €	120 million €
Electricity Purchase	EVN	EVN	EVN
Annual Electricity Sales	2.5 million €	4.3 million €	1.9 million €
Date of Commercial Power Generation	2011. 05	2012. 02	2012.06

Overview

R&D ODA

PV Business Div.

#### **0&M**

Provides a comprehensive maintenance solution optimized for business sites

We maintain approximately 600 solar power plants with 538 MW capacity and provide the best service.



#### Service



#### Monitoring

- Real-time power generation control through monitoring In the event of a power generation problem, identify the cause and take action after consultation with the control center
- CCTV Real-Time Remote Monitoring





>

#### **Emergency dispatch**

Inspection in case of Inverter shutdown or power plant abnormality





#### Regular inspection

- Periodic inspection of the output status and monitoring of inverters, modules, and connection
- Inspection of facility operation status and site status at all times
  - Support for statutory periodic inspection





#### Technical inspection

- Check the voltage and output of all instruments, such as the junction box and the electric meter.
- Cause Analysis of Inverter Power Drop





#### Office management

- SMP and REC Transactions
- Acting as an agent for comprehensive income tax and tax
- Insurance contract, renewal, claim management



Products

EPC

PV Business Div.

#### R&D

Selected Lis	t of R&D P	rojects
Contents	Period	Agency
Development of next- generation high-efficiency solar smart system	2012	The Korean intellectual Property Office
Development of smart junction box with power optimizer and multi- channel smart combiner box with string monitoring	2013 ~ 2015	Small and Medium Business Administration
Development of lightweight solar module for roof solar power generation system using double jointed cover glass	2012 ~ 2015	Ministry of Trade, Industry and Energy
Low-cost/high-efficiency solar cells using nanostructures	2014 ~ 2016	Ministry of Trade, Industry and Energy
Demonstration of photovoltaic solar system for noise reduction and carbon reduction of railways	2022 ~ 2025	Ministry of Trade, Industry and Energy
Development of BIPV and smart power conversion devices for zero energy buildings	2023 ~ 2024	Ministry of Trade, Industry and Energy



### **Process Technology**

Manufacturing

Overview

Introduction

- → Process technology research and development for flexible manufacturing system
- → Development of automated manufacturing equipment for PV module production



#### **Product Technology**

- → Next-generation PV module technology for high-efficiency and high-reliability
- → Development of PV modules for various applications including Building, Floating, Agro and Railway PV systems



#### System Techonolgy

- → Development of Balance-of-System (BOS) of renewable energy systems
- → System engineering for next-generation energy system including VPP and gridforming systems

Manufacturing

Products

0&M

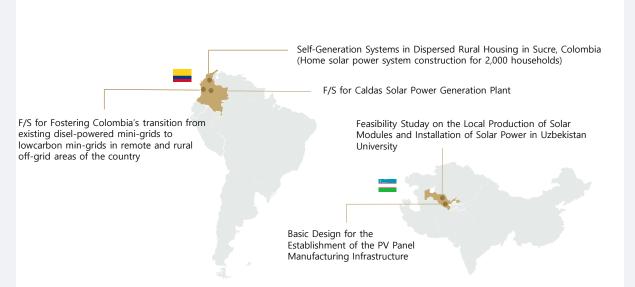
EPC

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PV Business Div.

## **ODA Project**

Selected	List of ODA	Projects
Contents	Period	Agency
F/S for Caldas Solar Power Generation Plant	2021.9 ~ 2021.12	Ministry of Trade, Industry and Energy
F/S for Fostering Colombia's transition from existing disel- powered mini-grids to lowcarbon min-grids in remote and rural off- grid areas of the country	2022.8 ~ 2022.12	Ministry of Trade, Industry and Energy
Feasibility Study on the Local Production of Solar Modules and Installation of Solar Power in Uzbekistan University	2022.10 ~ 2022.6	Korea Energy Agency
Basic Design for the Establishment of the PV Panel Manufacturing Infrastructure	2023.1 ~ 2023.8	Korea Export-Import Bank
Self-Generation Systems in Dispersed Rural Housing in Sucre, Colombia	2022.5 ~ 2025.12	Ministry of Trade, Industry and Energy



Introduction



Driving the 4<sup>th</sup> industrial revolution in developing countries

- → Contributing to the industrial and energy development of developing countries
- → Demonstration of smart energy infrastructure



