

# ANNUAL REPORT 2018

For the year ended September 30, 2018



HAMAMATSU PHOTONICS K.K.

## **ANNUAL REPORT 2018**

For the year ended September 30, 2018



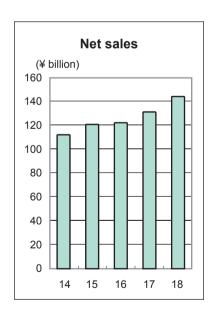
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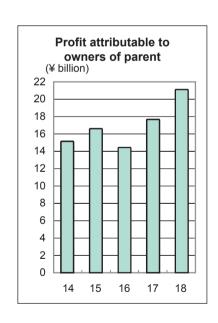
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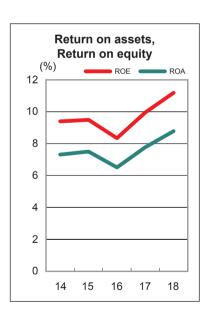
## FINANCIAL HIGHLIGHTS

#### Consolidated:

	Millions of Japanese Yen		Thousands of U.S. Dollars (*)	
	2017	2018	2017	2018
Net sales	¥ 130,495	¥ 144,338	\$ 1,144,695	\$ 1,266,123
Operating income	22,849	27,263	200,434	239,157
Profit before income taxes	23,570	27,577	206,758	241,904
Profit attributable to owners of parent	17,777	21,222	155,942	186,160
Total assets	239,331	245,267	2,099,399	2,151,465
Net assets	187,558	193,985	1,645,246	1,701,631
R & D expenses	11,776	12,830	103,300	112,551
Per share information (in Yen and U.S. Dollars)				
Earnings per share	¥ 113.00	¥ 136.50	\$ 0.99	\$ 1.19
Cash dividends	¥ 34.00	¥ 37.00	\$ 0.29	\$ 0.32



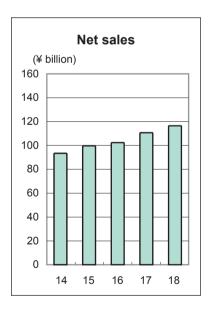


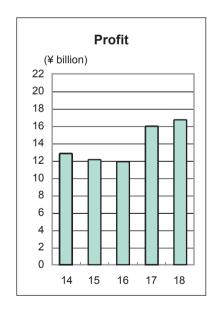


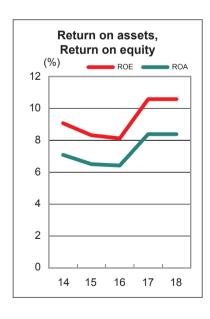
(\*) The U.S. dollar amounts above and elsewhere in this report represent translations, solely for the convenience of the reader, using the exchange rate of JPY 114 = US\$ 1.

### Non-consolidated:

	Millions of Japanese Yen		Thousands of U.S. Dollars	
	2017	2018	2017	2018
Net sales	¥ 110,200	¥ 116,323	\$ 966,672	\$ 1,020,385
Operating income	16,742	17,607	146,864	154,454
Profit before income taxes	19,599	20,858	171,923	182,967
Profit	16,044	16,792	140,739	147,302
Total assets	198,798	200,298	1,743,847	1,757,008
Net assets	157,483	159,245	1,381,429	1,396,893
R & D expenses	11,529	12,165	101,136	106,714
Per share information (in Yen and U.S. Dollars)				
Earnings per share	¥ 101.81	¥ 107.82	\$ 0.89	\$ 0.94
Cash dividends	¥ 34.00	¥ 37.00	\$ 0.29	\$ 0.32







## TO OUR SHAREHOLDERS



#### Dear Shareholders:

During the fiscal year ended September 30, 2018 (from October 1, 2017 through September 30, 2018), Japan's economy generally traced a gradual recovery trend as capital investment rose backed by improved corporate earnings. Nevertheless, the economic outlook became increasingly opaque towards the end of the term due to concerns about the impacts of global trade disputes and policy trends.

Given these circumstances, our Group strove to expand net sales and earnings by promoting basic and applied research leveraging our proprietary photonics technologies, as well as continuing to move forward with development of high-value-added products that addressed customers' needs and to make capital investments aimed at boosting production capacity.

As a result, we closed the fiscal year 2018 with net sales of JPY 144,338 million, up by JPY 13,842 million (10.6%), thanks to higher domestic sales and overseas sales. From an earnings perspective as well, operating income was JPY 27,263 million, up by JPY 4,414 million (19.3%) from the previous year and profit attributable to owners of parent was JPY 21,222 million, up by JPY 3,444 million (19.4%) from the previous year, reaching a record high respectively.

With regard to the business environment surrounding our Group, the economy fluctuated around a gradual recovery trend, with an increase in capital investment against the backdrop of improved corporate earnings. Nevertheless, we recognize that the economic outlook is highly uncertain and unpredictable, clouded by factors that include the political trends in Europe and the United States and the rising global trade tensions.

Given such circumstances, the scope of application for the photonics technologies pursued by our Group is continuing to expand on a worldwide scale. With the recent sophistication of medical equipment and downsizing/miniaturization of electronic components based on semiconductors, demands for products that our Company offers can be seen to be spreading widely, and these products have become an important key enabling technology for the advancement of state-of-the-art technologies in various fields.

Meanwhile, global competition in the field of photonics technologies is intensifying every year, particularly abroad. As the Group, in order to survive such fierce competition, we will strengthen the organization to respond rapidly and accurately to the needs of our global customers. From a medium to long-term perspective, under the philosophy of aiming ourselves to create new industries by using photonics technology and to pursue the world's greatest monozukuri manufacturing, we will strive to maintain our advantages in the Group's proprietary photonics technologies, press forward with aggressive research and development investments for the expansion of our business, and further strengthen our global competitiveness. While ensuring that core technologies such as optical sensors that form the basis of our business growth are enhanced, we will strengthen our internal organization in order to pursue initiatives such as investments aimed at opening up new markets for the future and HR development.

As the Group, we will live up to our shareholders' expectations, and contribute to the development of industry and society, by expanding our business domain and creating a sustainable, stable and strong earnings organization through the introduction of high-value-added products unrivaled by any other company to the market, while never forgetting the spirit of challenging the unknown that we have continued to pursue from the Company's conception.

We look forward to continuing to receive your unwavering support and encouragement in the future.

Sincerely,

Akira Hiruma

President and CEO

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December 20, 2018

## **DIVISIONAL REVIEW**

## **Electron Tube Division (Electron Tube Segment)**

For over 60 years, Hamamatsu Photonics has developed and manufactured photomultiplier tubes (PMT). This technology continues to evolve today at the Electron Tube Division, one of the company's primary manufacturing divisions. The Electron Tube Division also develops and manufactures a variety of products for use in medical applications, chemical analysis, measurement, industrial testing, and academic research. These products include PMT, electron multipliers, microchannel plates, image intensifiers, X-ray products, and a wide variety of light sources. In fiscal year 2018, sales of these products accounted for 38.9% of net sales.

#### Sales of PMT



PMT for oil-well logging devices

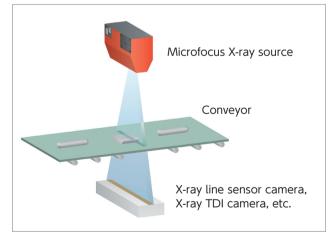
In the medical field, sales of PMT for nuclear medicine testing applications such as Positron Emission Tomography (PET) contracted. On the other hand, sales of products for inspection and monitoring systems such as blood analyzers increased both inside and outside Japan, thanks to their strong reputation for their high sensitivity, low-noise and high-speed operations. In addition, in the measuring instrument field, sales for oil-well logging devices that offer superior ruggedness to withstand against harsh work conditions such as high temperatures, shocks and vibrations were higher, thanks to the recovery in oilfield investment. As a result, net sales of PMT increased.

#### Sales of imaging devices and light sources

In imaging devices and light sources, sales in the industrial field of microfocus X-ray sources for non-destructive testing devices continued to achieve strong sales, thanks to their strong reputation for high-definition, high reliability and excellent stability. In addition, sales in the medical field of scintillators for converting X-rays into visible light increased. Further, sales of light sources for semiconductor inspection equipment grew<sup>(\*1)</sup>, and as a result, net sales of imaging devices and light sources increased.

In total, the Electron Tube business comprised of PMT and imaging devices and light sources closed the fiscal year 2018 with net sales of JPY 56,184 million, up by 15.3% from the previous year.

(\*1) Due to the contribution of Energetiq Technology Inc., whose shares were fully acquired by a subsidiary in the United States (Photonics Management Corp.) through a merger during this fiscal year. Energetiq Technology Inc. is engaged in the development, manufacture and sale of light sources for semiconductor inspection equipment, and dominates the market with its Laser Driven Light Sources, a type of light source with high brightness. It is also the only company in the world that offers products based on Extreme Ultraviolet light sources with shorter wavelengths.



Example using a Microfocus X-ray source

## Solid State Division (Opto-semiconductor Segment)

The Solid State Division develops and manufactures opto-semiconductors for demanding applications in medical imaging, high-energy physics, and scientific measurement. Products from this division include silicon photodiodes, photo IC components, position sensitive detectors, infrared detectors, image sensors for low-light-level imaging and X-ray imaging, mini-spectrometers, and light emitting devices. In fiscal year 2018, sales of these products accounted for 46.1% of net sales.

#### Sales of opto-semiconductors



Silicon photodiode module coupled with scintillator used for baggage inspection

In opto-semiconductor devices, sales of image sensors for semiconductor fabrication and inspection equipment in the industrial field maintained a strong performance. In addition, sales of Photo ICs, photodiodes and LED in the FA (Factory Automation) sector for applications such as controls for industrial-use robots and other equipment increased, as well as higher sales of silicon photodiodes for baggage inspections. Opto-semiconductor devices also performed well in the medical field, and as a result, net sales of opto-semiconductors increased.

