# **JUTURING SMART ENERGY**

4Q 2017 Review & Outlook



## **Disclaimer**

This presentation material is prepared for investors' reference, based on data that have not been filed with the financial supervisory commission.

Actual business performance may not necessarily be consistent with the projections herein, as a result of unexpected changes in the market environment and other conditions.

The financial information in this document are consolidated earnings results based on K-IFRS.

# I. Results & Outlook

## **4Q 2017 Total Results**

## Sales 605bwn (YoY 59bwn decreased), Operating Profit 23bwn (YoY 4bwn decreased) Electric Infra and Automation led to the decrease

#### **Income Statement**

(unit: bwn)

Segment	4Q 2016	3Q 2017	4Q 2017	YoY	QoQ
Sales	663	591	605	△59	13
Operating Profit	28	55	23	△4	△32
Profit before tax	25	50	24	△1	△27
Net income	22	38	16	△6	△22

#### Sales Breakdown by Business

(unit: bwn)

146 Subsidiaries 135 149 98 Convergence 55 68 65 77 Automation 64 Electric 169 187 175 Infra 157 165 155 Electric **Equipment** 4Q 2016 3Q 2017 4Q 2017





<sup>\*</sup> Subsidiaries includes LS Metal, LS Sauter, LS Mecapion, LSIS Wuxi and LSIS Dalian

<sup>\*\*</sup> Convergence Business includes Trans SOC, Solar, Smart-Grid and EV components.

<sup>\*\*\*</sup> Sales of subsidiaries are before the consolidated adjustments.

## **4Q 2017 Financial Position**

Total assets 2,256bwn (YoY 6bwn decreased)

Total liabilities 1,108bwn (YoY 88bwn decreased)

Total liabilities/Equity dropped 16%p(YoY, 112%→96%)

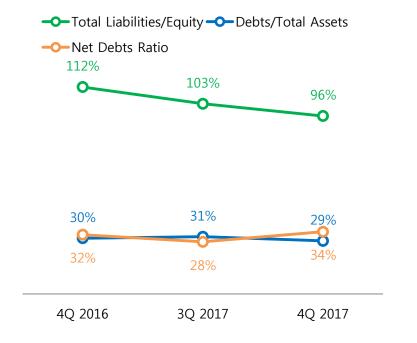
#### **Financial Statement**

(unit: bwn)

Segment	4Q 2016	3Q 2017	4Q 2017	YoY	QoQ
Total Assets	2,262	2,299	2,256	△6	△43
Current Assets	1,418	1,469	1,416	△1	△53
Cash & cash equivalent	340	393	262	△79	△131
Total Liabilities	1,196	1,167	1,108	△88	△59
Debts	682	712	648	△34	△64
Net Debts	342	319	387	45	67
Equity	1,066	1,132	1,148	82	16

#### **Financial Ratios**

(unit: %)



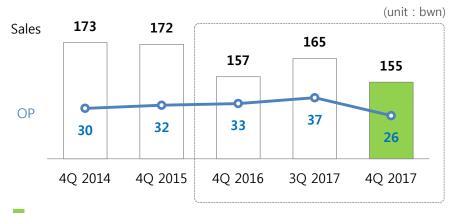




## **Business Results & Outlook**

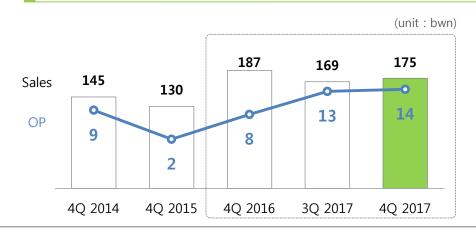
Electric Equipment – Sales decreased by overseas mkt
Electric Infra – Sales profit grew by YoY 79% due to SWGR and TR

#### **Electric Equipment**



- Sales decreased YoY 1.5%, OP decreased YoY 21.8%
- Sales decreased by overseas mkt
- Sales profit decreased by exchange rate
- For the 2018.
- Continuing to enter new market in domestic
- Expansion into SEAsia mkt by direct sales and distribution channel development

