Evolving unique chemical company

2014 Financial Results
- Consolidated -

SHOWA DENKO K.K.

February 12, 2015

Saburo Muto, CFO
Managing Corporate Officer

Performance forecast and other statements pertaining to the future as contained in this presentation are based on the information available as of today and assumptions as of today regarding risk factors that could affect our future performance. Actual results may differ materially from the forecast due to a variety of risk factors, including, but not limited to, the economic conditions, costs of naphtha and other raw materials, demand for our products, market conditions, and foreign exchange rates. We undertake no obligation to update the forward-looking statements unless required by law.

Consolidated Companies

- Consolidated subsidiaries: 45

  5 companies newly consolidated

  Shanghai Showa Chemicals Co., Ltd.
  Zhejiang Quzhou Juhua Showa Electronic Chemical Materials Co., Ltd.
  Showa Denko Aluminum (Nantong) Co., Ltd.
  Hanacans Joint Stock Company
  BE International Corporation

  2 companies excluded

  Tohoku Metal Chemical Co., Ltd.
  SD Preferred Capital Limited

- Equity method applied: 12

  3 companies excluded

  Tokyo Aluminum Wire Co., Ltd.
  Kofu Gas Center K.K.
  Takasaki Gas Center K.K.

Selected Data

(Average)

	2013		2014		Increase/decrease	
		Oct.-Dec.		Oct.-Dec.		Oct.-Dec.
Exchange rate: ¥/US$	97.7	100.5	105.9	114.5	Yen depreciated by ¥8.2/$	Yen depreciated by ¥14.1/$
Domestic naphtha price: ¥/kl	65,250	67,800	69,700	66,000	4,450	-1,800
Aluminum						
LME price: US$/T	1,888	1,813	1,893	1,976	5	163
Domestic market*: K¥/T	240	240	277	317	38	77

Exchange rate at 2013 year-end: ¥105.4/US$, at 2014 year-end: ¥120.6/US$
⇒Yen depreciated by ¥15.2/US$

*Domestic market: data from Nikkei

Summary

2013 (Jan.1 – Dec.31) vs. 2014 (Jan.1 – Dec.31)

(Unit: Billions of Yen)

	2013	2014	Increase/decrease
Net Sales	848.1	878.5	30.5
Operating Income	26.0	21.0	-4.9
Non-operating income and expenses	-2.5	1.2	3.7
Interest/Dividend income less interest expenses	-2.8	-0.8	2.0
Equity in earnings or losses of affiliates	-0.3	1.2	1.5
Currency exchange gain or loss	2.2	4.4	2.3
Other	-1.5	-3.6	-2.1
Ordinary Income	23.5	22.2	-1.3
Extraordinary Profit	6.3	3.5	-2.8
Extraordinary Loss	-5.7	-15.6	-9.9
Income before income taxes and minority interests	24.0	10.1	-14.0
Income Taxes	-13.8	-6.8	6.9
Minority Interests in income	-1.2	0.3	1.5
Net Income	9.1	3.5	-5.5
Net Income per share	¥6.06	¥2.41	¥-3.65

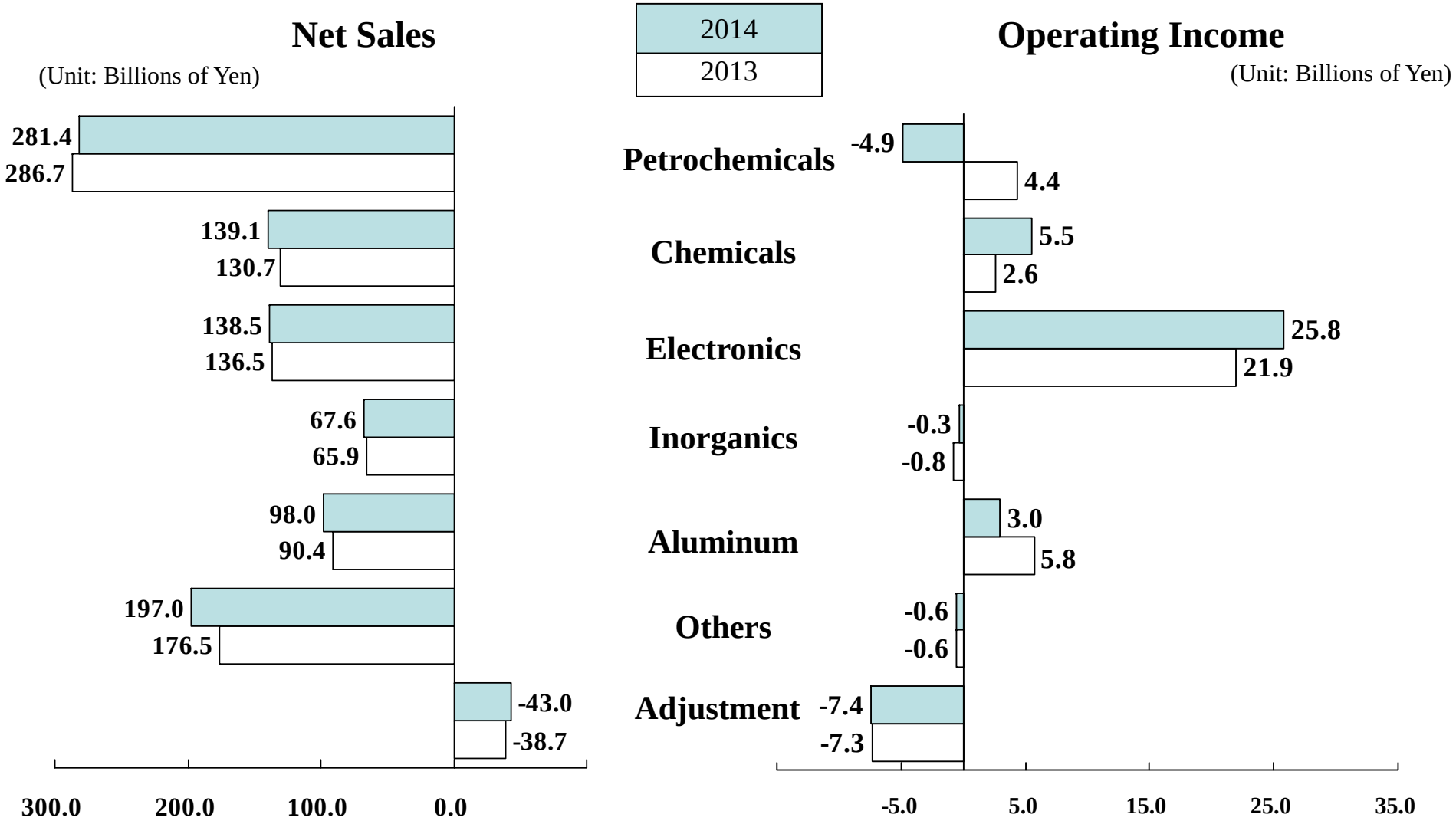
Cash dividends per Share	¥3.00	¥3.00(planned)	—

Extraordinary Profit/Loss

(Unit: Billions of Yen)

	2013	2014	Increase/ decrease
■Extraordinary Profit	6.3	3.5	-2.8
●Gain on sales of investment securities	5.1	3.0	-2.2
●Compensation for contract cancellation	0.8	0.0	-0.8
●Other	0.4	0.5	0.1
■Extraordinary Loss	-5.7	-15.6	-9.9
●Loss on sales and retirement of noncurrent assets	-1.5	-4.2	-2.7
●Impairment loss	-1.4	-3.7	-2.4
●Loss on valuation of investment securities	-0.5	-4.0	-3.6
●Other	-2.4	-3.6	-1.2
■Extraordinary Profit/Loss, Net	0.5	-12.1	-12.7

Sales and Operating Income by Segment



Consolidated Sales by Segment

(Unit: Billions of Yen)

	2013	2014	Increase/ decrease	
Petrochemicals	286.7	281.4	-5.3	【Olefins】sales decreased (shipment volumes down due to large-scale shutdown maintenance) 【Organic chemicals】sales increased (shipment volumes of vinyl acetate and ethyl acetate up)
Chemicals	130.7	139.1	8.4	【Basic chemicals】sales increased (AN: market price up, Chloroprene rubber: shipment volumes up) 【Industrial gases】sales maintained at the year-earlier level 【Electronic chemicals】sales increased (shipment volumes for East Asia up) 【Functional chemicals】sales slightly increased
Electronics	136.5	138.5	2.0	【HDs】sales increased 【Compound semiconductors】sales increased (shipment volumes up) 【Rare earth】sales decreased (shipment volumes down, price down)
Inorganics	65.9	67.6	1.6	【Ceramics】sales increased (shipment volumes of abrasives up) 【Graphite electrodes】sales slightly increased (shipment volumes up)
Aluminum	90.4	98.0	7.6	【High-purity foil for capacitors】sales increased (shipment volumes up) 【Aluminum specialty components】sales increased (shipment volumes for auto up) 【Aluminum cans】sales increased (acquisition of aluminum can maker in Vietnam)
Others	176.5	197.0	20.5	【LIB materials】sales maintained at the year-earlier level 【SHOKO Co., Ltd. 】sales increased 【BE International Corporation】Newly consolidated
Adjustment	-38.7	-43.0	-4.3	
Total	848.1	878.5	30.5	

