

(Securities code: 6728)

Business Results

FY2018 (July 2018–June 2019)

August 8, 2019

ULVAC, Inc.

◆ Disclaimer regarding forward-looking statements

Forward-looking statements of the company in this presentation are based on information that was available at the time these documents were prepared.

ULVAC's customers in the flat-panel display (FPD), semiconductor, and electronic parts industries face challenges due to the rapid pace of technological advances and fierce competition.

There are a number of factors that directly and indirectly impact performance, such as the global economy; fluctuations in exchange rates; market conditions for FPDs, semiconductors, electronic parts, and raw materials; and trends in capital expenditures.

Consequently, actual net sales and profits may vary substantially from the projections included in this presentation.

◆ Data included in the documents are stated as follows:

(All figures are stated on a consolidated basis unless otherwise noted.)

Yen values: Rounded to the nearest 10th of the unit stated.

Percentages: Rounded to the nearest 10th after yen values are rounded.

Abbreviations of accounting periods:

1Q to 2Q (cumulative): First and second quarter consolidated cumulative period

2Q: Second quarter consolidated period

Overview of Consolidated Business Results

□ FY2018 Consolidated Business Results

- **Orders Received: ¥218.5 billion (-10% year-on-year)**
 - Declined year-on-year mainly due to the postponement of investment plans by semiconductor memory manufacturers
- **Net Sales: ¥220.7 billion (-12% year-on-year)**
 - Declined year-on-year mainly due to the postponement of investment plans by semiconductor memory manufacturers
- **Operating Profit: ¥23.8 billion (-33% year-on-year)**
 - Exceeded forecast despite decline year-on-year mainly due to lower net sales

□ FY2019 Consolidated Earnings Forecast

- **Net Sales: ¥205.0 billion (-¥60.0 billion vs. medium-term business plan)**
- **Operating Profit: ¥22.5 billion (-¥15.5 billion vs. medium-term business plan)**

□ Goals for FY2022 (no change)

- **Aim for net sales of ¥300.0 billion and an operating profit margin of 16%.**

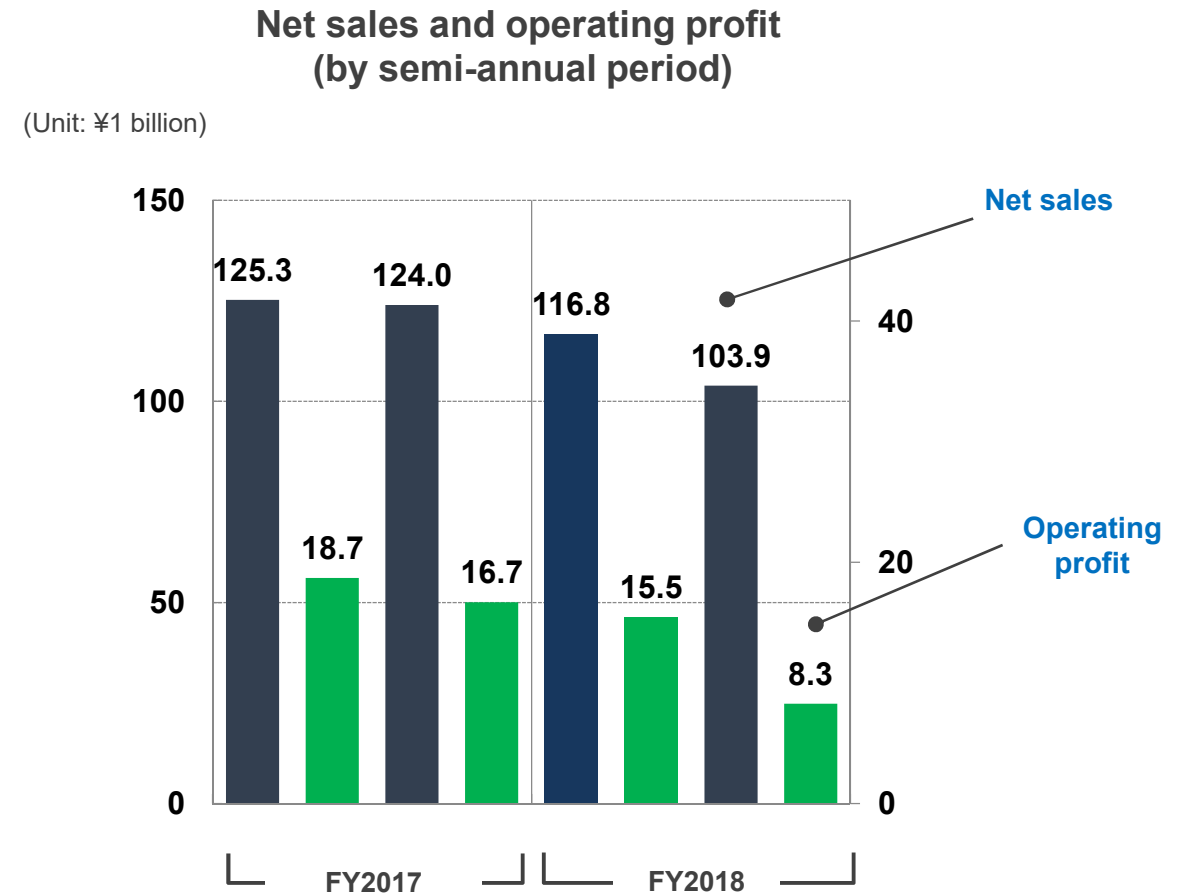
Summary of FY2018 Consolidated Business Results

Overview of FY2018 Consolidated Business Results

- Orders received and net sales: declined year-on-year mainly due to the postponement of investment plans by semiconductor memory manufacturers
- Operating profit: Exceeded forecast despite decline year-on-year mainly due to lower net sales

(Unit: ¥1 billion)

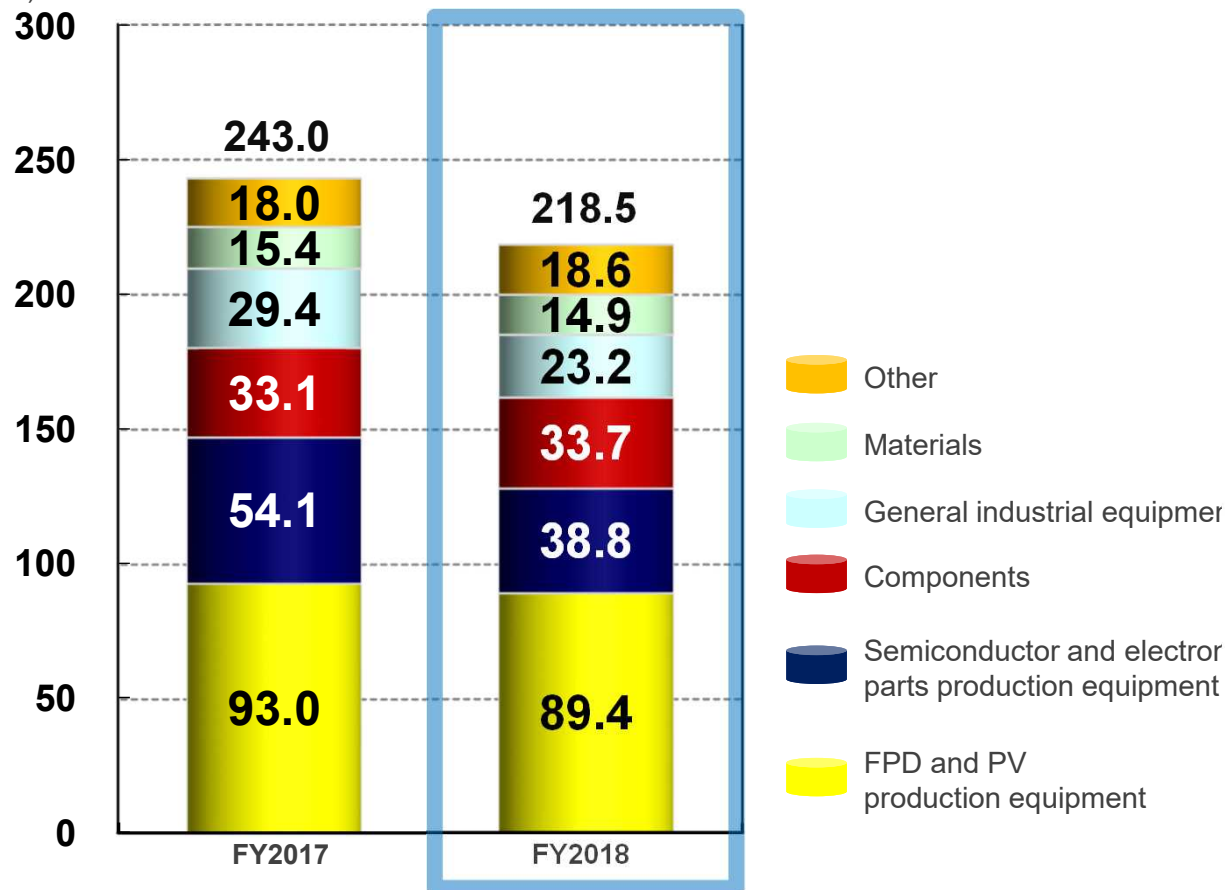
	June'17	June '18		
	Result	Forecast	Result	YoY (Changes)
Orders received	243.0	225.0	218.5	-24.4 -10.1%
Net Sales	249.3	225.0	220.7	-28.6 -11.5%
Operating Profit	35.4	23.5	23.8	-11.5 -32.6%
Ratio	14.2%	10.4%	10.8%	- 3.4 pt
Net Income	35.9	17.5	18.7	-17.2 -48.0%
Ratio	14.4%	7.8%	8.5%	- 5.9 pt



Overview of FY2018 Consolidated Business Results (Orders received by segment)

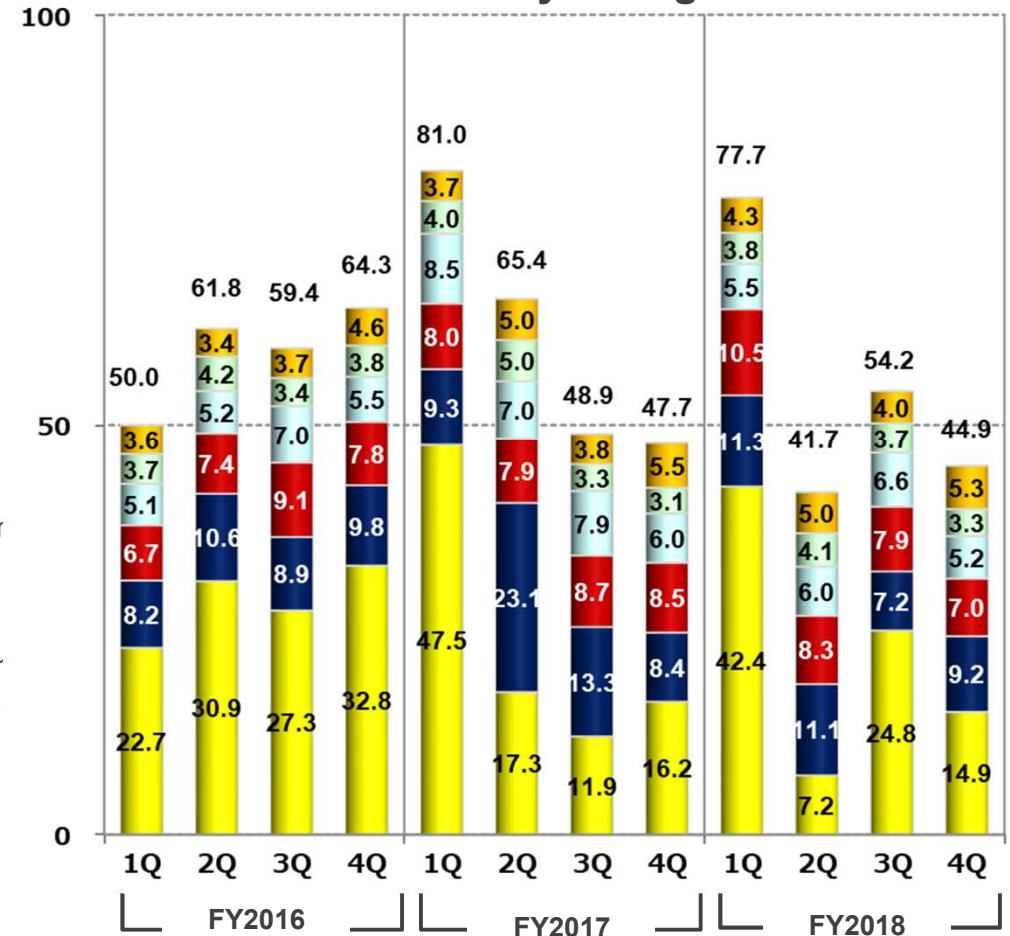
- FPD and PV production equipment: incoming orders of LCD production equipment for large-screen TVs and OLED production equipment for smart phones in China contributed to the ongoing high level of orders received
- Semiconductor and electronic parts production equipment: declined year-on-year mainly due to the postponement of investment plans by semiconductor memory manufacturers