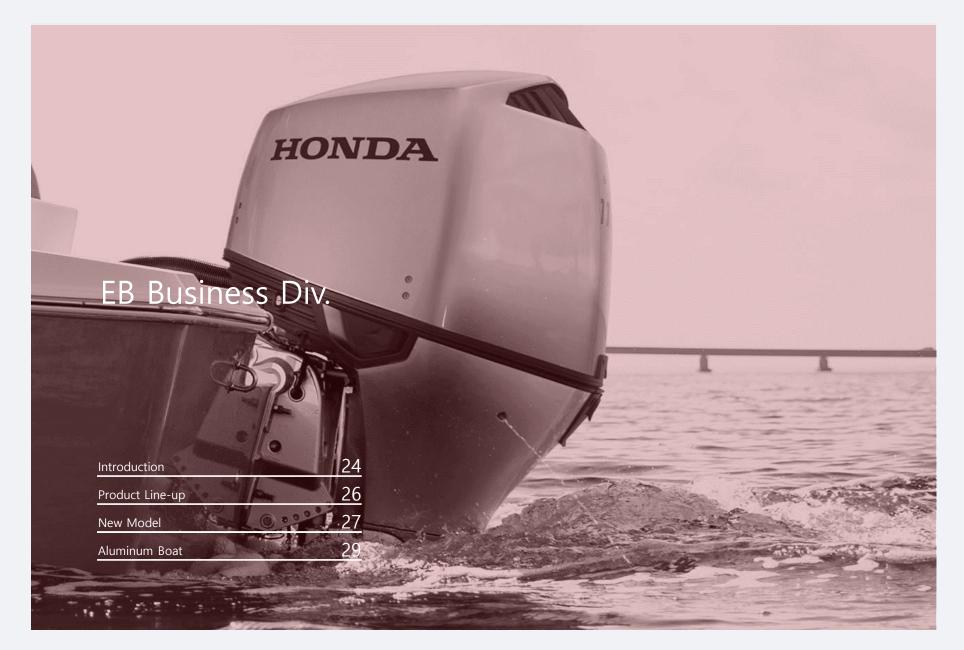
Expansion of domestic companies into overseas markets

- Establishment of expanded foundations for overseas market penetation and preemptive effects
- → Development of an overseas ODA model for the domestic power industry



Contribution to national interest

→ Enhancement of national image and promotion of cooperation between the two countries



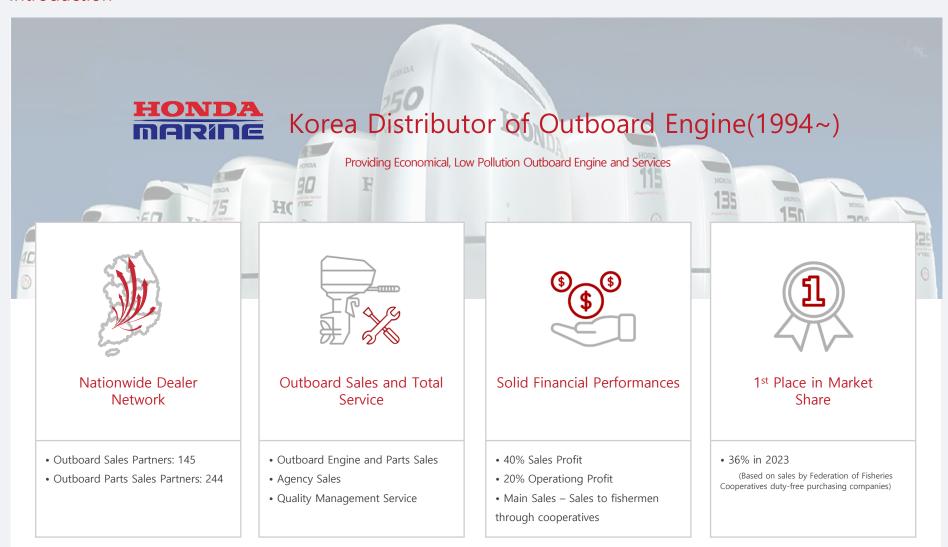
New Model

Aluminum Boat

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EB Business Div.

#### Introduction



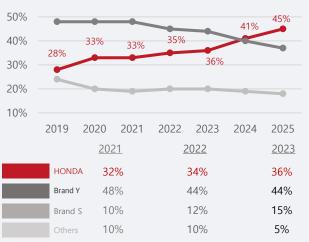
New Model

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EB Business Div.