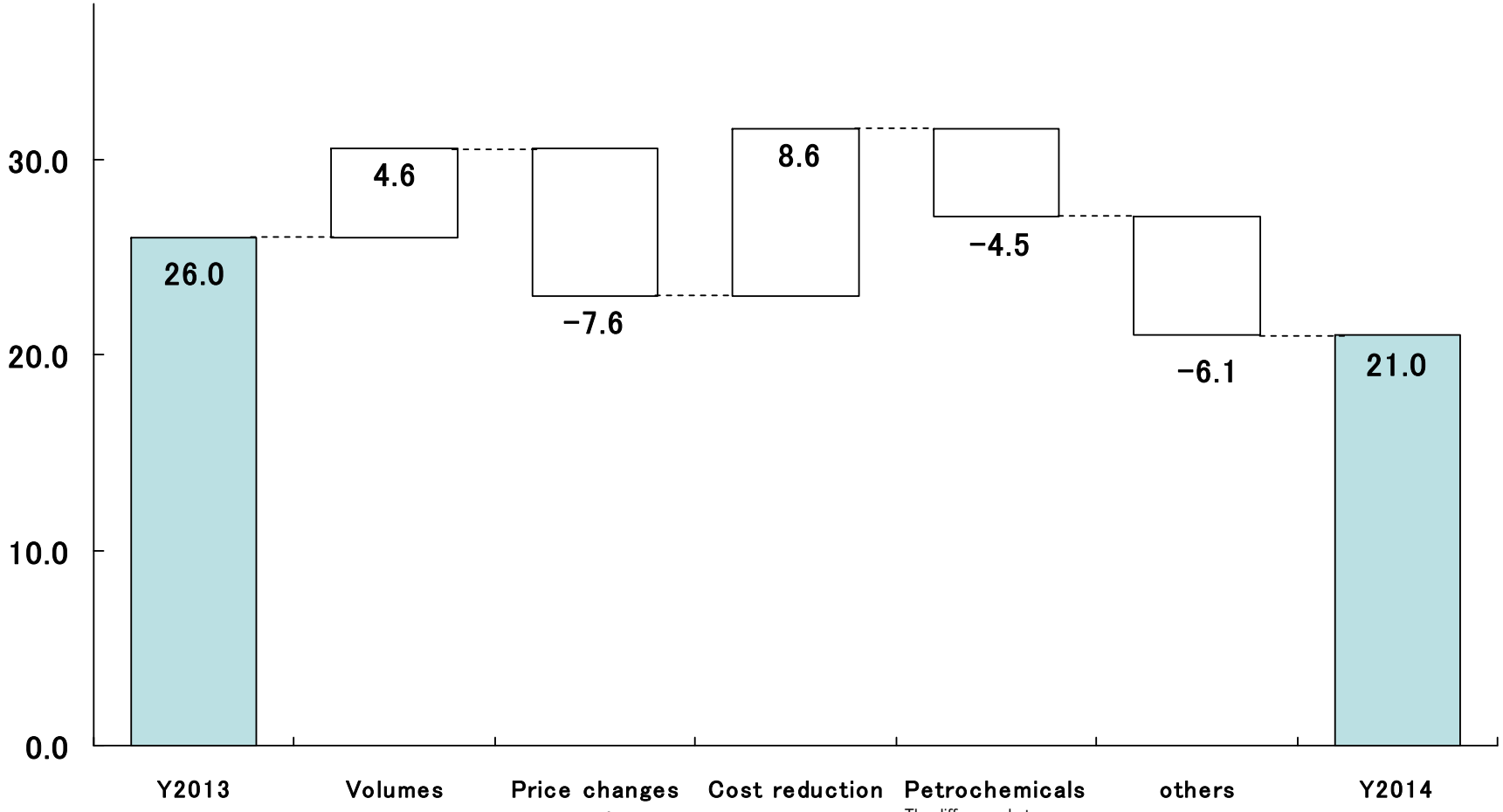
Consolidated Operating Income by Segment

(Unit: Billions of Yen)

	2013	2014	Increase/ decrease	
Petrochemicals	4.4	-4.9	-9.3	【Olefins】profit decreased (shipment volumes down due to large-scale shutdown maintenance, Naphtha price at year-end 2014 plummeted) 【Organic chemicals】profit decreased (ethyl acetate)
Chemicals	2.6	5.5	2.9	【Basic chemicals】profit increased (AN, Chloroprene rubber) 【Industrial gases】profit increased 【Electronic chemicals】profit increased 【Functional chemicals】profit decreased (cost up) 【Power generating business】profit improved
Electronics	21.9	25.8	3.8	【HDs】profit increased 【Compound semiconductors】profit increased 【Rare earth】profit increased (reduction in loss on valuation of inventories)
Inorganics	-0.8	-0.3	0.5	【Ceramics】profit maintained at the year-earlier level 【Graphite electrodes】profit increased (shipment volumes up)
Aluminum	5.8	3.0	-2.8	【High-purity foil for capacitors】,【Aluminum specialty components】 profit maintained at the year-earlier level 【Aluminum cans】profit substantially decreased (metal costs up)
Others	-0.6	-0.6	0.1	【LIB materials】profit increased 【SHOKO Co., Ltd.】profit decreased
Adjustment	-7.3	-7.4	-0.1	
Total	26.0	21.0	-4.9	

Operating Income Breakdown by Factor

(Unit: Billions of Yen)



Consolidated Balance Sheet

(Unit: Billions of Yen)

Assets	Dec.31, 2013	Dec.31, 2014	Increase/ decrease	Liabilities and Net Assets	Dec.31, 2013	Dec.31, 2014	Increase/ decrease
Cash and deposits	68.2	66.8	-1.4	Notes and accounts payable	124.2	129.2	5.0
Notes and accounts receivable	156.1	159.4	3.3	Interest-bearing debt	353.7	383.1	29.4
Inventories	120.2	123.6	3.4	Provision for retirement benefits, Net defined benefit liability	20.3	22.1	1.8
Other current assets	30.1	33.2	3.1	Other liabilities	141.8	156.1	14.4
Total Current Assets	374.6	383.1	8.5	Total Liabilities	640.0	690.6	50.6
Buildings and structures	85.5	85.9	0.5	Capital stock	140.6	140.6	0.0
Machinery and equipment	111.6	119.9	8.3	Capital surplus	62.2	62.2	0.0
Land	254.6	254.1	-0.5	Retained earnings	58.4	57.5	-0.9
Other tangible fixed assets	42.4	53.7	11.3	Treasury stock	-0.1	-10.2	-10.0
Tangible Fixed Assets	494.1	513.7	19.6	Total Shareholders' equity	261.0	250.1	-10.9
Intangible Fixed Assets	11.0	13.7	2.7	Valuation difference on available-for-sale securities	5.8	6.8	0.9
Investments and other assets	106.1	100.8	-5.3	Foreign currency translation adjustment, Deferred hedge gains	6.4	20.3	13.9
incl. investment securities	78.7	76.1	-2.6	Revaluation reserve for land	27.9	27.9	0.0
				Remeasurements of defined benefit plans	0.0	-4.9	-4.9
				Total accumulated other comprehensive income	40.2	50.1	9.9
				Minority Interests	44.6	20.4	-24.2
Total fixed assets	611.2	628.1	17.0	Total net assets	345.8	320.6	-25.2
Total Assets	**985.8**	**1,011.2**	**25.4**	**Total Liabilities and Net Assets**	**985.8**	**1,011.2**	**25.4**