(Unit: ¥1 billion) **Orders vs. same period last year**



(Unit: ¥1 billion)

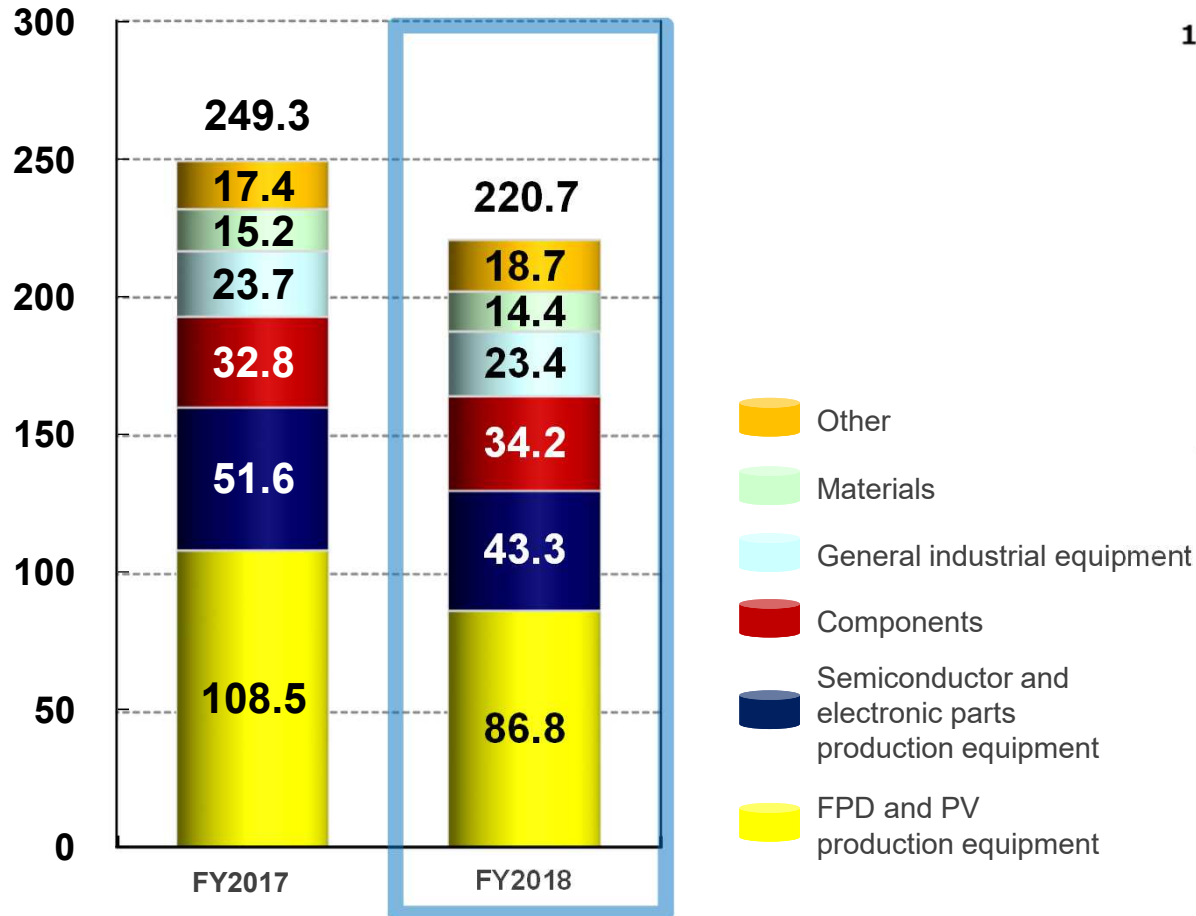
Quarterly change



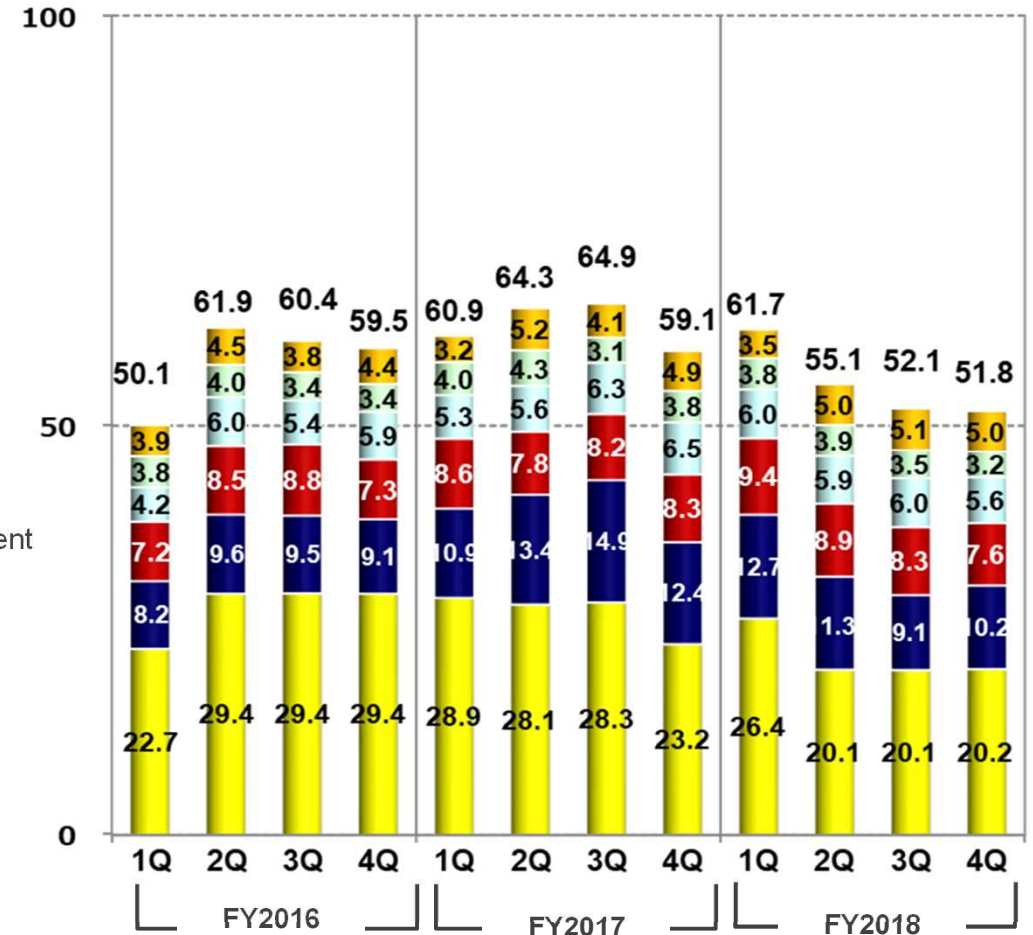
Overview of FY2018 Consolidated Business Results (Net sales by segment)

- FPD and PV production equipment: net sales declined year-on-year despite the contribution of orders received for LCD production equipment for large-screen TVs and OLED production equipment for smart phones in China
- Semiconductor and electronic parts production equipment: net sales declined year-on-year mainly due to the postponement of investment plans by semiconductor memory manufacturers

(Unit: ¥1 billion) Net sales vs. same period last year

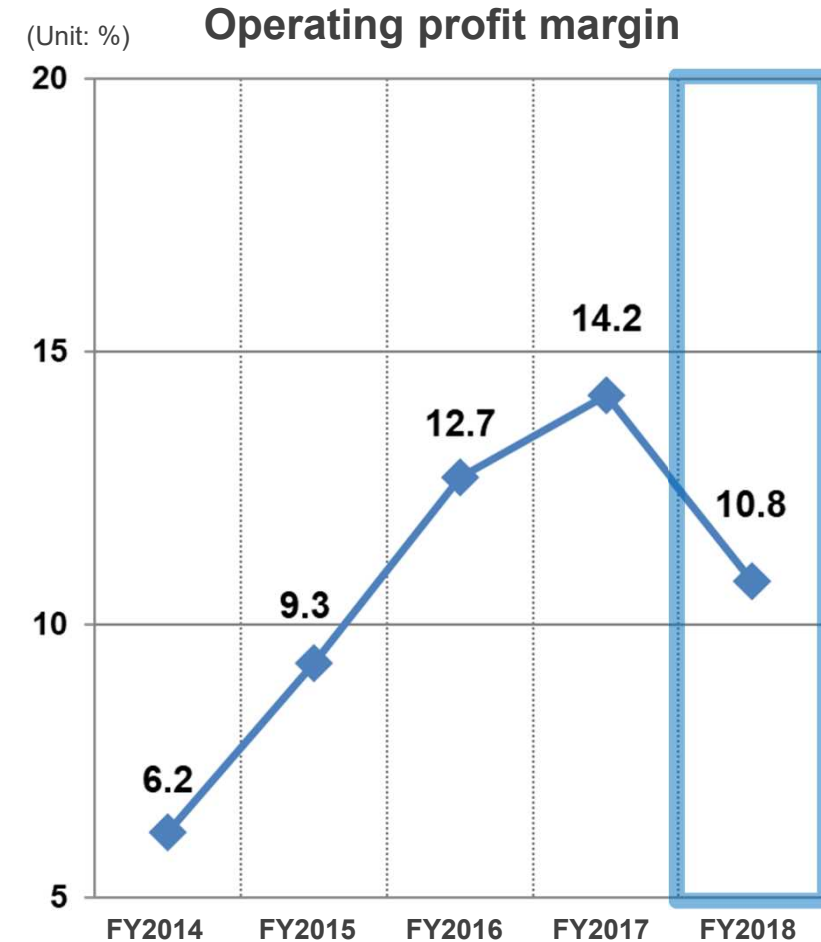
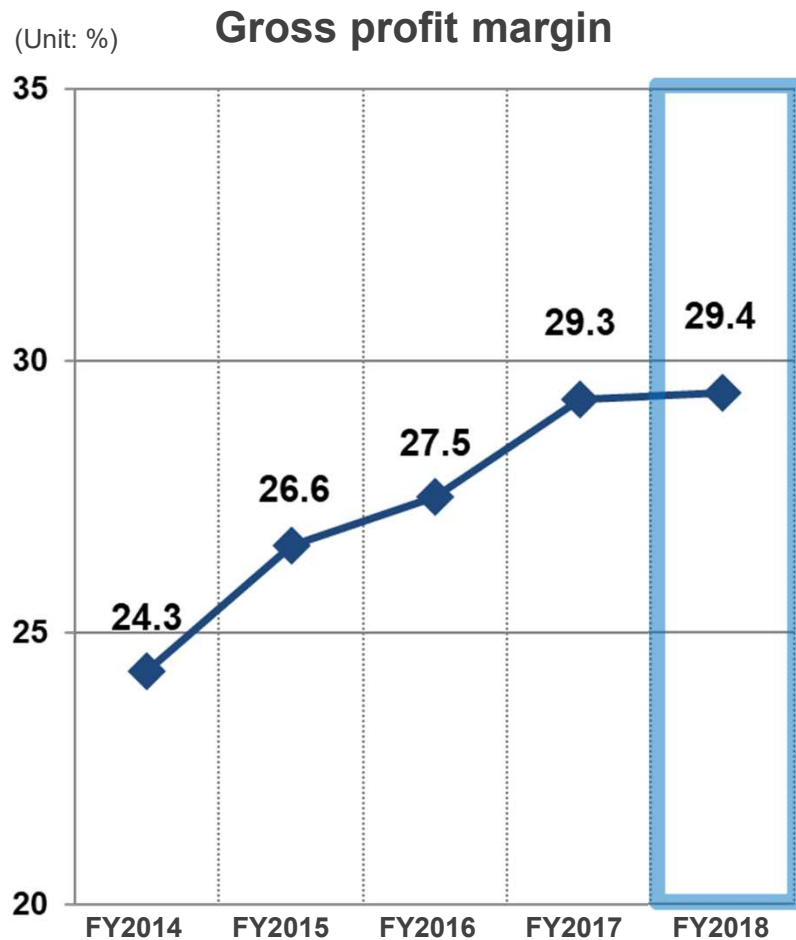


