



Doosan Heavy Industries & Construction

Doosan Heavy Industries &
Construction

'18.2Q Results



2018.7.

Disclaimer

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

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DHIC_Summary

In 2Q, orders recorded KRW 0.6T. Sales increased 4% and OP margin improved 140bps QoQ. Net profit turned to black by achieving KRW 2B.

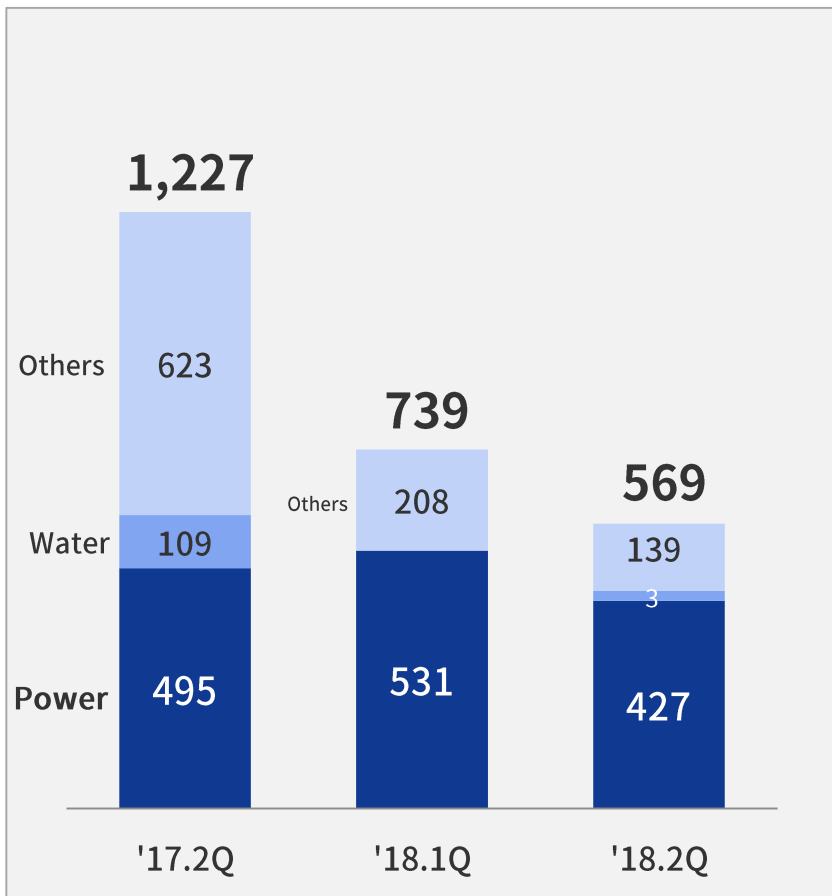
(Unit : KRW B., %)

	'17.2Q	'18.1Q	'18.2Q	YoY	QoQ
Orders	1,227	738	569	-658	-169
Backlog	18,098	17,282	16,535	-1,563	-747
Sales	1,447	1,265	1,316	-131	+51
OP	63	54	74	+11	+20
OPM(%)	4.3%	4.3%	5.7%	+1.4%p	+1.4%p
EBITDA	120	117	138	+18	+21
Non-OP	-107	-93	-64	+43	+29
Interest P/L	-40	-48	-50	-10	-2
FX	-32	-20	9	+41	+29
Others	-35	-25	-23	+12	+2
Net P/L	-52	-44	2	+54	+46

DHIC_New Orders

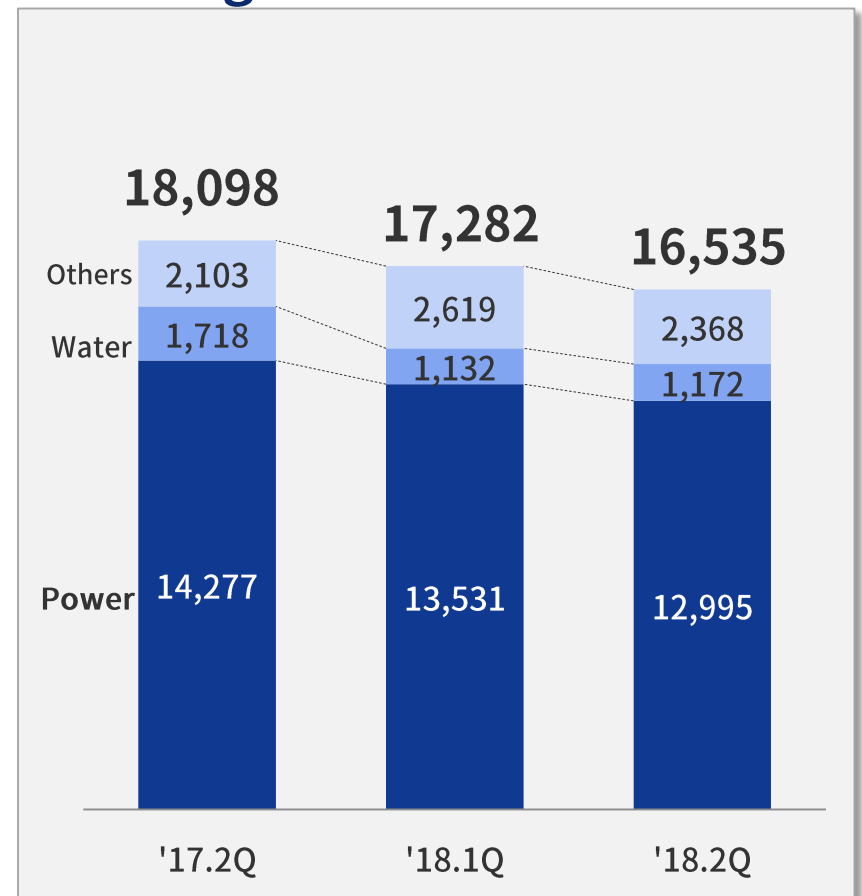
1H orders recorded KRW 1.3T., with 2Q orders of KRW 0.6T without large-scale project.
Backlogs was KRW 16.5T. and approximately 80% of which accounted for power division.

Orders



Backlogs

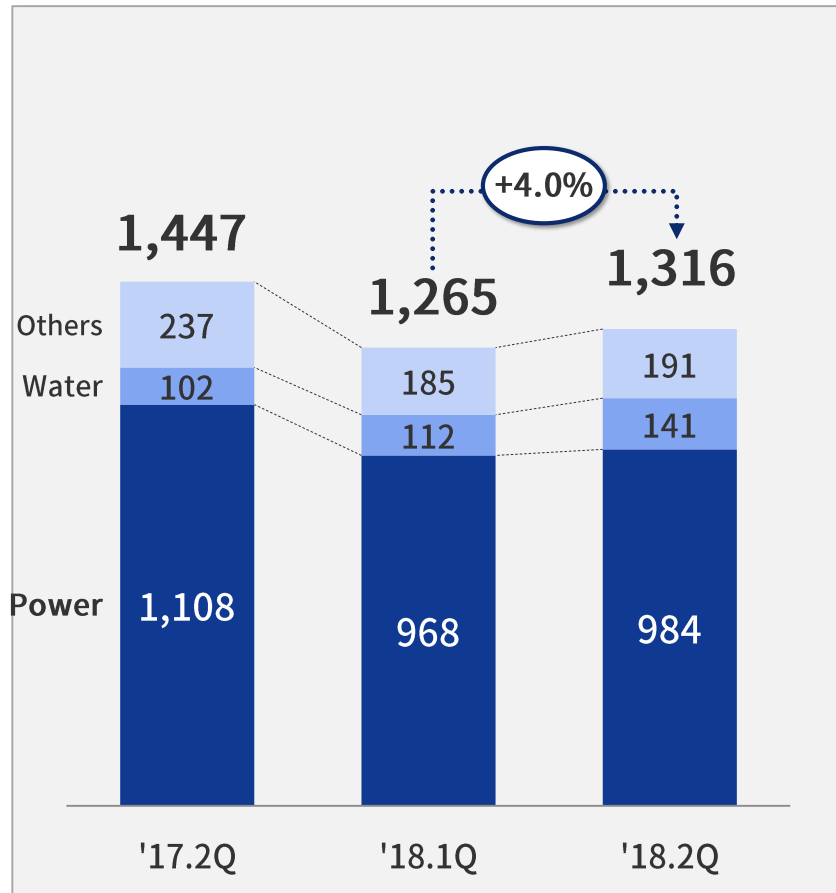
(Unit : KRW B.)



DHIC_Sales/OP(%)

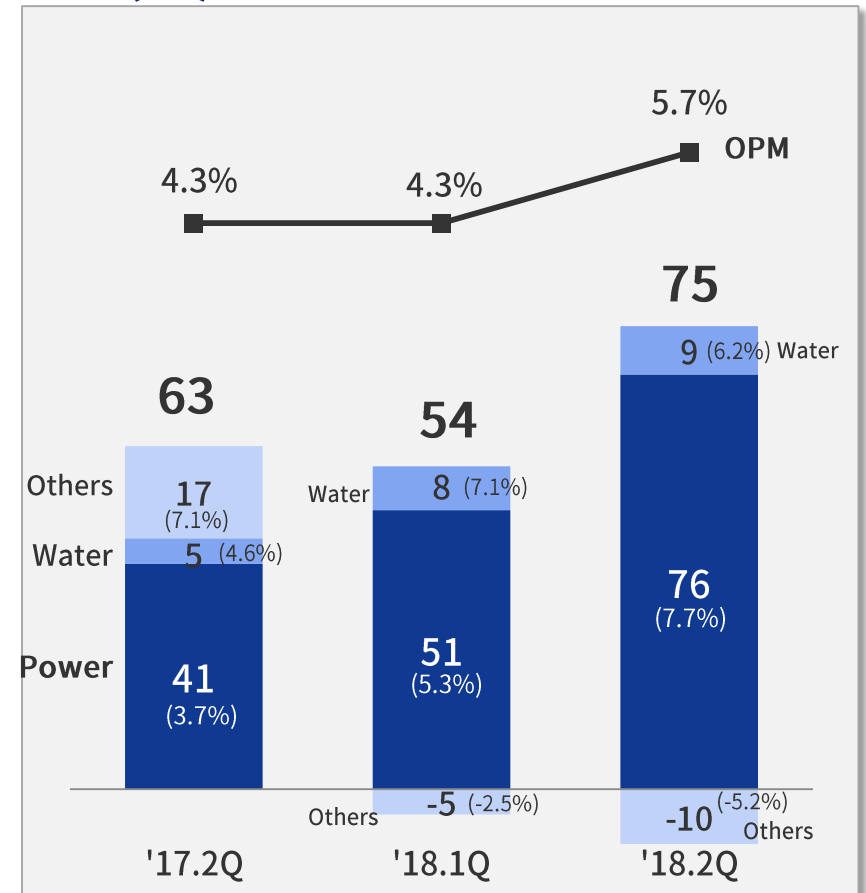
Sales increased 4% QoQ, and OP margin recorded 5.7% with increase of 140bps YoY .

Sales



OP(%)

(Unit : KRW B., %)

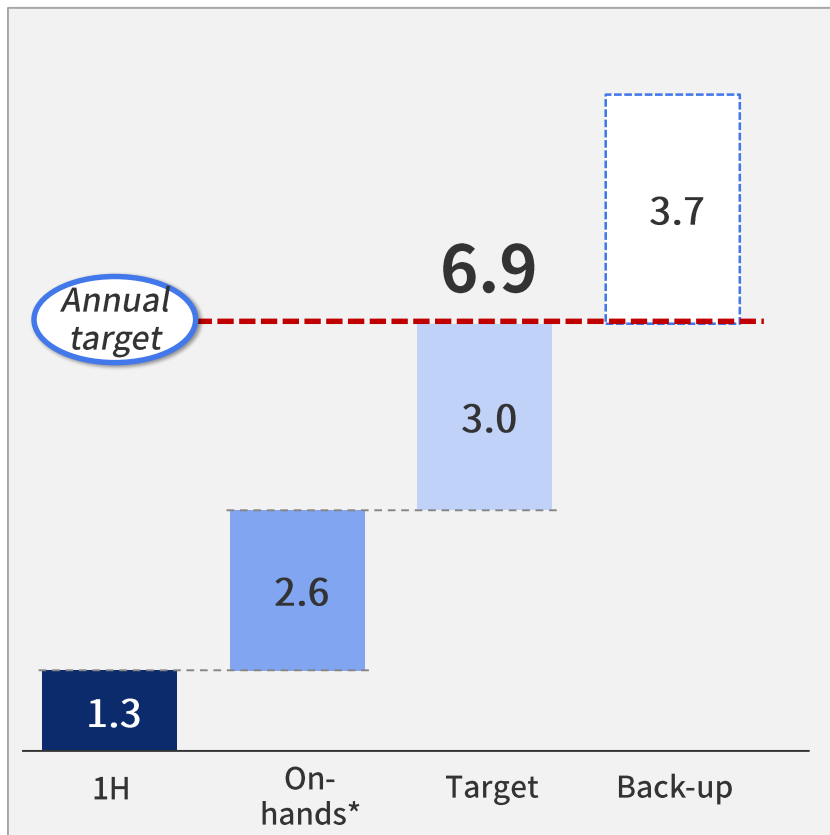


DHIC_Order Forecast

1H new order was KRW 1.3T. Expect to achieve annual order target 6.9T. through large-scale project orders from 3Q.

Order Forecast

(Unit : KRW T.)



1H Order was KRW 1.3T.

- HanWul(domestic nuclear) Replacement of Reactor Vessel Head 128B
- ShinSeoCheon FGD** 69B and others

Order to accelerate from 3Q

- Domestic coal PP EPC, Desalination (Middle east) etc.
- Off-shore wind turbine projects are in progress
- New business item of domestic nuclear is also expected

Other projects are in progress

- Coal PP EPC(south-east Asia), Desalination(Middle east) and etc.
- Service, R&M and other new items are also in progress

* On-hands : projects with private contract or DHIC is sole bidder or lowest bidder

** FGD : Flue-Gas Desulfurization



Doosan Heavy Industries & Construction

Major achievements – after 1Q

Major achievements by items

Gas power

–large-sized GT and service business

- Developing large-sized gas turbine : basic design of NRP(national research project) completed, prototype production started
- Expanding GT service business in north/middle America¹
- R&M and life expansion of aged GT tech. was selected as NRP

Renewables

–PV-ESS and wind turbine

- Completed PV-ESS 3.5MW power plant (Jul '18)
 - Expanding domestic/overseas business backed by ESS PJT portfolios in Korea
- SHINES PJT² of Doosan Gridtech was selected as the most notable PJT of the year³
 - Technology of PV-ESS, high performance of demand response system, and distributed power integration solution was highly recognized
- ‘Development of 8MW off-shore wind turbine’ selected as NRP

Service/ environmental

- Signed a pilot contract for digital service solution with India IPP (Jun '18)
- Winning orders of preventive maintenance service for domestic nuclear CEDM⁴ (Jun '18) : expanding nuclear maintenance business
- Winning order of Rumania and Turkey FGD projects (Apr/May '18)

Coal Power/ desalination

- Commencement of Vietnam Nghi Son² coal power projects
- Winning an order of Sharqiyah desalination plant (Jul '18)
- Signed a contract to build domestic coal IPP, Samcheok (Jul '18)



1. N.A. Oglethorp(7FA rotor maintenance), HECO(W501D5 high-temp. parts), Mexico Hermosillo PJT (Rotor maintenance) and Etc.
2. Supply 3MWh PV+ESS and distributed power integration control system to Texas Austin Kingsbery & Mueller substations
3. GTM(Green Tech Media) selected, ‘2018 Grid Edge Innovation Awards’
4. CEDM: Control Element Drive Mechanism

DHIC_Balanced Sheet

(Unit: KRW B., %)

Category	2017 end	2018 2Q	Difference
Current Assets	4,221	4,618	+397
Cash & Cash Equivalent	929	631	-298
Non-Current Assets	10,511	10,074	-437
Total Assets	14,732	14,692	-40
Total Liabilities	8,750	9,196	+446
Net-Debt	4,301	5,323	+1,022
Total Equity	5,982	5,496	-486
Total Liabilities and Equity	14,732	14,692	-40
Total L/E Ratio	146.3%	167.3%	+21.0%p

DHIC Parent_Summary

(Unit : KRW B., %)

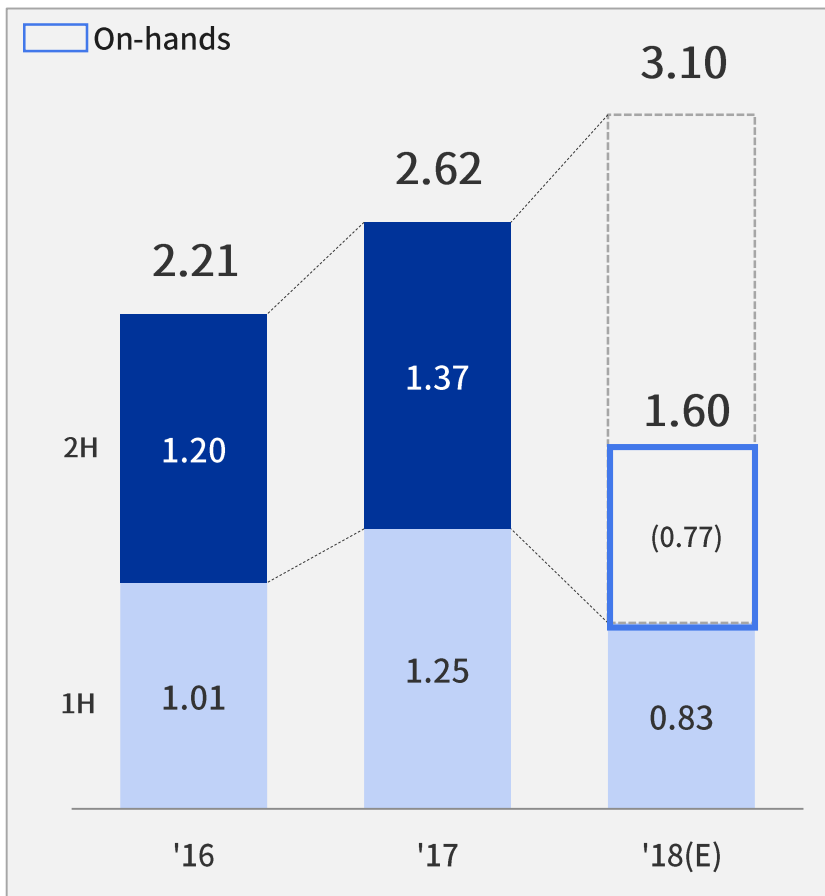
Category	'17.2Q	'18.1Q	'18.2Q	YoY	QoQ
Sales	1,104	965	1,000	-104	+35
OP	61	76	62	+1	-14
OPM(%)	5.5%	7.9%	6.2%	+0.7%p	-1.7%p
Non-OP	-62	-53	82	+144	+135
Interest P/L	-35	-40	-43	-8	-3
FX	-15	-3	-13	+2	-10
Others	-12	-10	138	+150	+148
Net P/L	-6	14	93	+99	+79

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Doosan E&C

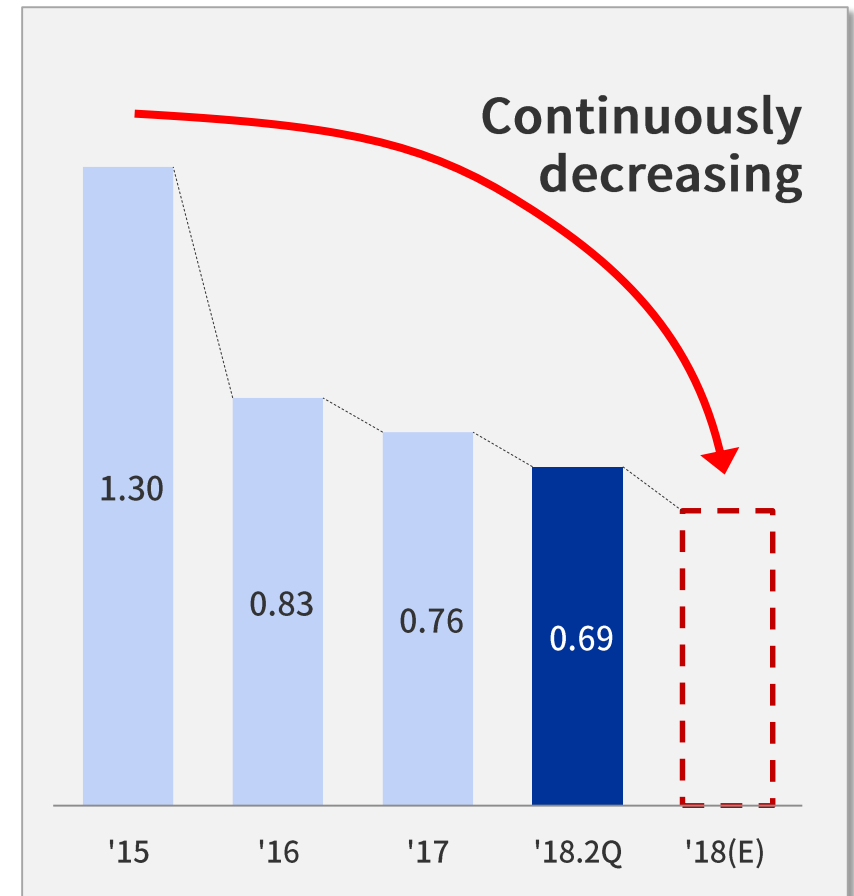
Secured 1.6T of orders including 0.8T of on-hands, which was greater than half of annual target(3.1T). Net debt is continuously decreasing thanks to cash inflow from exercise of warrants.