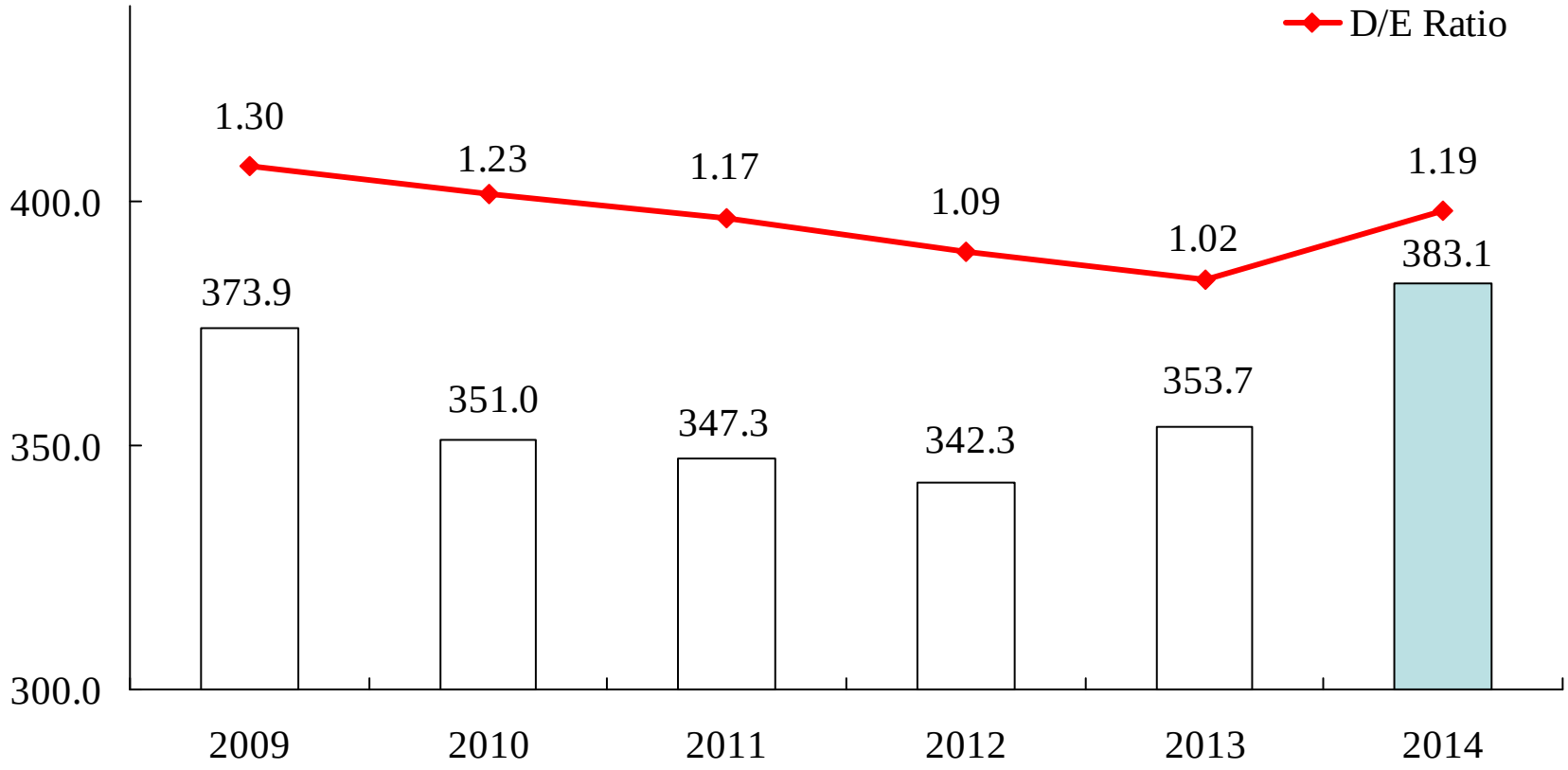
Total Assets
Interest-bearing Debt and D/E ratio

(Unit: Billions of Yen)

	Dec.31, 2013	Dec.31, 2014	Increase/ decrease
● **Total assets**	985.8	1,011.2	25.4
● **Interest-bearing debt**	353.7	383.1	29.4
● **Debt/Equity ratio**	1.02times	1.19times	0.17p
● **Stockholders' Equity ratio**	30.6%	29.7%	-0.9p

Interest-bearing Debt

（Unit: Billions of Yen)



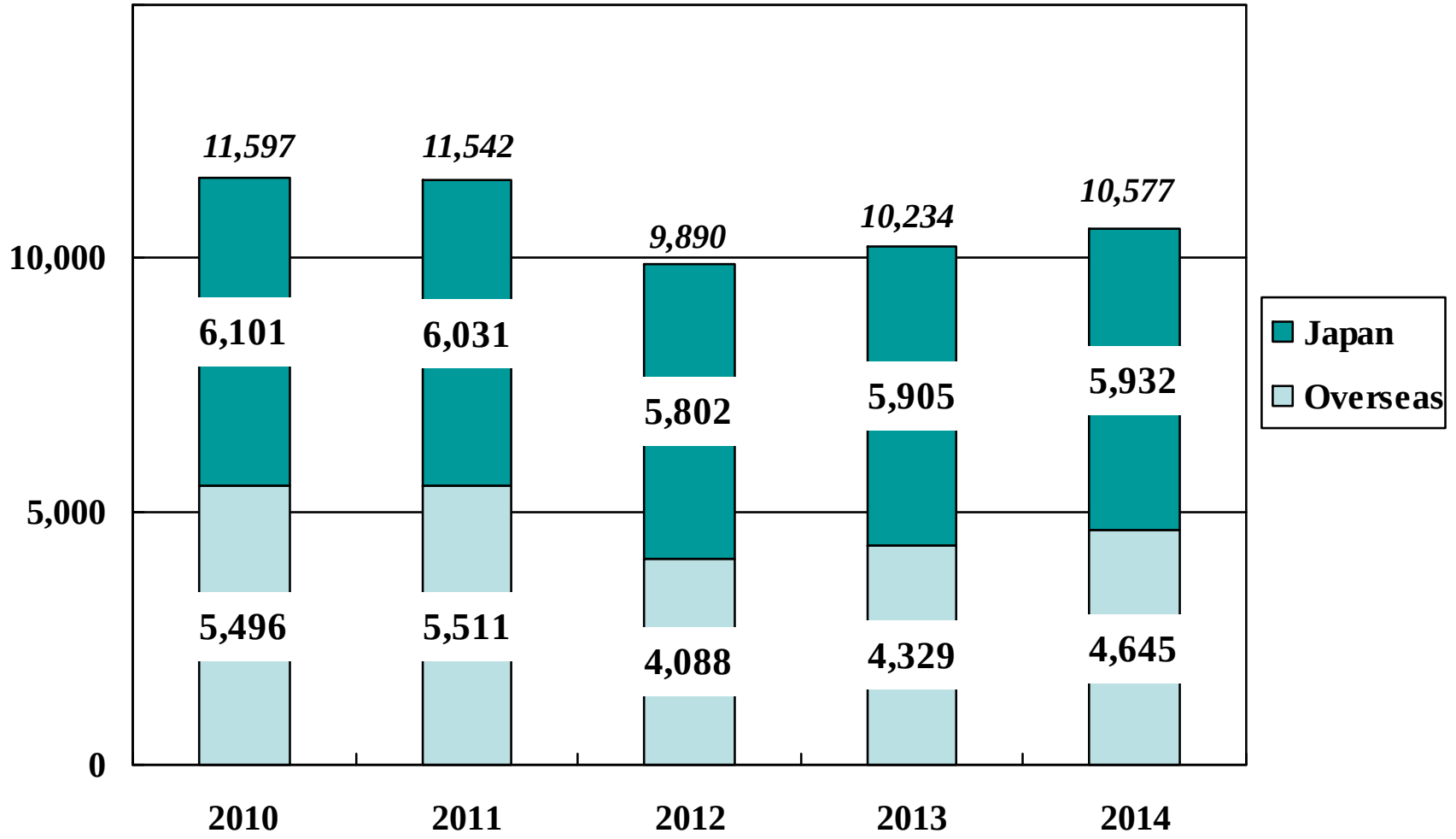
Equity ratio	25.5%	26.1%	26.8%	29.2%	30.6%	29.7%

Consolidated Cash Flows

(Unit: Billions of Yen)

	2013	2014	Increase/ decrease
●CF from Operating Activities	63.6	66.0	2.4
●CF from Investing Activities	-46.7	-47.2	-0.5
●Free CF	16.8	18.8	1.9
●CF from Financing Activities	-6.8	-25.0	-18.2
●Others	5.6	3.6	-2.0
Increase of cash and equivalents	15.7	-2.7	-18.3

Total number of employees and breakdown by location



	2010	2011	2012	2013	2014
Japan	52.6%	52.3%	58.7%	57.7%	56.1%
Overseas	47.4%	47.7%	41.3%	42.3%	43.9%

Capital expenditures/ Depreciation by Segment

(Unit: Billions of Yen)

	2013		2014		Increase/decrease	
	Capital expenditures	Depreciation	Capital expenditures	Depreciation	Capital expenditures	Depreciation
Petrochemicals	2.9	6.4	4.2	6.5	1.3	0.1
Chemicals	6.7	7.3	7.8	7.5	1.0	0.2
Electronics	6.1	14.2	7.8	13.2	1.7	-1.0
Inorganics	18.3	3.1	15.4	3.6	-2.9	0.5
Aluminum	6.3	4.3	7.1	5.3	0.9	1.0
Others	4.0	4.4	5.0	4.6	0.9	0.1
Total	44.4	39.8	47.3	40.7	2.9	0.9

Selected Data 2014, 2015 Forecast (Consolidated)

(* Unit: Billions of Yen)

	2013	2014	2014-2013 Increase/ decrease	2015 Forecast	2015-2014 Increase/ decrease
●Exchange rate: ¥/US$	97.7	105.9	8.2	115.0	Yen will depreciate by 9.2
●Domestic naphtha price: ¥/kl	65,250	69,700	4,450	51,000	-18,700
●Aluminum LME price: US$/t	1,888	1,893	5	1,840	-53
●Interest-bearing debt*	353.7	383.1	29.4	385.0	1.9
●Interest/dividend income less interest expenses*	-2.8	-0.8	2.0	-3.4	-2.6
●R&D expenditures*	20.4	20.4	-0.1	20.8	0.4
●Number of employees: people	10,234	10,577	343	11,164	587
●Total employment cost*	70.2	72.0	1.8	75.8	3.8