(Unit: ¥1 billion) Quarterly change



Overview of FY2018 Consolidated Business Results (Profit margins)

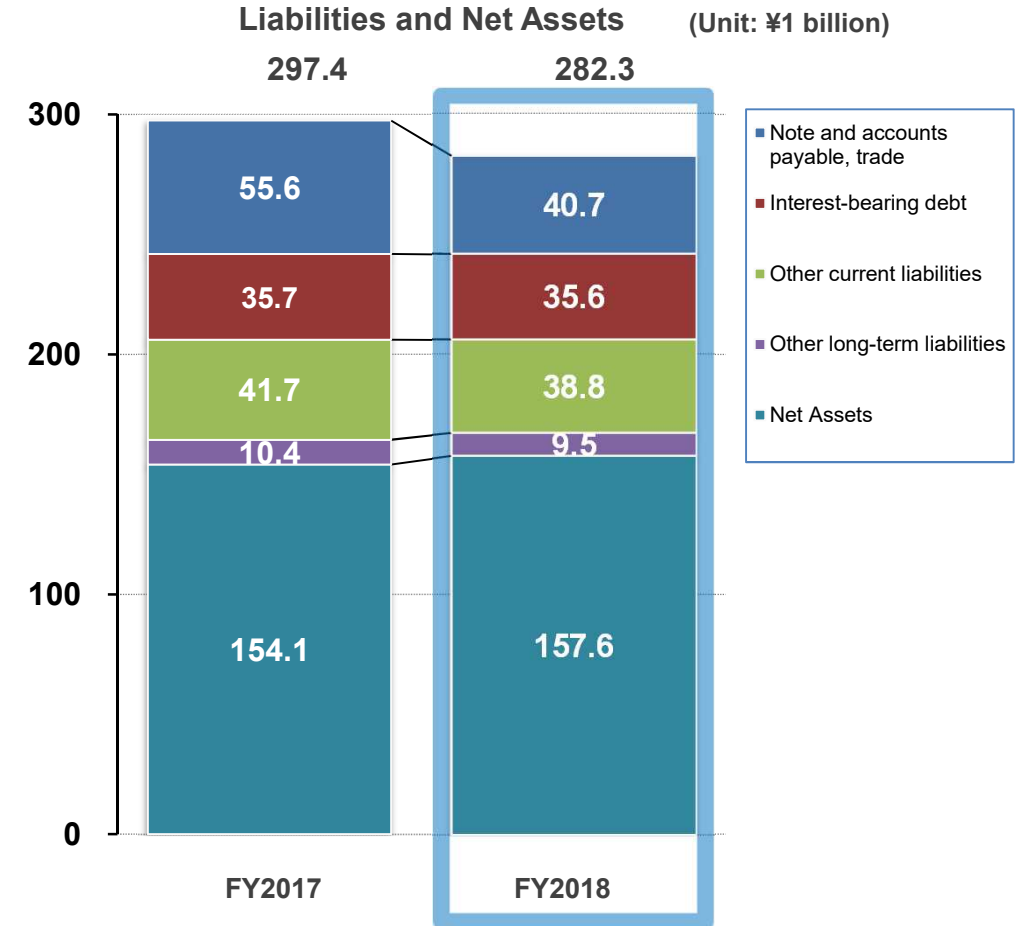
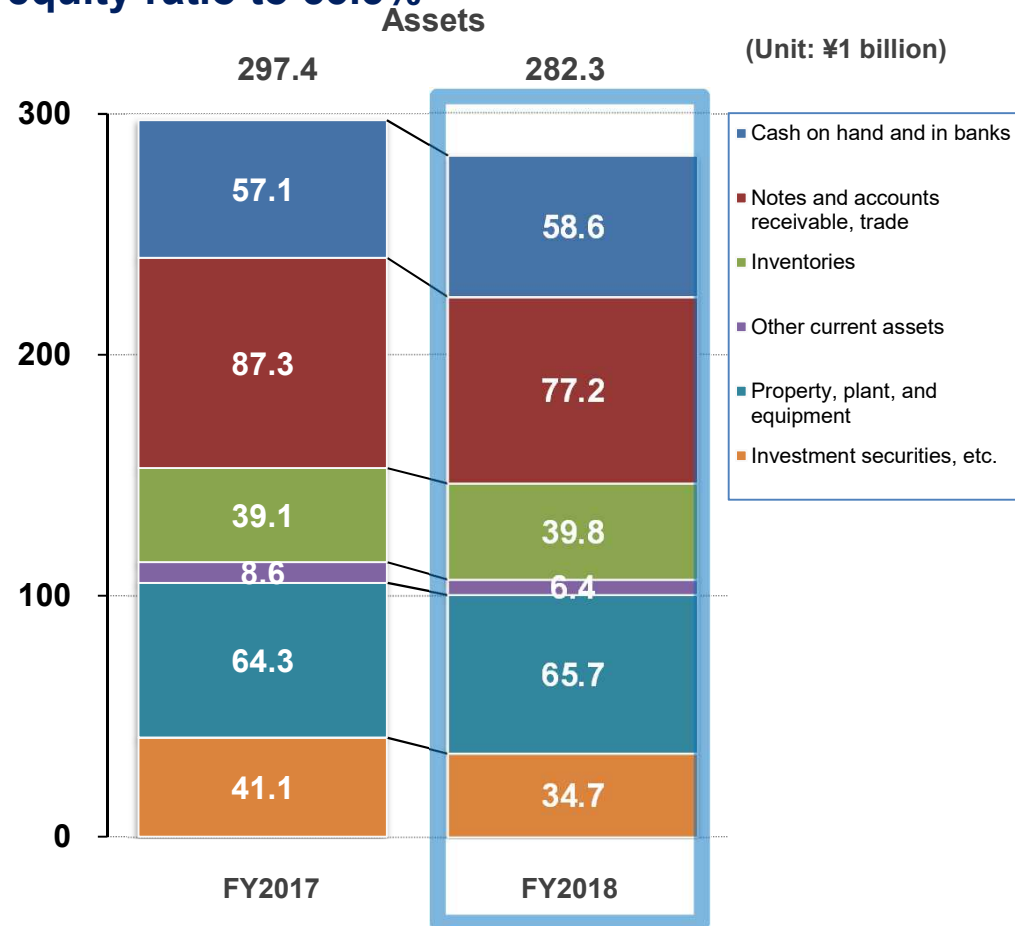
- The gross profit margin remained high, while the operating profit margin declined mainly due to lower sales and higher administrative and sales expenses



Overview of FY2018 Consolidated Business Results

(Consolidated balance sheet)

- Notes and accounts receivable declined by ¥10.0 billion, and notes and accounts payable declined by ¥14.8 billion
- Net assets increased by ¥3.5 billion, and total assets decreased by ¥15.1 billion, which improved the equity ratio to 53.5%



Business Environment and FY2019 Consolidated Earnings Forecast

FPD Market Environment: Expanding business opportunities by shifting to OLEDs (1)

Characteristics of OLEDs

- Flexibility
- Enable to be made thin and lightweight
- Possibility of cost reduction

Expansion of applications for OLED displays

- Foldable smart phones
- Wall-hung large-screen displays
- In-vehicle flexible displays
- Rollable displays
- Transparent displays

Technological challenges

- Development of equipment for large substrates
- Structural change (Evaporation process ⇒ Sputtering)
- Development for mass production



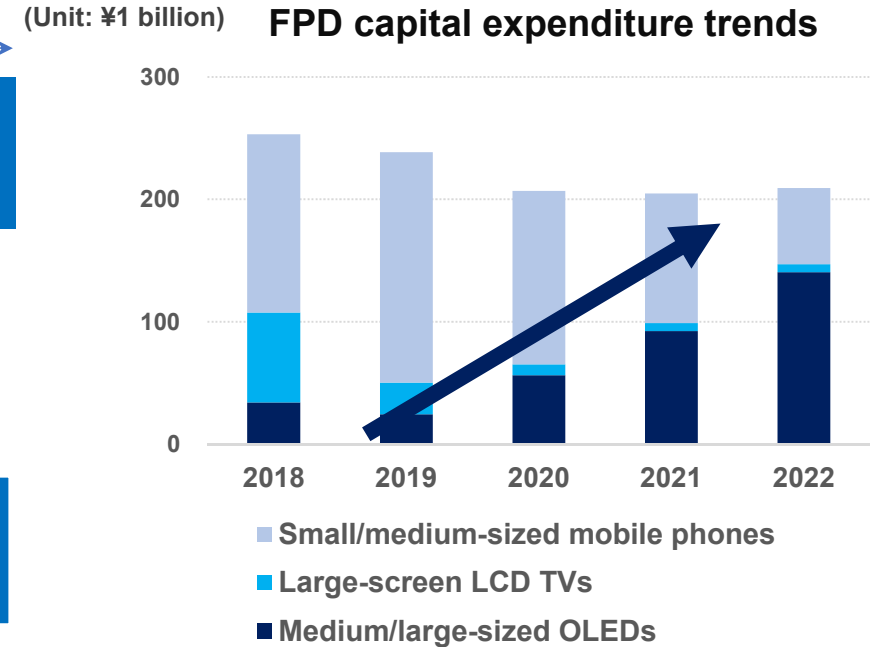
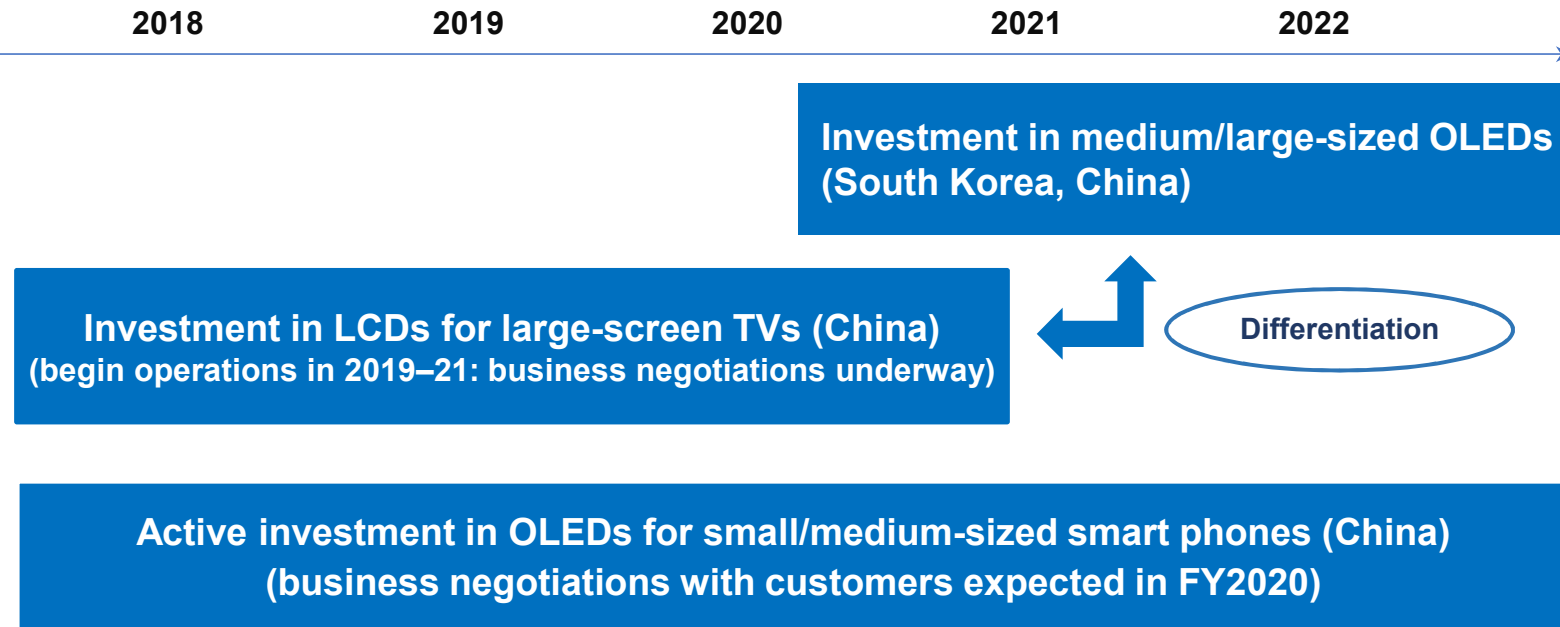
ULVAC's strengths