Orders



Net Debt

(Unit: KRW T.)



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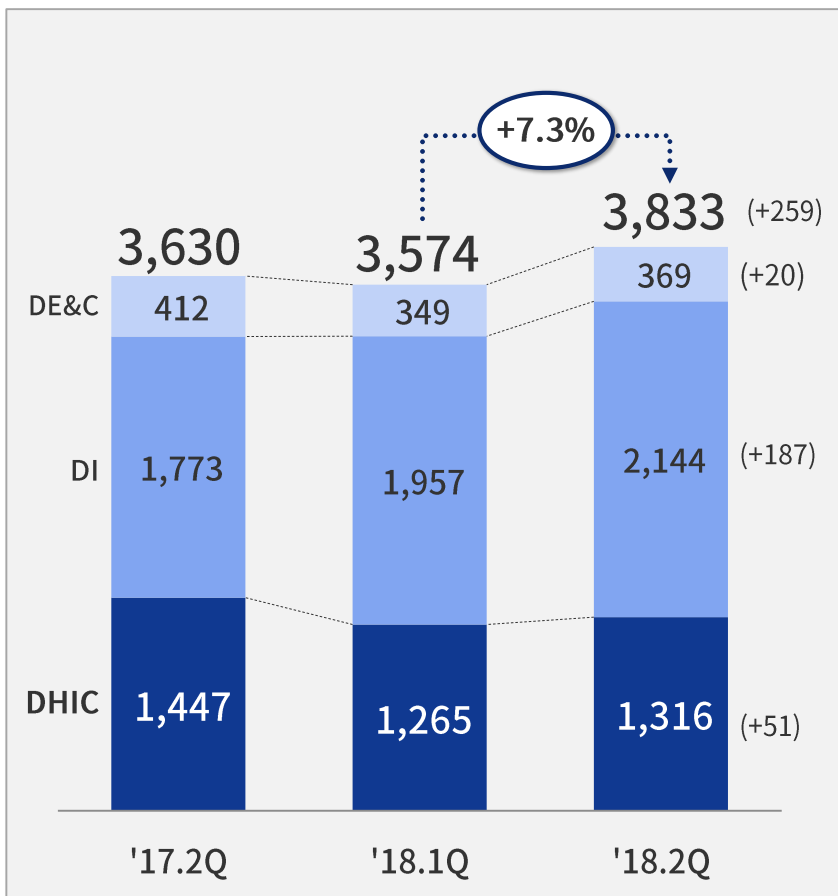
2Q sales was 3.8T, which was 6% YoY, 7% QoQ increased respectively.
OPM was 9.4%, net profit turned to black YoY, increased 126% QoQ.

(Unit : KRW B., %)

	'17.2Q	'18.1Q	'18.2Q	YoY	QoQ
Sales	3,630	3,574	3,833	+203	+259
OP	301	305	362	+61	+57
OPM(%)	8.3%	8.5%	9.4%	+1.1%p	+0.9%p
EBITDA	421	435	486	+65	+51
Non-OP	-241	-191	-183	+58	+8
Interest P/L	-106	-119	-118	-12	+1
FX	-25	-15	-16	+9	-1
Others	-111	-58	-49	+62	+9
P/L before income tax	60	114	179	+119	+65
Tax P/L	84	62	81	-3	+19
P/L from discontinued operation	-2	-29	-46	-44	-17
Net P/L	-26	23	52	+78	+29

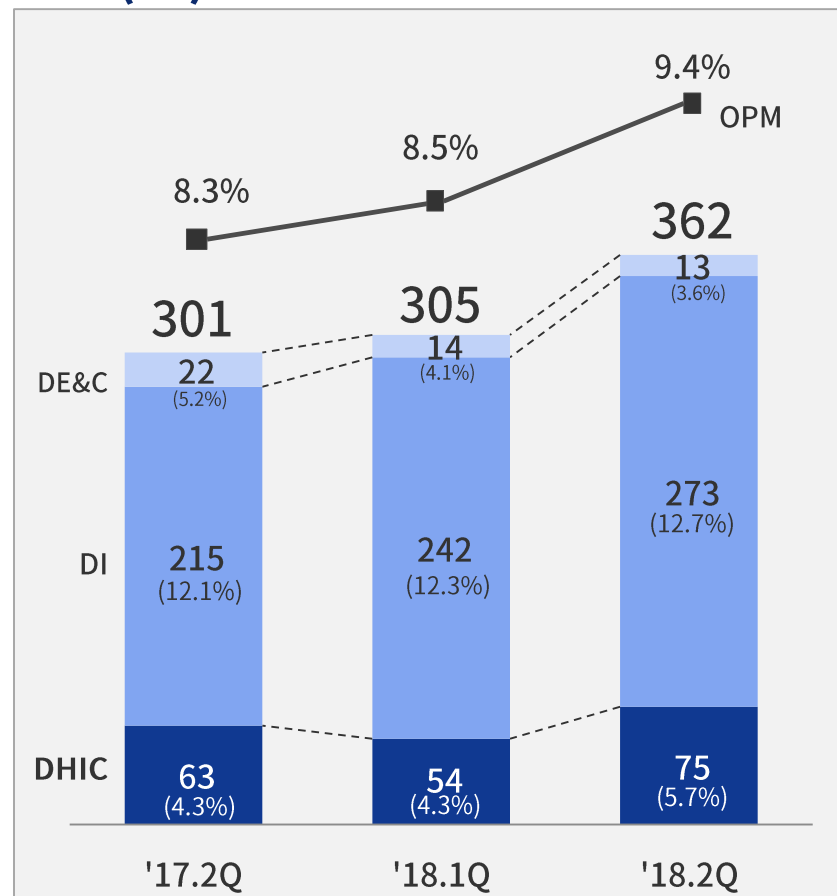
Sales growth continued backed by Infracore's sound growth, OPM margin of 2Q was 9.4% and 1H was 9%.

Sales



OP(%)

(Unit : KRW B., %)



(Unit : KRW B., %)

	2017 end	2018.2Q	Difference
Current Assets	9,230	9,982	+752
Cash & Cash Equivalent	2,239	1,933	-306
Non-Current Assets	15,732	15,302	-430
Total Assets	24,962	25,283	+321
Total Liabilities	18,396	18,760	+364
Net-Debt	9,007	9,895	+888
Total Equity	6,566	6,524	-42
Total Liabilities and Equity	24,962	25,283	+321
Total L/E ratio	280.2%	287.6%	+7.4%p

Detailed design of big-sized/heavy duty GT(NRP) was completed, and received an ‘excellent’ judgments from governmental(KETEP¹)assessment. Commercialization is on schedule.

Time line

- (Jul '13)
DHIC selected to
NRP partner to
develop GT
- ('17.3Q)
Basic design
completed
- ('18.2Q)
Detailed design
completed/
Production started
- (~Jul, '19)
Processing/assembly
completion
- (Feb,'19 ~ Jun,'21)
Engine performance
and soundness test
- Demonstration



Status and major achievement

- 1 Detailed design completed, received “excellence” judgment from KETEP**
 - Judgment for the execution of NRP with basic/detailed design

- 2 Test and experiments facilities completed**



- Built high-temp. parts manufacturing factory



- Engine test facilities

- 3 Plan to secure demo plant within the year**

After the acquisition, DTS¹ is now expanding new business to new customers and new markets. DHIC was selected as a partner of NRP to develop GT upgrade service².

Expanding DTS business

Expanding business

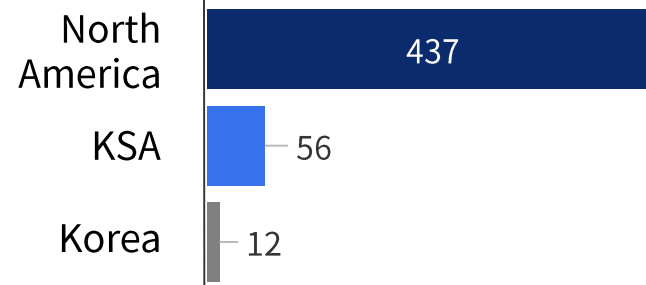
- Expanding to GT parts supply and steam turbine service
- Now focus on GT repair

Expanding customers and market

- Securing new customers
 - Expanding to entire north America and to various customers group(Oglethorp, HECO and others)
- Entering Mexico market
 - Winning maintenance PJT from CFE³
 - Long term plan to enter Korea, Middle East and Asia

Develop GT upgrade service

- GT upgrade target market⁴ (unit : Each)



Key Tasks

- Develop technologies to upgrade performance and to extend life of aged GTs
- Implement technology through demo plant
- Expand the biz to N.America and KSA

Timeline

- May '18 ~ May '21 : development
- Jan '22 ~ Apr '23 : implementation

Via revision of RPS¹, REC² weight increased, which is expected to improve profitability of wind power and to accelerate investment. DHIC is to maintain the leading position in domestic market through diversification of products with competitiveness.

Diversification of wind turbine models

- REC weight increased for off-shore wind power
 - additional REC granted by distance from shoreline from 1.5~2.0 → to 2.0~3.5X
- 10GW~ off-shore wind power is expected by GVMT policy goals until '22~'30
 - more demand of big-sized off-shore model is expected

3MW



<Jeju Island off-shore>

- Completion of the first off-shore (Sep '17, 30MW) wind farm
- 34% of utilization rate, the best performance compare to 23%³ of average domestic wind power

5MW



<Jeju on-shore demo>

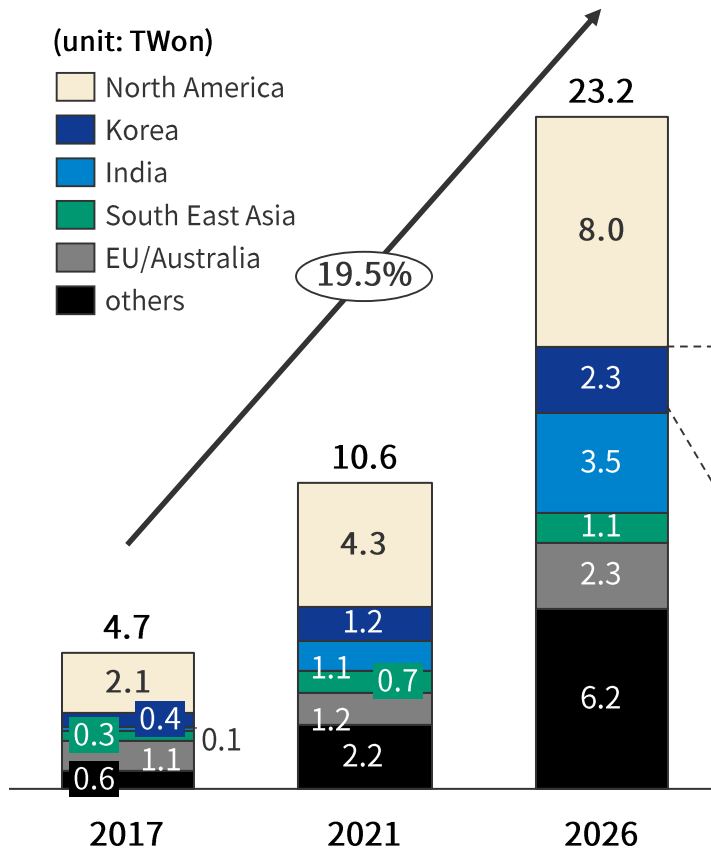
- Developed 5.5MW model, demo plant is now on-line
- Expand the implication to Jeju off-shore and west-sea of Korea

8MW

- 8MW off-shore system is now developing under NRP
- Completion of development until '22 and commercialization is expected

Global ESS market is to expand sharply, DHIC is now expanding the business with grid integrated solution and the demand control system of Doosan Gridtech.

ESS Global market¹



ESS business strategy

North America

- Focusing on Utility companies with large-sized solar farm to implement ESS system
 - Awarded PV+ESS PJT² from CA, MI
 - SHINES³ PJT selected as “2018 Grid Edge Innovation Awards” by GTM magazine

Korea

- Factory demand control and renewable linked ESS is the major business item
 - DHIC-DE demand control, PV-ESS pjt completed

And others

- Infiltrate to India and Australia market
 - India : as GVMT expanding renewable power rapidly, demand of ESS to surge as well
 - Australia : System instability increased by fast expansion of renewables

DHIC is now promoting ESS to link DHIC's major business such as desalination. This business model is developed to promote large-sized solar farm projects of domestic and middle east

ESS+PV projects

- PV 3.5MW, ESS 7.5MWh
(Changwon, Kunsan)



<PVs at DHIC Changwon factory parking lots>

- Track records of 3.9MW PV (as of Jul '18)
 - Implemented PV 100kW, ESS 4.2MWh microgrid at DE Changwon factory
 - DHIC factory : PV 300kW, ESS 1MWh

PV business strategy

- PV related Projects pipeline
 - Project to build RO(desal) Plant + 2.6MW solar farm at middle east is expected
 - Linking RO plant to PV+ESS from proposal stage(middle east)
 - Offering PV+ESS/microgrid format to PV developers(North America)
- DHIC is promoting Solar farm EPC projects at Korea, SE-Asia, and Middle East



Q&A