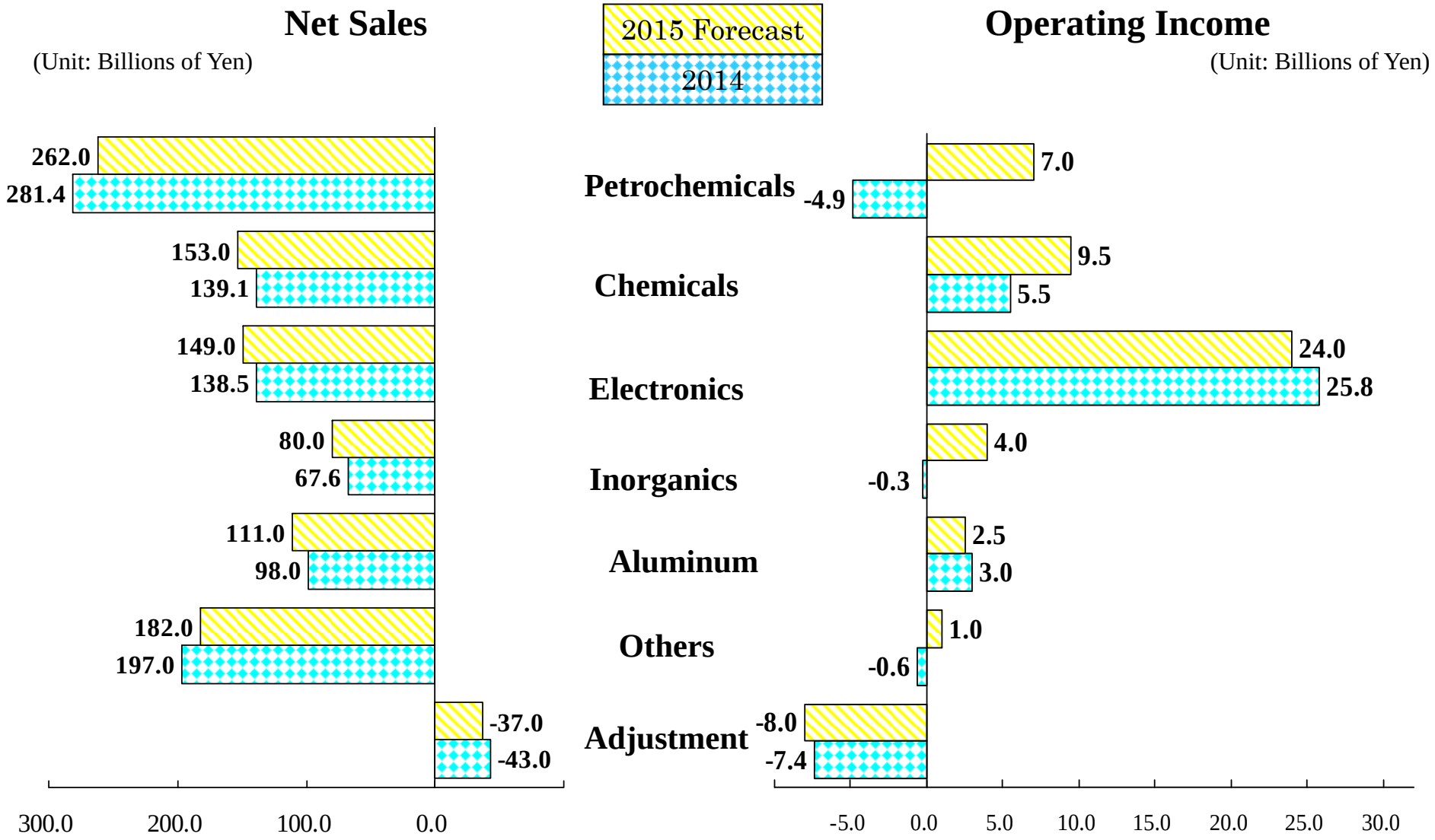
2015 Forecast (Consolidated)

(Unit: Billions of Yen except Cash dividends per Share and Net income per Share)

	2014	2015 Forecast	Increase/ decrease	2015 Forecast	
				1st Half	2nd Half
Net Sales	878.5	900.0	21.5	430.0	470.0
Operating Income	21.0	40.0	19.0	10.0	30.0
Non-operating income and expenses	1.2	-5.5	-6.7	-2.5	-3.0
Ordinary Income	22.2	34.5	12.3	7.5	27.0
Extraordinary Profit	-12.1	-9.0	3.1	-3.0	-6.0
Extraordinary Loss					
Net Income	3.5	15.0	11.5	2.0	13.0
Net Income per Share	¥2.41	¥10.50	¥8.09		

Cash dividends per Share	¥3.00 (planned)	¥3.00	-

Sales and Operating Income
Forecast for 2015



Net Sales by Segment, 2015 Forecast (Consolidated)

(Unit: Billions of Yen)

	2014	2015 Forecast	Increase/ decrease	Comments	2015 Forecast	
					1st Half	2nd Half
Petrochemicals	281.4	262.0	-19.4	Market price down due to the fall in naphtha price (sales decrease expected) Shipment volumes up due to the 2014 shutdown maintenance (sales increase expected)	122.0	140.0
Chemicals	139.1	153.0	13.9	Functional chemicals: sales increase expected (newly consolidated subsidiary) Electronic chemicals: sales increase expected	74.0	79.0
Electronics	138.5	149.0	10.5	HDs: sales increase expected Compound semiconductors: sales will be maintained at earlier-year level Rare earth: sales increase expected	73.0	76.0
Inorganics	67.6	80.0	12.4	Ceramics: sales increase expected Graphite electrodes: sales increase expected	37.0	43.0
Aluminum	98.0	111.0	13.0	Rolled products: sales increase expected (shipment volumes up) Specialty products: sales will be maintained at earlier-year level Cans: sales increase expected (subsidiary in Vietnam)	52.0	59.0
Others	197.0	182.0	-15.0	LIB Materials: sales increase expected SHOKO Co., Ltd.: sales decrease expected	90.0	92.0
Adjustment	-43.0	-37.0	6.0		-18.0	-19.0
Total	878.5	900.0	21.5		430.0	470.0

Operating Income, 2015 Forecast (Consolidated)

(Unit: Billions of Yen)

	2014	2015 Forecast	Increase/ decrease	Comments	2015 Forecast	
					1st Half	2nd Half
Petrochemicals	-4.9	7.0	11.9	Olefins: profit increase expected (Shipment volumes up due to the 2014 shutdown maintenance; alleviation of the impact of sharp fall in naphtha price) Organic chemicals: profit increase expected (ethyl acetate)	-2.5	9.5
Chemicals	5.5	9.5	4.0	Industrial gases, Basic chemicals, Electronic chemicals, Functional chemicals: profit increase expected	2.5	7.0
Electronics	25.8	24.0	-1.8	HDs: profit decrease expected Compound semiconductors: profit will be maintained at earlier-year level Rare earth: profit increase expected	12.5	11.5
Inorganics	-0.3	4.0	4.3	Ceramics, Graphite electrodes: profit increase expected	0.5	3.5
Aluminum	3.0	2.5	-0.5	Rolled products: profit increase expected Specialty products: profit decrease expected Cans: slight increase in profit expected	1.0	1.5
Others	-0.6	1.0	1.6	LIB materials: profit increase expected SHOKO Co., Ltd.: profit increase expected	0.0	1.0
Adjustment	-7.4	-8.0	-0.6		-4.0	-4.0
Total	21.0	40.0	19.0		10.0	30.0

Consolidated Cash Flows, 2015 Forecast

(Unit: Billions of Yen)

	2014	2015 Forecast	Increase/ decrease
●CF from Operating Activities	66.0	65.0	-1.0
●CF from Investing Activities	-47.2	-50.0	-2.8
●Free CF	18.8	15.0	-3.8
●CF from Financing Activities	-25.0	-8.2	16.8
●Others	3.6	0.0	-3.6
Increase of cash and equivalents	-2.7	6.8	9.5

Capital expenditures/Depreciation by Segment
2015 Forecast

(Unit: Billions of Yen)

	2014		2015 Forecast		Increase/decrease	
	Capital expenditures	Depreciation	Capital expenditures	Depreciation	Capital expenditures	Depreciation
Petrochemicals	4.2	6.5	2.4	5.8	-1.8	-0.7
Chemicals	7.8	7.5	11.5	7.2	3.7	-0.3
Electronics	7.8	13.2	15.0	13.4	7.2	0.2
Inorganics	15.4	3.6	10.6	5.5	-4.8	1.9
Aluminum	7.1	5.3	5.7	5.8	-1.4	0.5
Others	5.0	4.6	5.9	4.9	0.9	0.4
Total	47.3	40.7	51.2	42.6	3.8	1.9

CQ4 (Oct.1 – Dec.31), 2013 vs. CQ4 (Oct.1 – Dec.31), 2014 (Reference)

(Unit: Billions of Yen)