#### **Electric Infra**



- Sales decreased YoY 6.6%, OP increased YoY 78.8%
- Overseas improved by favorable demand
- Boosted profitability due to the product mix changes and SWGR projects.
- For the 2018, Overseas performance keep improving by favorable demand
   Expect to win a new HVDC contract in domestic mkt

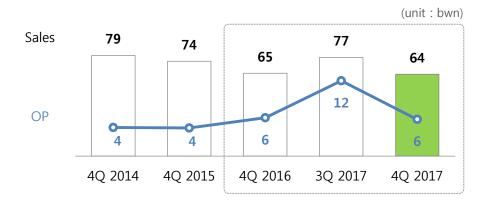




## **Business Results & Outlook**

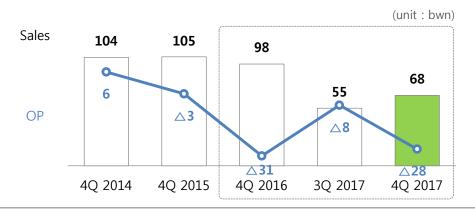
Automation – Overseas improved by upward trend in Europe and North America mkt Convergence- Sales decreased in Trans SOC, Solar mkt

#### **Automation**



- Sales decreased YoY 1.1%, OP decreased YoY 4.3%
- Performance improved by upward in Overseas mkt
- Sales decrease in Domestic mkt
- Sales profit decreased by exchange rate
- For the 2018,
  - Strengthen Overseas sales in Target Area
     (Vietnam , Middle East)

#### **Convergence Business**



- Sales decreased YoY 30.8%, OP continuous loss
  - Sales decreased in Railway system and Solar
- For the 2018,
- Expand floating Solar EPC & Japanese Solar EPC mkt
- Expand Smart-Grid mkt (ESS)

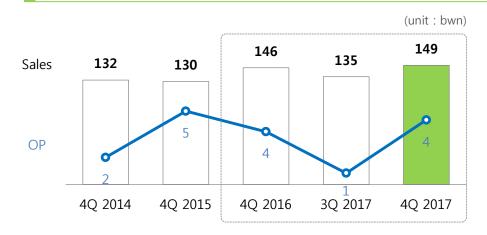




## **Business Results & Outlook**

LS Metals and China Subsidiaries led to the performance increase

#### **Subsidiaries**



- Sales increased YoY 2.0%, OP YoY19.4% increased
- LS Metals improved due to favorable demand in construction mkt and copper price increase
- Wuxi performance increased in renewable mkt condition
- For the 2018,
- LS Metals performance keep improving by copper price
- Wuxi performance improving by better renewable mkt condition in China.





## Growing into a World's Best from the Nation's First!

Leading company in the industrial electric, electronics, materials and energy field following its separation from LG in 2003

## **LS History**





LS is a faithful and reliable business partner

Collaboration with LS people leads to greater success



## **Leader in Power Solutions, Automation & Green Business**

The Leading Company in the Power Distribution & Automation Industry
The first to build a Smart Grid, Green Village and Green Factory

Founded	1974
Sales	2,214billion(KRW)
Employees	3,555
Headquarters	LS Tower, Gyeonggi-do, Korea
Plants	Total 7 Plants
Overseas subsidiaries	China, Vietnam, Japan, etc.
Overseas branches	USA, Europe, Russia, Vietnam, etc.

(As of 2016)



## 1. A History of Challenging the Future (1970's ~ 2007)

1970's '74 Jul. Established Goldstar Instrument & Electrical Co., Ltd

1980's '87 Mar. Established Goldstar Industrial Systems Co., Ltd.

2007 Feb. Opened Marketing Subsidiary in Dubai

2005 Mar. Renamed from LG to LS Industrial Systems

Sep. Constructed the Electric & Automation equipment factory in Wuxi, China









2003 Nov. Disaffiliated from LG Group, joined LS Group

**2001** Jun. Constructed Dalian factory

2000 Sep. Established high-voltage testing agency

1990's

'94 Jul. Listed Goldstar Industrial Systems on the Korea Stock Exchange

'95 Feb. Renamed from Goldstar to LG Industrial Systems (LGIS)

'95 Sep. LGIS merged Goldstar I&E & Goldstar Mechanical & Electrical

'99 Apr. LGIS merged LG Metal

'99 Aug. Sold copper smelting, Vending Machine, Elevator & Escalator unit





## 2. Shifting the strategy to growth paradigm (2007 ~ 2012)

2008 Apr. Relocated its headquarters to Anyang LS Tower

Sep. Received the Korea Best Company Award (Electricity & Cable industry category)

Oct. LS Industrial Systems(currently LSIS)
Opened R&D Center in Shanghai, China

2012 May. completed a EV Relay factory in Cheongju, Korea

Jun. Awarded the Best Korean Company Grand Award

Dec. Selected as one of the Top 100 Global Innovators

by Thompson Reuters

Dec. US and Chinese patent acquired for smart meter technology

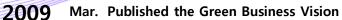


2011 Oct. Completed the Busan HVDC Plant

Nov. Included in the Fortune Korea's 500 Fastest Growing Companies

Nov. Selected as one of the Top 100 Global Innovators

by Thompson Reuters



Oct. Share in Mecapion acquired

Oct. European sales corporation established





2010 Jan. LS Power Semithech J/V established

Feb. LS Sauter established

Apr. LS Metal spun off from LSIS and newly established LS Metal

Apr. Construction of Busan plant completed

May. LS Hogae Electric established in China

May. LS Industrial Systems(currently LSIS) got the largest number of Green Certification as the first company in Korea

Jul. LS Industrial Systems(currently LSIS) opened R&D Center in Beijing, China





## 3. Challenging for the future of Smart Energy (2013 ~ 2016)

2015 Jan. Declared value-based management

Mar. Newly constructed R&D campus in Anyang

2013 Apr. Awarded the Great Place to Work Award for 2 consecutive years

May. MOU with China's Dongfang Group for developing green automobile parts

May. Concluded contract for the transfer of HVDC technology, and partnered with KAPES and Alstom

Jun. Awarded the Best Korean Company Grand Award

Oct. Selected as one of the Top 100 Global Innovators by Thompson Reuters

Nov. Awarded the 39th Korea National Quality Grand Award

Dec. Won the 500 million Trade Tower Award









2016

2014 Jan. Launched new strategic automation product lines for A&D

May. LSIS Vice Chairman Ja-kyun Koo Received Gold Tower Order of Industrial Service Merit

May. Won the World's Largest Order for Smart Grid Project in Iraq

Jun. Awarded the Best Korean Company Grand Award for 7 consecutive years

Jul. Marked the 40th anniversary of the foundation

Nov. Selected as one of the Top 100 Global Innovators by Thompson Reuters

Jan. Selected as one of the Top 100 Global Innovators by Thompson Reuters

Mar. R&D campus achieved the first BEMS certification

Jun. Awarded the Best Korean Company Grand Award

Sep. R&D campus equipped ESS for emergency electric power supply





We guarantee all our customers a safe and affluent life and a happy future by supplying them with convenient smart energy.

## **Mission**



Vision 2020



## **Strategy**

- **Boosting Our Market Position as a Power Solutions Provider**
- Leading New Markets through Convergence and Combination
- Expansion of Global Markets
- Securing Operational Excellence

**Core Value** 







Collaboration

Execution

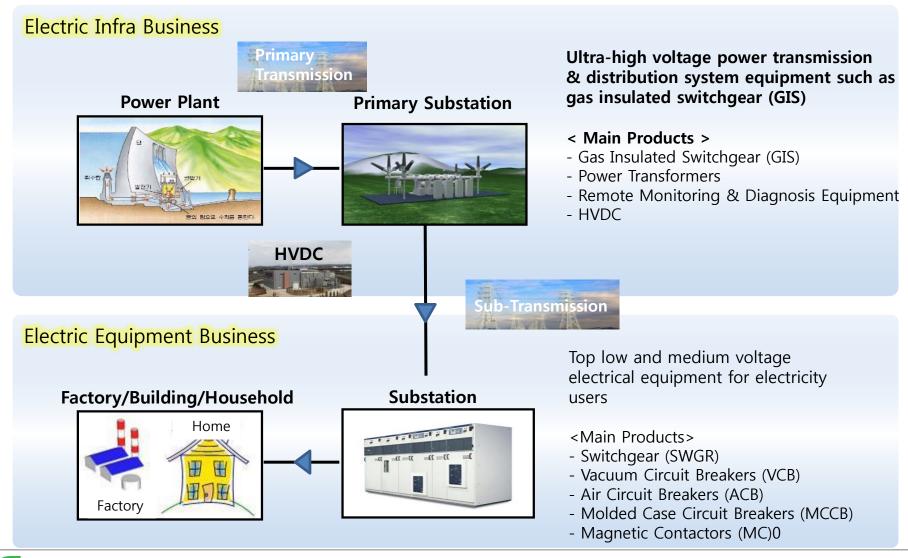
Integrity





## **Business Introduction**

### Leading Provider of Total Electric Power, Automation & Green Business Solutions

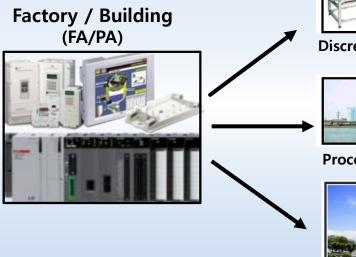






## **Business Introduction**

#### **Automation Business**





**Discrete Automation** 



**Process Automation** 



**Building Automation** 

From simple automation control to large-scale manufacturing facilities and process control, LSIS provides the optimal solutions to diverse industrial fields.

#### < Main Products >

- Variable Frequency Drive
- PLC (Programmable Logic Controller)
- HMI (Human Machine Interface)
- Servo Drive & Motor
- DCS (Distributed Control System)
- RTU (Remote Terminal Unit)

### Convergence Business



**Smart Grid** 



**Green Car Solution** 



**Photovoltaic System** 



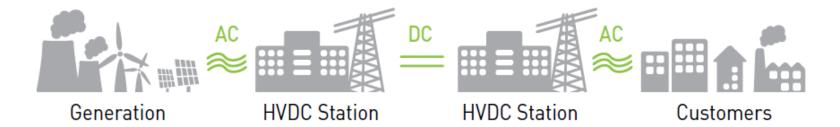
**Railway System** 





## **HVDC**

# HVDC system converts AC to DC to transmit long distance and then converts back again to Connect with the AC grid with very low loss



#### Long Distance Transmission with Lower Cost

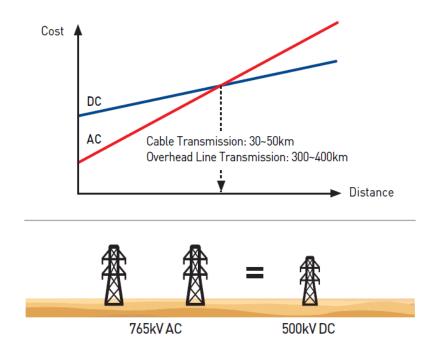
HVDC is the only option for the overhead transmission longer than 300km or submarine/underground 40km thanks to DC characteristics.

#### **Eco-friendly Transmission**

HVDC system has lower environmental impact because it requires fewer overhead lines comparing to AC system. The technology is also the key component in the future energy system based on renewable energy sources.

#### **Optimal Grid Management**

HVDC can directly interconnect load centers with huge energy sources efficiently. Therefore, negative impact on the grid is minimized. HVDC also improves the performance of AC grid by means of additional controllability.



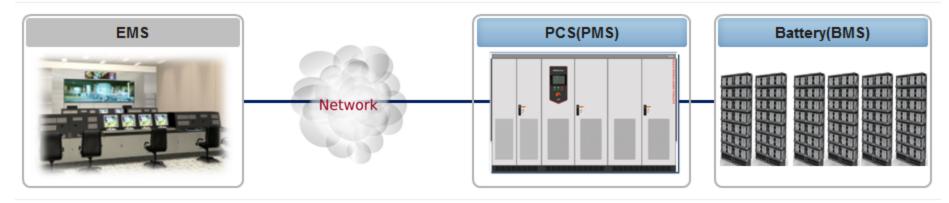




## **ESS Applications**

ESS(Energy Storage System) includes PCS(Power Conversion System) and battery, and make an efficient way of use electricity power

#### Concept of ESS

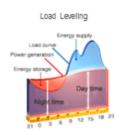


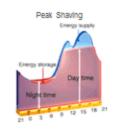
#### **Function of ESS**

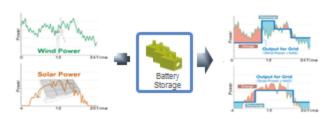
> Peak Shaving, Load Leveling

> Renewable Energy Smothing

> Frequency Regulation









EMS: Energy Management System

· PCS: Power Conditioning System

· PMS: Power Management System

· BMS: Battery Management System





## **PV Power Plant**

We provide total solution for PV Power Plant. In addition to PV products, we can provide customers with all kinds of electric power equipment manufactured by LSIS.



#### **System Components**



**PV Power System** 

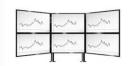
- Module
- Inverter
- Balance of System



- HV Switchgear
- MV Switchgear
- LV Switchgear



**Transformer** 



Monitoring(SCADA)





# III. Appendix

## **Appendix 1. Condensed Statement**

#### **Income statement**

(unit: bwn, %)

Segment	4Q 2016	3Q 2017	4Q 2017	QoQ	YoY
Sales	663	591	605	2.2%	△8.9%
Cost of Sales	△557	△470	△505	7.5%	△9.3%
Gross Profit	107	122	100	△17.9%	△6.4%
(%)	(16.1%)	(20.6%)	(16.5%)	-	-
SG&A	△79	△66	△77	15.3%	△3.4%
Operating Profit	28	55	23	△57.7%	△15.1%
(%)	(4.2%)	(9.4%)	(3.9%)	-	-
Non-OP and Loss	△3	△5	0	△102.0%	△103.9%
Profit before tax	25	50	24	△53.0%	△5.3%
Net Income	22	38	16	△58.8%	△28.0%
(%)	(3.3%)	(6.4%)	(2.6%)	-	-
EBITDA Margin	7.7%	12.7%	8.0%	-	-

#### **Statement of Financial position**

(unit: bwn, %)

Segment	4Q 2016	3Q 2017	4Q 2017	QoQ	YoY
Total Assets	2,262	2,299	2,256	<b>△2%</b>	△0%
Current Assets	1,418	1,469	1,416	△4%	△0%
Cash&Cash Equivalents	340	393	262	△33%	△23%
Inventories	147	170	167	△2%	14%
Other Current Assets	931	906	988	9%	6%
Non-Current Assets	844	830	840	1%	△1%
Tangible Assets	610	586	577	△1%	△5%
Intangible Assets	130	116	116	0%	△11%
Other Non-Current Assets	104	128	146	14%	41%
Total Liabilities	1,196	1,167	1,108	△5%	△7%
Current Liabilities	681	614	650	6%	△5%
Short-term borrowings	177	184	199	9%	13%
Non-Current Liabilities	515	553	458	△17%	△11%
Long-term borrowings	506	529	449	△15%	△11%
Equity	1,066	1,132	1,148	1%	8%
Current Ratio	208%	239%	218%	△21%	10%
Equity/Total Assets	47%	49%	51%	2%	4%
Total Liabilities/Equity	112%	103%	96%	△7%	△16%
Net debts Ratio	32%	28%	34%	5%	2%

#### **Statements of Cash Flows**

(unit: bwn)

Segment	'16.4Q	'17.4Q	YoY
Cash and cash equivalents at the beginning of year	286	340	54
Cash Flows From Operating Activities	242	145	△98
Cash Flows From Investing Activities	△102	△164	△62
Capex	△41	△42	△1
R&D	△13	△12	1
Others	△49	△110	△61
Cash Flows From Financing Activities	△87	△54	33
Effect of exchange rate changes on cash and cash equivalents	1	△5	△7
Cash and cash equivalents	340	262	△79





# Appendix 2. Results for the past 3 years

HQ (unit : bwn)

	Campa	4				14					15					16					17			Y-o-Y
	Segme	ent .		1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	(4Q)
			Domestic	103	111	113	110	437	105	107	108	109	429	95	101	102	101	399	115	111	109	100	435	△0%
	Electric	Sales	Overseas	52	51	53	63	219	58	62	67	62	249	61	62	55	57	235	59	61	56	55	230	△4%
	Equipment		Total	155	162	167	173	656	164	168	175	172	678	157	163	157	157	634	173	172	165	155	665	△2%
		Opera	ting Profit	28	27	34	30	120	31	35	41	32	139	36	36	37	33	142	40	36	37	26	139	△22%
			Domestic	100	89	79	111	379	79	107	100	98	384	64	82	105	141	392	90	106	131	120	447	△15%
	Electric	Sales	Overseas	39	44	43	34	160	12	16	15	33	75	36	33	20	46	134	41	40	38	55	174	20%
	Infra		Total	139	133	122	145	539	91	122	115	130	459	100	114	125	187	526	130	147	169	175	621	△7%
		Opera	ting Profit	11	△2	6	9	24	△2	△0	7	2	7	△5	0	△7	8	△4	0	2	13	14	29	79%
			Domestic	45	48	47	56	195	47	43	48	49	187	46	48	47	45	186	48	49	51	44	193	△2%
HQ	Automation	Sales	Overseas	20	21	20	23	84	21	22	21	25	89	26	23	19	20	88	24	24	26	20	94	1%
'''	ratomation		Total	65	68	67	79	279	68	65	69	74	276	72	71	66	65	274	72	73	77	64	287	△1%
		Opera	ting Profit	6	6	7	4	24	4	4	8	4	19	9	6	6	6	27	8	10	12	6	36	△4%
			Domestic	48	61	64	88	261	45	83	67	76	271	38	46	30	56	171	26	36	31	52	145	△7%
	Convergence	Sales	Overseas	31	32	14	16	93	11	7	23	28	69	17	17	31	42	107	23	26	24	15	89	△63%
	Business		Total	78	93	78	104	354	56	89	90	105	340	56	63	61	98	278	48	63	55	68	234	△31%
		Opera	ting Profit	△9	△4	△6	6	△13	△11	△0	△3	△3	△18	△10	△15	△11	△31	△67	△14	△9	△8	△28	△60	10%
			Domestic	296	309	303	365	1,272	277	339	323	332	1,271	244	277	284	343	1,148	278	303	322	317	1,220	△8%
	Subtotal	Sales	Overseas	142	147	131	136	555	102	106	126	149	482	141	134	125	164	564	146	151	145	145	587	△12%
	Jubiolai		Total	437	457	434	501	1,828	379	445	449	481	1,753	385	411	409	507	1,712	425	454	467	461	1,807	△9%
		Opera	ting Profit	36	27	42	50	155	22	38	53	35	148	29	27	25	16	97	34	38	53	18	143	9%



# Appendix 2. Results for the past 3 years

#### **Subsidiaries**

(unit: bwn)

	Coamo	nt				14					15					16					17			Y-o-Y
	Segme	mu		1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	(4Q)
			Domestic	32	41	32	30	134	24	28	26	26	104	25	28	33	40	126	34	<i>37</i>	41	43	156	6%
	LS	Sales	Overseas	52	43	31	43	169	47	39	44	39	168	45	36	29	37	147	49	39	37	43	167	17%
	Metal		Total	84	84	63	72	303	71	67	70	64	272	70	64	62	77	273	83	76	79	<i>85</i>	323	11%
		Opera	ting Profit	△1	0	△0	1	0	∆3	∆2	△5	1	△9	1	1	△1	△0	0	0	△0	△1	1	△0	800%
Subsidi	Subsidiaries	9	Sales	14	15	12	17	58	15	14	11	17	56	10	11	13	25	58	16	22	19	16	72	△36%
aries	(Korea)	Opera	ting Profit	△0	△0	△1	△0	△1	1	1	0	△0	2	△0	△0	1	2	2	1	3	2	1	7	△42%
	Subsidiaries	9	Sales	28	31	36	42	138	31	43	58	49	180	49	53	42	44	188	39	45	38	48	170	7%
	(China)	Opera	ting Profit	△0	1	2	1	5	0	2	6	4	13	5	5	4	2	16	1	3	0	3	6	39%
	Subtotal	9	Sales	126	130	111	132	499	116	124	139	130	508	129	128	117	146	519	138	143	135	149	565	2%
	Jubiolai	Opera	ting Profit	△1	1	1	2	3	△2	2	1	5	6	5	5	4	4	18	2	6	1	4	13	19%

#### Consolidated

(unit : bwn)

Comment			14					15					16					17			Y-o-Y
Segment	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	1Q	2Q	3Q	4Q	Total	(4Q)
Consolidation adjustment for Sales	△5	△7	△9	△16	△36	△10	△16	△15	△19	△60	△12	△14	△2	10	△18	△3	△9	△11	△5	△29	△152%
Consolidation adjustment for OP	1	2	1	1	4	△1	1	△0	1	1	0	0	1	8	9	0	△0	1	1	3	△82%
Total Sales	558	580	536	616	2,291	485	552	573	592	2,202	501	525	524	663	2,214	559	588	591	605	2,344	△9%
Total Operating Profit	36	31	43	52	162	19	41	54	41	154	35	32	30	28	124	36	44	55	23	158	△15%

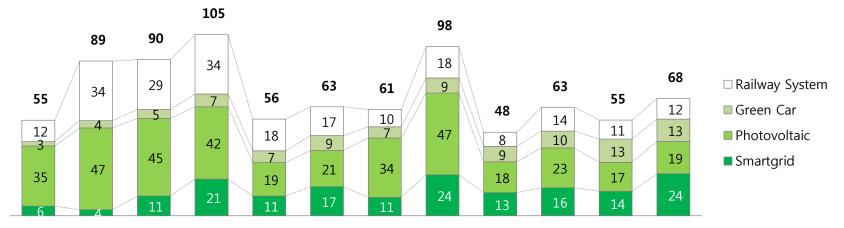




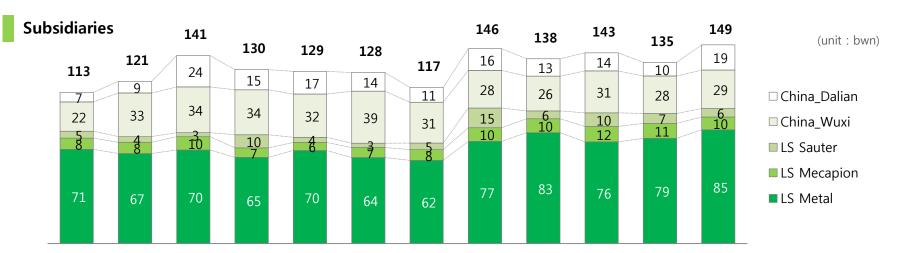
## **Appendix 3. Sales details for Convergence & Subsidiaries**

#### Convergence

(unit: bwn)



1Q 2015 2Q 2015 3Q 2015 4Q 2015 1Q 2016 2Q 2016 3Q 2016 4Q 2016 1Q 2017 2Q 2017 3Q 2017 4Q 2017



1Q 2015 2Q 2015 3Q 2015 4Q 2015 1Q 2016 2Q 2016 3Q 2016 4Q 2016 1Q 2017 2Q 2017 3Q 2017 4Q 2017



