

# 2018 Analyst Conference

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September 17, 2018



## Disclaimer

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Please be advised that the financial information and business conditions described in this document are based on the date stated, and may be subject to change based on economic, industrial and financial circumstances.

In addition, this material contains certain information based on assumptions that may change depending on future uncertainties and risk factors. This includes future investments in the global economy and its trends, market strategies and business plans. Please be advised that SK materials is not responsible for any changes due to such changes in the home and environment.

Actual performance of the Company may change due to factors that may not be predicted by the Company. These factors include a deepening recession, a decline in customer demand, departure of major customers, downward price pressure, and funding issues for specific projects and equipment investments.

Please note that the financial information included in this document is prepared for the convenience of investors in the absence of an external auditor's audit and there may be a change in performance after auditing.

## Contents

### I. Business in 2018

### II. Mid- / Long-Term Growth Strategy



# 1. Status of Business

## Expansion of Product Groups to Semiconductor/Display Materials From A NF3-Oriented Business Structure and Business Model Expansion

[When Incorporated into SK (Early 2016)]

*“Business structure focused on NF3  
– mass production of few items”*



**Strengthening  
Competitiveness  
of Existing  
Products**

- ❑ **Solidifying No1. Supplier Status for NF3**
  - 39%(2016) → 43%(Aug 2018)
- ❑ **Achieving the Largest Market Share in WF6**
  - 21%(2016) → 30%(Aug 2018)



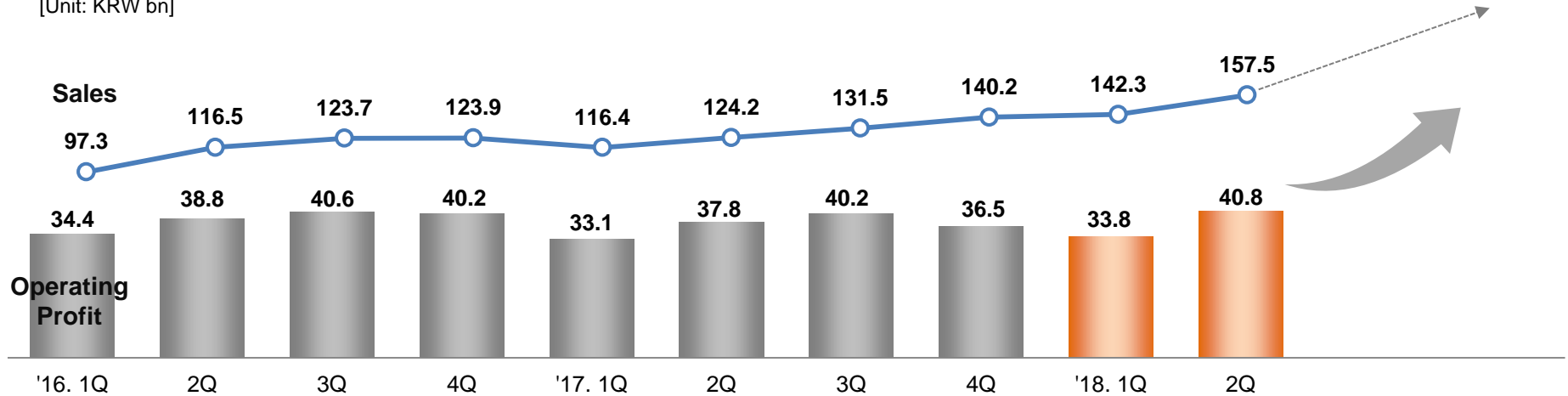
**Product Group/  
Biz Model  
Expansion**

- Industrial Gas**
  - (Ulsan, Icheon, Cheongju)
  - ❑ **Acquisition of SKAG & Expansion of Industrial Gas Business in the Semiconductor Industry**
    - N<sub>2</sub>, O<sub>2</sub>, Ar, and CDA
- Precursor/  
Etching Gas**
  - (Sejong, Yeongju)
  - ❑ **Finding & Strengthening the Foundation of High Value-Added Businesses for J/V (Japan)-Based Semiconductor**
    - Precursor : Zr-, Si-, Ti-type Products
    - Etching Gas : CH<sub>3</sub>F, C<sub>4</sub>F<sub>6</sub>
- Platform Biz.**
  - (Yeongju)
  - ❑ **Expansion of Product Portfolio for All Semiconductor Processes (since 2017)**
    - He, Xe, Ne etc.