	CQ4, 2013	CQ4, 2014	Increase/decrease
Net Sales	230.5	231.0	0.4
Operating Income	10.1	2.8	-7.3
Non-operating income and expense	1.0	2.4	1.3
Interest/Dividend income less expenses	-0.7	-0.8	-0.2
Equity in earnings of affiliates	0.3	0.8	0.5
Foreign exchange gain or loss	1.4	3.2	1.8
Other	0.0	-0.8	-0.8
Ordinary Income	11.1	5.1	-6.0
Extraordinary Income	4.3	2.4	-2.0
Extraordinary Loss	-2.0	-4.3	-2.3
Income before income taxes and minority interests	13.4	3.2	-10.2
Income Taxes	-11.0	-2.3	8.7
Minority Interests in income	-0.1	0.5	0.6
Net Income	2.3	1.4	-1.0

Consolidated Sales by Segment

CQ4 (Oct.1 – Dec.31), 2013 vs. CQ4 (Oct.1 – Dec.31), 2014

(Unit: Billions of Yen)

	CQ4, 2013	CQ4, 2014	Increase/ decrease	
Petrochemicals	79.2	78.8	-0.4	【Olefins】sales decreased (price down) 【Organic chemicals】sales increased (shipment volumes of vinyl acetate up)
Chemicals	35.1	36.6	1.5	【Basic chemicals】,【Functional chemicals】sales maintained at the year-earlier level 【Industrial gases】sales decreased (shipment volumes down) 【Electronic chemicals】sales increased (shipment volumes up)
Electronics	37.3	35.9	-1.4	【HDs】sales maintained at the year-earlier level 【Compound semiconductors】sales slightly decreased 【Rare earth】sales decreased (shipment volumes down)
Inorganics	17.0	16.6	-0.3	【Ceramics】sales slightly decreased 【Graphite electrodes】sales increased (shipment volumes up)
Aluminum	23.2	27.1	3.9	【High-purity foil for capacitors】sales increased (price up) 【Aluminum specialty components】sales slightly increased (shipment volumes of cylinders for laser beam printers up) 【Aluminum cans】sales increased (acquisition of aluminum can maker in Vietnam)
Others	49.2	47.0	-2.2	【LIB materials】sales maintained at the year-earlier level 【SHOKO Co., Ltd.】,【SHOKO (Shanghai) Co., Ltd.】sales decreased
Adjustment	-10.4	-11.1	-0.7	
Total	230.5	231.0	0.4	

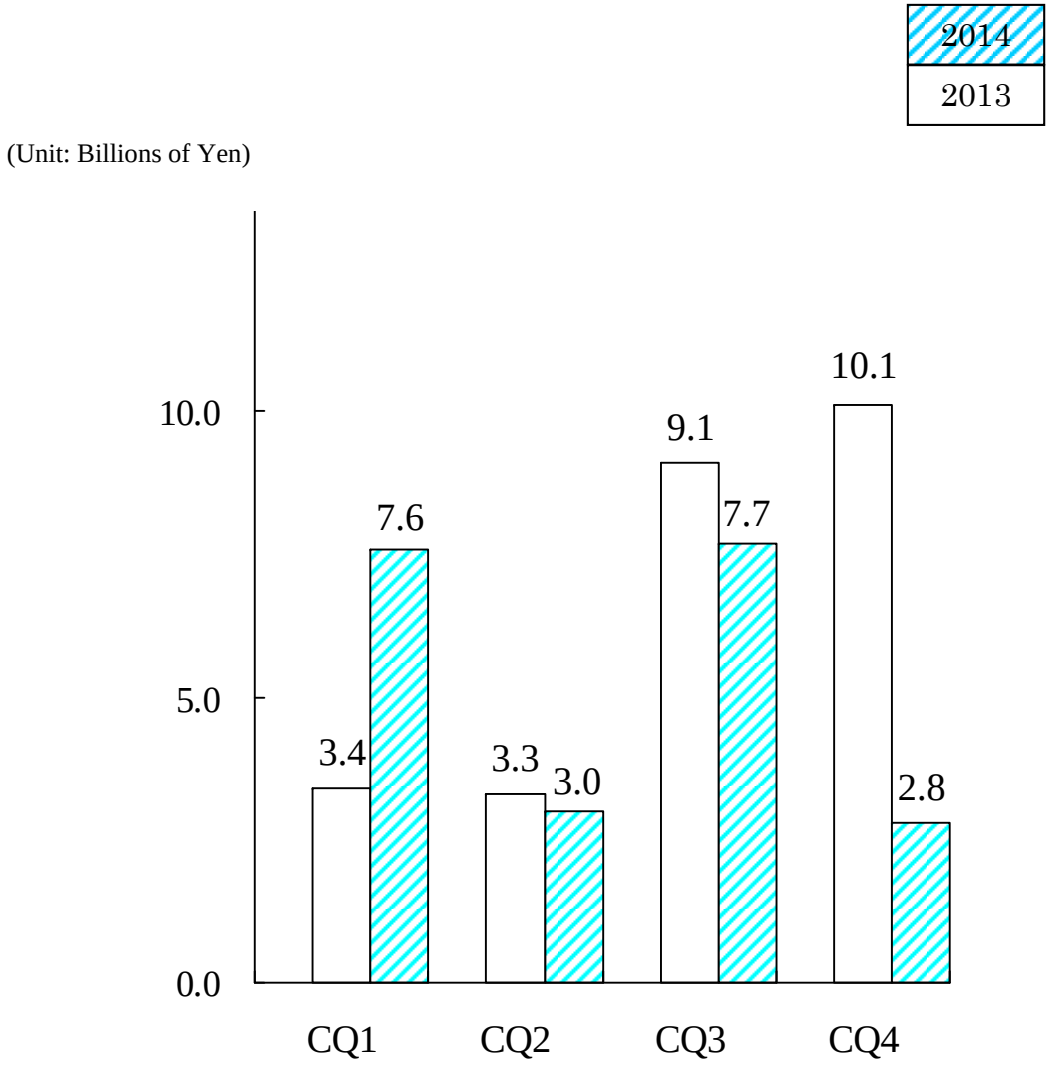
Consolidated Operating Income by Segment

CQ4 (Oct.1 – Dec.31), 2013 vs. CQ4 (Oct.1 – Dec.31), 2014

(Unit: Billions of Yen)

	CQ4 2013	CQ4, 2014	Increase/ decrease	
Petrochemicals	2.4	-4.3	-6.8	【Olefins】profit decreased (market price down due to the sharp fall in naphtha price; loss on valuation of inventories) 【Organic chemicals】profit increased (shipment volume of vinyl acetate up)
Chemicals	1.3	2.3	1.0	【Basic chemicals】profit increased (Chloroprene rubber) 【Industrial gases】profit slightly decreased 【Electronic chemicals】profit increased (shipment volumes up) 【Functional chemicals】profit slightly decreased 【Power generating business】profit improved
Electronics	7.8	6.9	-0.9	【HDs】profit decreased 【Compound semiconductors】profit slightly increased 【Rare earth】profit decreased
Inorganics	-0.5	0.4	1.0	【Ceramics】profit slightly increased 【Graphite electrodes】profit increased (shipment volumes up)
Aluminum	1.0	0.5	-0.5	【High-purity foil for capacitors】profit slightly decreased 【Aluminum specialty components】profit slightly decreased 【Aluminum cans】profit decreased (metal costs up)
Others	0.2	-1.1	-1.2	【LIB materials】profit maintained at the year-earlier level 【SHOKO Co., Ltd.】profit decreased
Adjustment	-2.0	-1.9	0.1	
Total	10.1	2.8	-7.3	