In total, net sales for the Opto-semiconductor business were JPY 66,569 million, up by 9.9% from the previous year.

## Systems Division (Imaging and Measurement Instruments Segment)

The Systems Division develops and manufactures a wide variety of cameras for scientific and industrial applications, as well as specialized instruments for use in fields such as pharmaceutical development, semiconductor manufacturing, X-ray nondestructive inspection, spectrophotometry, and optical communications. In fiscal year 2018, sales of these products accounted for 11.9% of net sales.

#### Sales of image processing and measurement systems

In image processing and measurement systems, sales of digital slide scanners for remote pathologic diagnosis systems and other pathologic applications grew primarily in Europe thanks to the release of new products. In addition, sales of failure analysis systems for semiconductor devices recovered in the second half and increased. However, sales of X-ray line sensor cameras contracted under the impact of inventory adjustment by customers. As a result, net sales of image processing and measurement systems decreased. As a result, net sales for the Imaging and Measurement Instruments business were JPY 17,145 million, down by 0.4% from the previous year.



Semiconductor failure analysis system "iPHEMOS-DD"

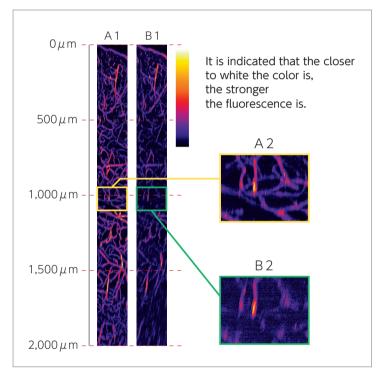
### **RESEARCH & DEVELOPMENT**

With decades of accumulated expertise in the development of photonic technologies to rely upon, Hamamatsu Photonics conducts basic research to discover new knowledge and create new industries in the fields of biotechnology, medicine, information technology, communications, energy, materials, astronomy, and agriculture. We also strive to continuously develop exciting new products and enhance existing products with added functionality. In fiscal year 2018, funds allocated to research and development totaled JPY 12,830 million, an increase of 9.0% over the previous fiscal year. Some highlights of our R&D efforts are presented here.

#### Basic research

#### Promoting research on biological imaging using wavefront control technique

In the optical information processing sector, we are pursuing research on in vivo imaging using wavefront control. With the recent advancement in genetic modification techniques and information processing techniques, three-dimensional in vivo observation is given greater importance in various filed. While two-photon excitation fluorescence microscopy (TPM) is known as an effective imaging method(\*1), it is unable to provide clear intravital deep imaging due to optical aberrations generated from the samples themselves. Given these conditions, based on the wavefront control technology cultivated by the Company, we developed a new calculation method to correct aberration using parameters such as the surface shape of the sample, and applied it to the TPM equipped with our integrated spatial light modulator to successfully acquire clear deep imaging inside the sample(\*2). While conventional calculation methods only allowed aberration corrections for samples with flat surfaces, the new method enables the application of aberration corrections to samples with curved surfaces. These results are expected to contribute to intravital deep observation, as well as to be applied in various fields including neuroscience, regenerative medicine and nextgeneration laser processing.



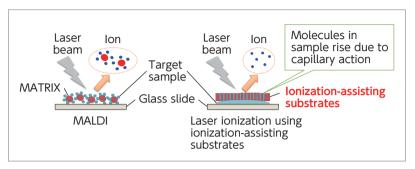
Blood vessels in a mouse cerebrum observed by TPM. Deep region of the sample is clearly observed in the images (A1, A2) acquired with the novel method compared to the images (B1, B2) acquired with a conventional method. (1µm=1/1000mm)

- (\*1) This method observes the fluorescence by exciting fluorescent molecules from the simultaneous absorption of two photons. Because near-infrared light with greater intravital penetration can be used, it allows observing of deeper areas compared to conventional fluorescence microscopy.
- (\*2) Results of this research was achieved through joint research with the Hamamatsu University School of Medicine.

### **Product development**

#### Ionization-assisting substrates achieving matrix-free mass spectrometry

Mass spectrometry is an analytical technique used to accurately analyze the types, quantities and structures of atoms and molecules within a sample. By irradiating a laser beam or electron beam on the sample, you can ionize them and measure their mass. Demands for mass spectrometry are growing in the recent years for application in a wide range of fields such as environment, food and life sciences. MALDI(\*3) TOF-MS(\*4), which is one method of ionization in mass spectrometry, uses a substance (matrix) to enhance the efficiency of ionization by the laser beam, and this caused some problems: the sample pretreatment process is time-consuming



In general MALDI, MATRIX is ionized together with target sample when laser irradiation. On the other hand, laser desorption ionization using ionization-assisting substrates makes it possible to ionize the target sample only.

because it requires mixing the matrix with the sample, and measuring was difficult in lower molecular region because the matrix itself was ionized. Just by placing the newly developed ionization-assisting substrates<sup>(\*5)</sup> on the sample, the molecules in the sample rise to the surface of substrates by capillary action in the through holes<sup>(\*6)</sup>, allowing ionization by irradiation of the laser beam onto molecules without using any matrix, drastically reducing the pretreatment time needed compared to the conventional MALDI TOF-MS and providing highly accurate measurements in low molecular region. Looking forward, the Company will improve the structural design to enhance the efficiency of ionization and develop products that are compatible with various applications.

#### X-ray line sensor cameras that can be used for a wide range of applications

X-ray line sensor cameras are used to capture the inside of objects transported on a conveyor belt or similar apparatus, and are used widely in non-destructive testing applications for food and electronic components. Due to the diverse types of objects to be inspected, particularly in the recent years, there are demands for products that are compatible with various applications. Given these circumstances, the Company developed a new X-ray line sensor camera with a significantly greater range of detection, achieving lower noise and higher sensitivity as a result of fundamental review of the sensor structure. This product is capable of inspecting objects that are thin and light that use weak X-rays as well as objects that are thick and dense that require greater X-rays, and can be used for a wide range of testing applications. Other features include double scan speed compared to conventional products for



Newly developed X-ray line sensor camera

reduced testing time, downsized, and equipped with waterproof and dust-proof functions suitable for all kinds of sites. We will continue to develop products that address market needs for highly precise non-destructive testing.

- (\*3) Acronym for Matrix Assisted Laser Desorption/Ionization
- (\*4) Acronym for Time of Flight Mass Spectrometry. By creating potential difference in the space that the ion travels to reach the detector and separating the ions by mass, it is used to measure mass based on the time taken for an ion to travel to the detector.
- (\*5) Results of this development was achieved through joint development with the Graduate School for the Creation of New Photonics Industries.
- (\*6) A phenomenon in which the liquid inside the thin tube moves inside the tube.

#### PHOTON FAIR 2018 held in Hamamatsu City

The PHOTON FAIR 2018 — Hamamatsu Photonics Exhibition was held from November 1 through November 3, 2018.

The PHOTON FAIR 2018 theme was What can we do with light? From here in Hamamatsu into the future. In this fair we displayed and demonstrated the latest technologies and products in an easy-to-understand way based on the fields of "AUTOMOTIVE", "LIFE", "MEDICAL & LIFE SCIENCE", "ENVIRONMENT", "MANUFACTURING" and "SCIENCE & RESEARCH" which are all closely linked to our daily and future lives. We also presented our technological capabilities and future vision as well as some of the infinite possibilities of light and photonics technology.

During PHOTON FAIR 2018, we had more than 10,000 visitors from domestic and overseas locations, making this the largest turnout ever for the event. They dropped in to talk with us and





gave us their impressions. We had a lot of good responses and many inquiries about our products.

#### Infrared image sensor mounted in the "HAYABUSA 2" asteroid explorer

Following the "HAYABUSA" Japanese spacecraft that returned to Earth in 2010 after successfully completing its observation of the asteroid "Itokawa", one of our infrared image sensors was again mounted in the "HAYABUSA 2" that has arrived at another asteroid called "Ryugu" and is now conducting observations.

The "Ryugu" asteroid is thought likely to contain organic matter and water that existed at the time of the solar system's formation. Through this mission, we may find clues to unlock the mystery of how Earth was born and where Earth's water came from as well as the origin of organic matter that became the raw materials of life.

The image sensor mounted in the "HAYABUSA 2" is made from InAs (indium arsenide) compound semiconductor having high sensitivity in the infrared region. It is specifically designed to boost sensitivity at water absorption wavelengths in the 3µm spectral band and also to provide the high reliability needed for normal operation and low-noise measurements even in a harsh space environment.



InAs image sensor mounted in "HAYABUSA 2"



Artist's illustration of "HAYABUSA 2" © Akihiro Ikeshita

## Received the 2019 Certified Health & Productivity Management Organization Recognition Program under the large enterprise category (White 500)

Hamamatsu Photonics received the 2019 Certified Health & Productivity Management Organization Recognition Program under the large enterprise category (White 500) on February 21, 2019. White 500 is a program that honors and commends large-scale corporations practicing strategic health management for employees from the viewpoint that activities for maintaining and promoting employees' health will lead to future benefits.

We continue to pursue unknown and unexplored realms to create new industries utilizing photonics technology. We will strive to enhance corporate value by manufacturing the world's finest products as well as contribute to society and human well-being.

To make this goal a reality, we think that people, technology and knowledge are the basis of business management, so we always encourage each of our employees to work to advance themselves through their daily work and find something that only they can do and excel at. We believe this will increase the knowledge base needed for making a photonics industry we are working toward, meet its growing needs, and develop competitive technologies. We also recognize that it is important to foster a company culture with the spirit of cooperation and teamwork that will help us exhibit a total power greater than the sum of our individual abilities.