- Sputtering on large substrates and transport technology
- Expertise in sputtering equipment
- Collaboration in development for mass production with top manufacturers



Aim for top share in medium/large-sized OLED market

FPD Market Environment: Expanding business opportunities by shifting to OLEDs (2)



Source: Interviews by ULVAC

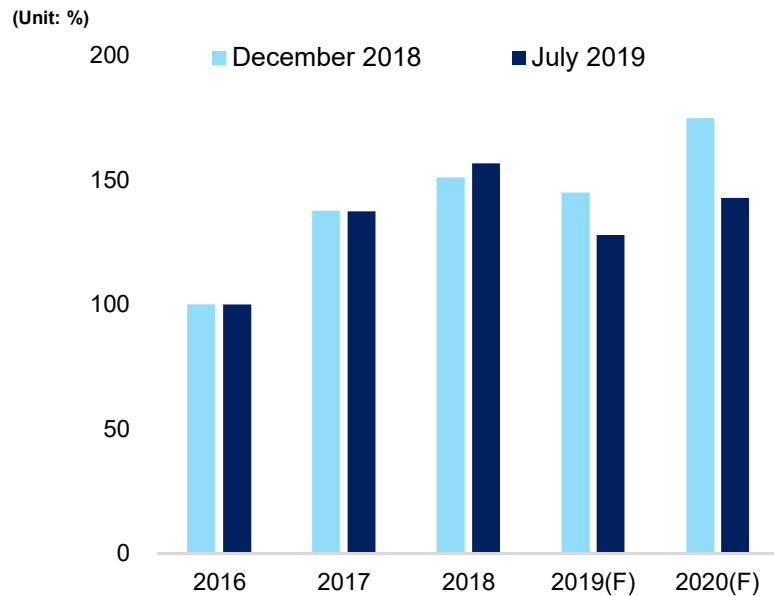
- FPD-related investment is expected to be soft for the near-term
- LCD production facilities for large-screen TVs (G10.5 in China) are scheduled to begin production gradually from 2019 through 2021
- Investment in OLED for smart phones is also expected to continue
- Expansion of the medium/large-sized OLED market by anticipated increase in applications ⇒ Collaboration in development for mass production with top manufacturers

Semiconductor Market Environment: Memory

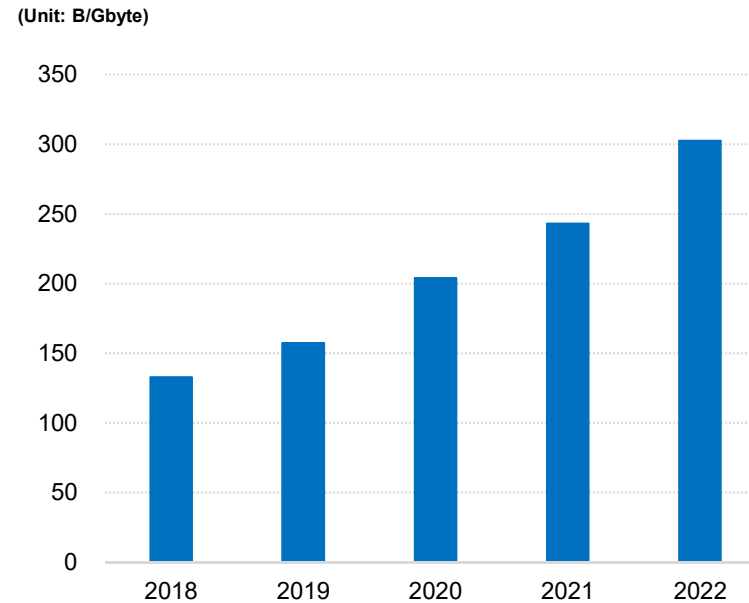
Memory market

- Active investment by memory manufacturers in 2017 to 2018 ⇒ Oversupply and significant price declines
- Postponement of investment by memory manufacturers from the end of 2018 ⇒ Investment is not expected to fully resume until 2020 or later due to high-tech trade friction between the US and China (Investment in 2019 to 2020 is forecast by SEMI to be lower than in 2018)
- Growth in DRAM and NAND demand (memory capacity) ⇒ After realization of the smart society, the current forecast may be exceeded

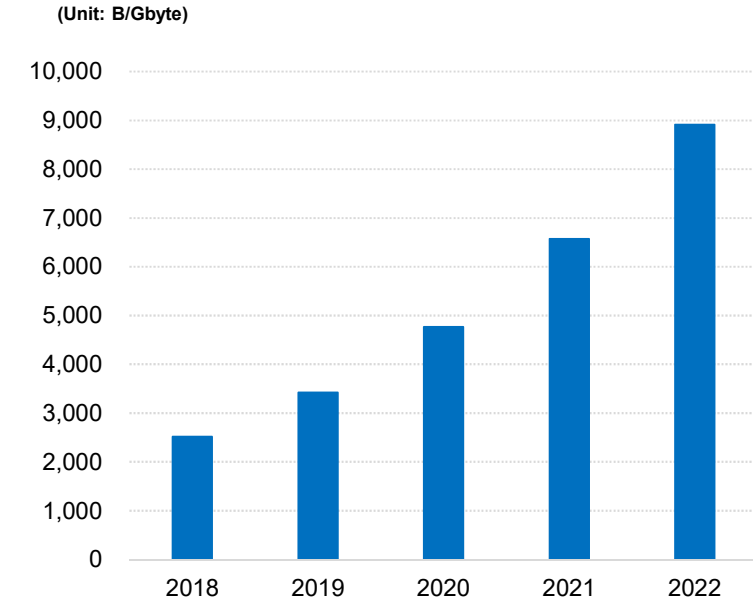
Semiconductor Manufacturing Equipment Market Outlook (SEMI)
2016 = 100



DRAM demand (shipment volume) forecast



NAND demand (shipment volume) forecast



Semiconductor Market Environment: Logic

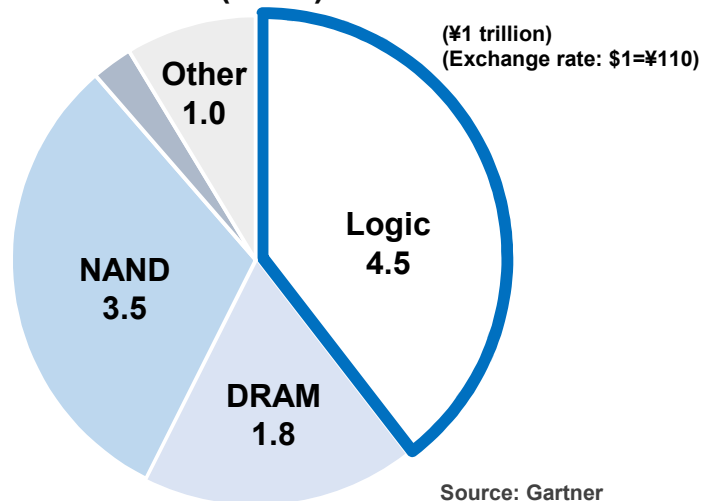
Logic market

- Investment on par with that for memory (DRAM and NAND)
- Logic-related investment is stable (¥4.4-4.7 trillion)
- Future growth is expected for advanced miniaturized products ⇒ Focus on capital expenditures
(Advanced miniaturized products will not be fully developed until 2020 or later)

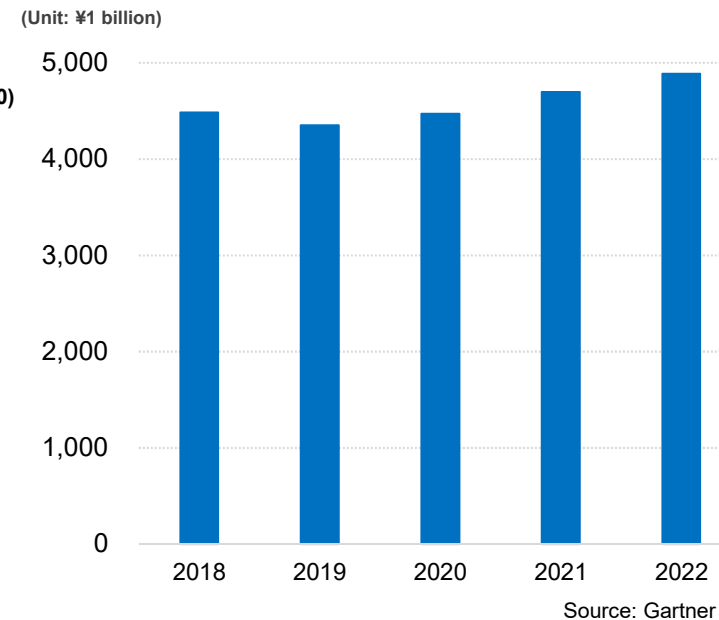
Success in entering the logic field

- Two major manufacturers rated us higher than the competitors in the sputtering process required for miniaturization in EUV process ⇒ Certified as standard equipment
- Grow by expanding business to logic foundry manufacturers who are pursuing miniaturization

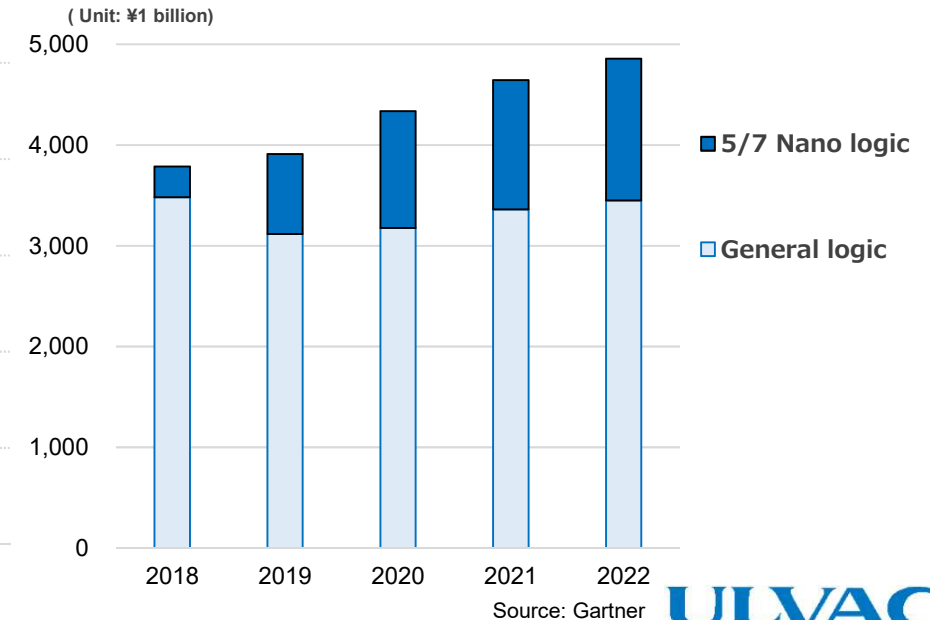
Semiconductor capital expenditure amount (2018)



Logic capital expenditures



Demand forecast



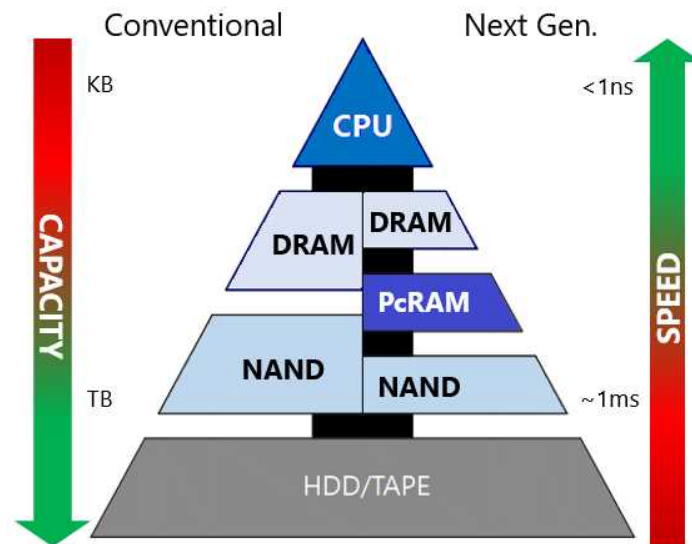
Semiconductor Market Environment: New non-volatile memory (PCRAM)

New non-volatile memory market

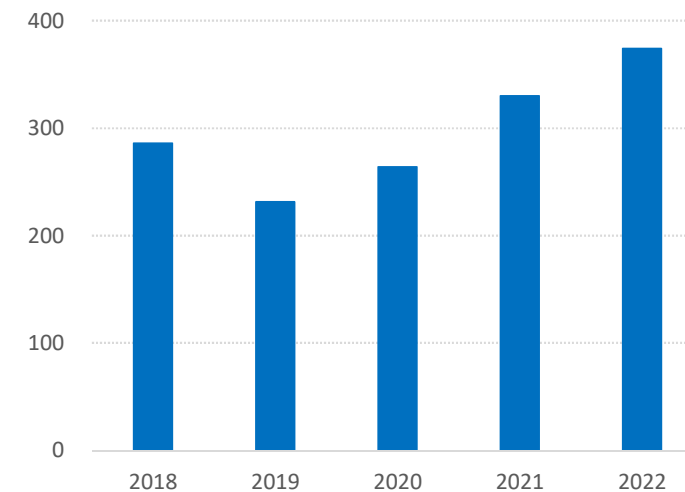
- Memory positioned between NAND and DRAM in that it 1) has a faster processing speed than NAND, and 2) unlike DRAM, it is non-volatile (memory is preserved even if power supply is cut)
⇒ Contributes to high-speed processing of big data and energy conservation
- PCRAM can be used to replace DRAM-based DIMMs on servers. Other applications will also be developed.