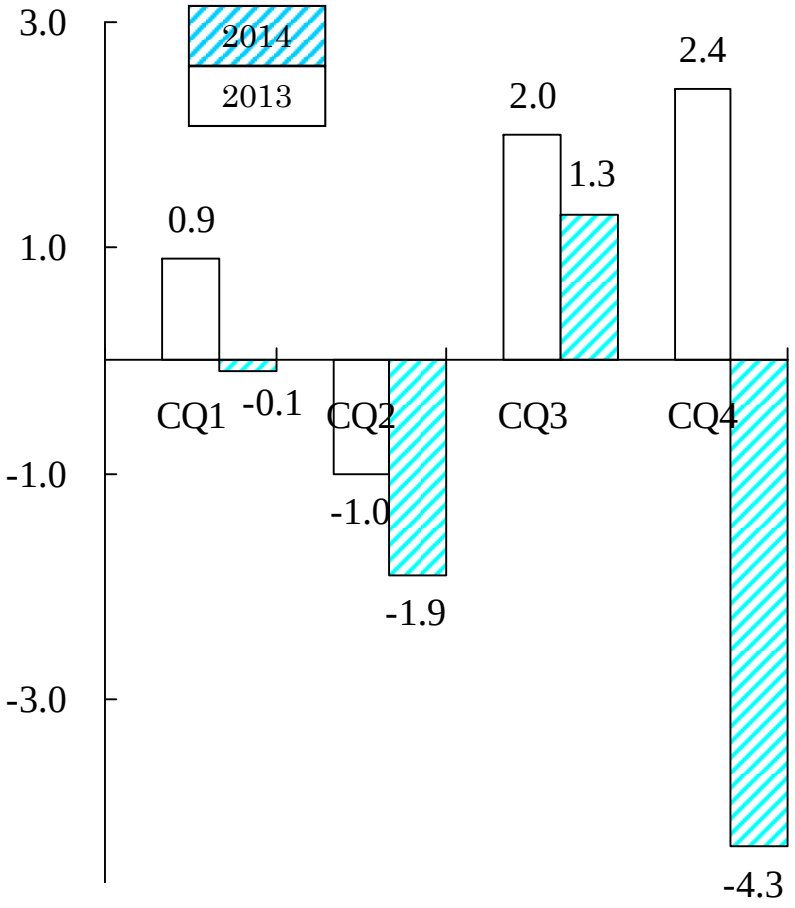
(Reference)　Quarterly Operating Income



(Reference) Quarterly Operating Income by Segment

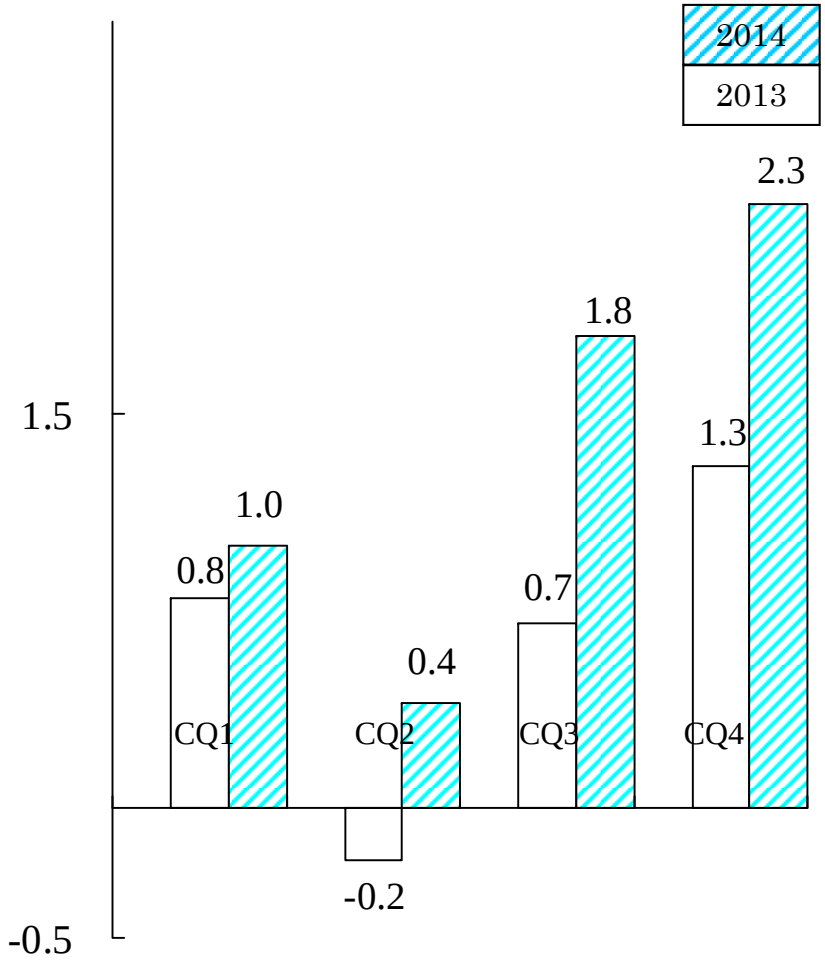
《Petrochemicals》

(Unit: Billions of Yen)



《Chemicals》

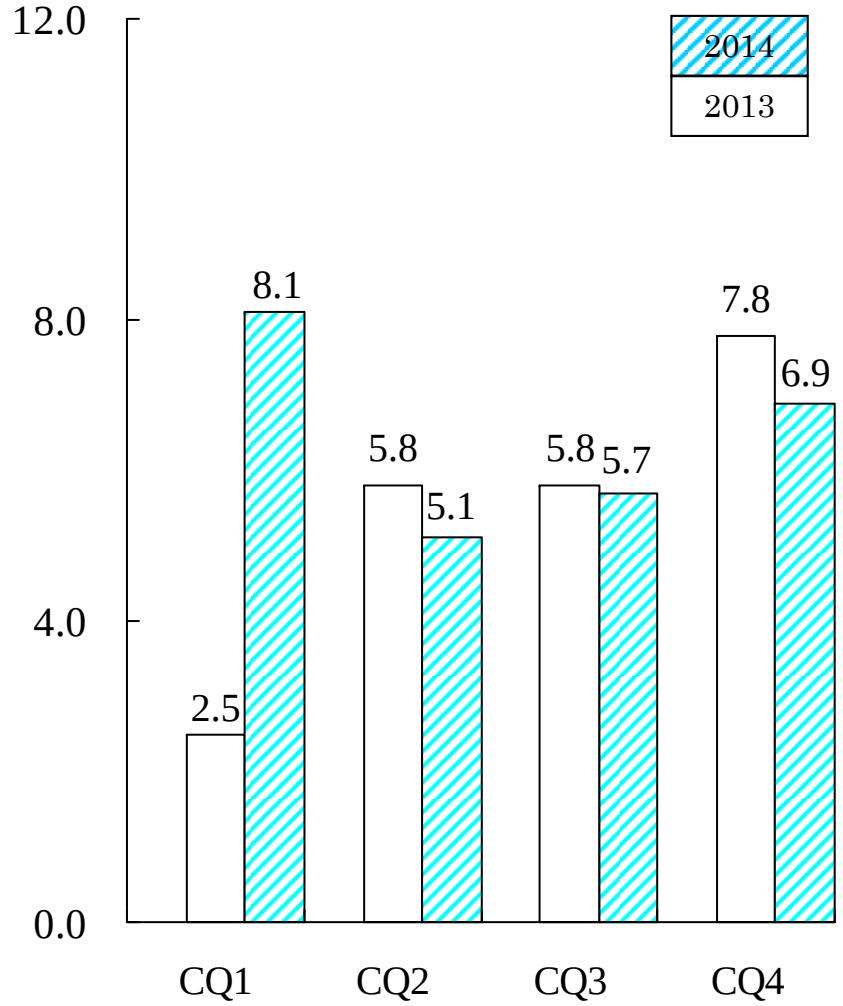
(Unit: Billions of Yen)



(Reference) Quarterly Operating Income by Segment

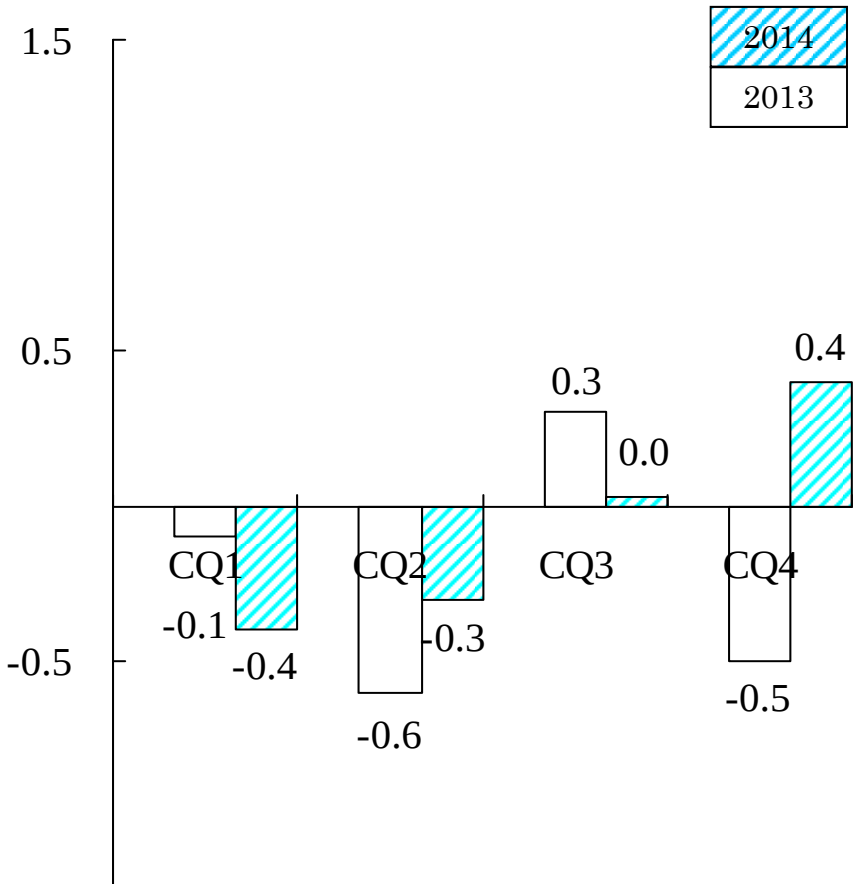
《Electronics》

(Unit: Billions of Yen)