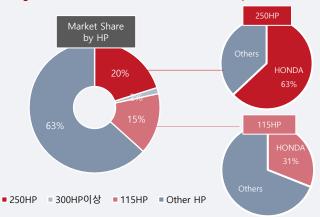
#### Introduction





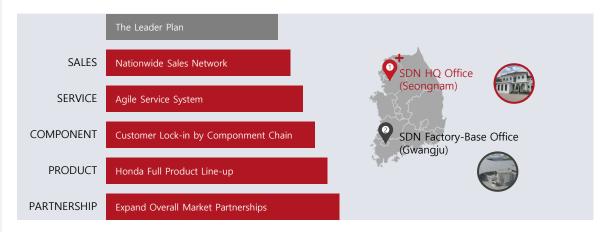
<sup>\*</sup> Brand Y: Total sales of multiple distributor

### HONDA Market Shre Trends by HP



#### "For Shared Growth and Future Value Creation of Honda, partners, and SDN"

Our Vision: "No. 1 Brand Share in Overall OB Market"















# Product Line-up

# **High Power Outboard**

Next generation premium V8 mode

Strong Power and durability

#### Middle Power Outboard

Achieving minimum fuel consumption with advanced technology

#### **Portable Outboard**

Combining safety and economic efficiency

#### **Accessories**

Overall and broad







BF 150D/BF 135D/BF 115J/BF 100AK1/ BF 900DK5/BF 80AK1/BF 50DK4



BF 130DK2/BF 20DK2/BF 15DK2/

BF 6AH/BF4.9DH/BF 2.3DH

Lowest engine weight in class

(BF20/15)

Excellent power generation performance (BF6/4.9)





















#### Propeller / Handel / Fuel Tank / etc

We are selling outboard engine-related parts with reasonable price range and good quality.

#### BF 350A

Mobility beyond limits

Premium grade charge performance

No.1 Sales Rate in NFFC Market

BF 250D/BF 225D/BF200D/BF175D

Best fuel efficiency with lean-

Best-in-class electric charging system

Fuel savings with BLAST

technology

Innovative noise reduction technology

Convenient trolling control fuction

Optimized for storage and movement

> High efficiency air cooling system (BF2.3)

Best fuel efficiency compared to its class

Powerful driving performance

Durability enhanced with Honda's leading technology

burn systems

Increased trust by increased gear ratio

EB Business Div.

#### **New Model**

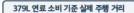


- DBW method(electronic)
- Next generation premium model
- Powerful driving performance proven by maximum speed compared to its class
- High battery charging performance

  High economic efficiency

#### ○ 최상의 연비

O2 피드백 컨트롤(Lean Burn)과 마찰 저감 기술이 적용 된 기어케이스를 통해 수중마찰력/진동을 최소화하여 동 급 최고의 연비





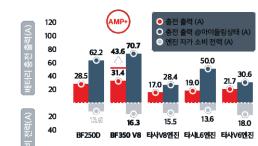
#### ○ 향상된 기동성

고중량 화물을 적재한 상태에서도 제동이 안정적이며 전·후진 변환 성능 향상



#### 뛰어난 충전성능

최대 70A의 타사대비 높은 배터리 충전 출력과 더불어 아이들링 상태에서도 충분한 충전 출력을 통해 전자장비를 안심하고 사용

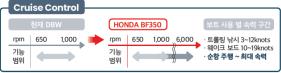


#### O AMP+

아이들링 상태에서 필요에 따라 자동으로 충전 출력을 증가 시켜 발전량을 조절하는 시스템(750RPM 이상에서 작동)

### ○ 조작 편이성 향상







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Product Line-up

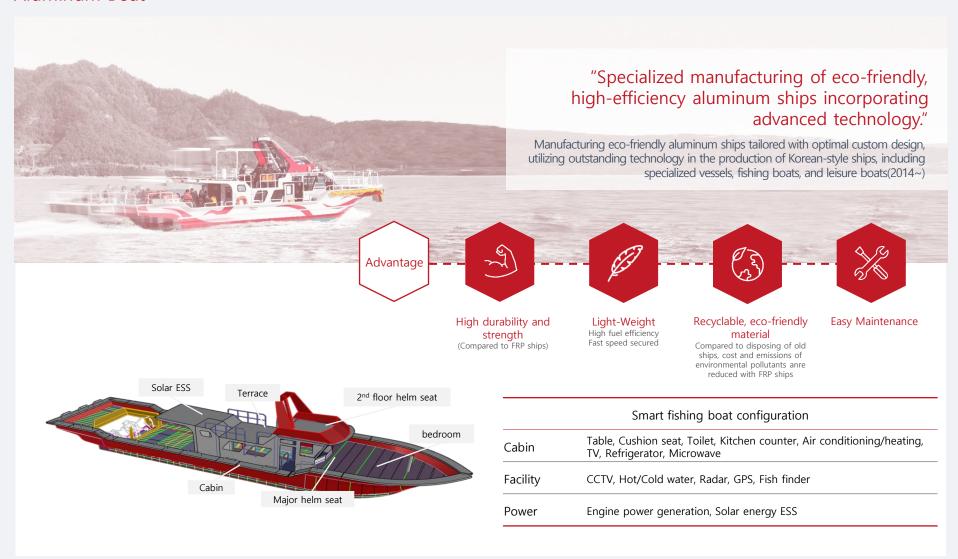
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EB Business Div.