## 2. 2018 Business Results and Forecast

Operating Profit to Increase More than 20% YoY  
Thanks to Solid Profit Growth and Outcome of New Business Development

[Unit: KRW bn]



NF3

- Capturing a growing demand for the semiconductor market thanks to the completion of additional 1500ton facilities at the end of 2017
- Improvement in supply-demand & seeking to raise the price due to a rise in raw material prices

WF6

- Preemptive Action to complete the expansion (600ton) of facilities to respond to a growing 3D NAND demand

Industrial Gas

- Sharp rise in sales following completion of new semiconductor/expansion projects
  - N2 Capa. : 110,000 Nm<sup>3</sup>/h(Dec. 2017) → 200,000(Dec. 2018)

Precursor

- Successful entry into high-growth precursor market / creating results
  - Mass production of main product (Zr-type product) & boosting sales (1Q, 2018)
  - Mass production of Si-type product and starting sales (2Q, 2018)
  - Starting sales of Ti-type product (2H18)

Etching Gas

- Completion of CF-type etching gas facilities and starting sales
  - Mass production of CH<sub>3</sub>F and starting sales (June 2018) /completion of C<sub>4</sub>F<sub>6</sub> facility (Dec. 2018)

### 3. Main Production Facilities and Progress of Project

Product	Capacity of Key Facilities (Unit: MT)		Ongoing Project
	End of 2016	End of 2018	
NF3	8,600	10,600	<ul style="list-style-type: none"> <li><input type="checkbox"/> Increasing capacity based on the expected demand coming from a long-term contract signed with customers               <ul style="list-style-type: none"> <li>- Expansion of 2,000 tons in 2017 (1,500 tons in Yeongju, 500 tons in China)</li> <li>※ Additional expansion(1,500 tons) planned for the 2Q of 2019</li> </ul> </li> </ul>
WF6	600	1,200	<ul style="list-style-type: none"> <li><input type="checkbox"/> Capacity expansion due to a sharp increase in 3D NAND demand and in the number of long-term contracts               <ul style="list-style-type: none"> <li>- Capacity expansion(600 tons) completed in 2017</li> </ul> </li> </ul>
SiH4	2,000	2,000	<ul style="list-style-type: none"> <li><input type="checkbox"/> Increased utilization rate due to increased sales volume               <ul style="list-style-type: none"> <li>- More than 50% operation rate in 2018</li> </ul> </li> </ul>
Si2H6	8	14	<ul style="list-style-type: none"> <li><input type="checkbox"/> Sales of high value-added semiconductors starting to slow down but the sales volume continues to grow               <ul style="list-style-type: none"> <li>- Sales volume more than doubled in 2018 when compared with 2016</li> </ul> </li> </ul>
Industrial Gas	64,000*	200,000	<ul style="list-style-type: none"> <li><input type="checkbox"/> Growing sales of gas products from refinery / chemical company at Ulsan plant</li> <li><input type="checkbox"/> New supply and expansion of facilities for semiconductors (2018)</li> <li><input type="checkbox"/> Preparing for an entry into the Chinese market</li> </ul>
Precursor		Zr-type Si-type Ti-type	<ul style="list-style-type: none"> <li><input type="checkbox"/> Mass production of Zr- and Si-type precursor (1H18) and supply expansion</li> <li><input type="checkbox"/> Initiating mass production of Ti -based precursor (2H18)</li> </ul>
Etching Gas		20 (CH3F) 20 (C4F6)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Completion of the construction of the world's largest CH3F plant (late 2017) and starting mass production and sales (June 2018)</li> <li><input type="checkbox"/> The construction of C4F6 facility underway</li> </ul>

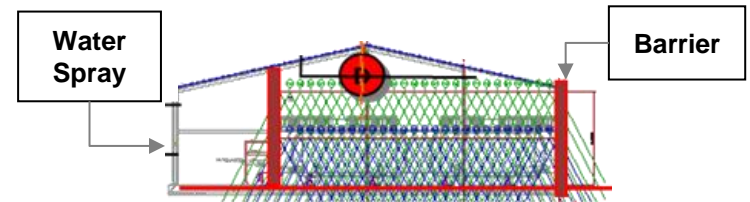
\*Based on N2 (Nm3/h)