ULVAC's strengths

- ULVAC is the only equipment supplier to enable mass-produced film deposition system for PCRAM
- Providing equipments to several major leading manufacturers at mass production level
- Supporting the development for next-generation products of manufacturers as a partner



(Unit: ¥1 billion) Emerging memory total investment forecast

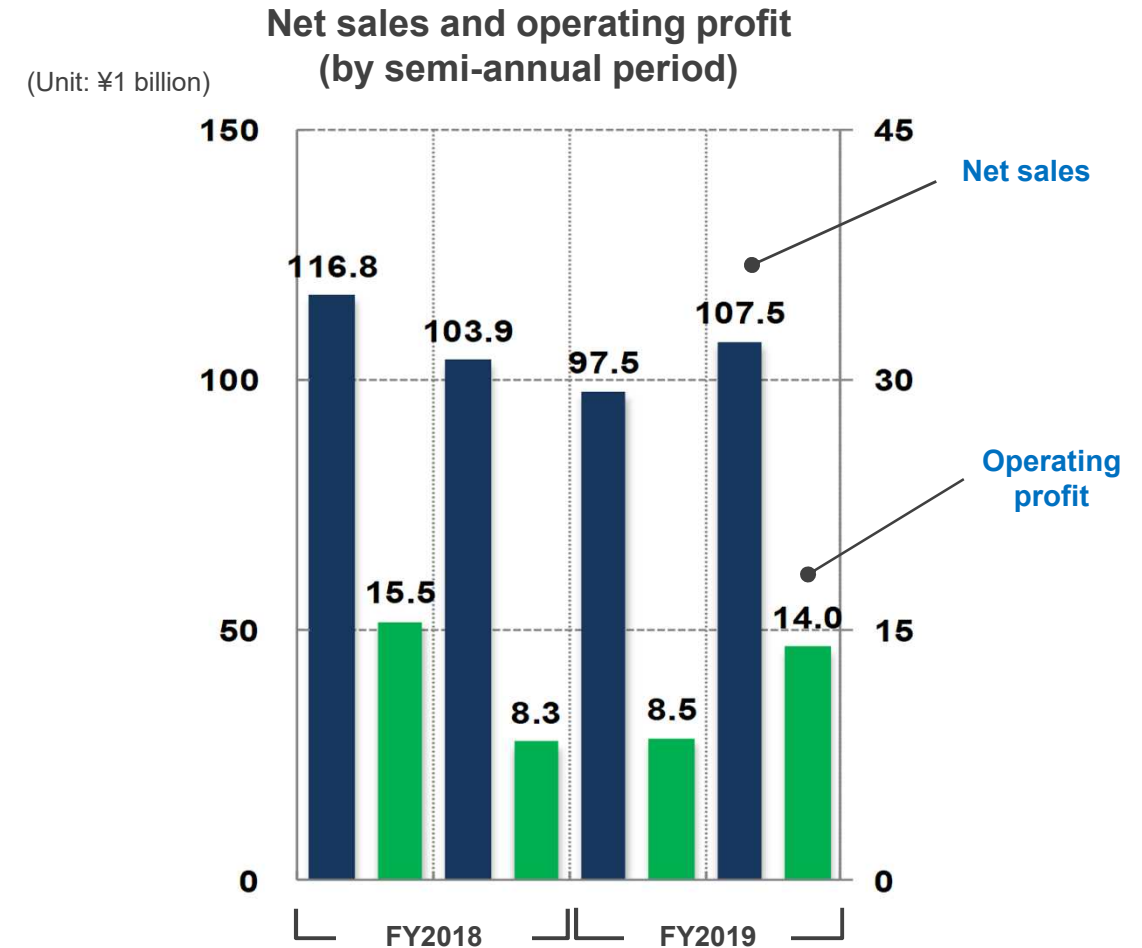


Note: Emerging Memory includes MRAM, ReRAM, PCRAM, etc.
Source: Gartner 2018

FY2019 Consolidated Earnings Forecast

- Net sales are expected to decrease year-on-year to ¥205.0 billion (-¥60.0 billion vs. medium-term business plan) due to a decline in FPD-related investment
- Operating profit is expected to decrease to ¥22.5 billion (-¥15.5 billion vs. medium-term business plan) in tandem with the decrease in net sales

(Unit: ¥1 billion)	FY2018 Results	FY2018 Forecast		
		1st Half	Full Year	Change YoY
Orders Received	218.5	98.6	206.0	-5.7%
Net Sales	220.7	97.5	205.0	-7.1%
Operating Profit	23.8	8.5	22.5	-5.6%
Ratio	10.8%	8.7%	11.0%	+0.2pt
Net Income	18.7	6.0	15.5	-17.0%
Ratio	8.5%	6.2%	7.6%	-0.9pt

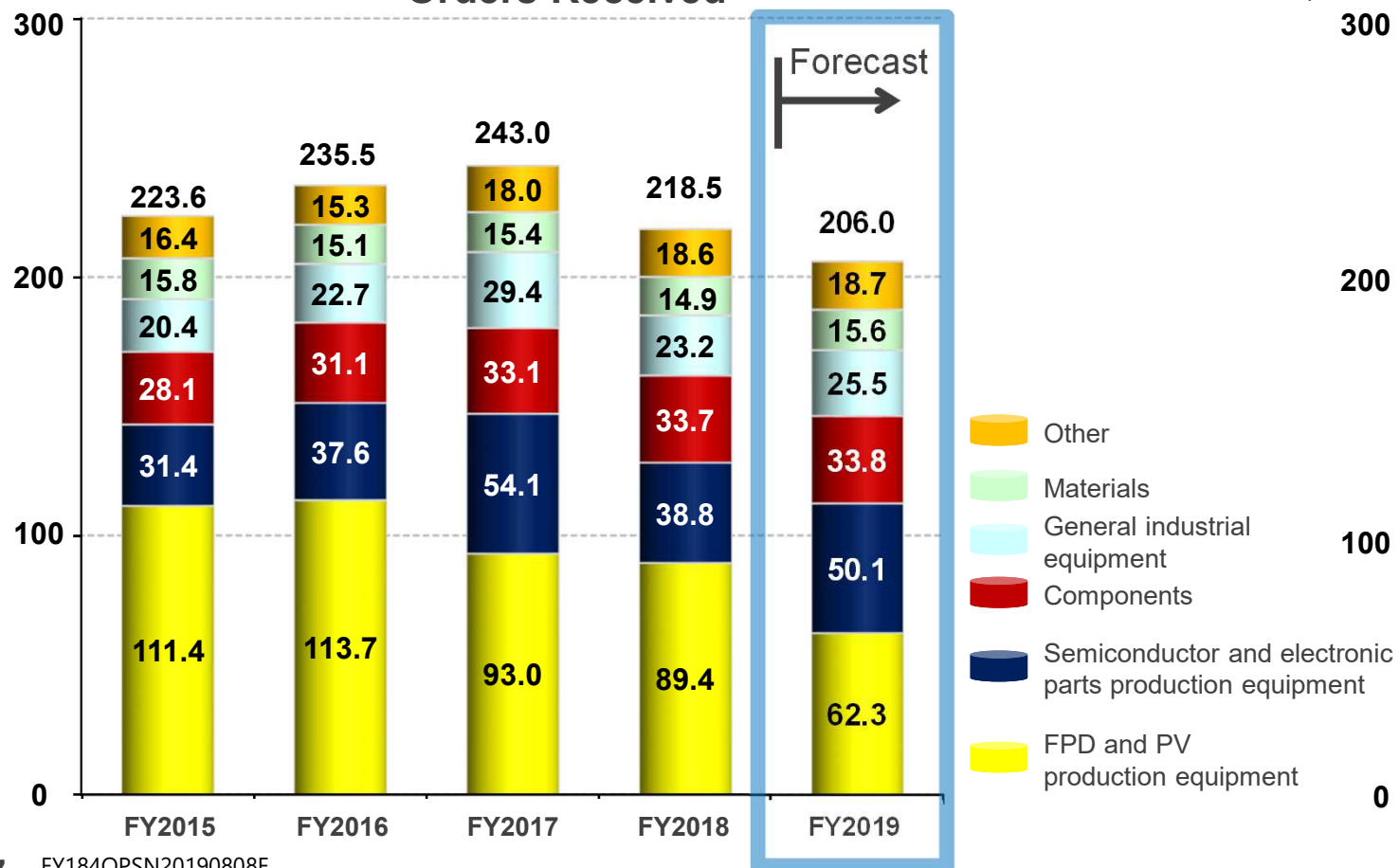


FY2019 Full Year Consolidated Earnings Forecast (Orders Received and Net Sales by Segment)

- In FPDs, business talks regarding large-screen TV LCD production equipment have slowed, and the OLED investment plans for smart phone by our customers are most likely to be postponed to FY2020, so FPD-related orders received and net sales are both expected to decline as
- In semiconductors and electronics, both orders received and net sales are expected to increase owing to the resumption of investment in semiconductor memory anticipated in the second half

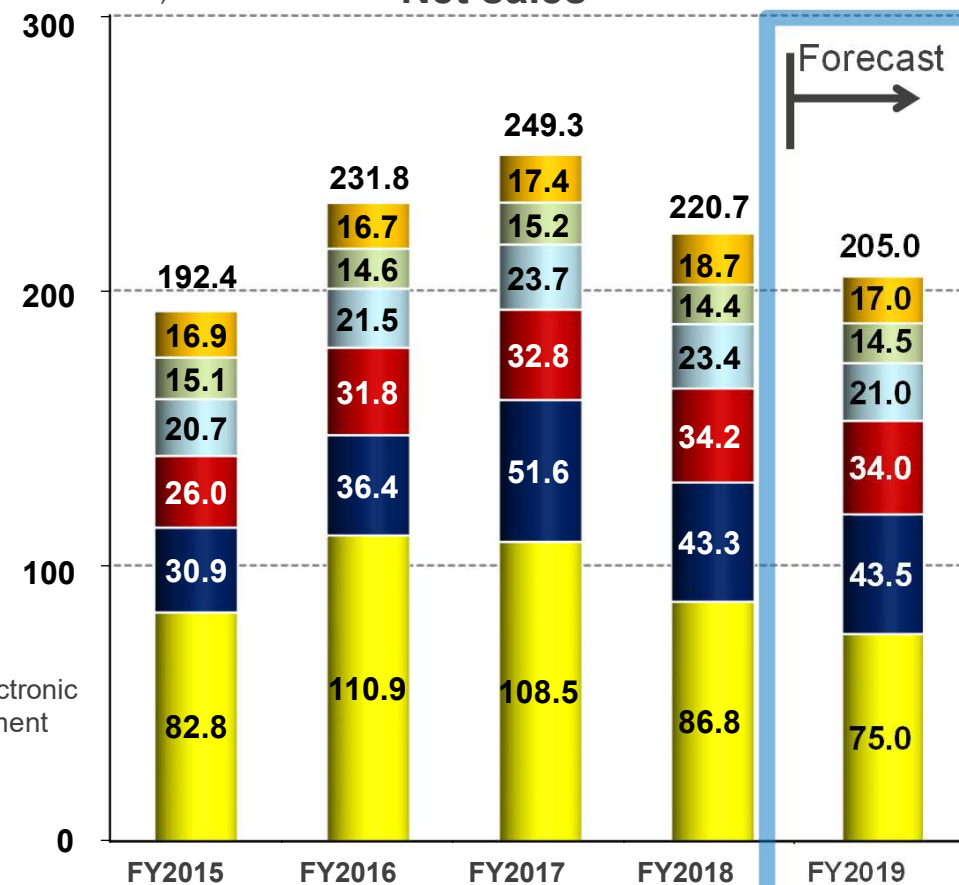
(Unit: ¥1 billion)