#### Aluminum Boat



New Model

Overview

Introduction

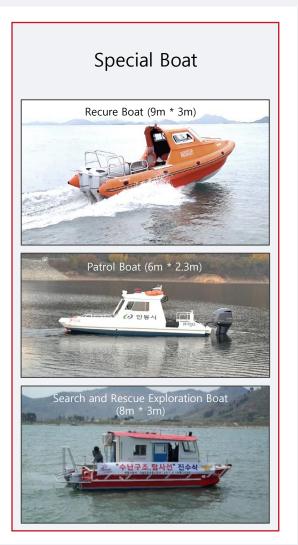
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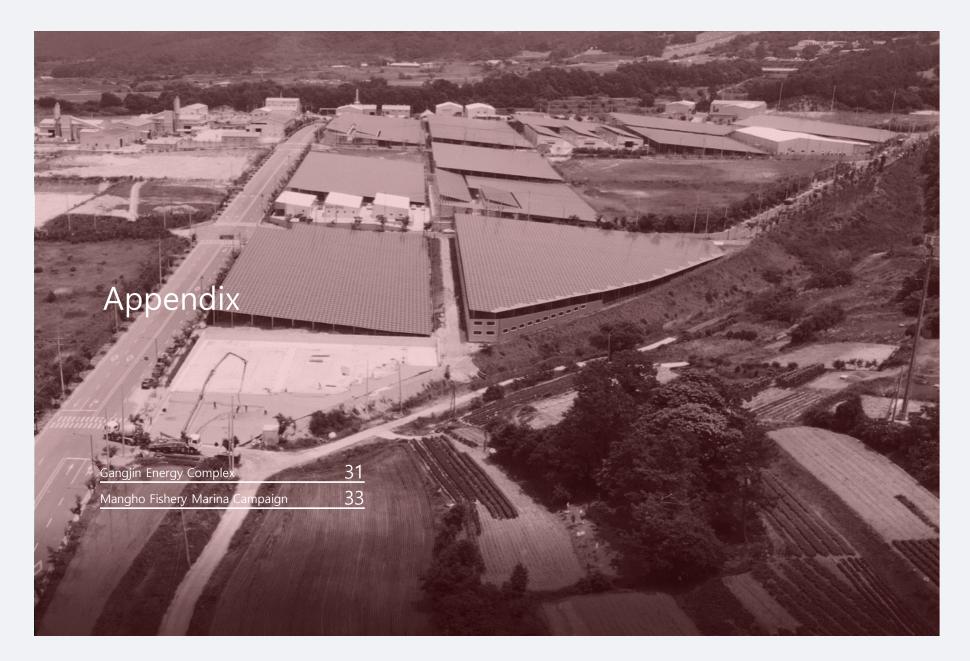
EB Business Div.

### Aluminum Boat









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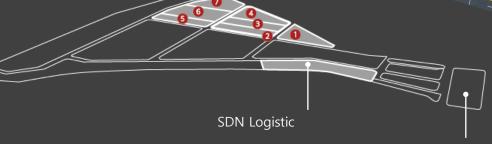
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# Gangjin Energy Complex

# " Leading Localization with Advanced Technology"

- SDN (14,934 m<sup>2</sup>) : Aluminum ship / R&D
- SDN ENG (8,242 m<sup>2</sup>) : O&M
- SD ESS (11,994 m<sup>2</sup>) : ESS System
- SD FC (18,726 m<sup>2</sup>) : Hydrogen Power Generation
- SD BIO (11,335 m<sup>2</sup>) : Bio Farm
- SD 솔루션 (23,467 m²) : Electronic Components
- SD PV (22,730 m<sup>2</sup>) : Solar Module



Jeonnam Environment Industry Promotion Agency

# Gangjin Energy Complex

# "Dreaming of turning an industrial complex into an energy park"

Complex energy center: Manufacturing plant + Integrated solar power generation + Fuel cell power generation



#### Manufacturing

- Relocation and establishment of about 10 companies including solar modules and structures
- · Manufacture of Aluminum ship and engine related products



#### A/S and Demonstration Center

- SDN solar power plant monitoring and A/S center
- · Solar Inverter and fuel cell demonstration



#### Power Plant Operation

- Solar Powr Plant 15MW
- · Fuel Cell Power Plant  $19.8MW \times 3 = 59.4MW$

Mangho Fishery Marina Complex

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Appendix

### Mangho Fishery Marina Campaign

Period	2024.06 ~ 11 Gangjin-gun maryang port area
Organized	SDN/Gangjin-gun/MastersMGM
Host broadcaster	MBC sports+







# SDN