# 4. Strengthening SHE(Safety/ Health/ Environment) Management System

Establishment of the Total Safety Management System by Securing Production Facility Reliability / Upgrading Logistics System and Advancing Safety Management System

## Improvement of Facility Safety

- ❑ **Prevention of gas leakage through enclosure system**
  - Establishment of HF and double blocking system for ammonia tank (Barrier + Water Spray)
- ❑ **Establishment of early detection system**
  - Installation of gas detectors outside the plants/ gas gauge for product tank and more CCTVs
- ❑ **Process / facility improvement through safety diagnosis of all factories**
  - Precise diagnosis for all the factories of Gas Safety Corporation (KGS)



[HF Tank Enclosure System]

## Strengthening Emergency Response System

- ❑ **Preparation of disaster prevention vehicle for early rapid response**
  - Introduction of fire truck, vacuum pump car, chemical disaster prevention car
  - Hazardous gas delivery vehicle convoy
- ❑ **Upgrading the operating system for Disaster Prevention Center**
  - Establishment of emergency broadcasting system for corporations and government offices by the end of the year
- ❑ **Improvement of the resident protection system in case of emergency**
  - Sharing the volume of gas measured by installing an electric signboard
  - Providing booklet on protective equipment and resident's behavior guidelines in case of emergency
  - Conducting joint training to evacuate residents in case of emergency with the city of Yeongju (Sep 2018)



[Hazardous Gas Carrier Convoy]



[Disaster Prevention Center of SK Materials]



[Gas Gauge Display Board]

## Contents

I. Business in 2018

II. Mid- / Long-Term Growth Strategy



# 1. Market Environment

## Semi-conductor

- ❑ Expansion of IoT, big data market and expectations for solid mobile demand
- ❑ Increased usage per unit due to the increase in the number of processes due to miniaturization of semiconductor process and 3D NAND lamination
  - NF3 usage per area : 2D → 3D 時 > 2 times

## Display

- ❑ Full Introduction of Mobile & TV OLED
  - NF3 usage per area : LCD → OLED > 5 times

## China

- ❑ China Leading the Expansion of Large LCD trend
- ❑ High Growth Potential for the Semiconductor Industry and Large-Scale Investment in China

## Customer

- ❑ Strong Needs for Stable Material Supply
- ❑ Requiring A High Level of Quality Control Capability

## Growth Strategy

### 1 Strengthening Innovative Competitiveness of Existing Business

- *NF3 Capa. Expansion*
- *Expansion of Global M/S of Key Products*
- *Achieving Innovative Cost Competitiveness*

### 2 Expansion of New Business

- *Acceleration of JV Growth / Securing New Portfolio*

### 3 Biz Model / Service Differentiation

- *Establishment of Customer Point of Contact BM*
- *Expansion of Material Package Supply*
- *Strengthening Next-Generation Product Development Capabilities*

## 2. Mid- / Long-Term Growth Strategy ① Strengthening Innovative Competitiveness of Existing Business

### Strengthening Market Leadership by Preemptively Expanding Capacity and Securing Cost Competitiveness at the Highest Level in the Industry

NF3

- ❑ **Preparing for an expected increase in demand from domestic major customers**
  - Planning to expand NF3 facilities in Yeongju (1,000 ton → 1,500 ton, to be completed in 2019)
- ❑ **Securing a frontier base to respond to the market circumstances in China (Semiconductor / OLED)**
  - Multi-site expansion ongoing in China (Currently 1 site → 2 sites)

WF6 / Si-type gas

- ❑ **WF6 : Continuing to meet the demand through debottlenecking of existing plants**
  - Currently 1,200 ton + @
- ❑ **Expansion of high-value Si-type gas production capacity / customers**
  - Maximizing global sales volume and expand high value-added products (Si<sub>2</sub>H<sub>6</sub>, DCS, MCS, etc.) by using merit in the region's only production facility

Acquire  
Innovative Cost  
Competitiveness

- ❑ **NF3 : Target on 30% reduction in manufacturing cost (test to be completed within 2018)**
  - Improving productivity, reducing utility cost, and reducing investment cost per unit
- ❑ **Diversification of the vendor pool for raw and supplementary materials**
  - Review of strategic alliances with a non-Chinese vendor from other 3rd countries