Official Logo of Certified Health & Productivity

Management Organization Recognition Program
under the large enterprise category (White 500)

This cannot be achieved unless each and every employee is healthy both physically and mentally. Making investments to maintain and promote both physical and mental health of employees is essential in promoting corporate management and so we will move ahead with this plan.

#### Construction of a new factory building started at our main factory site

To meet growing customer demand for our Opto-semiconductor module products, we started construction of a new factory building at the main factory site (Ichino-cho, Higashi-ku, Hamamatsu City, Japan). In the new factory building, along with consolidating our design and development departments for Opto-semiconductor module products which are currently dispersed at different locations at the main site, we will combine and expand production space to enhance the development speed and production line capacity of our Opto-semiconductor module products used in medical equipment and other applications.

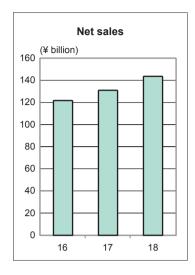
We will also transfer our product warehouse and shipping functions to the new factory building to cluster together all logistics functions including incoming order processing, procurement, warehouse operation and shipping within the main factory site. This will help us improve business

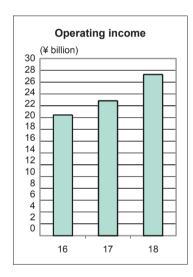


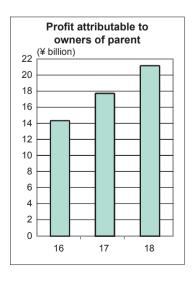
Artist's rendering of new factory building at our main factory site

operation efficiency, information sharing, and customer response speed. We also plan to boost production capacity of other Optosemiconductors such as image sensors, since free space available in existing factory buildings after clustering departments together in the new factory building can be utilized as space for production processes.

## **FINANCIAL REVIEW**







#### Net sales

During the fiscal year ended September 30, 2018 (from October 1, 2017 through September 30, 2018), Japan's economy generally traced a gradual recovery trend as capital investment rose backed by improved corporate earnings. Nevertheless, the economic outlook became increasingly opaque towards the end of the term due to concerns about the impacts of global trade disputes and policy trends. Given these circumstances, our Group strove to expand net sales and earnings by promoting basic and applied research leveraging our proprietary photonics technologies, as well as continuing to move forward with development of high-value-added products that addressed customers' needs and to make capital investments aimed at boosting production capacity.

As a result, we closed the fiscal year 2018 with net sales of JPY 144,338 million (US\$ 1,266,123 thousand), up by 10.6% from the previous year, thanks to higher domestic sales and overseas sales.

Performance by segment, sales in the Electron Tube business comprised of Photomultiplier Tubes (PMT) and Imaging Devices and Light Sources amounted JPY 56,184 million (US\$ 492,844 thousand), up by 15.3% from the previous year. Sales of Opto-semiconductor was JPY 66,569 million (US\$ 583,941 thousand), up by 9.9% over the previous year. Sales of the Imaging and Measurement Instruments business resulted to decrease 0.4% to JPY 17,145 million (US\$ 150,397 thousand). Net sales from other business, mainly semiconductor laser business, hotel operations and a business relating to the proprietary products of Beijing Hamamatsu Photon Techniques Inc., which is a subsidiary in China, were JPY 4,439 million (US\$ 38,940 thousand), up by 12.5% over last year.

#### **Operating income**

Cost of sales increased 7.2% or JPY 4,715 million (US\$ 41,363 thousand) over the previous year to JPY 70,385 million (US\$ 617,417 thousand). The cost of sales ratio strengthened 1.5 points to 48.8% this year. Selling, general and administrative expenses were JPY 33,857 million (US\$ 296,996 thousand), up by 12.1%, JPY 3,658 million (US\$ 32,089 thousand). Research and development expenses were JPY 12,830 million (US\$ 112,551 thousand), up by 9.0% from previous year. As a result, operating income was JPY 27,263 million (US\$ 239,157 thousand), up by 19.3%. Operating income for Electron tube, Opto-semiconductor and Imaging and measurement instruments business segment was JPY 19,697 million (US\$ 172,780 thousand), up by 15.9%, JPY 21,320 million (US\$ 187,025 thousand), up by 17.4% and JPY 3,584 million (US\$ 31,440 thousand), up by 1.1%, respectively. Other business recorded an operating income of JPY 69 million (US\$ 608 thousand), down by 75.3%.

#### Profit attributable to owners of parent

Other income, on net basis, was JPY 313 million (US\$ 2,746 thousand), compared with JPY 720 million (US\$ 6,324 thousand) net of other incomes for the previous year. Reflecting the previously cited factors, profit attributable to owners of parent for the fiscal year ended September 30, 2018 was up by 19.3% to JPY 21,222 million (US\$ 186,160 thousand) from JPY 17,777 million (US\$ 155,942 thousand). Consequently, earnings per share increased from JPY 113.00 (US\$ 0.99) to JPY 136.50 (US\$ 1.19). Dividend per share applicable to the fiscal year was JPY 37 (US\$ 0.32).

#### **Financial position**

Current assets decreased by JPY 2,863 million (US\$ 25,114 thousand) from the year ended September 30, 2017. This mainly reflected a decrease in cash and deposits of JPY 9,443 million (US\$ 82,838 thousand).

Non-current assets increased by JPY 8,798 million (US\$ 77,181 thousand) from the year ended September 30, 2017, this was mainly from an increase in Buildings and structures of JPY 5,153 million (US\$ 45,203 thousand) and machinery, equipment and vehicles of JPY 7,181 million (US\$ 62,996 thousand).

Total assets at the fiscal year-end were JPY 245,267 million (US\$ 2,151,465 thousand), up by JPY 5,935 million (US\$ 52,066 thousand) from the year ended September 30, 2017. Current liabilities were down by JPY 1,959 million (US\$ 17,189 thousand) from the prior fiscal year-end. Total current liabilities decreased because of a decrease in Notes and accounts payable-trade of JPY 2,731 million (US\$ 23,956 thousand).

Non-current liabilities increased by JPY 1,467 million (US\$ 12,872 thousand) from the previous fiscal year-end, mainly due to an increase in Net defined benefit liability of JPY 367 million (US\$ 3,226 thousand) and increase in Deferred tax liabilities of JPY 677 million (US\$ 5,942 thousand) respectively. As a result, total liabilities at the fiscal year-end were JPY 51,281 million (US\$ 449,834 thousand), down by JPY 492 million (US\$ 4,317 thousand) from the year ended September 30, 2017. Net assets were JPY 193,985 million (US\$ 1,701,631 thousand), up by JPY 6,427 million (US\$ 56,384 thousand) from the previous fiscal year-end. This mainly reflected an increase in retained earnings of JPY 10,642 million (US\$ 93,354 thousand) as a result of reporting profit attributable to owners of parent.

#### **Cash flows**

At the end of this fiscal year, cash and cash equivalents stood at JPY 61,824 million (US\$ 542,315 thousand), down by JPY 1,561 million (US\$ 13,701 thousand) from the year ended September 30, 2017.

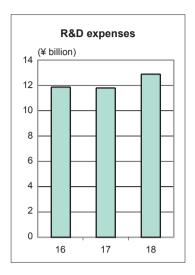
Cash flows for the fiscal year ended September 30, 2018 (from October 1, 2017 through September 30, 2018) were as follows. Net cash provided by operating activities during the year was JPY 23,579 million (US\$ 206,839 thousand), down by JPY 2,574 million (US\$ 22,586 thousand) over the previous year. The decrease is mainly generated from an increase in inventories and a decrease in income taxes (paid) refund.

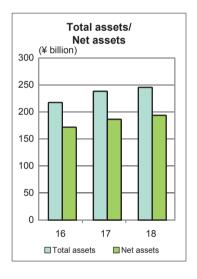
Net cash used in investing activities was JPY 8,880 million (US\$ 77,897 thousand), down by JPY 4,318 million (US\$ 37,880 thousand) from the previous year, due mainly to Net decrease in time deposits.

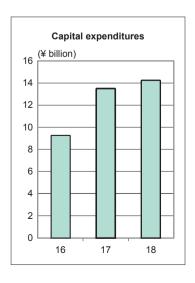
Net cash used in financing activities was JPY 16,323 million (US\$ 143,187 thousand), up by JPY 10,616 million (US\$ 93,125 thousand) from the previous year, due mainly to an increase in expenditures for purchase of treasury shares.

#### Capital expenditures

Capital expenditures during fiscal year 2018 totaled JPY 14,221 million (US\$ 124,753 thousand), 4.8% or JPY 649 million (US\$ 5,695 thousand) higher than previous fiscal year. Major investments were made in expanding and improving manufacturing, research and development facilities. Investments were also made in new facility for Opto-semiconductor and Compound semiconductor devices production. There was no major sale or disposal of material fixed assets during this fiscal year.