Orders Received



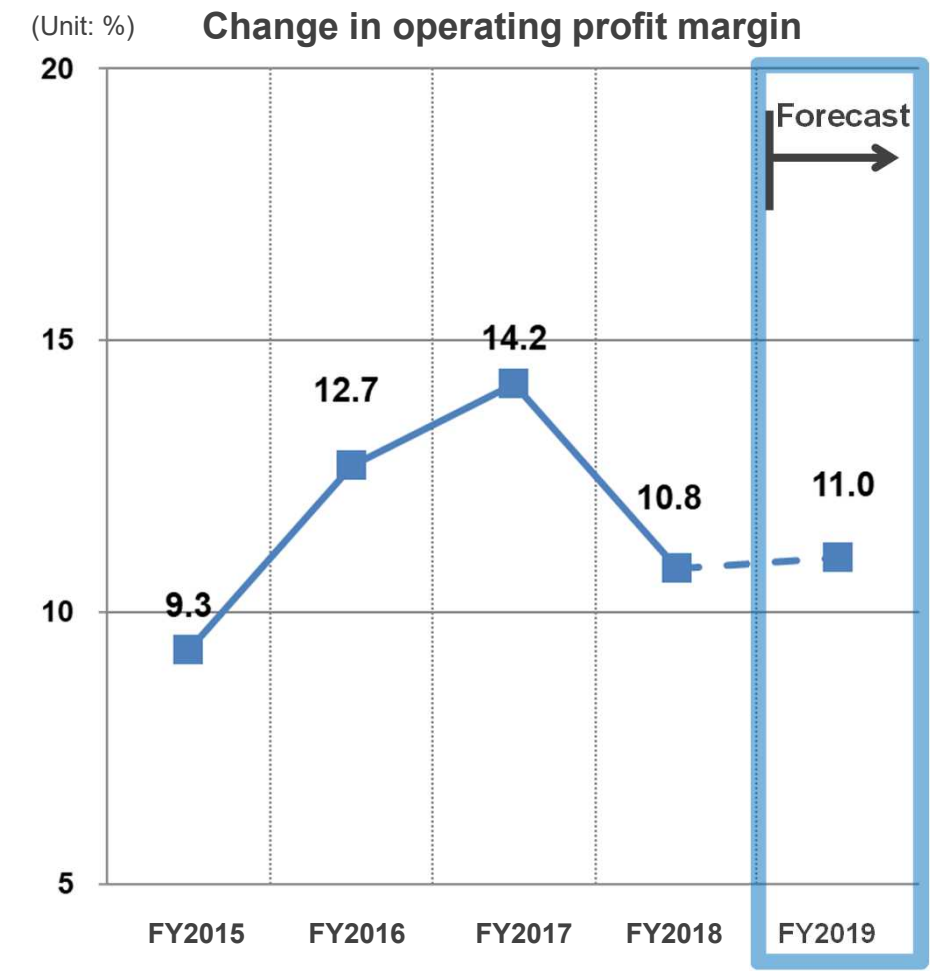
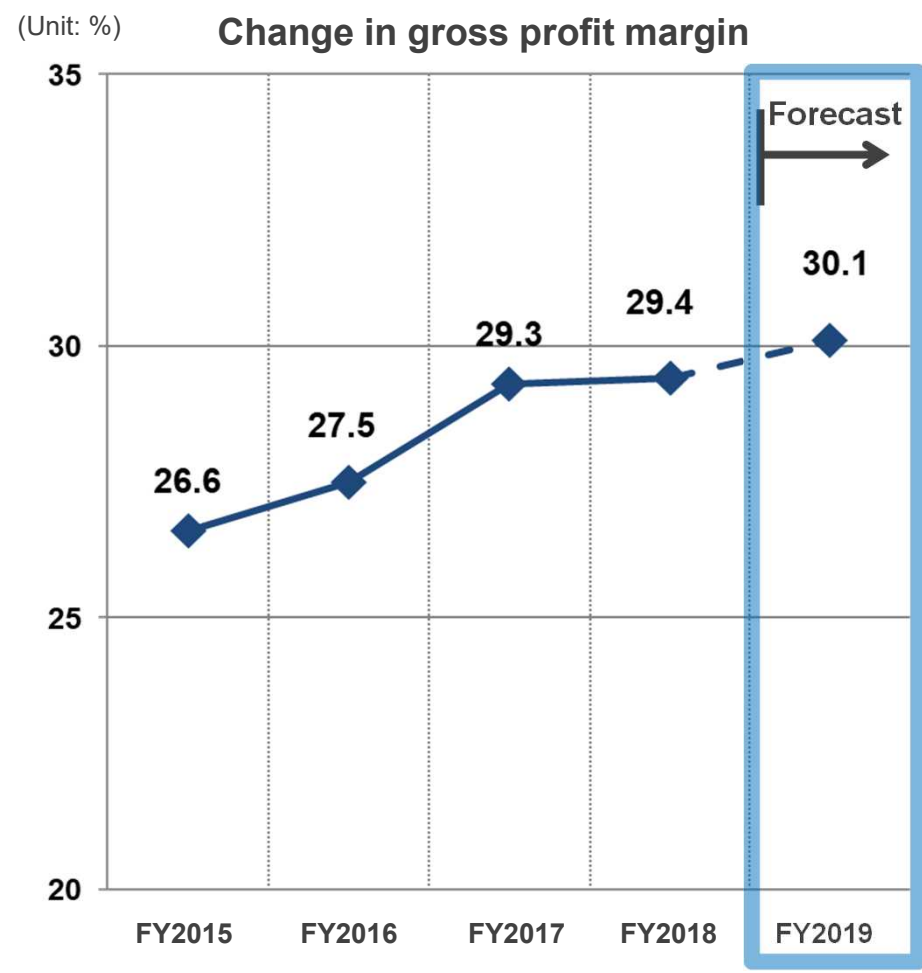
(Unit: ¥1 billion)

Net sales



FY2019 Consolidated Earnings Forecast (Profit Margins)

- The gross profit margin is forecast at 30.1% and the operating profit margin at 11.0%

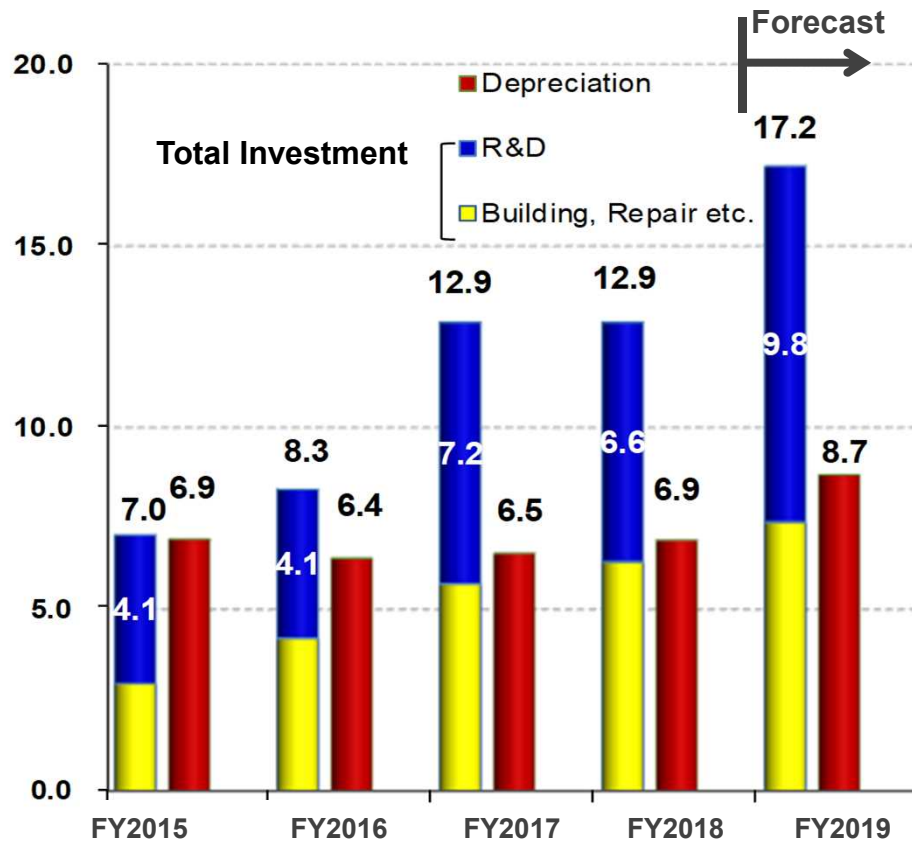


FY2019 Consolidated Earnings Forecast (Progression of Capital Expenditures and R&D Expenses)

- R&D investment (R&D capital expenditures + R&D expenses) was ¥50.0 billion in the medium-term business plan and is forecast to be more or less in line with the plan

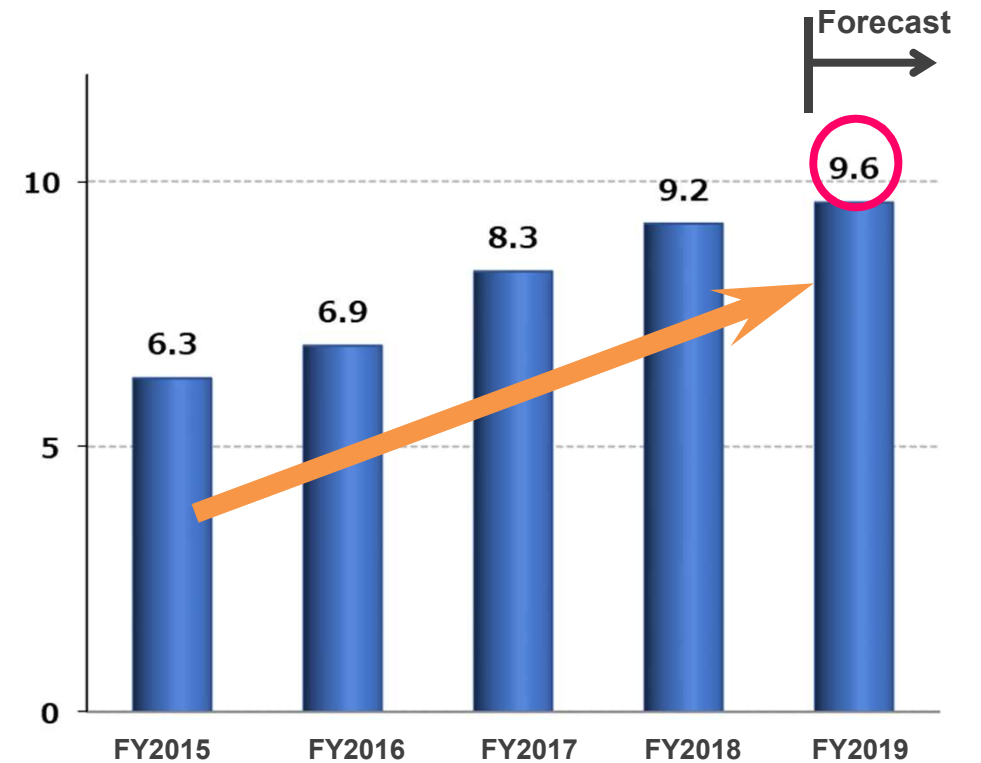
Actual and forecast capital expenditures

(Unit: ¥1 billion)