《Inorganics》

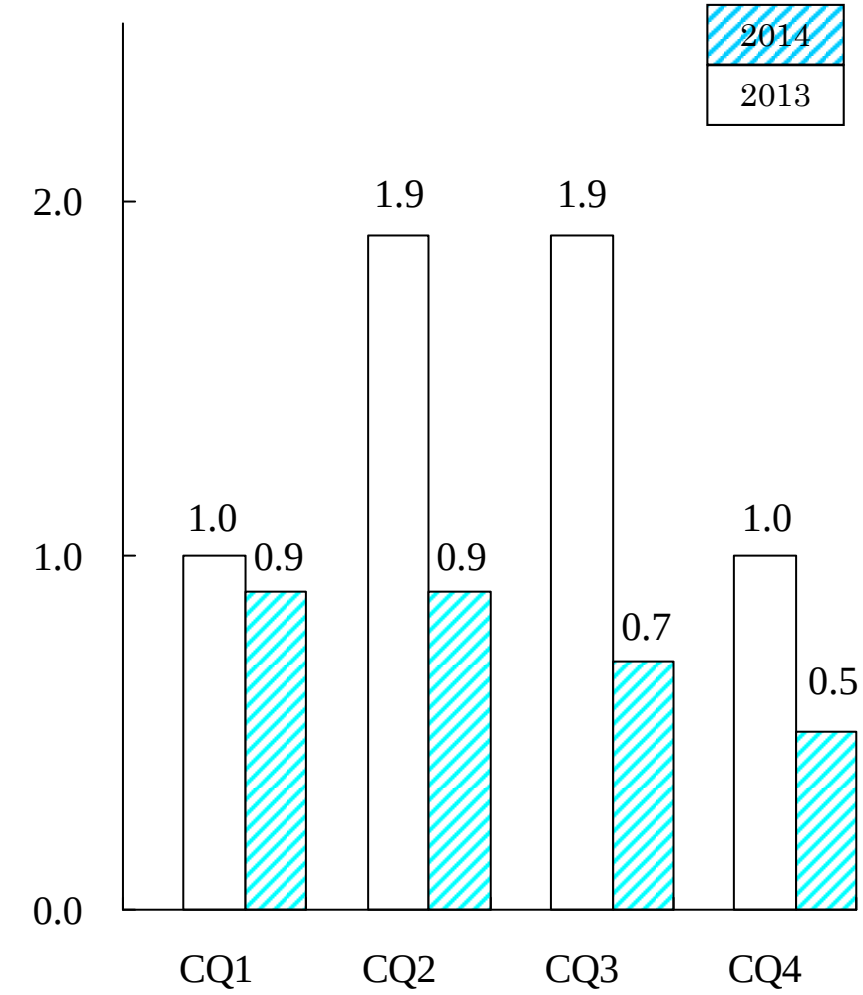
(Unit: Billions of Yen)



(Reference) Quarterly Operating Income by Segment

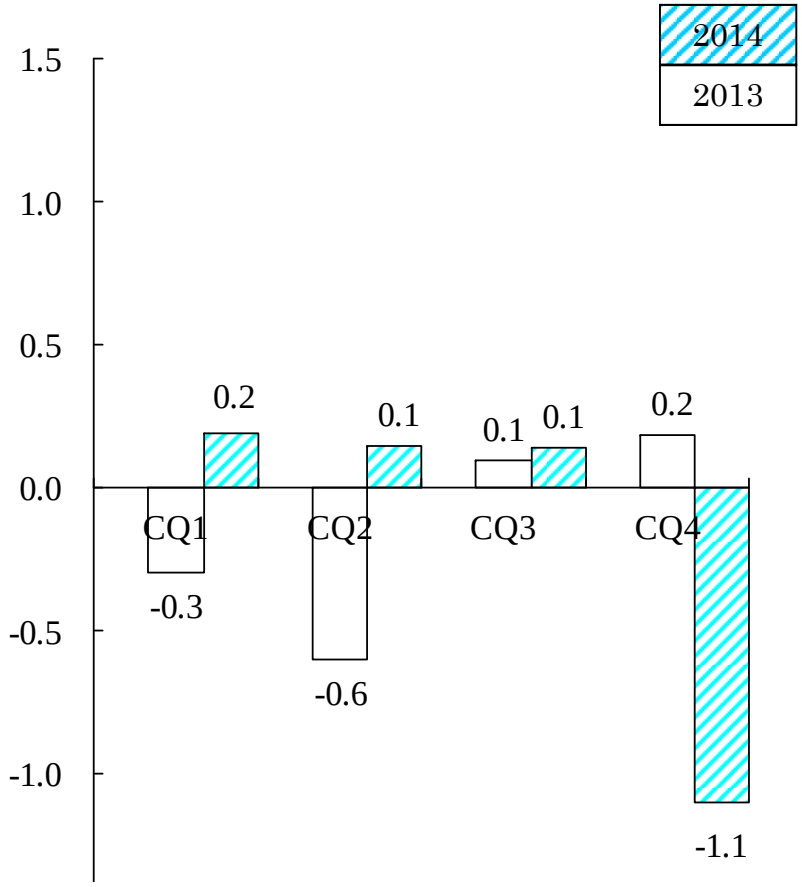
《Aluminum》

(Unit: Billions of Yen)



《Others》

(Unit: Billions of Yen)



Topics

[General]

- **Repurchase of own shares**

  At its Board of Directors' meeting held on July 31, 2014, SDK resolved to repurchase its own shares in order to ensure shareholder returns and facilitate flexible implementation of capital policy in response to changes in the business environment. SDK started the repurchase on August 1, 2014 and completed it on September 22, 2014. Accumulated total number of shares repurchased was 68,261,000 (equivalent to about ¥10 billion).

- **Refinancing of existing Hybrid Securities by subordinated loan**

  In April 2014, SDK carried out refinancing of an aggregate amount of ¥24 billion by way of a subordinated loan and the repurchase and cancellation of the subordinated convertible bonds due 2014 issued by SDK and perpetual preferred securities issued by SD Preferred Capital Limited, SDK's wholly-owned special purpose company.

- **Increase of capacity to produce 6" SiC epitaxial wafers for power devices**

  In September 2014, SDK increased its capacity to produce silicon carbide (SiC) epitaxial wafers with a diameter of six inches for use in power devices from 400 units a month to 1,100 units a month. SDK also started shipping of a new grade of SiC epitaxial wafers with improved quality, to be used in power control modules for automobiles and other applications that require heavy withstanding currents. When compared with the currently mainstream silicon-based semiconductors, SiC-epitaxial-wafer-based power devices can operate under relatively high-temperature, high-voltage and heavy–current conditions, while substantially reducing energy loss. With these features, SiC power devices are expected to be in greater demand for use in automobiles, power sources for servers, electric trains, decentralized power generation systems utilizing new energy sources, and other applications. The market size of SiC power devices is expected to grow to be about ¥30 billion in 2020. SDK will continue meeting market needs for quality, and contribute to the extension of SiC power device market.

Topics

[Petrochemicals segment]

- **Start-up of new ethyl acetate plant**

  In June 2014, SDK started commercial operation of its new ethyl acetate plant at Oita Complex using its proprietary production process technology. Ethyl acetate is an organic solvent used in wide-ranging applications, including printing ink, paint, and adhesives for electronic devices. In the new process technology adopted this time, however, acetic acid is directly added to ethylene, enabling efficient production of high-quality ethyl acetate.

- **Decision to dissolve PT. Showa Esterindo Indonesia**

  SDK decided to terminate production of ethyl acetate at its subsidiary PT. Showa Esterindo Indonesia (SEI), and dissolve and liquidate SEI after demolition and removal of the production facilities. The production was terminated at the end of 2014. SEI started to produce ethyl acetate in 1999 as SDK's first plant to introduce our proprietary technology to synthesize ethyl acetate by adding ethylene directly to acetic acid, and had been providing stable Southeast Asian market with ethyl acetate since then. In recent years, however, the business environment for SDI has become harder than before because of rises in material prices and expansion of the capacities of neighboring countries to supply ethyl acetate. Under these circumstances, SDK and its partners have concluded that it is difficult to continue SEI's operations, and decided to dissolve the company.

[Chemicals segment]

- **Expanding high-purity ammonia production in China**

  SDK increased the production capacity for high-purity ammonia (a specialty gas for semiconductor production) at its manufacturing subsidiary* in Zhejiang Province, China, from 1,000 t/y to 2,000 t/y. The expanded facility started operation in January 2014. Following the expansion, SDK now has a total high-purity ammonia production capacity of 6,000 tons a year, consisting of 1,500 t/y in Japan, 2,500 t/y in Taiwan, and 2,000 t/y in China. SDK will continue to strengthen its supply system to meet the growing demand for high-purity gases in East Asia, where electronics production sites are integrated.

  * Zhejiang Quzhou Juhua Showa Electronic Chemical Materials Co., Ltd.

Topics

[Chemicals segment]

- **Establishing a new base for high-purity N_2O in South Korea**

  SDK decided to increase its capacity for supplying high-purity nitrous oxide (N_2O), a specialty gas for semiconductor production, by cooperating with Dooam Industrial, which is headquartered in Anseong, Gyeonggi Province, South Korea. SDK and Dooam concluded a work commissioning agreement concerning the production of high-purity N_2O. The two companies also agreed to jointly construct a purification facility within the premises of Dooam's plant near Seoul. The purification facility was completed in January 2015. By the completion of the new facility, SDK's total high-purity N_2O supply capacity increased to 1,800 t/y, consisting of 1,200 t/y in Japan and 600 t/y in South Korea. High-purity N_2O is used for deposition of an insulating oxide film in the process of chemical vapor deposition (CVD) for producing semiconductors. For this application, demand for high-purity N_2O is growing at the rate of 10-15% a year in Asia. SDK will continue strengthening its high-purity N_2O supply system in response to the growing demand in East Asia.