## **FIVE-YEAR SUMMARY**

Hamamatsu Photonics K.K. and Consolidated Subsidiaries Years ended September 30

	Millions of Japanese Yen							
	2014	2015	2016	2017	2018			
For the year:								
Net sales	¥ 112,092	¥ 120,691	¥ 121,852	¥ 130,495	¥ 144,338			
Operating income	21,665	23,596	20,544	22,849	27,263			
Profit before income taxes	22,462	24,672	20,080	23,570	27,577			
Profit attributable to owners of parent	15,155	16,598	14,419	17,777	21,222			
Capital expenditures	15,499	14,338	9,315	13,572	14,221			
Depreciation	7,396	8,561	9,888	9,441	10,261			
R&D expenses	10,977	11,615	11,873	11,776	12,830			
At year-end:								
Working capital	¥ 106,901	¥ 111,326	¥ 108,631	¥ 116,774	¥ 115,871			
Total assets	215,412	226,179	217,300	239,331	245,267			
Capital stock	34,928	34,928	34,928	34,928	34,928			
Net assets	168,815	180,770	169,716	187,558	193,985			
Number of shares issued (thousands)	83,764	167,529	167,529	167,529	165,011			
Number of employees	4,420	4,482	4,592	4,683	4,878			
			Japanese Ye	en				
Per share information:								
Earnings per share								
Basic	¥ 94.26	¥ 103.23	¥ 90.23	¥ 113.00	¥ 136.50			
Diluted	-	-	-	-	-			
Cash dividends	55.00	49.00	34.00	34.00	37.00			
Net assets	1,046.56	1,120.38	1,075.31	1,188.30	1,248.84			
* Hamamatsu Photonics implemented a two-for-one stock sp	lit on April 1, 20	15. Earnings per	share has been	calculated by as	suming this stock			

split had been executed at the beginning of the fiscal year ended September 30, 2014.

			Percent		
Ratios:					
Equity ratio	78.1	79.6	77.8	78.1	78.8
Return on net sales	13.5	13.8	11.8	13.6	14.7
Return on assets	7.3	7.5	6.5	7.8	8.8
Return on equity	9.4	9.5	8.3	10.0	11.2

## **CONSOLIDATED SUBSIDIARIES**

Japan	Koso Corporation Takaoka Electronics Co., Ltd. Hamamatsu Electronic Press Co., Ltd. Iwata Grand Hotel Inc.	Iwata City, Shizuoka Pref., Japan Hamamatsu City, Shizuoka Pref., Japan Iwata City, Shizuoka Pref., Japan Iwata City, Shizuoka Pref., Japan
Asia	Hamamatsu Photonics (China) Co., Ltd. Hamamatsu Photonics Taiwan Co., Ltd. Beijing Hamamatsu Photon Techniques, Inc. Hamamatsu Photonics Scientific Instrument (Beijing) Co., Ltd. Hamamatsu Photonics Medical Technology (Lang Fang) Co., Ltd.	Beijing, China Hsinchu, Taiwan Beijing, China Beijing, China Hebei, China
U.S.A.	Photonics Management Corp. Hamamatsu Corporation Energetiq Technology, Inc.	Bridgewater, New Jersey, U.S.A. Bridgewater, New Jersey, U.S.A. Woburn, Massachusetts, U.S.A.
Europe	Hamamatsu Photonics Deutschland GmbH Hamamatsu Photonics France S.A.R.L. Hamamatsu Photonics Italia S.r.I. Hamamatsu Photonics UK Limited Hamamatsu Photonics Norden AB Hamamatsu Photonics Europe GmbH	Herrsching, Germany Massy Cedex, France Arese, Italy Welwyn Garden City, United Kingdom Kista, Sweden Herrsching, Germany

Hamamatsu Photonics K.K. and Consolidated Subsidiaries As of September 30, 2018

ASSETS	Millions of Japanese Yen			ands of ers (Note 1)
	2017	2018	2017	2018
Current assets:				
Cash and deposits (Note 8)	¥ 83,902	¥ 74,458	\$ 735,982	\$ 653,144
Receivables:	,	,	·,	, ,
Notes and accounts receivable-trade	33,608	35,914	294,811	315,036
Less: Allowance for doubtful accounts	(159)	(162)	(1,395)	(1,423)
Inventories:	,	,	( , ,	( , ,
Merchandise and finished goods	8,742	8,874	76,692	77,846
Work in process	16,389	17,933	143,766	157,310
Raw materials and supplies	6,620	7,677	58,705	67,350
Other	4,184	5,501	36,703	48,255
Deferred tax assets (Note 6)	3,545	3,774	31,101	33,106
	156,834	153,971	1,375,740	1,350,625
Property, plant and equipment (Note 8):				
Land	16,545	16,789	145,131	147,280
Buildings and structures	74,585	79,738	654,260	699,464
Machinery, equipment and vehicles	109,966	117,147	964,614	1,027,610
Construction in progress	5,983	3,826	52,491	33,564
. •	207,080	217,502	1,816,498	1,907,919
Less: Accumulated depreciation	(138,788)	(145,772)	(1,217,447)	(1,278,708)
·	68,291	71,730	599,051	629,210
Investments and other assets:				
Investment securities (Note 9)	2,987	3,492	26,209	30,632
Investments in and advances to non-consolidated				
subsidiaries and affiliates	1,269	1,388	11,138	12,178
Intangible assets	1,697	6,278	14,892	55,078
Other	1,836	1,573	16,133	13,798
Deferred tax assets (Note 6)	6,412	6,833	56,252	59,941
	14,205	19,565	124,607	171,629
	V 220 224	Y 245 267	£ 2 000 200	¢ 2 454 465
	¥ 239,331	¥ 245,267	\$ 2,099,399	\$ 2,151,465

## **CONSOLIDATED BALANCE SHEET**

LIABILITIES AND NET ASSETS	Millions of Japanese Yen			ands of ars (Note 1)
	2017	2018	2017	2018
Current liabilities:				
Short-term loans payable (Note 8)	¥ 2,230	¥ 1,662	\$ 19.568	\$ 14,579
Current portion of long-term loans payable (Note 8)	3,194	3,178	28,019	27,882
Payables:	2,101	<b>-,</b>		,,
Notes and accounts payable-trade	14,099	11,368	123,677	99,721
Construction and other	5,257	5,722	46,118	50,193
Income taxes payable (Note 6)	3,517	2,892	30,859	25,372
Accrued expenses	8,073	8,892	70,819	78,001
Other	3,686	4,384	32,336	38,458
	40,059	38,099	351,399	334,209
Non-current liabilities:				
Long-term loans payable (Note 8)	3,683	3,512	32.315	30,809
Net defined benefit liability (Note 5)	7,025	7,393	61,628	64,855
Other	731	1,325	6,415	11,623
Deferred tax liabilities (Note 6)	272	950	2,393	8,336
, ,	11,713	13,181	102,753	115,625
Net assets:				
Shareholders' equity				
Capital stock, no par value:	34,928	34,928	306,391	306,391
Authorized - 500,000,000 shares				
Issued - 167,529,968 shares in 2017				
- 165,011,568 shares in 2018				
Capital surplus	34,672	34,672	304,145	304,145
Retained earnings	131,678	142,321	1,155,076	1,248,430
Less: Treasury shares	(16,060)	(20,795)	(140,879)	(182,416
- 10,213,886 shares in 2017				
- 10,213,968 shares in 2018				
Accumulated other comprehensive income				
Valuation difference on available-for-sale securities	1,259	1,545	11,052	13,556
Foreign currency translation adjustment	1,210	1,259	10,616	11,044
Remeasurements of defined benefit plans	(750)	(614)	(6,583)	(5,386)
Non-controlling interests	618	668	5,426	5,863
	187,558	193,985	1,645,246	1,701,631
	V 220 224	V 245 227	¢ 2 000 200	¢ 2 454 405
	¥ 239,331	¥ 245,267	\$ 2,099,399	\$ 2,151,465

Year ended September 30, 2018	Millions of Japanese Yen		Thousands of U.S. Dollars (Note 1)		
	2017	2018	2017	2018	
Net sales	¥ 130,495	¥ 144,338	\$ 1,144,695	\$ 1,266,123	
Operating costs and expenses:					
Cost of sales	65,670	70,385	576,054	617,417	
Selling, general and administrative expenses	30,199	33,857	264,906	296,996	
Research and development expenses	11,776	12,830	103,300	112,551	
Operating income	22,849	27,263	200,434	239,157	
Other income (expenses):					
Interest and dividend income	253	241	2,222	2,118	
Interest expenses	(121)	(65)	(1,068)	(577)	
Other, net	589	137	5,170	1,205	
Profit before income taxes	23,570	27,577	206,758	241,904	
Income taxes (Note 6):					
Current	6,137	7,282	53,837	63,882	
Deferred	(409)	(995)	(3,594)	(8,728)	
	5,727	6,287	50,243	55,153	
Profit	17,842	21,289	156,515	186,750	
Profit attributable to non-controlling interests	(65)	(67)	(572)	(589)	
Profit attributable to owners of parent	¥ 17,777	¥ 21,222	\$ 155,942	\$ 186,160	

## CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME (Note 3)

Year ended September 30, 2018	Millions of Japanese Yen		Thousands of U.S. Dollars (Note 1	
	2017	2018	2017	2018
Profit	¥ 17,842	¥ 21,289	\$ 156,515	\$ 186,750
Other comprehensive income:				
Valuation difference on available-for-sale securities	804	285	7,056	2,504
Foreign currency translation adjustment	4,136	55	36,287	484
Remeasurements of defined benefit plans, net of tax	420	136	3,687	1,197
accounted for using equity method	20	(3)	177	(31)
Total other comprehensive income	5,381	473	47,209	4,155
Comprehensive income	¥ 23,224	¥ 21,763	\$ 203,725	\$ 190,905
Comprehensive income attributable to:				
Owners of parent	¥ 23,134	¥ 21,693	\$ 202,934	\$ 190,290
Non-controlling interests	90	70	791	614