Actual and forecast R&D expenses

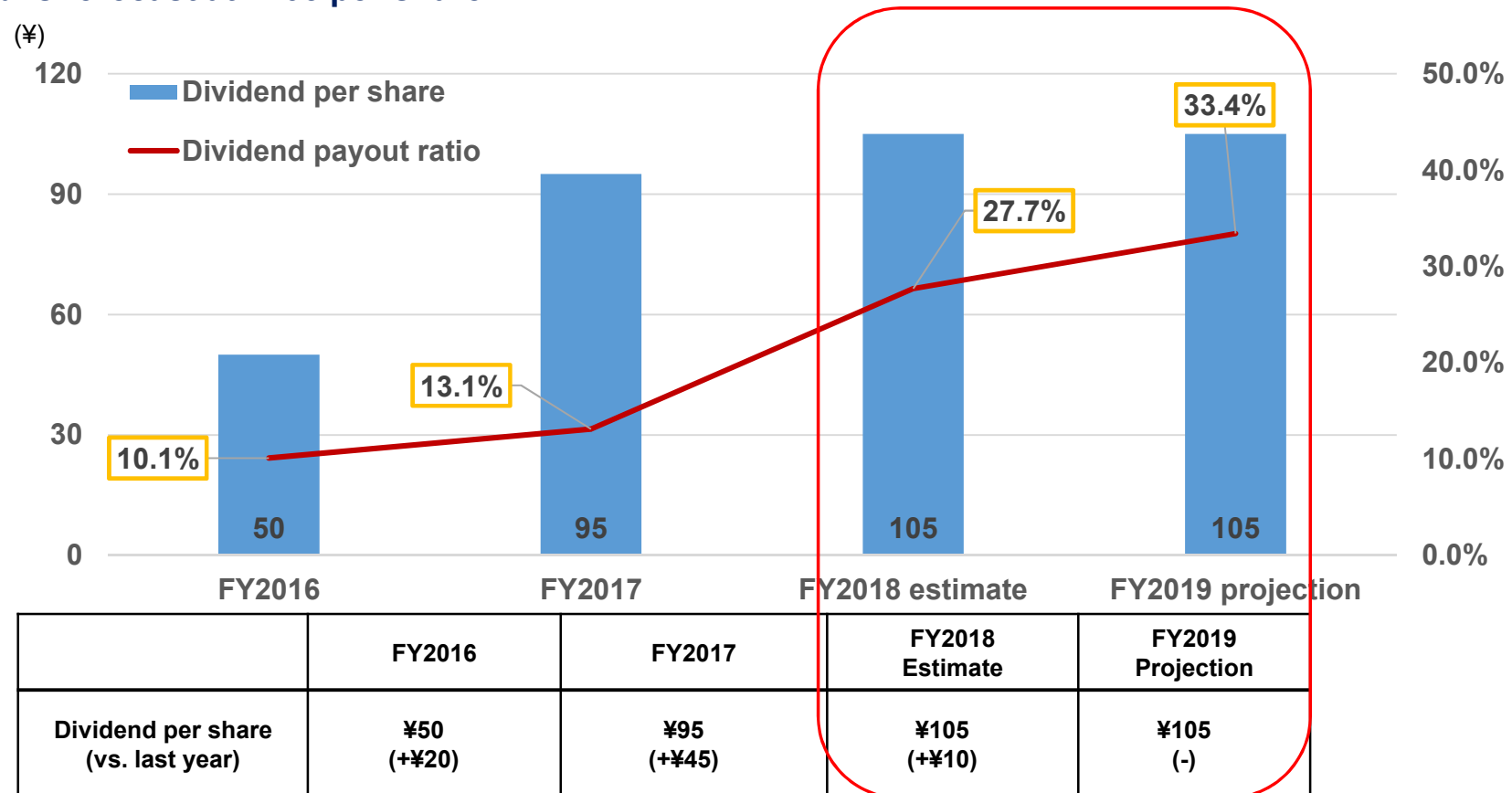
(Unit: ¥1 billion)



FY2019 Consolidated Earnings Forecast (Year-end Dividend)

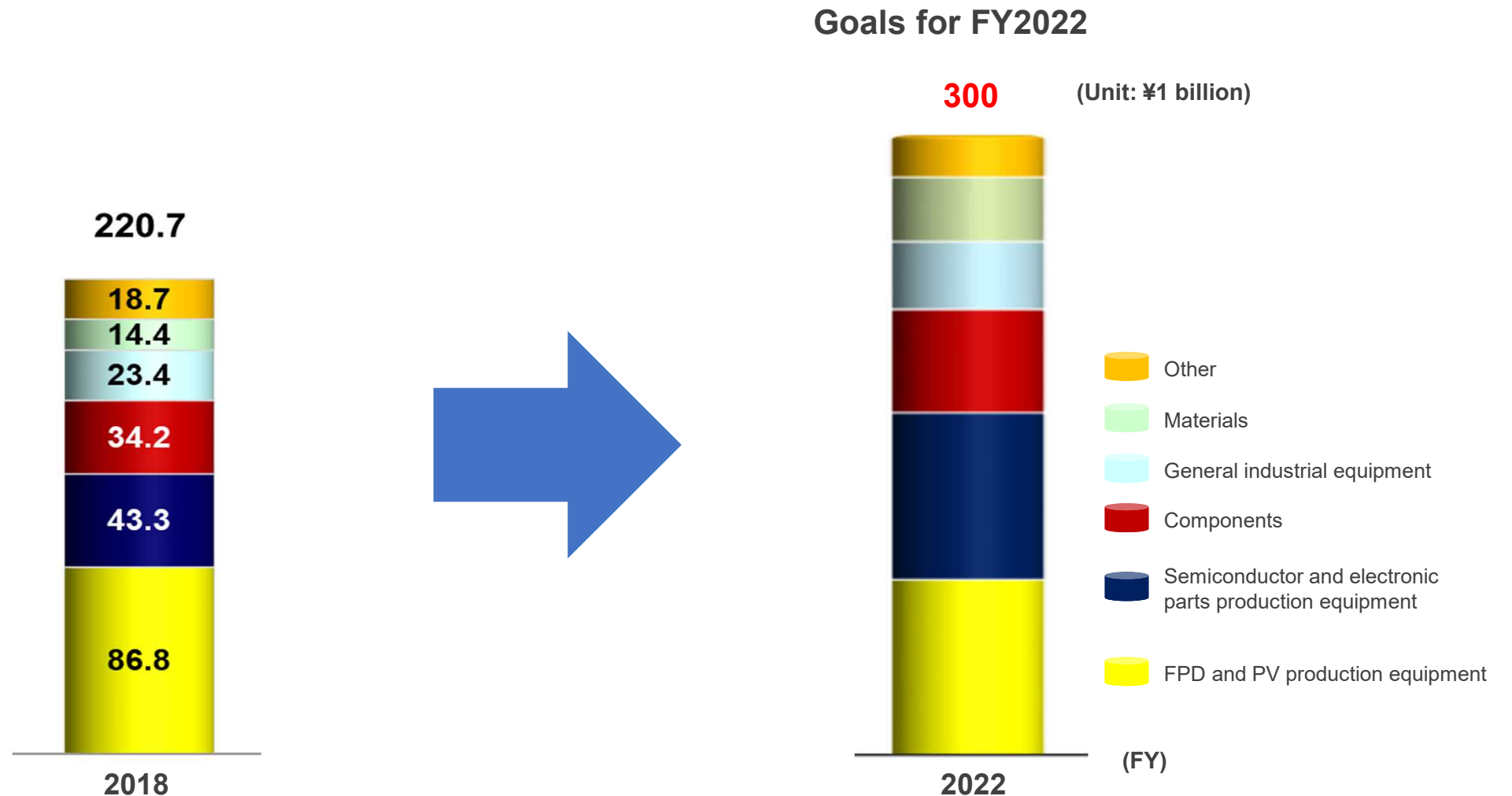
Dividends are implemented giving full consideration to factors such as expansion of the financial base for further investment in growth, consolidated performance each year, and dividend payout ratio.

- The FY2018 dividend is ¥105 per share (up by ¥10), in line with the forecast
- The FY2019 dividend is forecast at ¥105 per share



Goals for FY2022

Aim for net sales of ¥300.0 billion and an operating profit margin of 16% in FY2022 (no change)



ULVAC's Growth Strategy

Smart society: Shift to electronics in every industry

Global social problems: population expansion, aging population, concentration in cities

Shortage of medical care

Shortage of food and water

Shortage of energy

Traffic congestion

Changes in the natural environment

Technological solutions

Smart society

Anytime

Anywhere



Medical and healthcare

Wireless



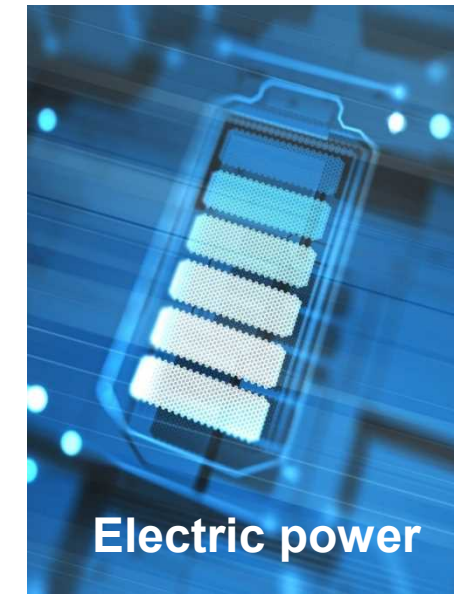
Agriculture

High-speed Prediction



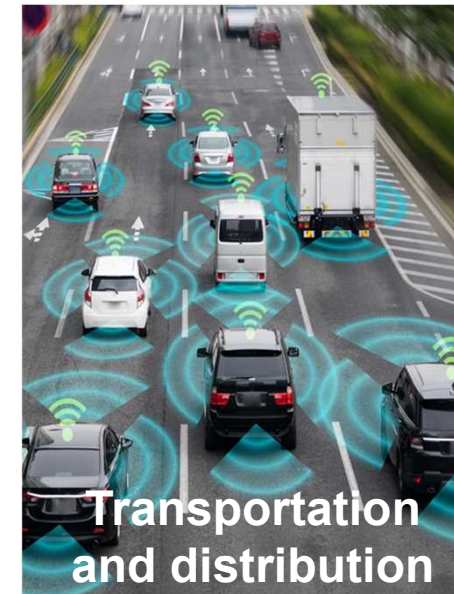
IT

Low power consumption



Electric power

Autonomous



Transportation and distribution

Technology for enabling a smart society = Growth market

Applications



Automobile
(autonomous-driving)



Finance
(blockchain)



Drones
(unmanned delivery)



Food
(smart agriculture)



Smart phones
(healthcare)



Medicine
(remote medicine)

Smart systems



IoT



AR/VR



Edge

Cloud



Big data



AI

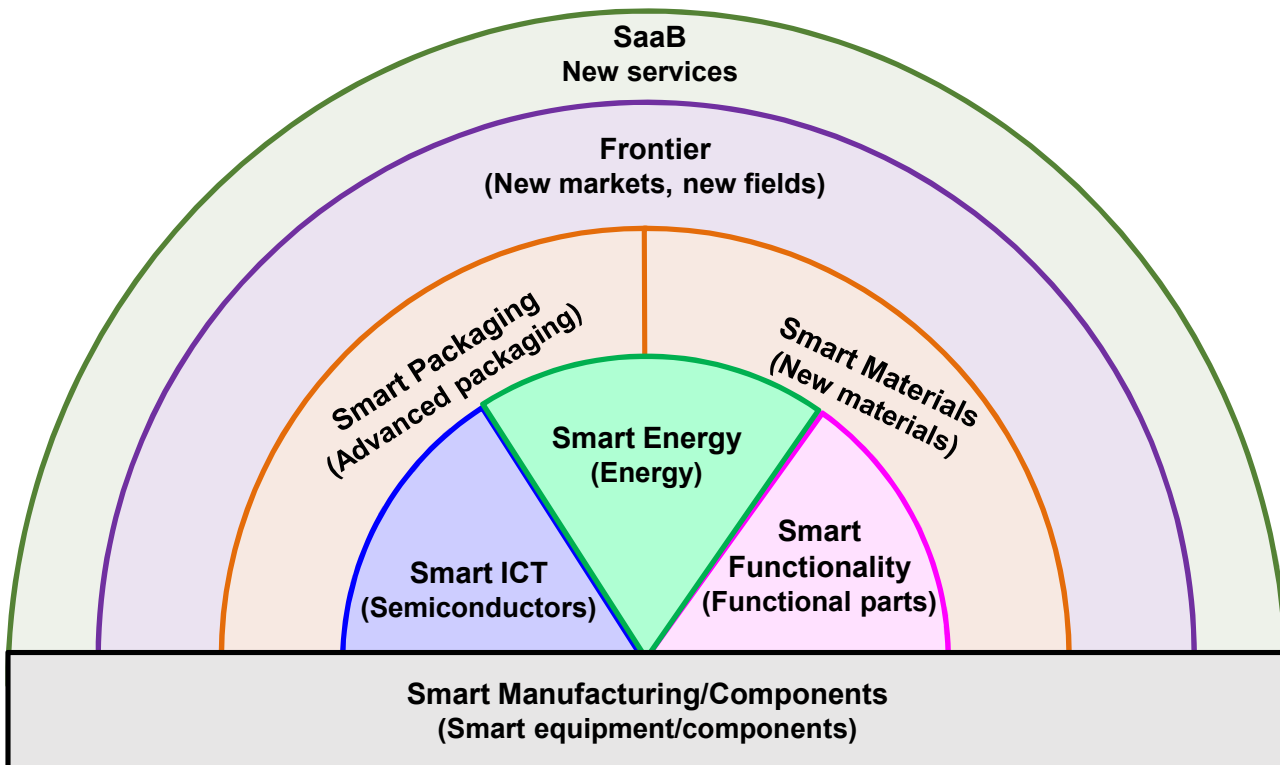
Growth markets
(key technologies)

Semiconductors (memory & logic), new non-volatile memory, MEMS, Sensors, Communication devices, Power devices, Li-ion batteries (LIB), Advanced packaging, OLED displays, Solar panels

ULVAC's growth markets!!