- **Strengthening high silica zeolite production system**

  Union Showa (USKK), a joint corporation between SDK and UOP LLC, completed the construction of a new high silica zeolite plant within the premises of SDK's Higashinagahara Plant in Aizu-Wakamatsu City, Fukushima Prefecture, and started operation of the new plant in December 2014. High silica zeolite is a synthetic zeolite adsorbent which has improved hydrophobic nature, and is used in such applications as deodorization, gas adsorption, and removal of toxic VOCs. High silica zeolite has been in tight supply worldwide. In Japan and other Asian countries, demand for high silica zeolite is expected to grow further, reflecting increased awareness of the need for environmental protection and desire to achieve a higher standard of living. USKK has already been producing hydrophilic synthetic zeolite at its Yokkaichi Plant in Mie Prefecture for such applications as dehydration, drying, refining, and separation. USKK will fully utilize its two plants, and will aim to develop and supply new zeolite products not only for conventional use such as treatment of industrial waste water but also for treatment of contaminated water at Fukushima Daiichi Nuclear Power Plant and wide area decontamination, and treatment of radioactive nuclides to promote decommissioning of nuclear reactors.

Topics

[Chemicals segment]

- **Acquisition of Air Products' high-purity chlorine business in Taiwan**

In order to strengthen its special material gas business, SDK decided in July 2014 to acquire a high purity chlorine business including production facilities located in Kaohsiung, Taiwan, which had been owned by Air Products San Fu Co., Ltd, a subsidiary of Air Products and Chemicals Inc. (APCI). The demand for high-purity chlorine used as an etching gas in the manufacturing process of semiconductors and LCDs is increasing, and the annual market size of the gas is expected to be about 2,000 tons in 2015. The SDK Group has production facilities for high-purity chlorine with annual production capacity of 1,000 tons in its Kawasaki Plant. By having additional high-purity chlorine production facilities in Taiwan, the SDK Group aims to ensure further stable supply of high-purity chlorine to the growing market in East Asia.

[Electronics segment]

- **Starting to mass-produce highest capacity 3.5-inch HD media**

The leading-edge 3.5-inch hard disk (HD) media produced and sold by SDK have been introduced into 8 TB hard disk drives (HDDs), the world's highest storage capacity HDDs to date. The 3.5-inch HD media introduced this time has data storage capacity of 1.1-1.3 TB per medium, and are classified as the seventh generation products of the HD media based on use the perpendicular magnetic recording (PMR) technology. SDK pioneered in producing and selling HD media using the PMR technology in 2005. The number of shipment of HDDs, especially those for the use in storage servers in data centers, is expected to increase very rapidly because of the increase in data generation accompanying the extension of cloud computing. The number of shipment of HD media, which are main components of HDDs and control HDDs' storage capacities, is expected to show annual rate of increase of about 3%. As the world's largest independent HD media supplier, SDK will aim to ensure stable supply of high-capacity media. SDK will also continue meeting customer requirements in terms of quality as well as quantity.

Topics

[Inorganics segment]

- **Reorganization of ceramics-related subsidiaries**

  Aiming to improve competitiveness of its ceramics business, SDK reorganized its ceramics-related subsidiaries to be more efficient ones. SDK established Showa Denko Ceramics Co., Ltd. as a core company of SDK's ceramics business in January 2014, and merged this company and another subsidiary, Tohoku Metal Chemical Co., Ltd., which produces abrasives for mirror plane polishing, in October 2014. SDK also merged Nagoya Kenmazai Kogyo Co., Ltd., which produces and sells artificial abrasives, and Shiojiri Showa K.K., which performs production works commissioned by SDK's Shiojiri Plant, in January 2015 and launched a new subsidiary Showa Fine Ceramics Co., Ltd. In the Phase II of its medium-term consolidated business plan PEGASUS, SDK positions its ceramics business as "Base (Stable)" business. The reorganization mentioned above is one of core measures planned in the PEGHASUS Phase II to improve competitiveness of SDK's ceramics business. SDK will aim to realize effectiveness of the reorganization, and continue expanding its ceramics business.

- **Application of high-performance photocatalyst *LUMI-RESH*™ in progress**

  In 2014, high-performance photocatalyst *LUMI-RESH*™ which was developed by Showa Denko Ceramics Co., Ltd., a subsidiary of SDK, was applied to an indoor-use membrane building material "Hikari-Protextile" manufactured by Taiyo Kogyo Corporation, and to high-performance curtains manufactured by Lilycolor Co., Ltd. In addition, Nippon Soda Co., Ltd. successfully developed a paint containing *LUMI-RESH*™. SDK developed and started to market heat insulation panels coated with this new paint containing *LUMI-RESH*™ for use in completely airtight plant factories. Application of *LUMI-RESH*™ to the surfaces of these heat insulation panels reduces bacteria and viruses in the air, and prolongs the freshness of vegetables. When rays of light strike photocatalyst, that photocatalyst catalyzes water vapor and oxygen in the air, and generates active oxygen, which inactivates bacteria and viruses adhering to surfaces of substances containing the photocatalyst. While conventional photocatalysts are activated by ultraviolet rays much included in sunlight, *LUMI-RESH*™ can be activated by visible low-energy light emitted by indoor lighting apparatus including fluorescent lights and LEDs. By further improving performance of photocatalysts and developing its new applications in cooperation with our customers, SDK Group will contribute to people's healthy, safe and sound life.

Topics

[Aluminum segment]

● Acquisition of a Vietnamese aluminum can maker

In May 2014, SDK and its wholly owned subsidiary Showa Aluminum Can Corporation (SAC) completed the procedures for jointly acquiring 91.75% of shares in Hanacans*, a manufacturer of aluminum beverage cans in Vietnam. Hanacans is the largest aluminum can producer in the northern region of Vietnam, and has strong sales network among local beverage manufacturers. Furthermore, Hanacans will introduce SAC's advanced production technology and quality control system, thereby strengthening its competitive power in the growing Vietnamese market.

* Hanacans Joint Stock Company

● Decision to expand the capacity to produce high-purity aluminum foils in China

SDK decided in July 2014 to expand its capacity to produce high-purity aluminum foil, which is a main material for aluminum electrolytic capacitors, in China. SDK will increase productive capacity of Showa Denko Aluminum (Nantong) from 400 tons a month at present to 600 tons a month. Aluminum electrolytic capacitors are used in wide areas, including electric appliances, IT devices, electric vehicles, hybrid cars and equipment for power generation with renewable energy sources. The demand for electrolytic capacitors is expected to increase especially in China. SDK Group will ensure stable supply of high-quality high-purity aluminum foil to the Chinese market, and continue responding to the expansion of the global market of aluminum electrolytic capacitors in a timely manner.

● Starting commercial operation of a new aluminum casting plant in Malaysia

SHOTIC Malaysia Sdn. Bhd. (STM), a subsidiary of SDK, completed construction of a new aluminum casting plant in Johor, Malaysia in November 2014, and started commercial operation of the new plant. STM is the SDK Group's first production base outside Japan to cast aluminum. Thus, with the existing aluminum forging plant of SHOTIC Singapore Pte., Ltd., SDK group has established an integrated aluminum forging and casting system in ASEAN region. SDK Group will meet lively demand for fine aluminum products through quick response to car manufacturers' and parts suppliers' needs.

Topics

[Others segment]

- **Completion of the expansion of production lines for LIB packaging laminates**

  Showa Denko Packaging Co. Ltd., a subsidiary of SDK, completed the expansion work of its productive capacity for aluminum laminated films used for packaging lithium ion batteries (LIBs) at its Hikone Plant in Shiga Prefecture, and started mass production with the expanded lines in July 2014. As a result of this expansion work, Showa Denko Packaging's productive capacity for aluminum laminated films was increased to be three times as much as that in 2010. The market for aluminum laminated films used for LIB packaging continues expanding. Specifically, not only the demand for small LIBs used in smart devices such as smartphones and tablets is growing, but also the demand for large LIBs is expected to grow due to the progress in the electrification of cars. The Showa Denko Group aims to ensure stable supply of high-quality materials for LIBs whose market is growing dramatically.

- **Increased adoption of proprietary LED chips for plant growth facility**

  Shigyo™ Method, developed jointly by SDK and Professor Shigyo, Department of Agriculture, Yamaguchi University, accelerates the growth of plant at LED-based facilities by irradiating light with optimum wavelengths and intensity in consideration of the kind of plant and growing stages. SDK's proprietary LED chips are used for this technology. In 2014, *Shigyo*™ Method was adopted by Gushiken Co., Ltd., a major bread maker in Okinawa Prefecture, and by Endo Corporation at its plant growth facility in Yamagata Prefecture. Aiming to promote plant growth facilities that realize stable supply of safe food, SDK will continue to provide various types of support to companies considering participation in plant factory business.