## **CONSOLIDATED STATEMENT OF CHANGES IN NET ASSETS**

Hamamatsu Photonics K K, and Consolidated Subsidiaries Year ended September 30, 2018 Millions of Thousands of Japanese Yen U.S. Dollars (Note 1) 2017 2018 2017 2018 Capital stock: Balance at beginning of current period ..... ¥ 34,928 ¥ 34,928 \$ 306,391 \$ 306,391 Total changes of items during period..... Balance at end of current period..... 34,928 34,928 306,391 306,391 Capital surplus: Balance at beginning of current period ..... 34.672 34.672 304.145 304.145 Total changes of items during period..... Balance at end of current period..... 34,672 34,672 304,145 304,145 Retained earnings: Balance at beginning of current period ..... 119,259 131,678 1,046,133 1,155,076 Dividends of surplus ..... (46,998)(46,623)(5,357)(5,315)Profit attributable to owners of parent..... 17,777 21,222 155,942 186,160 Retirement of treasury shares ..... (5,264)(46,183)1,155,076 Balance at end of current period..... 131,678 142,321 1,248,430 Treasury shares: Balance at beginning of current period ..... (16,059)(16,060)(140,875)(140,879)Purchase of treasury shares..... (0)(10,000)(87,720)(3)Retirement of treasury shares ..... 5,264 46,183 Balance at end of current period..... (16,060)(20,795)(140,879)(182,416) Valuation difference on available-for-sale securities: Balance at beginning of current period ..... 455 1.259 3,995 11.052 Net changes of items other than shareholders' equity...... 804 285 7,056 2,504 Balance at end of current period..... 1,259 1,545 11,052 13,556 Foreign currency translation adjustment: 10,616 Balance at beginning of current period ..... (2,921)1.210 (25,630)Net changes of items other than shareholders' equity...... 4,132 48 36,246 428 Balance at end of current period..... 1,210 1,259 10,616 11,044 Remeasurements of defined benefit plans: Balance at beginning of current period ..... (1,170)(750)(10,271)(6,583)Net changes of items other than shareholders' equity...... 420 136 3,687 1,197 Balance at end of current period..... (750)(614)(6,583)(5,386)Non-controlling interests: Balance at beginning of current period ..... 553 618 4,854 5,426 Net changes of items other than shareholders' equity...... 49 571 436 65 Balance at end of current period..... 618 668 5,426 5,863 ¥ 187,558 ¥ 193,985 Total net assets \$ 1,645,246 \$1,701,631

Hamamatsu Photonics K.K. and Consolidated Subsidiaries Year ended September 30, 2018

	Millions of Japanese Yen		Thousands of U.S. Dollars (Note 1)	
	2017	2018	2017	2018
Cash flows from operating activities:				
Profit before income taxes	¥ 23,570	¥ 27,577	\$ 206,758	\$ 241,904
Depreciation	10,043	11,335	88,103	99,435
Increase (decrease) in allowance for doubtful accounts	(45)	3	(395)	27
Increase (decrease) in provision for bonuses	911	567	7,999	4,979
Increase (decrease) in net defined benefit liability	468	556	4,112	4,885
Interest and dividend income	(253)	(241)	(2,222)	(2,118)
Interest expenses	121	65	1,068	577
Foreign exchange losses (gains)	(26)	(99)	(233)	(873)
Share of (profit) loss of entities accounted for using equity method	(102)	(119)	(899)	(1,047)
Loss on retirement of property, plant and equipment	484	50	4,249	447
Loss (gain) on sales of property, plant and equipment	(13)	19	(122)	172
Decrease (increase) in notes and accounts receivable-trade	(4,106)	(2,324)	(36,021)	(20,393)
Decrease (increase) in inventories	(563)	(2,749)	(4,941)	(24,120)
Increase (decrease) in notes and accounts payable-trade	(994)	(2,665)	(8,725)	(23,385)
Other, net	1,193	(656)	10,472	(5,760)
Subtotal	30,688	31,319	269,200	274,729
Interest and dividend income received	247	234	2,174	2,057
Interest expenses paid	(121)	(65)	(1,068)	(577)
Income taxes (paid) refund	(4,660)	(7,908)	(40,880)	(69,369)
Net cash provided by operating activities	26,154	23,579	229,426	206,839
Cash flows from investing activities:				
Net decrease (increase) in time deposits	590	7,876	5,176	69,091
Proceeds from sales of securities	1,000	-	8,771	-
Purchase of property, plant and equipment	(13,773)	(12,755)	(120,816)	(111,889)
Proceeds from sales of property, plant and equipment	31	97	274	858
Purchase of intangible assets	(741)	(490)	(6,508)	(4,299)
Purchase of shares of subsidiaries resulting in change in scope of consolidation (Note 4)	-	(3,916)	(0,000)	(34,353)
Other, net	(305)	307	(2,676)	2,694
Net cash used in investing activities	(13,198)	(8,880)	(115,777)	(77,897)
Cash flows from financing activities:				
Net increase (decrease) in short-term loans payable	(29)	(591)	(255)	(5,190)
Proceeds from long-term loans payable	38	3,008	336	26,389
Repayments of long-term loans payable	(224)	(3,195)	(1,965)	(28,032)
Purchase of treasury shares	(0)	(10,103)	(3)	(88,631)
Cash dividends paid	(5,359)	(5,304)	(47,015)	(46,527)
Other, net	(132)	(136)	(1,158)	(1,195)
Net cash used in financing activities	(5,707)	(16,323)	(50,062)	(143,187)
Effect of exchange rate change on cash and cash equivalents	2,541	61	22,292	543
Net increase (decrease) in cash and cash equivalents	9,790	(1,561)	85,878	(13,701)
Cash and cash equivalents at beginning of period	53,595	63,385	470,138	556,017
Cash and cash equivalents at end of period (Note 4)	¥ 63,385	¥ 61,824	\$ 556,017	\$ 542,315

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

#### 1. Basis of Presenting Consolidated Financial Statements

The accompanying consolidated financial statements of Hamamatsu Photonics K.K. (the "Company") and consolidated subsidiaries are prepared on the basis of accounting principles generally accepted in Japan, which are different in certain respects as to application and disclosure requirements of International Financial Reporting Standards, and are compiled from the consolidated financial statements prepared by the Company as required by the Financial Instruments and Exchange Law of Japan. For convenience, the accompanying consolidated financial statements have been presented in U.S. dollars by arithmetically translating all Japanese yen amounts at JPY 114 = US\$ 1, the exchange rate prevailing on September 30, 2018. The

translations should not be construed as a representation that Japanese yen have been, could have been, or could in the future be, converted into U.S. dollars at that or any other rate.

In preparing the consolidated financial statements, certain rearrangements and reclassifications have been made and certain additional financial information has been included in the consolidated financial statements issued in Japan for the convenience of readers outside Japan.

Amount less than one million yen and one thousand dollars have been omitted. As a result, the total in Japanese yen and U.S. dollars shown in the consolidated financial statements do not necessarily agree with the individual amounts.

#### 2. Summary of Significant Accounting Policies

#### (a) Principles of Consolidation

The consolidated financial statements for the year ended September 30, 2018 included the accounts of the Company and its 18 subsidiaries, and its 3 affiliates accounted for by the equity method. All significant intercompany balances and transactions have been eliminated in consolidation. The Company does not consolidate nor apply the equity method to subsidiaries whose total assets, net sales, profit(loss) and retained earnings are not significant to the consolidated financial statements.

#### (b) Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, readily available deposits and highly liquid investments with insignificant risk of changes in value, which have original maturities of three months or less.

#### (c) Investment Securities

Marketable securities are valued by market price method based on the fair market price at the balance sheet date (unrealized gain or loss, net of applicable income taxes, included directly in net assets) and non-marketable securities are stated at cost determined by the total average method.

#### (d) Inventories

Inventories of the Company and consolidated subsidiaries are mainly stated at cost determined by the total average method or by reducing book value when the inventory profitability declines.

#### (e) Property, Plant and Equipment, and Depreciation

Property, plant and equipment are stated at cost. Significant renewals and additions are capitalized. Maintenance and repairs, including minor renewals and improvements, are charged to income as incurred. Interest expense relating to the construction of property, plant and equipment is not capitalized.

Depreciation of property, plant and equipment is determined by the declining-balance method over the estimated useful lives of the individual assets for the Company and its domestic subsidiaries. The straight-line method over the estimated useful lives of the individual assets is primarily applied to the property, plant and equipment of foreign subsidiaries.

#### (f) Retirement Benefits

When calculating retirement benefit obligations, the Company applies the benefit formula method to attribute expected retirement benefits to the period until the end of the fiscal year. Prior service cost is amortized by the straight-line method over 10 years. Actuarial gain or loss is amortized by the straight-line method over 10 years from the following fiscal year.

#### (g) Foreign Currency Translation

Monetary assets and liabilities denominated in foreign currencies are translated into yen at the exchange rates in effect on the respective balance sheet dates and differences arising from the translation are included in the consolidated statement of income.

Assets and liabilities accounts of foreign consolidated subsidiaries are translated into yen amounts at the exchange rates in effect at the each balance sheet date. Revenue and expense accounts of foreign consolidated subsidiaries are translated into yen amounts at average rates for the period for each fiscal year. Any resulting translation differences are included in Foreign currency translation adjustment and Non-controlling interests as a separate component of net assets.

#### (h) Derivative

The Companies have entered into foreign forward contracts in order to manage the exposures to risk arising from fluctuations in foreign currency exchange rates. All derivative financial instruments are recognized as either assets or liabilities and measured at fair value with any changes in unrealized gain or loss recognized in the statements of income.

#### (i) Income Taxes

Deferred income taxes are provided on the asset and liability method by which deferred tax assets and liabilities are recognized based on the temporary differences between the assets and liabilities for financial reporting and those for tax purpose, and are measured by applying currently enacted tax laws.

#### (j) Per share information

Earnings per share is computed based on the profit attributable to owners of parent available for distribution to the shareholders of common stock and the weighted average number of shares outstanding during the year. Cash dividends per share represent dividends declared as applicable to the respective periods.

#### 3. Other Comprehensive Income

Reclassification adjustments and income tax effect allocated to each component of other comprehensive income for the years ended September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen		Thousands of U.S. Dollars	
	2017	2018	2017	2018
Valuation difference on available-for-sale securities:				
Amount arising during the year	¥ 1,071	¥ 420	\$ 9,399	\$ 3,689
Reclassification adjustments	-	(16)	-	(141)
Amount before income tax effect	1,071	404	9,399	3,548
Income tax effect	(267)	(118)	(2,342)	(1,043)
Valuation difference on available-for-sale securities	804	285	7,056	2,504
Foreign currency translation adjustment:				
Amount arising during the year	4,136	55	36,287	484
Foreign currency translation adjustment	4,136	55	36,287	484
Remeasurements of defined benefit plans:				
Amount arising during the year	402	7	3,531	69
Reclassification adjustments	198	184	1,739	1,615
Amount before income tax effect	600	192	5,271	1,685
Income tax effect	(180)	(55)	(1,583)	(487)
Remeasurements of defined benefit plans	420	136	3,687	1,197
Share of other comprehensive income of entities				
Amount arising during the year	20	(3)	177	(31)
Total other comprehensive income	¥ 5,381	¥ 473	\$ 47,209	\$ 4,155

#### 4. Supplementary Cash Flow Information

Cash and cash equivalents in the consolidated statement of cash flows for years ended September 30, 2017 and 2018 were reconciled to cash and deposits in the consolidated balance sheet as follows:

	Millions of Japanese Yen		Thousands of U.S. Dollars	
	2017	2018	2017	2018
Cash and deposits	¥ 83,902	¥ 74,458	\$ 735,982	\$ 653,144
Time deposits with maturities of more than three months	(20,516)	(12,634)	(179,965)	(110,828)
Cash and cash equivalents	¥ 63,385	¥ 61,824	\$ 556,017	\$ 542,315

Major breakdown of assets and liabilities of newly consolidated subsidiary resulting from acquisition of shares Consolidated fiscal year ended September 30, 2018 (October 1, 2017 to September 30, 2018)

A breakdown of assets and liabilities at the start of consolidation of Energetiq Technology, Inc., a new subsidiary resulting from the acquisition of shares, along with details regarding share acquisition price and related expenditures (net) are presented below.

	Millions of Japanese Yen	Thousands of U.S. Dollars
	2018	2018
Current assets	¥ 2,627	\$ 23,049
Non-current assets	3,647	31,999
Goodwill	1,555	13,641
Current liabilities	(1,017)	(8,926)
Non-current liabilities	(1,306)	(11,456)
Share acquisition cost	¥ 5,506	\$ 48,306
Cash and cash equivalents	(1,511)	(13,254)
Foreign currency translation	(79)	(698)
Net: Share acquisition expenditures	¥ 3,916	\$ 34,353

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

#### 5. Retirement benefits

The Company and certain of its consolidated subsidiaries have defined benefit pension plans and lump-sum payment plans. The Company and certain of consolidated subsidiaries have defined contribution plans. The Company has retirement benefit trust.

The changes in the retirement benefit obligation during the years ended September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen			sands of Dollars
	2017	2018	2017	2018
Retirement benefit obligation at beginning of current period	¥ 33,525	¥ 34,256	\$ 294,084	\$ 300,498
Service cost	1,739	1,806	15,262	15,845
Interest cost	60	61	531	543
Actuarial gain and loss	(154)	(98)	(1,352)	(863)
Retirement benefits paid	(953)	(723)	(8,361)	(6,345)
Foreign currency translation differences	38	2	333	25
Retirement benefit obligation at end of current period	¥ 34,256	¥ 35,306	\$ 300,498	\$ 309,704

The changes in plan assets during the years ended September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen			sands of Dollars
	2017	2018	2017	2018
Plan assets at beginning of current period	¥ 26,407	¥ 27,231	\$ 231,643	\$ 238,870
Expected return on plan assets	391	409	3,433	3,592
Actuarial gain and loss	247	(90)	2,166	(795)
Contributions by the Company	706	722	6,193	6,334
Retirement benefits paid	(520)	(359)	(4,566)	(3,153)
Plan assets at end of current period	¥ 27,231	¥ 27,912	\$ 238,870	\$ 244,849

The following table sets forth the funded status of the plans and the amounts recognized in the consolidated balance sheet as of September 30, 2017 and 2018 for the Company's and the consolidated subsidiaries' defined benefit plans:

	Millions of Japanese Yen			sands of Dollars
	2017	2018	2017	2018
Funded retirement benefit obligation	¥ 33,856	¥ 34,892	\$ 296,990	\$ 306,070
Plan assets at fair value	(27,231)	(27,912)	(238,870)	(244,849)
	6,625	6,979	58,119	61,221
Unfunded retirement benefit obligation	399	414	3,508	3,633
Net liability for retirement benefits in the balance sheet	¥ 7,025	¥ 7,393	\$ 61,628	\$ 64,855
Net defined benefit liability	7,025	7,393	61,628	64,855
Net liability for retirement benefits in the balance sheet	¥ 7,025	¥ 7,393	\$ 61,628	\$ 64,855

The components of retirement benefit expense for the years ended September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen		Thousands of U.S. Dollars	
	2017	2018	2017	2018
Service cost	¥ 1,739	¥ 1,806	\$ 15,262	\$ 15,845
Interest cost	60	61	531	543
Expected return on plan assets	(391)	(409)	(3,433)	(3,592)
Amortization of actuarial gain and loss	284	270	2,498	2,374
Amortization of prior service cost	(86)	(86)	(758)	(758)
Retirement benefit expense	¥ 1,607	¥ 1,642	\$ 14,099	\$ 14,411

Prior service cost and actuarial gain and loss included in other comprehensive income (before tax effect) for the years ended September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen		Thousands of U.S. Dollars	
	2017	2018	2017	2018
Prior service cost	¥ 86	¥ 86	\$ 758	\$ 758
Actuarial gain and loss	(685)	(278)	(6,017)	(2,442)
Other	(1)	0	(12)	(1)
Total	¥ (600)	¥ (192)	\$ (5,271)	\$ (1,685)

Unrecognized prior service cost and unrecognized actuarial gain and loss included in accumulated other comprehensive income (before tax effect) as of September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen		Thousands of U.S. Dollars	
	2017	2018	2017	2018
Unrecognized prior service cost	¥ (259)	¥ (172)	\$ (2,275)	\$ (1,517)
Unrecognized actuarial gain and loss	1,336	1,057	11,719	9,275
Total	¥ 1,076	¥ 884	\$ 9,444	\$ 7,758

The fair value of plan assets, by major category, as a percentage of total plan assets as of September 30, 2017 and 2018 were as follows:

	2017	2018
Bonds	48%	39%
General accounts at life insurance companies	26	26
Stocks	11	17
Other	15	18
Total	100%	100%

The expected return on assets has been estimated based on anticipated allocation to each asset class and the expected long-term returns on assets held in each category.

The assumptions used in accounting for the above plans were as follows:

	2017	2018
Discount rate	0.2%	0.2%
Expected rates of return on plan assets	Principally 2.0%	Principally 2.0%
Estimated rate of salary increase	2.9%	2.9%

The amount paid to the defined contribution plans for the years ended September 30, 2017 and 2018 were ¥514 million (US\$ 4,514 thousand) and ¥573 million (US\$ 5,030 thousand), respectively.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

#### 6. Income Taxes

The Company and its domestic subsidiaries are subject to Japanese national and local income taxes which, in the aggregate, resulted in statutory effective tax rate of approximately 30.21% for the years ended September 30, 2017 and 2018 respectively.

Significant components of deferred tax assets and liabilities at September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen			ands of ollars	
	2017	2018	2017	2018	
Deferred tax assets:					
Contribution to retirement benefit trust	¥ 3,053	¥ 3,077	\$ 26,783	\$ 26,998	
Depreciation	1,955	2,140	17,150	18,772	
Net defined benefit liability	1,978	2,084	17,353	18,287	
Provision for bonuses	1,238	1,363	10,865	11,959	
Unrealized gain on sales of inventories	1,159	1,192	10,168	10,457	
Write down of inventories	476	480	4,177	4,215	
Impairment loss	257	257	2,262	2,262	
Write down of investment securities	207	206	1,815	1,813	
Others	1,492	1,621	13,092	14,226	
Total gross deferred tax assets	11,818	12,425	103,668	108,992	
Less valuation allowance	(1,260)	(1,249)	(11,057)	(10,957)	
Total deferred tax assets	10,557	11,175	92,610	98,034	
Amount set off against deferred tax liabilities	(599)	(568)	(5,256)	(4,986)	
Net deferred tax assets	¥ 9,958	¥ 10,607	\$ 87,354	\$ 93,048	
Deferred tax liabilities					
Intangible assets identified due to business combinations	¥ -	¥ 745	\$ -	\$ 6,542	
Valuation difference on available-for-sale securities	288	407	2,533	3,576	
Deferred income under preferential tax treatment	154	120	1,353	1,058	
Others	453	266	3,975	2,334	
Total deferred tax liabilities	896	1,540	7,863	13,513	
Amount set off against deferred tax assets	(599)	(568)	(5,256)	(4,986)	
Net deferred tax liabilities	¥ 297	¥ 972	\$ 2,607	\$ 8,526	

A reconciliation between the statutory effective tax rate and the actual effective tax rate reflected in the accompanying consolidated statements of income for the years ended September 30, 2017 and 2018 were as follows:

	2017	2018
Statutory effective tax rate for the Company	30.21 %	30.21 %
Tax credit	(5.78)	(5.48)
Change in valuation allowance	(0.96)	0.03
Statutory tax rates variance of overseas subsidiaries	(0.22)	(2.20)
Expenses not deductible for income tax purposes	0.70	0.80
Effect of the tax reform in the United States	-	(1.33)
Other, net	0.35	0.77
Actual effective tax rate	24.30 %	22.80 %

Due to enactment of the "Tax Cuts and Jobs Act" in the United States of America on December 22, 2017, the income tax rate applicable to the consolidated subsidiaries of the Company in the United States of America was reduced from 35% to 21% from the fiscal year beginning on or after January 1, 2018.

As a result, deferred tax liabilities (net of deferred tax assets) decreased by ¥376 million (\$3,300 thousand); foreign currency translation adjustments increased by ¥8 million (\$74 thousand); and income taxes-deferred decreased by ¥367 million (\$3,226 thousand).

#### 7. Segment Information

#### 1. Summary of Reportable Segments

The Company's reportable segments are components of the Company for which separate financial information is available. These segments are subject to periodic examinations to enable the Company's board of directors to decide how to allocate resources and assess performance.

The Company's business divisions are based on product and service categories. Each of the divisions conducts business based on comprehensive strategies formulated for the products and services it handles.

Therefore the Company's business segments based on the products and services handled by each of the divisions comprise its three principal reportable segments, which are Electron Tube, Opto-semiconductor, and Imaging and Measurement Instruments.

The Electron Tube business segment manufactures and sells photomultiplier tubes (PMT), light sources and imaging devices. The Optosemiconductor business segment manufactures and sells opto-semiconductor devices. The Imaging and Measurement Instruments business segment manufactures and sells image processing and measurement systems.

#### 2. Method for Calculating the Sales, Income (Loss), Assets, and Other Items for Reportable Segments

Figures for income in reportable segments are on an operating profit basis. Intersegment sales and transfers are based on prevailing market prices.

#### 3. Information on the Amounts of Sales, Income (Loss), Assets, and Other Items for Reportable Segments

	Millions of Japanese Yen							
		Reportable Segment						
Year ended or as of September 30, 2017	Electron Tube	Opto- semiconductor	Imaging and Measurement Instruments	Total	Others	Total	Adjustments	Consolidated total
Net sales								
Outside customers	¥ 48,744	¥ 60,589	¥ 17,214	¥ 126,547	¥ 3,947	¥ 130,495	-	¥ 130,495
Intersegment	1,704	937	27	2,670	640	3,310	(3,310)	-
Total net sales	50,449	61,526	17,242	129,218	4,587	133,805	(3,310)	130,495
Segment income	¥ 16,992	¥ 18,155	¥ 3,544	¥ 38,692	¥ 281	¥ 38,973	¥ (16,124)	¥ 22,849
Segment assets	¥ 47,110	¥ 50,243	¥ 12,437	¥ 109,791	¥ 6,183	¥ 115,974	¥ 123,356	¥ 239,331
Other items								
Depreciation and amortization	¥ 3,420	¥ 3,903	¥ 869	¥ 8,193	¥ 338	¥ 8,531	¥ 1,468	¥ 10,000
Amortization of goodwill	-	-	-	-	-	-	¥ 9	¥ 9
Increase in property, plant and equipment and intangible assets	¥ 2,801	¥ 5,654	¥ 1,222	¥ 9,678	¥ 285	¥ 9,963	¥ 4,360	¥ 14,324

	Millions of Japanese Yen							
		Reportable Segment						
Year ended or as of September 30, 2018	Electron Tube	Opto- semiconductor	Imaging and Measurement Instruments	Total	Others	Total	Adjustments	Consolidated total
Net sales								
Outside customers	¥ 56,184	¥ 66,569	¥ 17,145	¥ 139,898	¥ 4,439	¥ 144,338	-	¥ 144,338
Intersegment	1,596	924	24	2,545	677	3,222	(3,222)	-
Total net sales	57,781	67,494	17,169	142,444	5,116	147,561	(3,222)	144,338
Segment income	¥ 19,697	¥ 21,320	¥ 3,584	¥ 44,602	¥ 69	¥ 44,671	¥ (17,407)	¥ 27,263
Segment assets	¥ 52,386	¥ 53,938	¥ 14,005	¥ 120,329	¥ 6,924	¥ 127,254	¥ 118,012	¥ 245,267
Other items								
Depreciation and amortization	¥ 3,719	¥ 4,055	¥ 902	¥ 8,677	¥ 366	¥ 9,043	¥ 2,180	¥ 11,224
Amortization of goodwill	¥ 153	-	-	¥ 153	-	¥ 153	¥ 9	¥ 162
Increase in property, plant and equipment and intangible assets	¥ 2,348	¥ 5,086	¥ 743	¥ 8,177	¥ 512	¥ 8,689	¥ 6,023	¥ 14,712

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

	Thousands of U.S. Dollars							
	Reportable Segment							
Year ended or as of September 30, 2017	Electron Tube	Opto- semiconductor	Imaging and Measurement Instruments	Total	Others	Total	Adjustments	Consolidated total
Net sales								
Outside customers	\$ 427,583	\$ 531,486	\$ 151,000	\$ 1,110,069	\$ 34,625	\$ 1,144,695	-	\$ 1,144,695
Intersegment	14,954	8,221	245	23,421	5,619	29,041	(29,041)	-
Total net sales	442,537	539,708	151,245	1,133,491	40,245	1,173,736	(29,041)	1,144,695
Segment income	\$ 149,061	\$ 159,256	\$ 31,090	\$ 339,408	\$ 2,466	\$ 341,875	\$ (141,441)	\$ 200,434
Segment assets	\$ 413,249	\$ 440,731	\$ 109,101	\$ 963,081	\$ 54,239	\$ 1,017,320	\$ 1,082,078	\$ 2,099,399
Other items								
Depreciation and amortization	\$ 30,005	\$ 34,239	\$ 7,624	\$ 71,870	\$ 2,969	\$ 74,839	\$ 12,884	\$ 87,723
Amortization of goodwill	_	-	-	-	-	-	\$ 84	\$ 84
Increase in property, plant and equipment and intangible assets	\$ 24,571	\$ 49,598	\$ 10,727	\$ 84,897	\$ 2,504	\$ 87,401	\$ 38,249	\$ 125,651
	Thousands of U.S. Dollars							
		Reportabl	e Segment					0
Year ended or as of September 30, 2018	Electron Tube	Opto- semiconductor	Imaging and Measurement Instruments	Total	Others	Total	Adjustments	Consolidated total
Net sales								
Outside customers	\$ 492,844	\$ 583,941	\$ 150,397	\$ 1,227,183	\$ 38,940	\$ 1,266,123	-	\$ 1,266,123
Intersegment	14,008	8,112	211	22,332	5,939	28,271	(28,271)	-
Total net sales	506,852	592,053	150,608	1,249,515	44,879	1,294,394	(28,271)	1,266,123
Segment income	\$ 172,780	\$ 187,025	\$ 31,440	\$ 391,247	\$ 608	\$ 391,855	\$ (152,698)	\$ 239,157
Segment assets	\$ 459,527	\$ 473,144	\$ 122,852	\$ 1,055,524	\$ 60,739	\$ 1,116,264	\$1,035,201	\$ 2,151,465
Other items								
Depreciation and amortization	\$ 32,628	\$ 35,577	\$ 7,912	\$ 76,118	\$ 3,214	\$ 79,332	\$ 19,124	\$ 98,456
	Ψ 32,020	+,-	+ - ,	, -, -				
Amortization of goodwill	\$ 1,344	-	-	\$ 1,344	-	\$ 1,344	\$ 84	\$ 1,428

#### 8. Short-Term and Long-Term Loans Payable

Short-term bank loans represent notes maturing generally within six months. The average annual interest rate applicable to the short-term bank loans at September 30, 2018 is 0.5%.

Long-term debt at September 30, 2017 and 2018 were as follows:

	Millions of Japanese Yen		Thousa U.S. D	ands of ollars
	2017	2018	2017	2018
Loans principally from banks due serially through 2031	¥ 6,878	¥ 6,690	\$ 60,335	\$ 58,692
Less current portion	(3,194)	(3,178)	(28,019)	(27,882)
	¥ 3,683	¥ 3,512	\$ 32,315	\$ 30,809

At September 30, 2017 and 2018, cash & deposits and property, plant & equipment which had a carrying amount of ¥4,655 million (US\$40,838 thousand) and ¥5,039 million (US\$44,205 thousand) were pledged as collateral for short-term bank loans and long-term debt, respectively.

#### 9. Investment Securities

Information regarding the marketable securities classified as other securities as of September 30, 2017 and 2018 were as follows:

¥ 1,953

		Millions of Japanese Yen 2017				Thousands of U.S. Dollars				
						2017				
	Carrying amount	Cost	Unrealized gain	Unrealized loss	Carrying amount	Cost	Unrealized gain	Unrealized loss		
Equity securities	¥ 2,460	¥ 911	¥ 1,548	-	\$ 21,579	\$ 7,994	\$ 13,585	-		
Other	-	-	-	-	-	-	-	-		
	¥ 2,460	¥ 911	¥ 1,548	-	\$ 21,579	\$ 7,994	\$ 13,585	_		
	1	Millions of J	Japanese Yen		7	Thousands o	of U.S. Dollars	;		
		20	018			20	)18			
	Carrying amount	Cost	Unrealized gain	Unrealized loss	Carrying amount	Cost	Unrealized gain	Unrealized loss		
Equity securities	¥ 2,859	¥ 906	¥ 1,953	-	\$ 25,082	\$ 7,948	\$ 17,133	-		
Other	-	-	-	-	-	-	-	-		

\$ 25.082

\$7,948

\$ 17.133

#### 10. Per Share Information

	Japan	ese Yen	U.S. D	ollars
	2017	2018	2017	2018
Per share of common stock:	,			_
Earnings per share	¥ 113.00	¥ 136.50	\$ 0.99	\$ 1.19
Cash dividends	34.00	37.00	0.29	0.32

#### 11. Business Combinations

#### (Business combination through acquisition)

#### 1. Outline of business combination

(1) Name of the acquired company and the content of its business

¥ 2.859

Name of the acquired company: Energetiq Technology, Inc.

Business content: Development, manufacture and sale of light sources for semiconductor inspections

¥ 906

(2) Main reason for the business combination

With the addition of Energetiq Technology's Laser Driven Light Sources and Extreme Ultraviolet light sources to the Company's light sources, product offerings of our group will expand and our response to the demands of semiconductor inspection equipment market will be strengthened. Also, combining the light source development technologies cultivated by both companies will increase the speed of development and lead to the development of even greater value-added products to open up new markets.

(3) Business combination date

October 16, 2017

(4) Legal form of the business combination

Acquisition of shares with cash consideration

(5) Name of the company after the combination Energetiq Technology, Inc.

(6) Ratio of voting rights acquired 100%

(7) Main grounds for determining the acquiring company

This is because Photonics Management Corp., a consolidated subsidiary of the Company, acquired shares with cash consideration.

## 2. Period of the business results of the acquired company included in the consolidated financial statements From October 17, 2017 to September 30, 2018

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

#### 3. Acquisition price of the acquired company and acquisition cost breakdown

Acquisition price: ¥ 5,506 million (\$48,306 thousand) in cash Acquisition cost: ¥ 5,506 million (\$48,306 thousand)

#### 4. Details and amounts of main acquisition costs

Advisory fees, etc.: ¥122 million (\$1,075 thousand)

#### 5. Amount, reason, amortization method and period of goodwill recognized

(1) Amount of goodwill

¥1,555 million(\$13,641 thousand)

(2) Reason for recognition

As the acquisition cost exceeded the net assets at fair value as of the date of business combination, the difference is recognized as goodwill.

(3) Method and period of amortization Straight-line basis over 10 years

#### 6. Assets acquired and liabilities assumed on the date of business combination and their major components

Current assets	¥2,627 million (\$23,049 thousand)
Non-current assets	¥3,647 million (\$31,999 thousand)
Total assets	¥6,275 million (\$55,048 thousand)
Current liabilities	¥1,017 million (\$8,926 thousand)
Non-current liabilities	¥1,306 million (\$11,456 thousand)
Total liabilities	¥2.323 million (\$20.383 thousand)

#### 7. Amount of major identifiable intangible assets other than goodwill, its details, and weighted-average useful life

	Millions of	Thousands of	Weighted-Average
	Japanese Yen	U.S.Dollars	Useful Life (Years)
Customer-related assets	¥ 2,875	\$ 25,222	10
Technology assets	458	4,025	5
Trademark	262	2,300	-
Total	¥ 3.596	\$ 31.549	_

## 8. Estimated amount of impact on the consolidated statement of income for the fiscal year ended September 30, 2018 and calculation method assuming that the business combination had been completed at the beginning of the fiscal year

The amount and calculation method is omitted due to lack of monetary materiality.

This note has not been audited.



Ernst & Young ShinNihon LLC

#### Independent Auditor's Report

The Board of Directors
Hamamatsu Photonics K.K.

We have audited the accompanying consolidated financial statements of Hamamatsu photonics K.K. and its consolidated subsidiaries, which comprise the consolidated balance sheet as at September 30, 2018, and the consolidated statements of income, comprehensive income, changes in net assets, and cash flows for the year then ended and a summary of significant accounting policies and other explanatory information, all expressed in Japanese yen.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for designing and operating such internal control as management determines is necessary to enable the preparation and fair presentation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

#### Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in Japan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. The purpose of an audit of the consolidated financial statements is not to express an opinion on the effectiveness of the entity's internal control, but in making these risk assessments the auditor considers internal controls relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Hamamatsu Photonics K.K. and its consolidated subsidiaries as at September 30, 2018, and their consolidated financial performance and cash flows for the year then ended in conformity with accounting principles generally accepted in Japan.

#### Convenience Translation

We have reviewed the translation of these consolidated financial statements into U.S. dollars, presented for the convenience of readers, and, in our opinion, the accompanying consolidated financial statements have been properly translated on the basis described in Note 1.

Ernot & Young Shin Ni hon LLC

December 20, 2018 Hamamatsu, Japan

A member firm of Ernst & Young Global Limited

## **DIRECTORS AND AUDIT & SUPERVISORY BOARD MEMBERS**

## **Directors and Audit & Supervisory Board Members**

#### **President and CEO**

Akira Hiruma, Representative Director

#### **Vice President**

Junichi Takeuchi, Representative Director

#### **Senior Managing Director**

Koei Yamamoto, Representative Director

#### **Managing Directors**

Kenji Suzuki Tsutomu Hara Kenji Yoshida

#### **Directors**

Naofumi Toriyama Kazuhiko Mori Tadashi Maruno Takayuki Suzuki Hisaki Kato Kashiko Kodate Ken Koibuchi

#### **Audit & Supervisory Board Members**

Hiroshi Mizushima Akira Utsuyama Yuji Maki Saburo Sano Hamamatsu Photonics K.K. (Registered address) 1126-1, Ichino-cho, Higashi-ku, Hamamatsu City

Shizuoka Pref., 435-8558, Japan Telephone: (81)53-434-3311

Established: September 29, 1953

Paid-in Capital: 34,928,648,325 yen

Common Stock

Authorized: 500,000,000 shares Issued: 165,011,568 shares

Stock Listing: Tokyo Stock Exchange (1st Section)

ID number 6965

Trading Unit 100 shares

Number of Shareholders: 22,378 Number of Employees: 4,878

Independent Auditor: Ernst & Young ShinNihon LLC

Hamamatsu Čity, Shizuoka Pref.

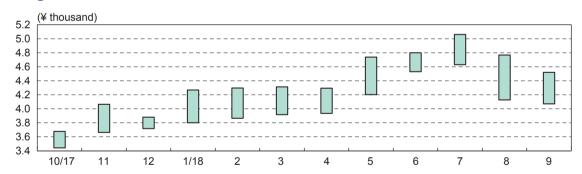
Transfer Agent and Registrar: Sumitomo Mitsui Trust Bank, Limited

Chiyoda-ku, Tokyo

Annual Meeting: The annual meeting of shareholders is held in

December of each year in Hamamatsu City, Japan

#### Price range of stock traded



#### Major shareholders

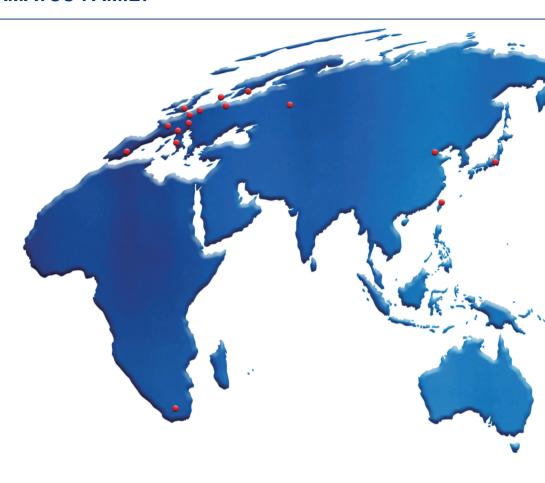
As of September 30, 2018<sup>(\*)</sup>
Percentage to total shares outstanding (%)

The Master Trust Bank of Japan, Ltd. (Trust Account)	6.48
Toyota Motor Corporation	5.09
Japan Trustee Services Bank, Ltd. (Trust Account)	3.57
Japan Trustee Services Bank, Ltd. (Trust Account 9)	3.39
SSBTC Client Omnibus Account	3.15
JP Morgan Chase Bank 380055	2.88
Hamamatsu Photonics K.K. employees	2.88
The Nomura Trust and Banking Co., Ltd. (Investment Trust)	1.83
Japan Trustee Services Bank, Ltd. (Trust Account 5)	1.69
State Street Bank West Client — Treaty 505234	1.38

<sup>(\*)1.</sup> The Company holds 9,945,363 (6.03%) shares of treasury shares that is not included in the shares of the major shareholders shown above.

<sup>2.</sup> In this fiscal year, the Company purchased 2,518,400 shares of common stock as treasury shares and the same number of common stock was retired as of April 26, 2018.

## PROFILE OF THE HAMAMATSU FAMILY



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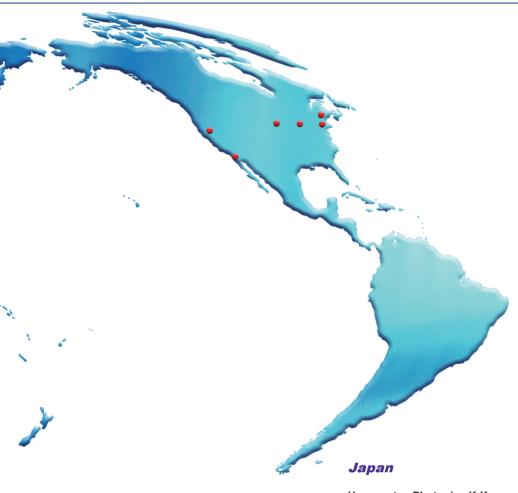
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Head office

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Energetiq Technology, Inc. 7 Constitution Way, Woburn, MA 01801, U.S.A. Telephone: (1)781-939-0763