## 2. Mid- / Long-Term Growth Strategy ② Expansion of New Business

### Accelerating Growth of Existing JV and Securing the Business for High Profit/Promising IT Materials

		<b>Sales Target by 2020</b>
<b>Industrial Gas</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Expansion of semiconductor &amp; refining / chemical projects</b> <ul style="list-style-type: none"> <li>– High-value on-site business, upgrading the refinery's facilities</li> </ul> </li> <li><input type="checkbox"/> <b>Site expansion in China</b></li> </ul>	<b>&gt; 200 bn</b>
<b>Precursor</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Addition of new products</b></li> <li><input type="checkbox"/> <b>Development of next-generation products according to the advancement of technologies of customers</b> <ul style="list-style-type: none"> <li>– Currently developing 5 kinds (Low-K type 2, High-K type 2, Metal type 1)</li> </ul> </li> </ul>	<b>&gt; 180 bn</b>
<b>Etching Gas</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Mass production and sale of CH<sub>3</sub>F &amp; C<sub>4</sub>F<sub>6</sub> started</b></li> <li><input type="checkbox"/> <b>CF-type commercial high-value items being commercialized</b></li> </ul>	<b>&gt; 50 bn</b>
<b>New &amp; New Biz.</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Promoting diversification of high-growth/high-profit portfolio</b> <ul style="list-style-type: none"> <li>– High functionality Wet chem, Photo material, Battery material, etc.</li> </ul> </li> </ul>	<b>&gt; 270 bn</b>

## 2. Mid- / Long-Term Growth Strategy ③ Biz Model / Service Differentiation

### Identifying Customer Needs Preemptively, Providing Differentiated Services and Value

#### Establishment of Customer Point of Contact BM

- ❑ **Entry into the BSGS\* business by establishing the 'material supply + gas facility operation' package service system**
  - For IT (2H18)
  - Securing reference and capacity Initiating BSGS Service to win more domestic and global projects

*\* Bulk Specialty Gas Supply System*
- ❑ **Establishment of the integrated logistics system for customers/provision of operation service**
  - Material sourcing for multiple products/logistics/inventory management
  - Expansion of warehouses in China and construction of additional warehouse under review

#### Expansion of Material Package Supply

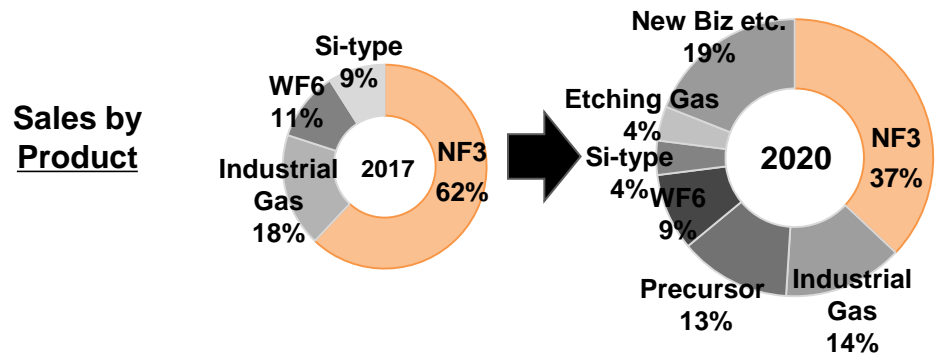
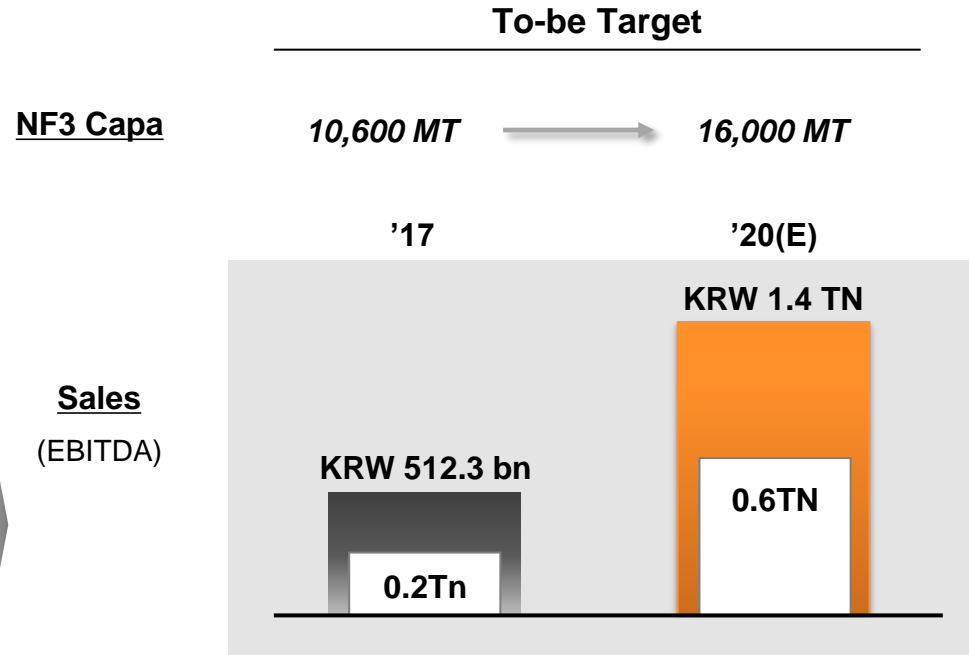
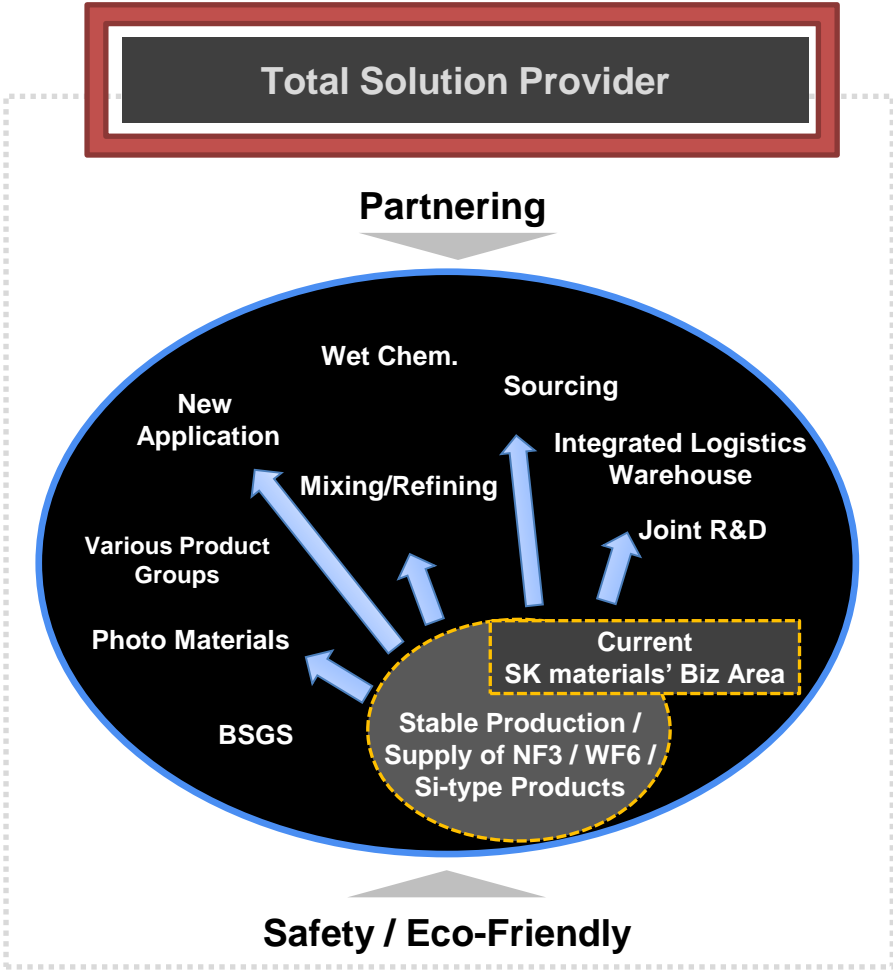
- ❑ **Utilizing existing special gas quality/analysis capability and expanding high-value customized mixture gas for customers**
  - No. of products sold : 8 in 2017 → 40 in 2020(E)

#### Strengthening Capabilities for Next-Generation Product Development

- ❑ **Develop and sell new products through joint research with major customers**
  - Preemptively making a proposal and promoting development of new customized application
- ❑ **Improved analytical precision and reliability by establishing the advanced analysis system**

### 3. Mid- / Long-Term Target

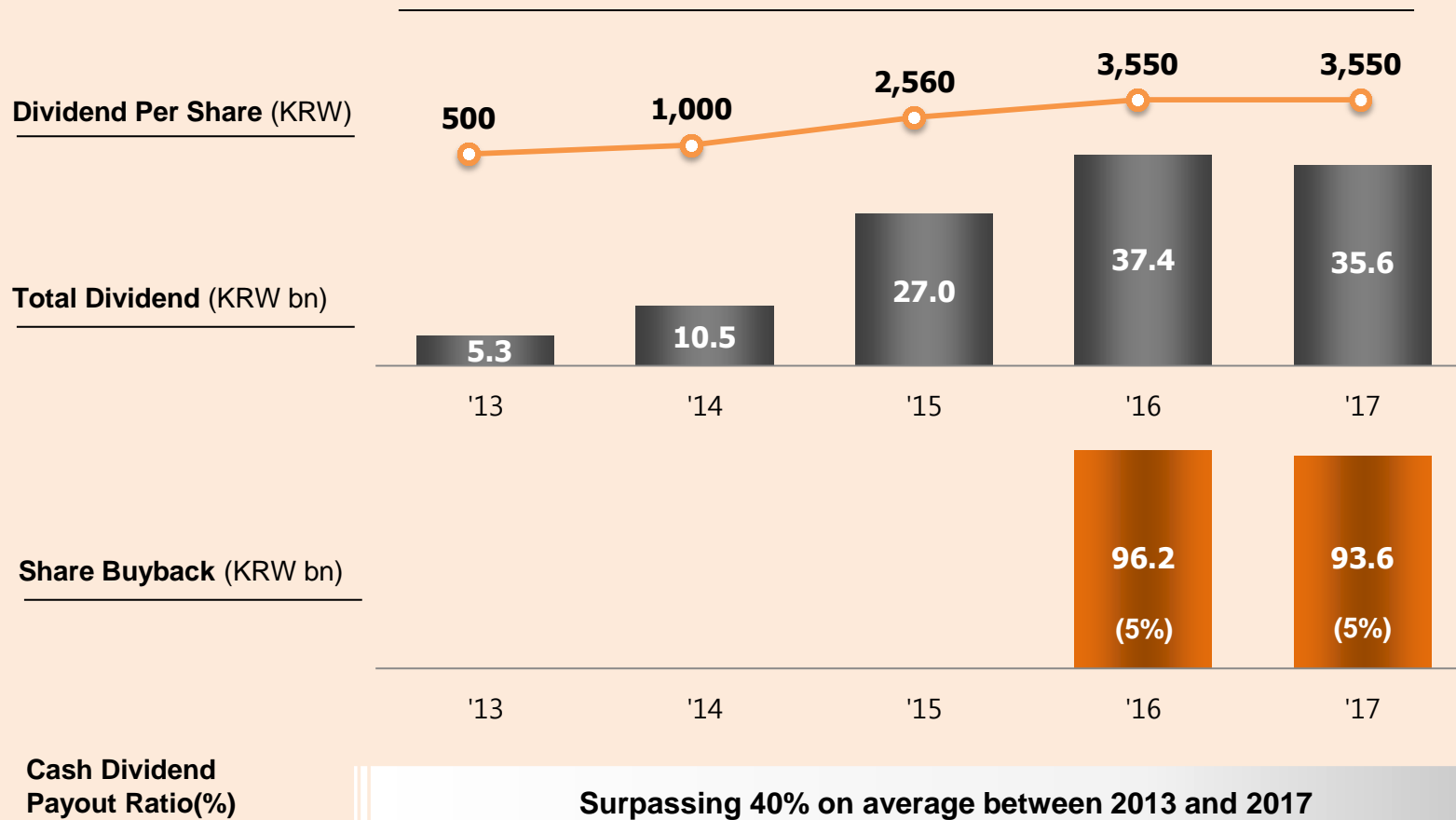
Seeking to Grow into a Global Top Tier "Total Solution Provider of Gas & IT Materials" by 2020 Through Expanding Its Specialty Gas Business and High Value-Added Products



# [Ref.] Raising Shareholder Value

Continuing to Implement a Policy on High Return to Shareholder  
(e.g. by maintaining high dividend rate)

### Scale of Return to Shareholder by Year



***End of Document***