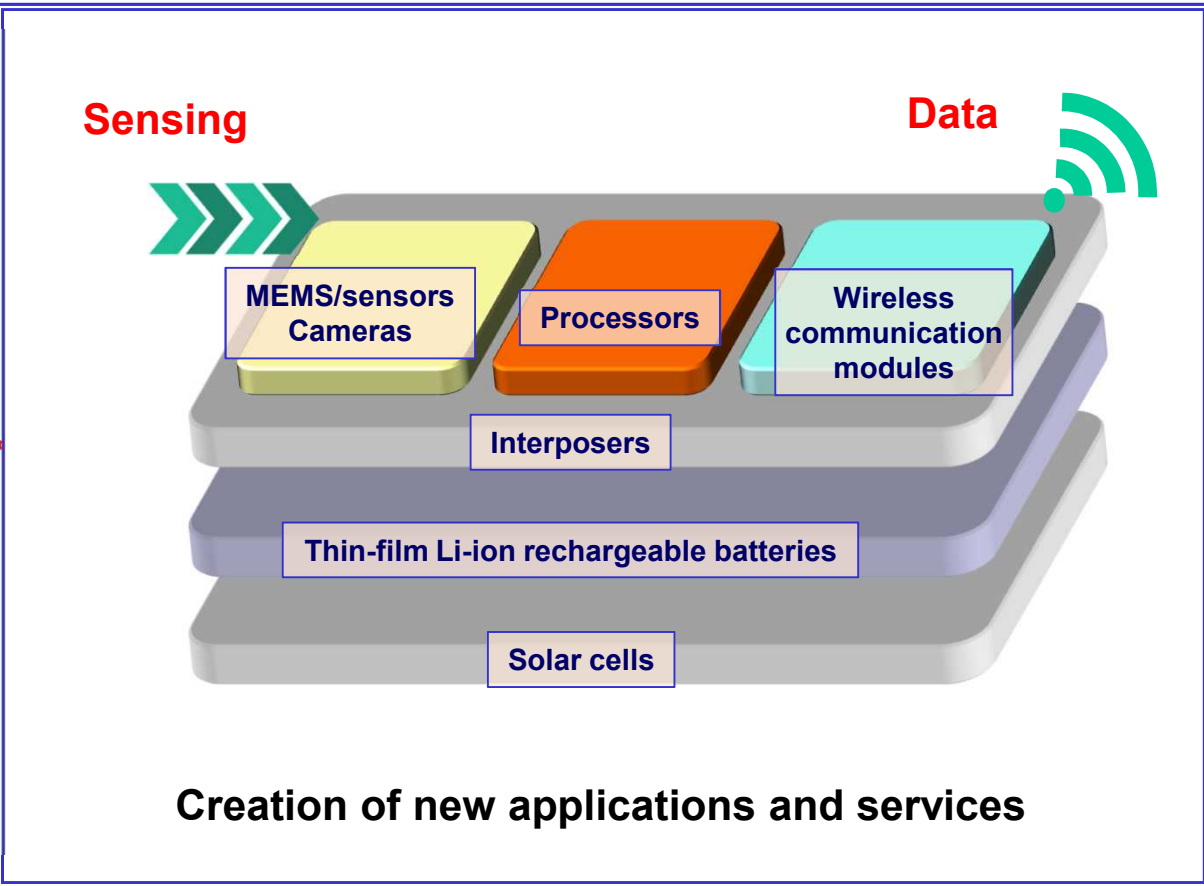
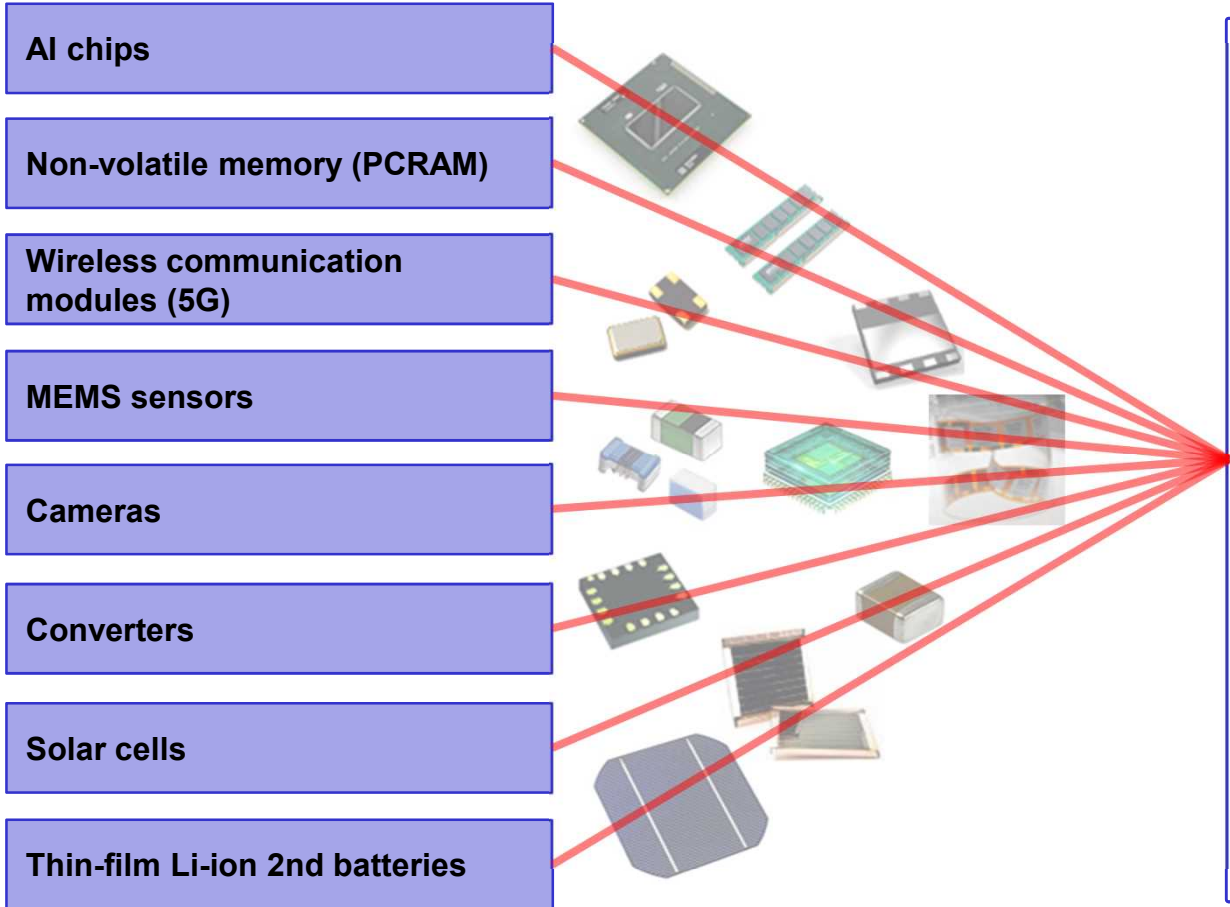
Creating growth markets (key technologies): ULVAC's technology strategy

**Growth markets ↔
technology strategy**



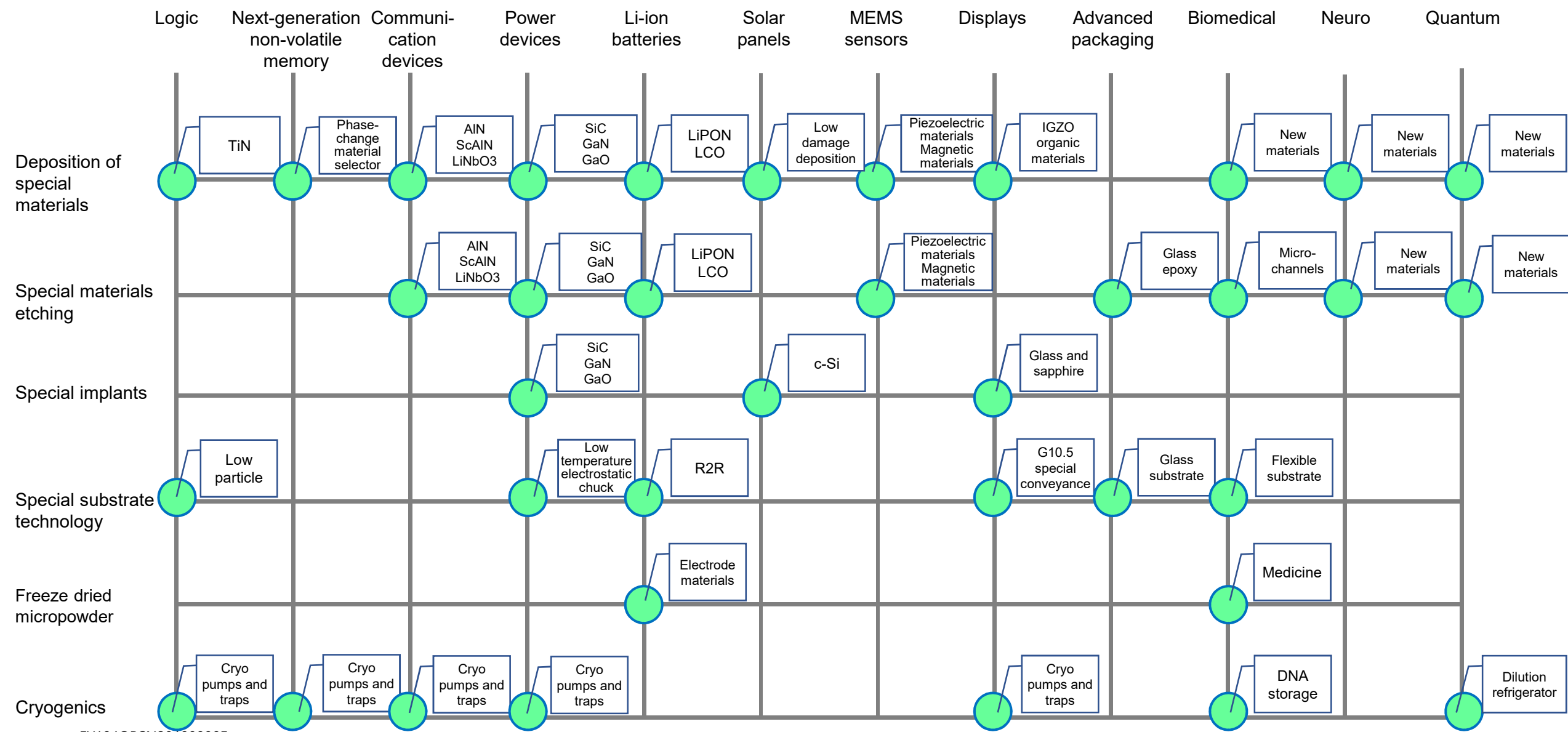
	Field	Description
3	Smart ICT (Semiconductors)	Semiconductor logic, Memory, Communication devices
	Smart Functionality (Functional parts)	MEMS sensors, Displays
	Smart Energy (Energy)	Power devices, Li-ion batteries (LIB), