



Doosan Heavy Industries & Construction

Doosan Heavy Industries & Construction '17 2Q Business Results Review



2017.8.

Disclaimer

This presentation was prepared for the convenience of investors. The financial figures contained in this presentation are K-IFRS consolidation and DHI operation* basis.

Also, this presentation has been prepared in advance prior to the completion of external audit, only for the convenience of investors. Accordingly, it may be subject to change during the course of audit.

This presentation is provided only as a reference material. Doosan Heavy Industries and Construction assumes no responsibility for your decisions.

* DHI Operation : DHIC Parent & Overseas Subsidiaries(DPS and etc.)

Table of Contents

- **DHIC (Doosan Heavy Industries & Construction)**
 - **Summary**
 - **New Orders**
 - **Sales/Operating Profit**
 - **Annual New Orders Forecast**
 - **Balance Sheet**
- Consolidated
- Affiliates
- Status of new businesses

DHIC_Summary

1H new orders recorded KRW 2.4T., including KRW 1.2T. in 2Q.
Sales increased by 5.5% QoQ, and OPM(%) is 4.3%.

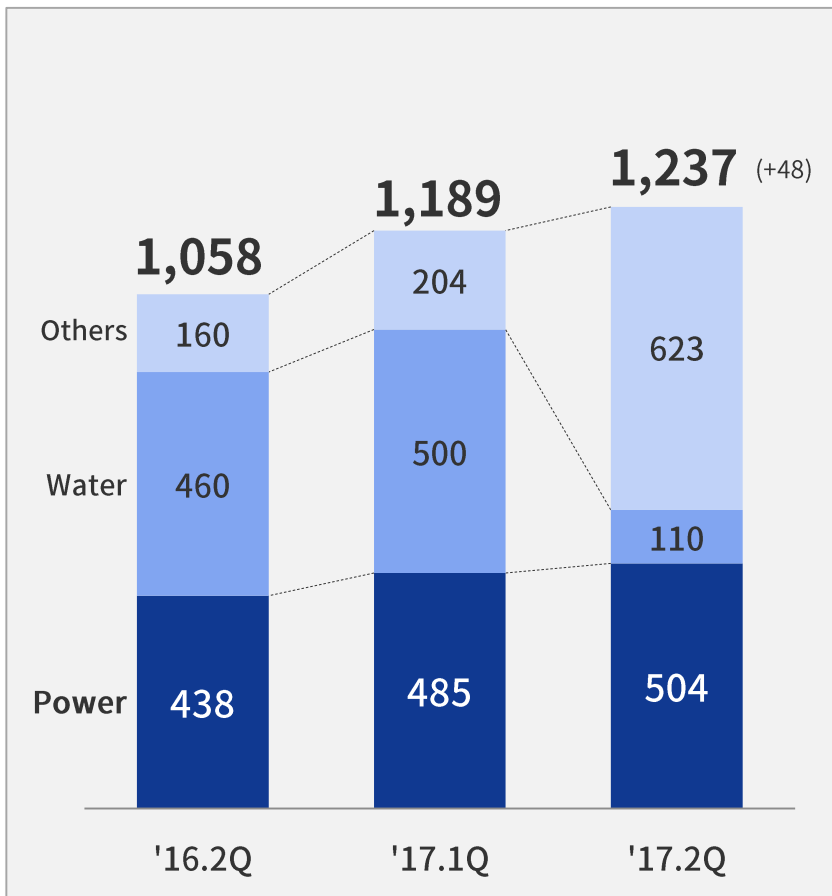
(Unit : KRW B., %)

	'16.2Q	'17.1Q	'17.2Q	YoY	QoQ
Order	1,058	1,189	1,237	+179	+48
Backlog	17,160	19,289	19,079	+1,919	-210
Sales	1,488	1,372	1,447	-41	+75
OP	72	69	63	-9	-6
OPM(%)	4.9%	5.1%	4.3%	-0.6%p	-0.8%p
EBITDA	133	126	120	-13	-6
Non-OP	-46	-49	-107	-61	-58
Interest P/L	-36	-43	-40	-4	+3
FX	3	12	-32	-29	-44
Others	-4	-1	-24	-20	-23
Net P/L	21	7	-52	-73	-59

DHIC_New Orders

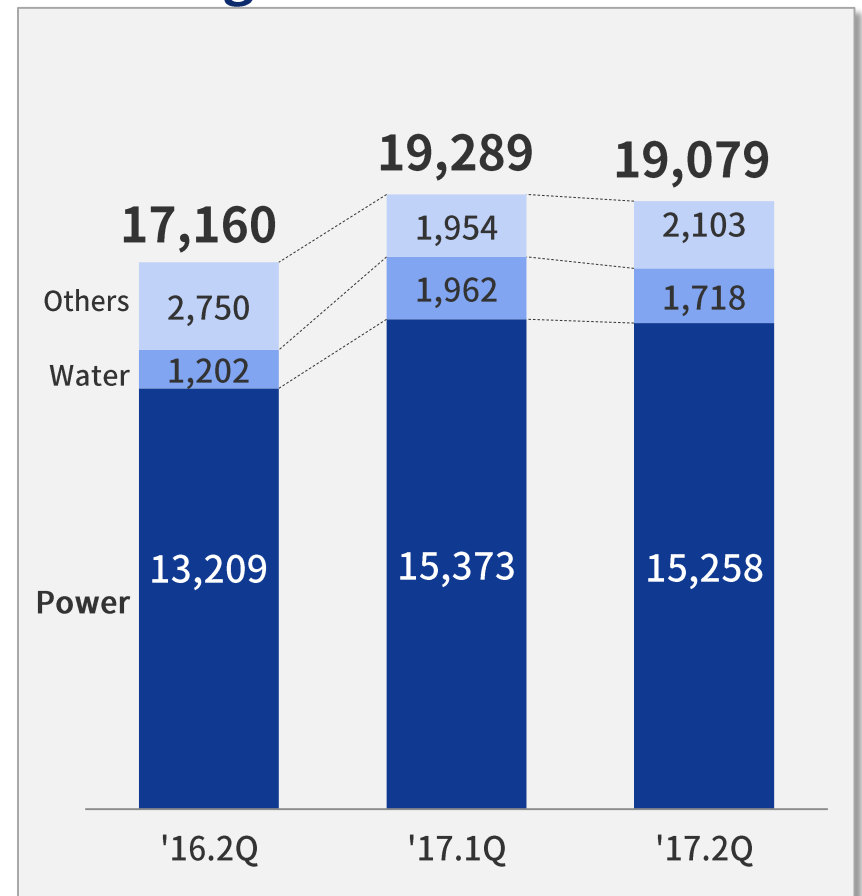
Orders recorded KRW 1.2T in 2Q, increased YoY and QoQ.
Order backlog maintained at level of KRW 19T.

New Orders



Backlogs

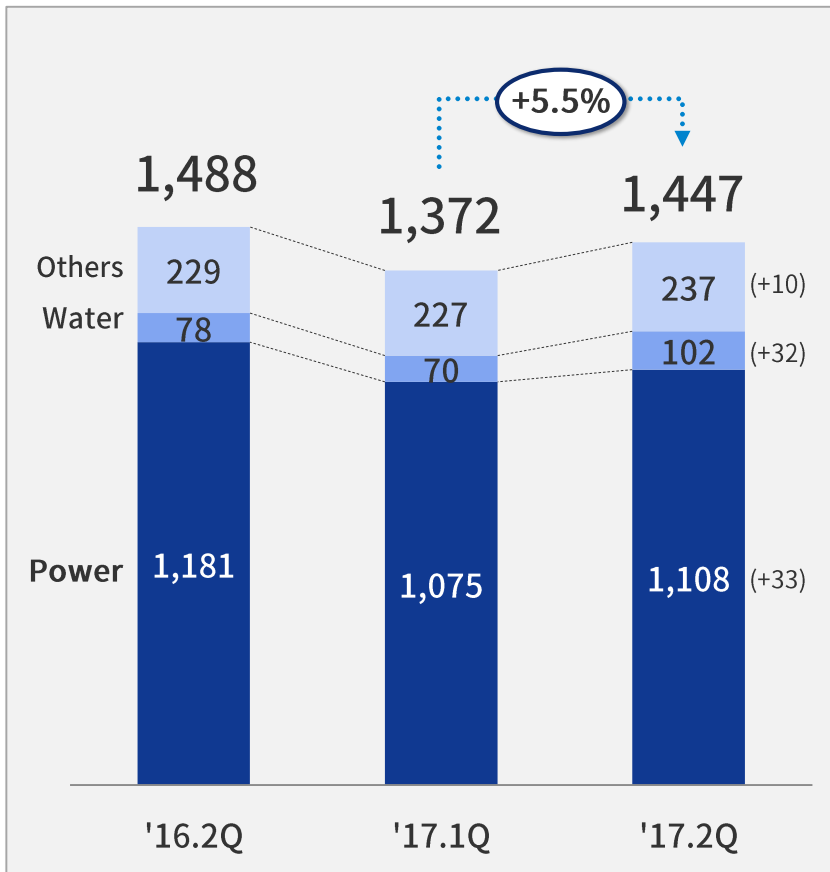
(Unit : KRW B.)



DHIC_Sales / OP(%)

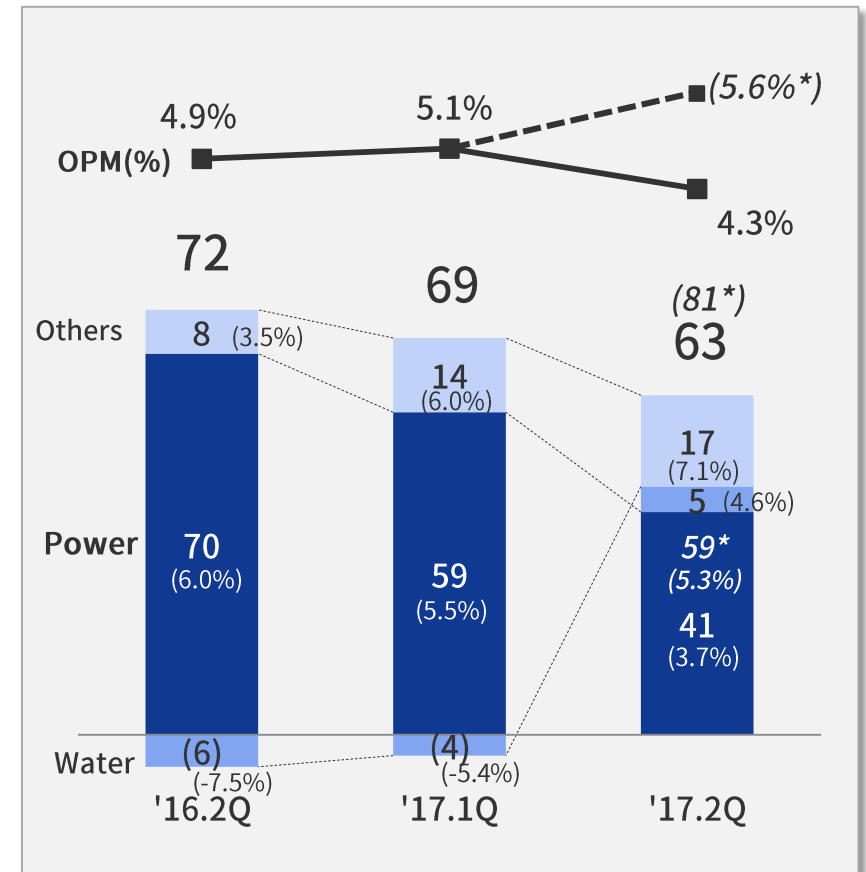
Sales increased by 5.5% QoQ due to revenue recognition from projects that awarded at the end of '16. OP(%) was little sluggish due to one-off losses*, but normalized OP margin was around 5.6% when removing the one-off.

Sales



OP(%)

(Unit : KRW B., %)

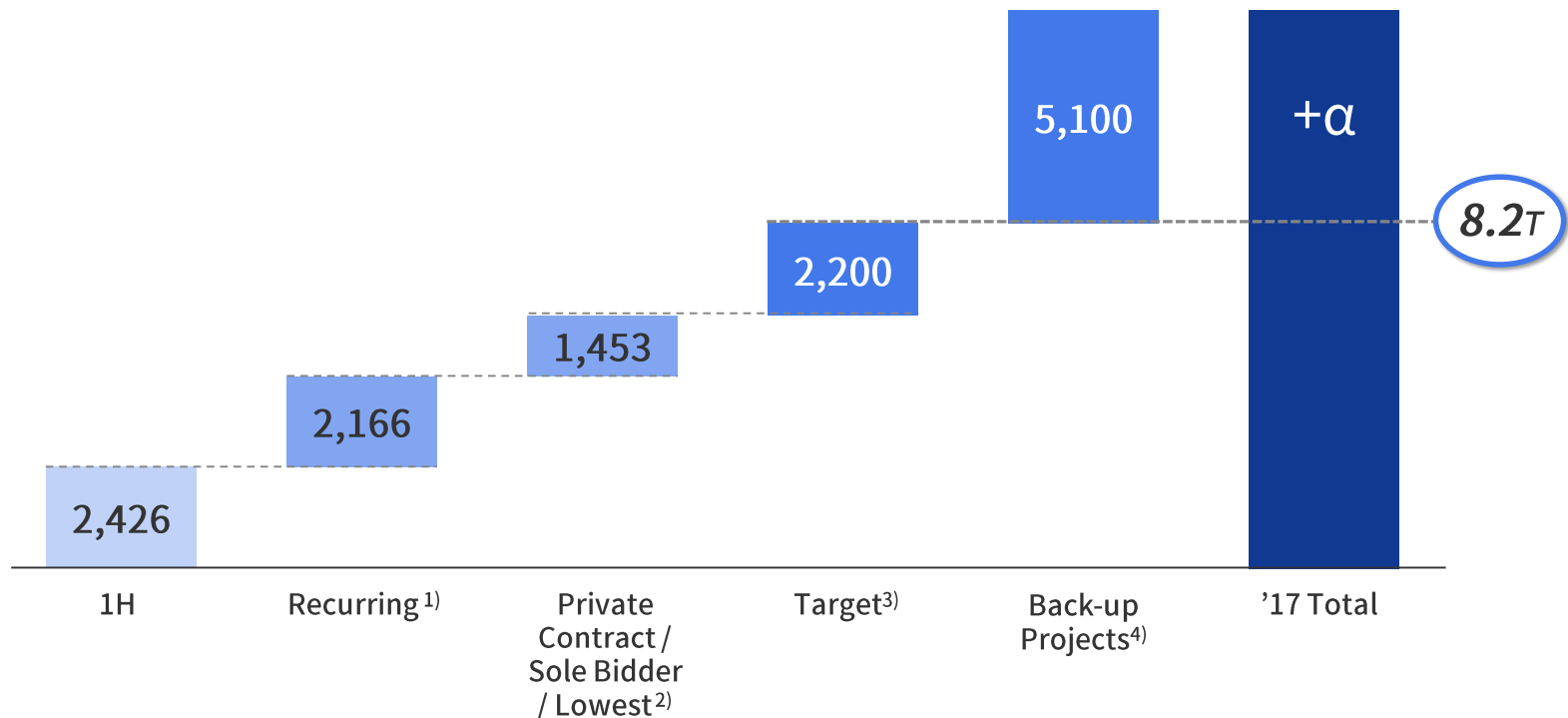


* TEPCO(Tokyo Electric Power Company) Nuclear waste cask supply contract termination : KRW 18B. losses.

DHIC_Annual New Orders Forecast

Expect to achieve 8.2T. of new order in '17, considering uncertainties of domestic nuclear & coal-IPPs due to changes of government's energy policy.

(Unit : KRW B.)



1) Equip. 0.8T, Service 1.1T, Others 0.3T / Low order risk, continued & repeated contracted PJTs ('12~'16 avg 4.2T yearly orders)

2) South Africa A CFB 1.1T, Domestic Environmental Equip., etc.

3) Mid-Asia EPC 0.6T, Domestic Civil/Construction 0.6T, Kuwait Water 0.8T, Oman Water 0.2T etc.

4) Egypt EPC 1.2T, Southeast-Asia EPC 0.7T, Vietnam EPC 0.6T etc. / **Domestic Nuclear not included**

DHIC_Balance Sheet

(Unit : KRW B., %)

Category	2016	2Q 2017	Difference
Current Assets	4,445	4,521	+76
Cash & Cash Equivalent	730	669	-61
Non-Current Assets	10,218	10,308	+90
Total Assets	14,663	14,829	+166
Total Liabilities	8,745	8,949	+204
Net-Debt	3,974	4,570	+596
Total Equity	5,918	5,880	-38
Total Liabilities and Equity	14,663	14,829	+166
Total L/E Ratio	148%	152%	+4%p

Table of Contents

- DHIC (Doosan Heavy Industries & Construction)
 - Summary
 - New Orders
 - Sales/Operating Profit
 - Annual New Orders Forecast
 - Balance Sheet
- **Consolidated**
- Affiliates
- Status of new businesses

'17 1H Consolidated_Summary

In 1H, sales and OP increased by 7.2% and 12% YoY respectively. OPM(%) achieved 7.5% improved 0.4%p

(Unit : KRW B., %)

Category	2016			2017			YoY	
	1Q	2Q	1H	1Q	2Q	1H	2Q standard	1H standard
Sales	3,174	3,598	6,772	3,438	3,825	7,263	+227	+491
OP	221	262	483	237	306	543	+44	+60
OPM(%)	7.0%	7.3%	7.1%	6.9%	8.0%	7.5%	+0.7%p	+0.4%p
EBITDA	341	379	720	360	426	786	+47	+66
Non-OP	-106	-175	-281	-121	-247	-368	-72	-87
Interest P/L	-131	-123	-254	-109	-110	-219	+13	+35
FX/Other Financials	-5	-30	-35	26	-65	-39	-35	-4
Other Non-OP	30	-22	8	-38	-71	-109	-49	-117
Net P/L	90	131	*221	37	-26	11	-157	-210

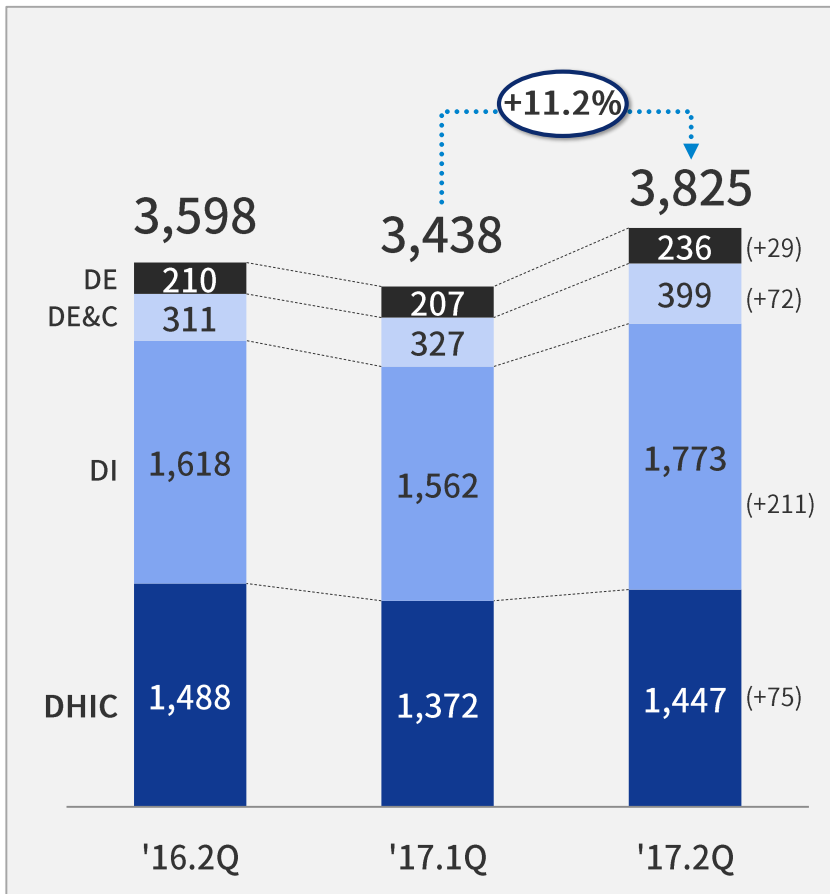
*including DI's discontinued operation profit KRW 190.B



Consolidated_Sales / OP(%)

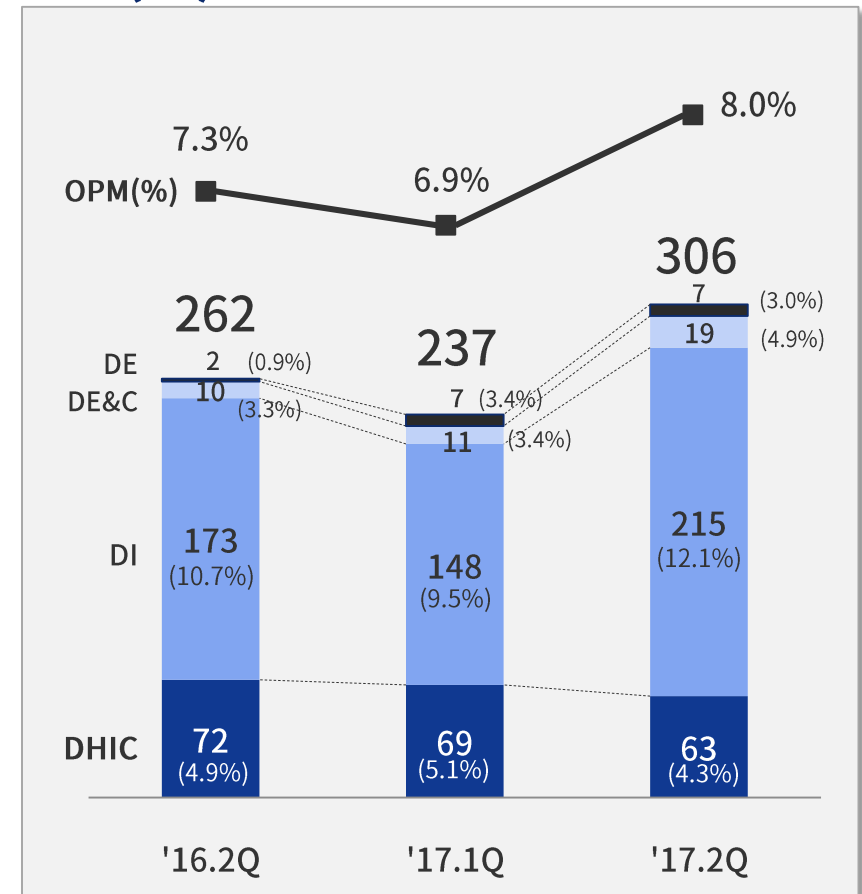
Sales increased YoY and QoQ thanks to simultaneous growth of every affiliates, OP(margin) improved as well.

Sales



OP(%)

(Unit : KRW B., %)



Consolidated_Balance Sheet

(Unit : KRW B., %)

Category	2016	2Q 2017	Difference
Current Assets	9,035	9,585	+550
Cash & Cash Equivalent	1,583	1,793	+210
Non-Current Assets	15,797	15,742	-55
Total Assets	24,833	25,328	+495
Total Liabilities	18,010	18,400	+390
Net Debt	8,835	9,212	+377
Total Equity	6,823	6,929	+106
Total Liabilities and Equity	24,833	25,328	+495
Total L/E Ratio	264%	266%	+2%p

Table of Contents

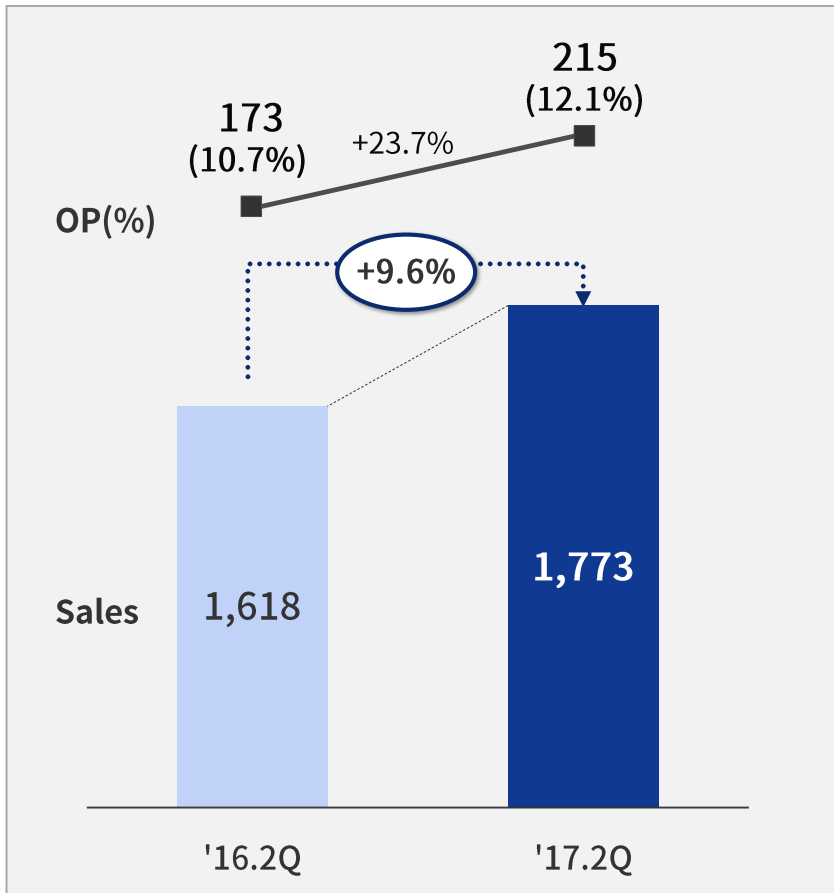
- DHIC (Doosan Heavy Industries & Construction)
 - Summary
 - New Orders
 - Sales/Operating Profit
 - Annual New Orders Forecast
 - Balance Sheet
- Consolidated
- **Affiliates**
- Status of new businesses

Doosan Infracore

Sales & OP highly improved, driven by infrastructure spending and rebound of end market in China and developing countries. In China, product mix also improved to high value-added products, with growth of sales volume.

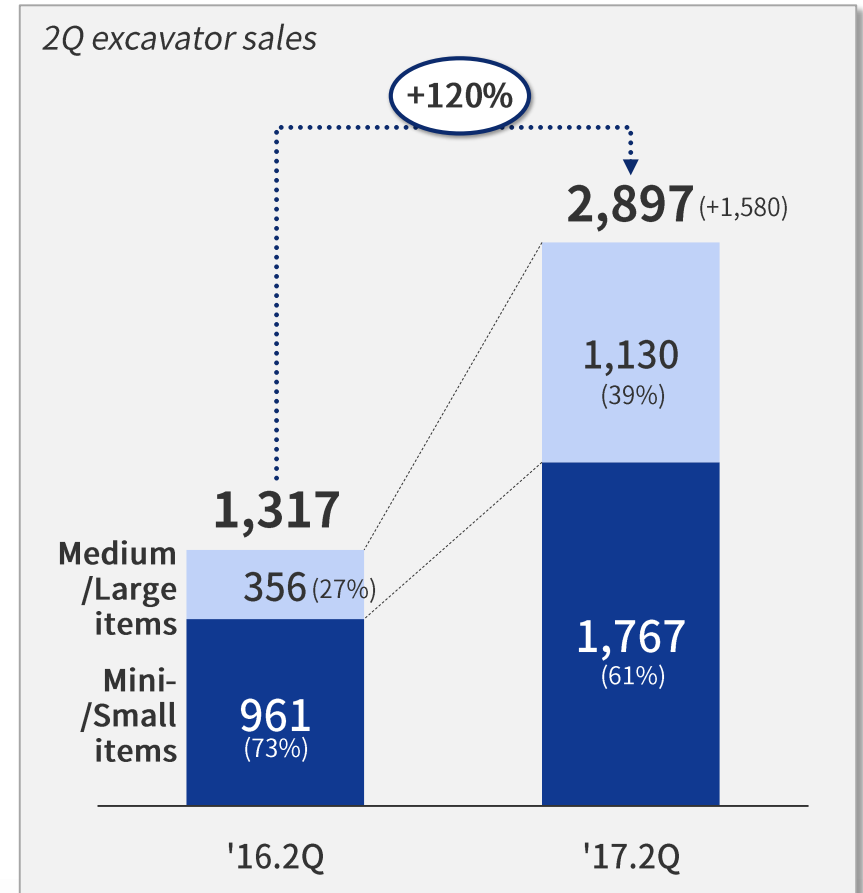
Sales/OP(%)

(Unit : KRW B., %)



Sales volume of China

(Unit : ea.)

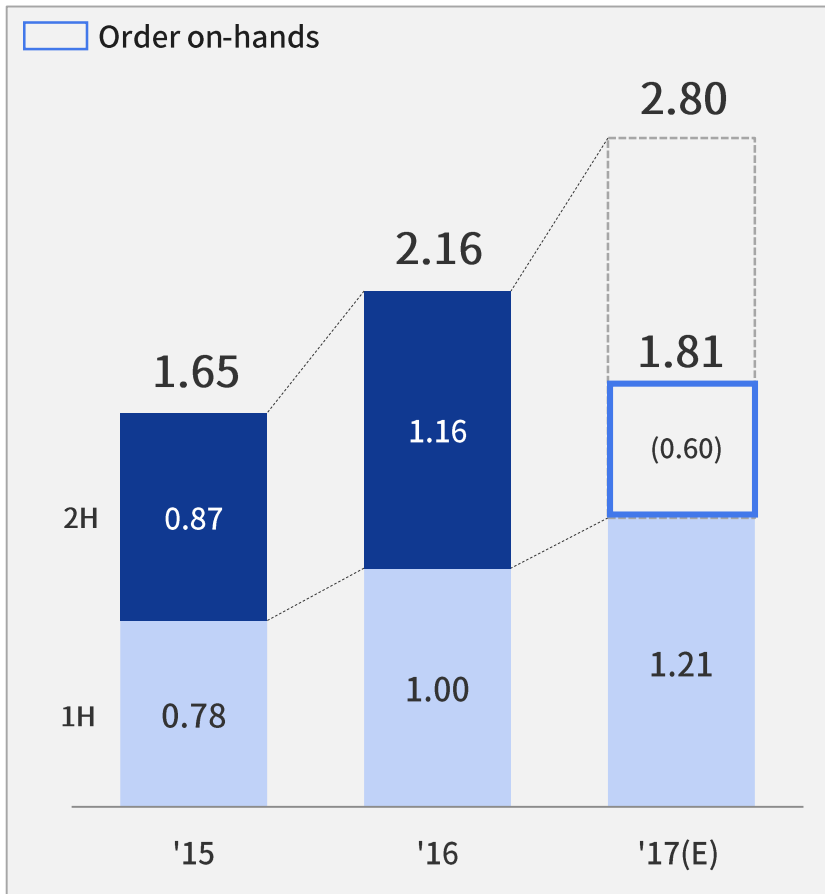


Doosan E&C

1H New orders improved 21% backed by new civil engineering and housing projects. Sales & OP also improved by order growth of recent years.

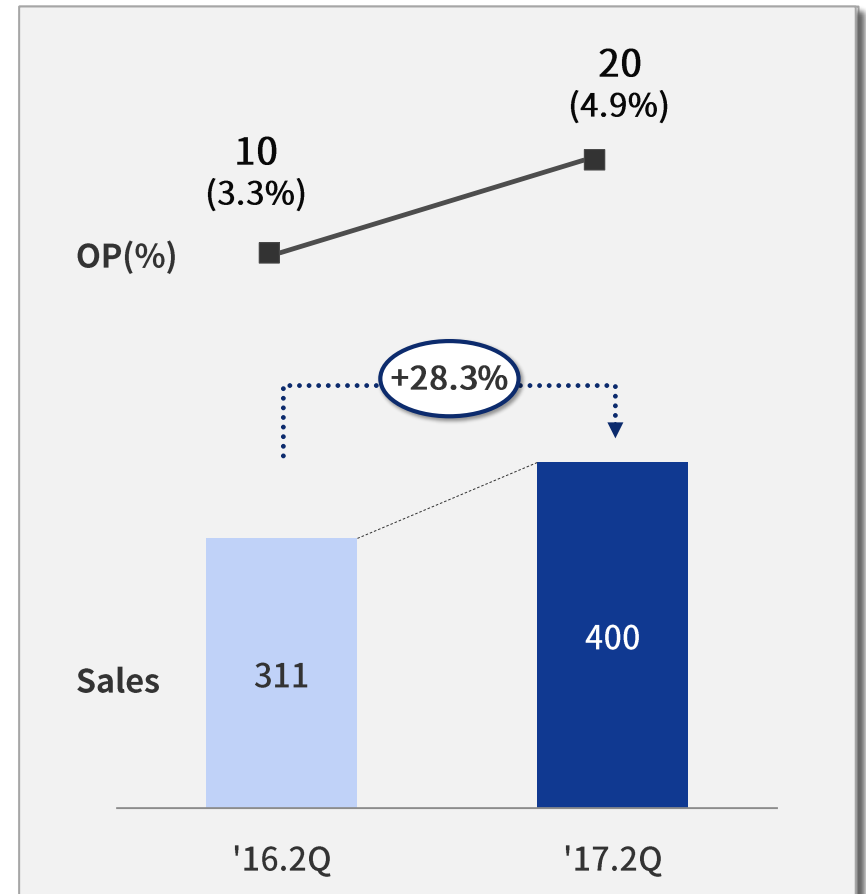
New Orders

(Unit : KRW T.)



Sales/OP(%)

(Unit : KRW B., %)

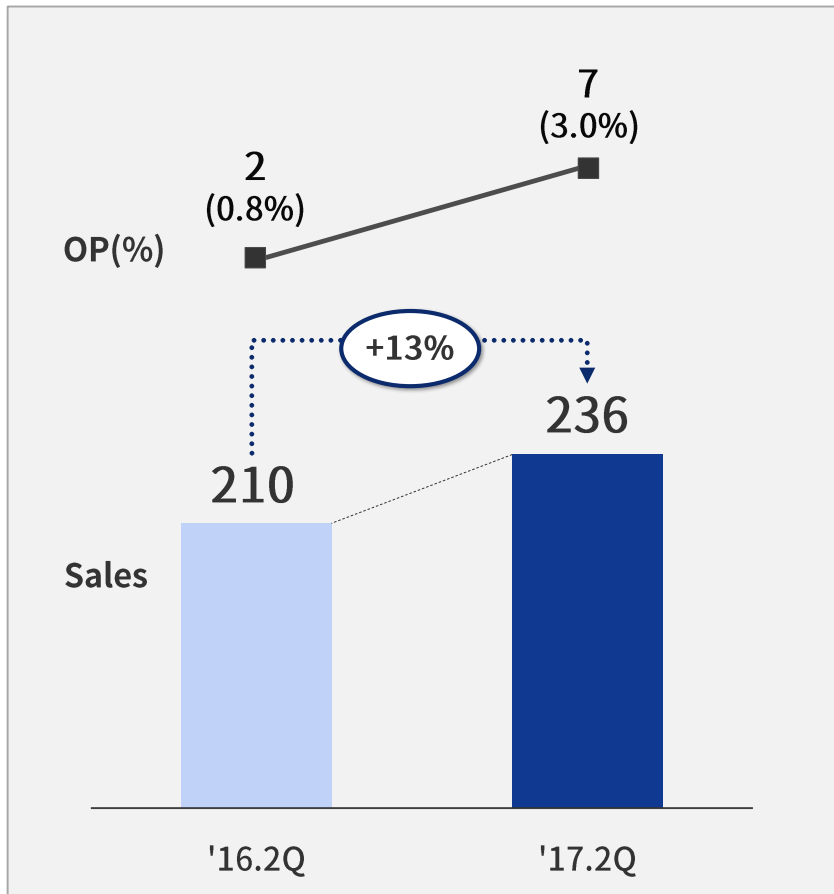


Doosan Engine

Sales increased 13% YoY and OP(%) recorded big improvement, thanks to the highly profitable LNG dual-fuel engine work increased.

Sales/OP(%)

(Unit: KRW B., %)



Sales Breakdown

(Unit: %)

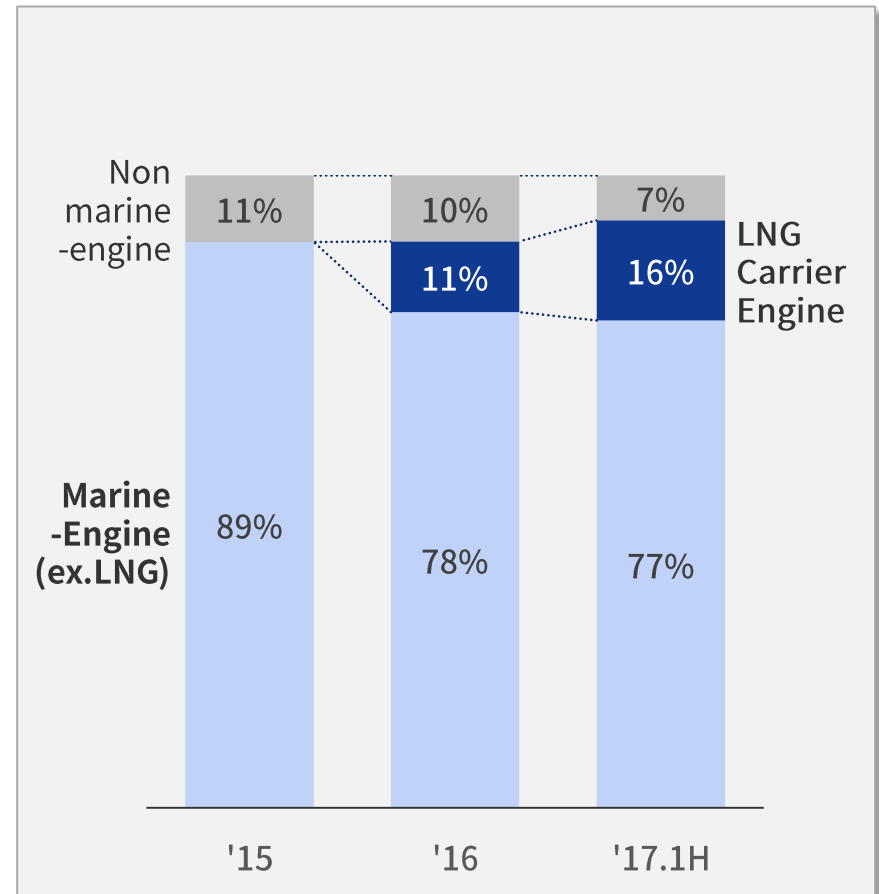


Table of Contents

- DHIC (Doosan Heavy Industries & Construction)
 - Summary
 - New Orders
 - Sales/Operating Profit
 - Annual New Orders Forecast
 - Balance Sheet
- Consolidated
- Affiliates
- **Status of new businesses**

Gas Turbine Development

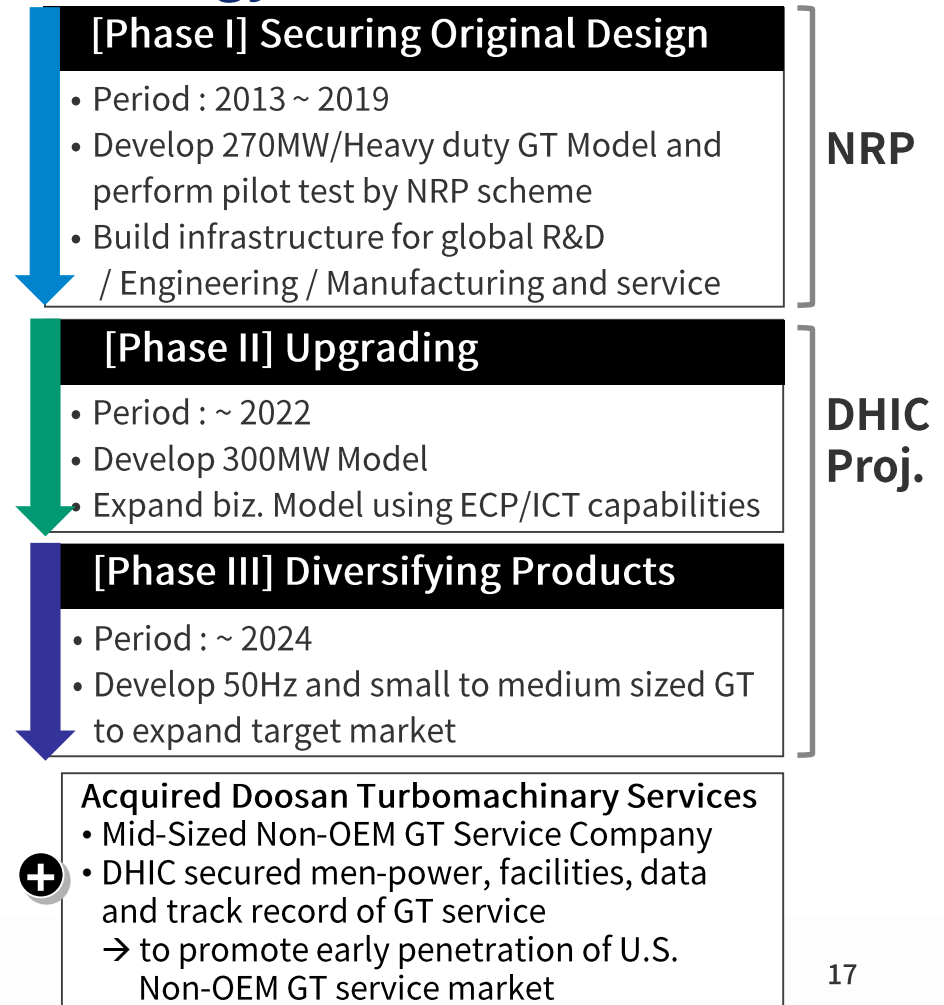
DHIC is now executing NRP* to develop large-sized/heavy duty gas turbine with the governmental support, and fostering the item to the next growth engine.

Overview of Development

	NRP's RFP	DHIC Target
Performance	Capacity>100MW Efficiency>37%	Capacity>270 MW Efficiency>40%
Emission standard	NOx <15ppm / CO ₂ <10ppm	NOx <15ppm / CO ₂ <10ppm
Period	2013.07 ~ 2019.09 (75months)	

* NRP: National Research Project

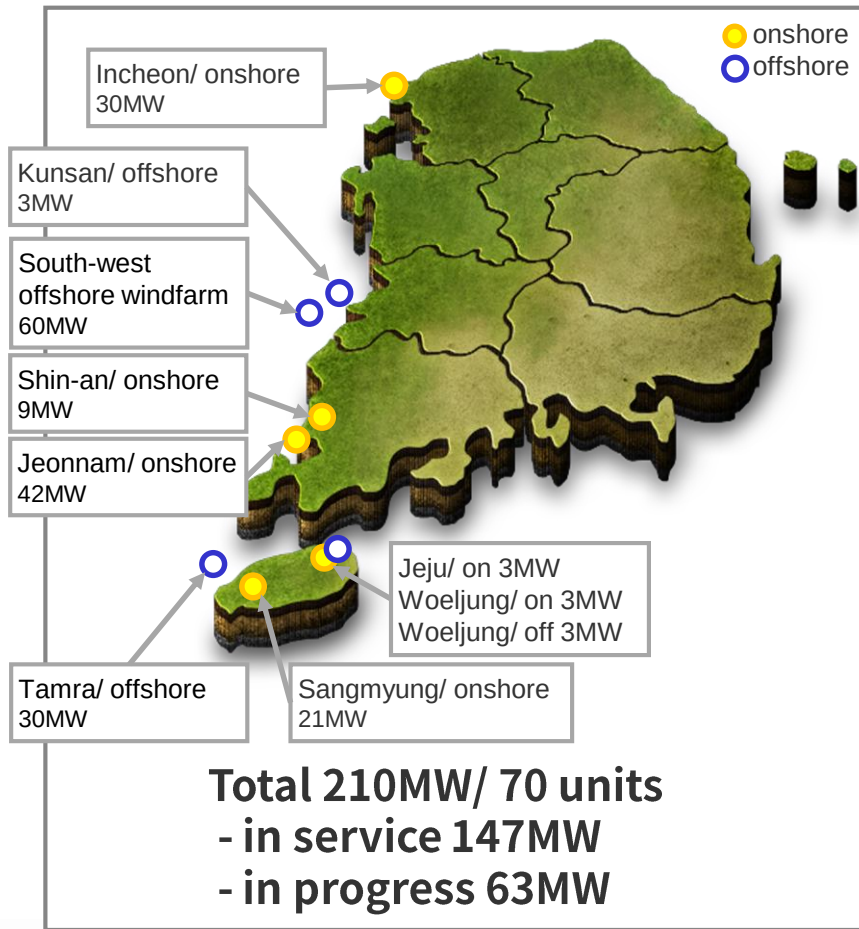
Strategy



Wind Power

DHIC, leader of domestic wind-power industry, is to expand wind business to overseas market by cost-reduction and product diversification.

Track Records



Overview of business

- No.1 of domestic Market share(by end of '16)
- Leading the domestic market with original model (WinDS 3000, 3MW) and advanced technologies
- Sole provider of offshore EPC solution in Korea (executed 100% of domestic offshore projects)

Enhancing Product Competitiveness

- Type certification awarded for 3MW model (WinDS3000/134)
- Acquired 5.5MW Model to expand products line-up

Penetrating global market with experiences in the domestic market and enhancing product competitiveness

Wind Power

Southwest Offshore Wind Project* is KRW 12.5T. sized national project to build 2.5GW windfarm. DHIC is sole provider of wind mills in phase 1 to build 60MW of pilot plant.

Location



(이미지 출처 : Google)

Overview of SOWP

- Title : SOWP Pilot Project (Phase 1)
- Developer : Korea Offshore Wind Power /
KEPCO(25%) + 6 GenCos(75%, 12.5% per each)
- Capacity : 60MW(3MW X 20), DHIC is providing 100%
- Long Term Plan
 - Phase 1(60MW, ~2019) : build offshore test bed
 - Phase 2(400MW, 2020~2022) : secure track record
 - Phase 3(2GW, TBD) : develop mega-sized farm

**with SOWP experiences,
penetrate to domestic/overseas
large-sized offshore PJT.**

※ DHIC is now preparing to participate Jeju Daejung (110MW, ~2021), Jeju Woljung(100MW, ~2022) and others

* SOWP : Southwest Offshore Wind Project

** KOWP : Korea Offshore Wind Power Co.

ESS-Microgrid

Acquired Doosan GridTech¹⁾ - the leader of ESS²⁾/Microgrid industry - to secure original technology and track records and expand business using synergy with HQ.

Doosan GridTech

- Established in 2011 / DHIC acquired in July 2016
- ESS System Integration, EPC Turn-key, Software sales/maintenance, ESS PJT's feasibility study

[Rationale of Acquisition]

- Early market entry with track records in ESS, Microgrid

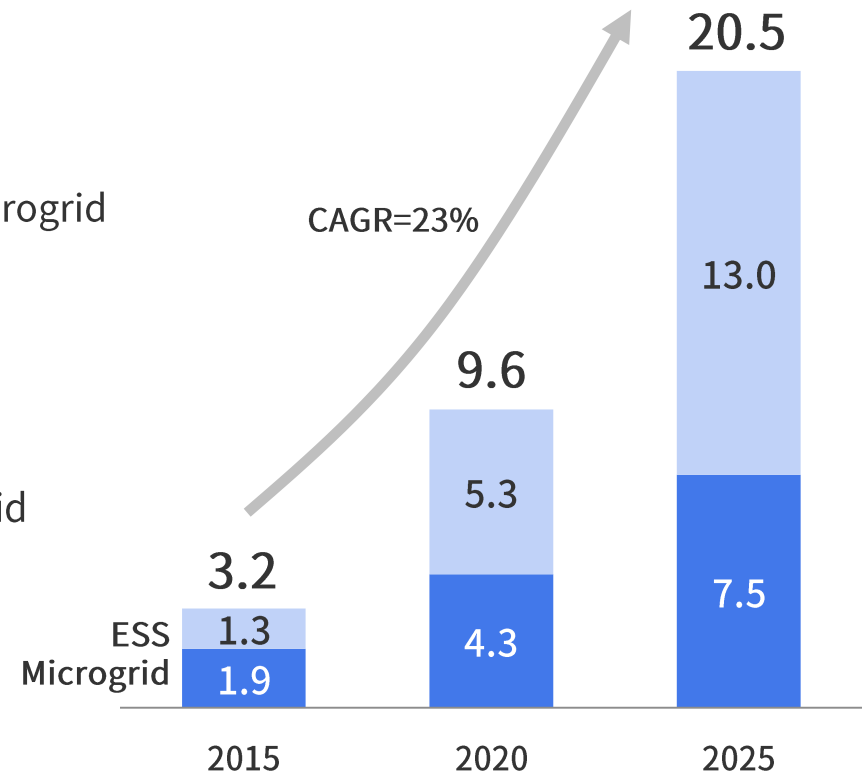
	USA	South Korea
Completed	25.3MW / 10.7MWh	1.3MW / 3.4MWh
In Process ³⁾	25.3MW / 23.2MWh	12.2MW / 38.2MWh
Total	50.6MW / 33.9MWh	13.5MW / 41.6MWh

- Securing original tech. of S/W, SI in ESS, Microgrid
- PJTs in progress

	Developer	Capacity
MESA 2	Snohomish PUD	2MW / 7MWh
Kingsbery	Austin Energy	1.5MW / 3MWh
SHINES	Austin Energy	1.75MW / 3.22MWh

Market outlook

(Unit: USD B.)



1) renamed from '1Energy Systems' after acquisition(July 2016)

2) Energy Storage System

3) including projects in negotiation



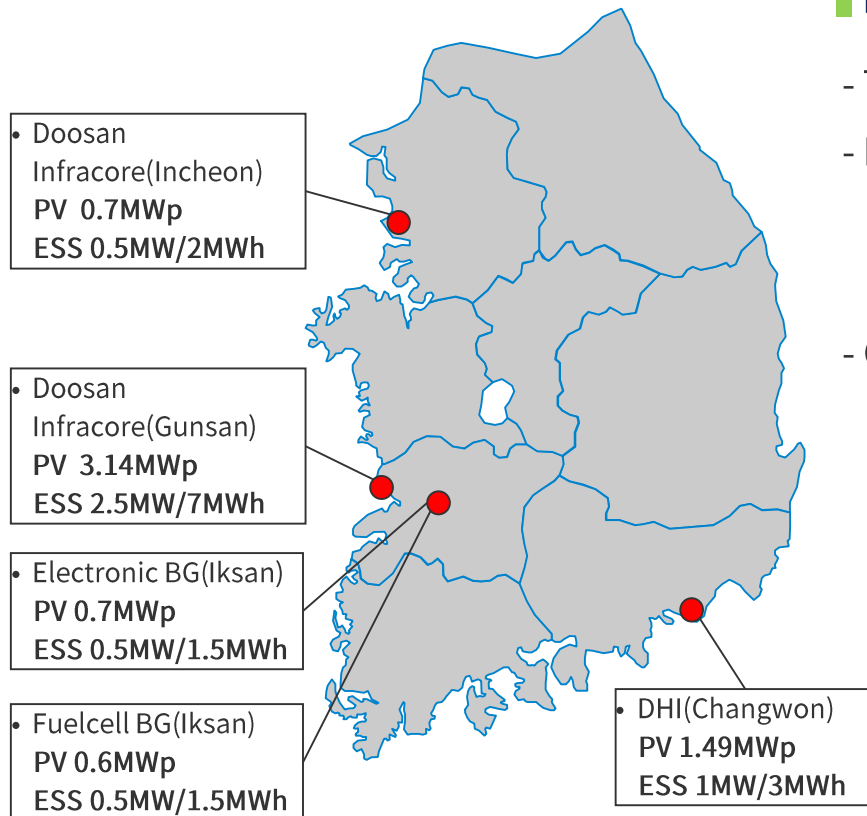
Doosan Heavy Industries & Construction

ESS-Microgrid

In corporation with GenCos, DHIC is to execute PV + ESS* installation business at Doosan affiliates owned sites, and to expand business with the track records.

Project Overview

- Title : PV + ESS Installation biz. of Doosan group
- Developer: SPC established by Doosan Aff., and GenCos
 - Doosan Affiliates : land offering
 - DHIC: 'PV+ ESS EPC' Turn-key / O&M
- Capacity : PV 6.6MWp, ESS 5MW/ 15MWh



Expanding business using experience
and track records in PV+ESS+Microgrid
in response to the growth of renewable
energy market

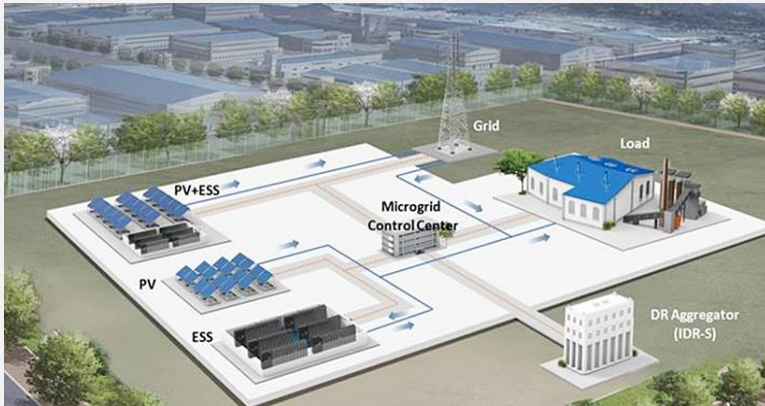
* PV(Photovoltaic)+ESS(Energy Storage Systems)

ESS-Microgrid Case Study

Pilot PJT to build Microgrid and PV+ESS* is now executing at DHIC and affiliates' sites.

Doosan Engine Microgrid

- The first profit-sharing Microgrid PJT in Korea with 100kW PV + 4.2MWh ESS
 - DHIC : design and construction
 - Doosan Engine : site offering
 - Korea South-East Power(GenCo)
: Facilities set-up and operation



DHIC Learning Center

- Pilot PJT to build 300kW PV + 1MWh ESS at DHIC learning Center is now under construction
- After the completion, expand the business model to other Doosan affiliates and outside the group



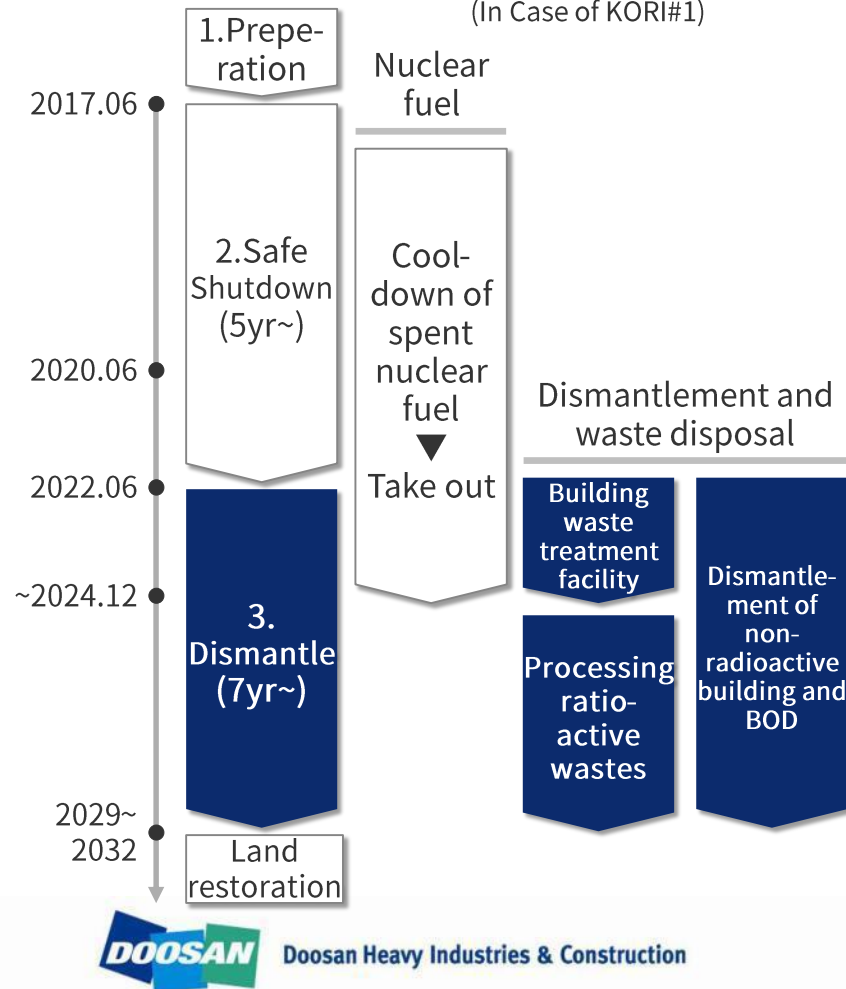
* PV(Photovoltaic)+ESS(Energy Storage Systems)

Nuclear Decommissioning

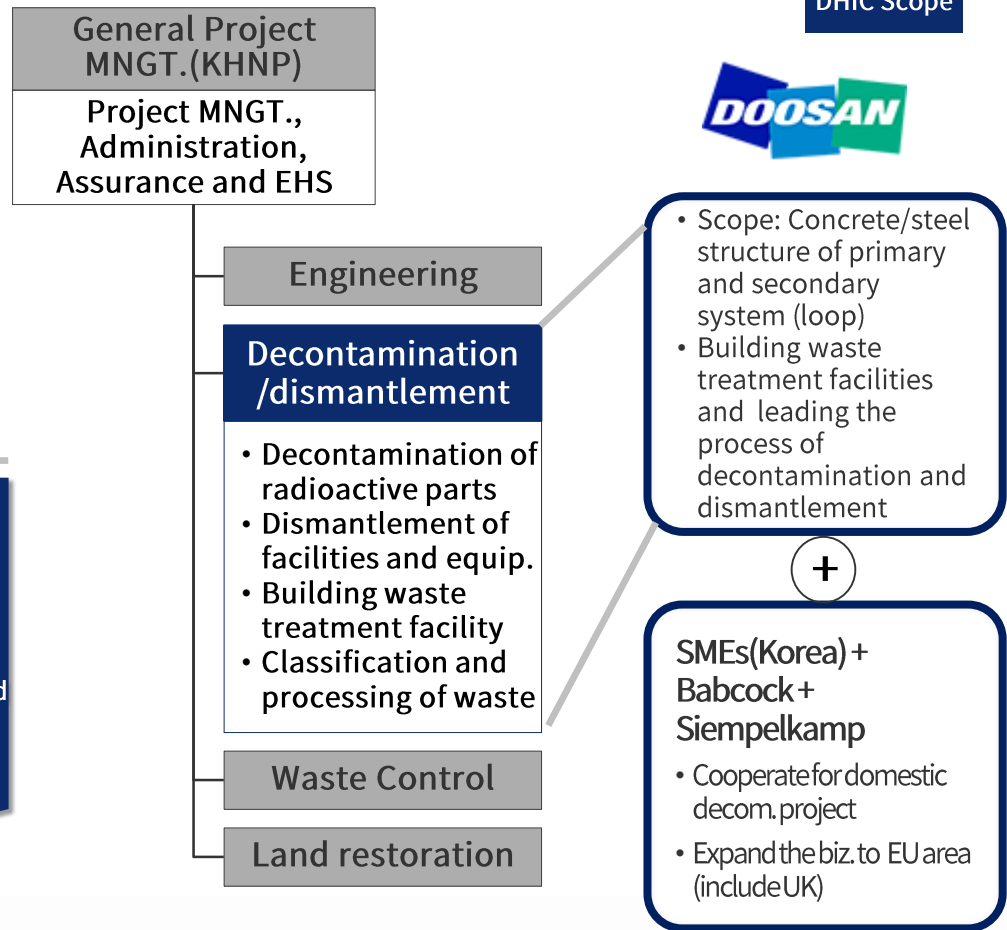
Full decommissioning of KOR1#1 starts from 2022, after cool-down of nuclear fuel. DHIC is driving alliances and R&D efforts in decontamination and dismantlement work to lead the business of Korea nuclear power plant.

Basic Plan for Nuc.Dec.

(In Case of KOR1#1)



Business Structure

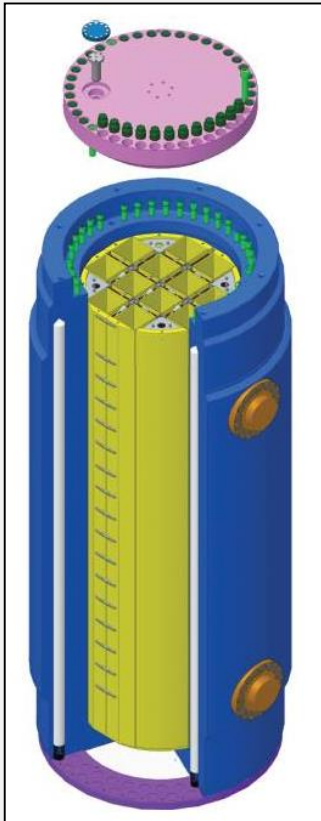


Nuclear Cask and Export

Developing Cask* technology for commercialization.

Promoting nuclear export with APR1400 marketing and WEC AP1000 equipment order.

Cask business



- Over KRW 2T.(~2030, Global) market is expected with Cask business
- DHIC is developing cask tech. and product
 - Alliance with NAC¹⁾ to develop DHIC's original model
 - To dominate Korea market first, then expand to overseas market

* Cask : storage for high-level radio-active spent nuclear fuel that has been cooled

Export Activities



- APR1400(Korea Type) marketing is underway at UK, UAE and Czech Rep.
 - Supporting Korea Team for Moorside PJT
- Promoting AP1000(WEC) key equipment supply for India PJT
 - U.S.-India summit meeting in June, building 6 units of AP1000 was agreed
- Also, promoting to penetrate nuclear service and MMIS²⁾ market

Water Treatment

Expanding water treatment business with Doosan Enpure's experience and technology

Water Treatment business

- Reinforcing the business with capabilities of Doosan Enpure
 - Birmingham Resilience WTW¹⁾ awarded
 - Sludge to Energy Conversion (Thermal Hydrolysis)
 - Takes part in UK's AMP7²⁾ and expand the business to eastern EU and SE-Asia
- Promoting package business such as ZLD³⁾ (YungHeung power plant and others)

Doosan Enpure

- Established in 1955, acquired by Doosan in 2012
- Specialized in water and waste water treatment facility design and engineering
- Hold core-technologies and patents for pre-processing



Service business

Since the launch of Service Business Group, DHIC is expanding to R&M, Environmental equipment, O&M, and Component supply business.

R&M(Renovation & Modernization)

- Upgrade output efficiency/capacity of the existing power plants
 - Life extension, output enlargement, fuel conversion
- Secured track records of domestic/overseas markets(India, Africa, Australia and etc.)
- 500MW sized R&M orders are expected to continue following Boryeong #3(DHIC awarded, 2016) in domestic market

Component supply

- Provide component of the existing plants
 - Constant revenue generation through periodic replacement components supply
 - Expand to follow-up projects such as R&M

Environmental Equipment

- Provide 'Air Quality Control System' solution for De-SOx and De-NOx of power plants
 - Track records : Tae-an IGCC(Korea), Jawaharpur & Obra C(India)
- Market size of the target region¹⁾ is expected to reach over KRW 3T. to 2022
 - Bulk Order to install 11 FGDs²⁾ is in progress(India)

O&M(Operation & Maintenance)

- Operation/maintenance of the power plant
 - Pushing forward to Long Term Service(LTS) biz for DHIC manufactured plants
 - Expand to the Middle East market in connection with Babcock

Digital service

DHIC is now executing pilot project of 'digital service for power plant' which aims to figure out optimal operation solution. And simultaneously DHIC derives to commercialize the business.

Overview of Digital service

- Improve performance of power plant by analyzing big-data of operation
 - differentiate from conventional O&M work
 - combined with R&M to offer more value

Progress

- 2013~ : Applied ICT to the power industry and commercialization work started
- 2014 : Established S/W center and RMS¹⁾ center in Changwon
- 2016 : MOU agreement with GenCo in cooperation with Digital service, providing pilot S/W service
- In the process of developing the Digital Service biz-model package

Cooperation with GenCo

- 2016.12 : MOU with GenCo for 'industry 4.0 Tech-innovation of Power Plants', to launch 'cooperated Digital service business'
- Utilize DHIC's OEM/service capability and GenCo's experience and big data of power plant operation
 - Expand to domestic/overseas market after testing the solution for 12 power plants that GenCo owned

Schedule

- 2017.08 : Joint business agreement
- 2017.10~2018.10 : Execute pilot project

1)Remote Monitoring Service

theDoosanWay

Our story. Our vision.

Q&A

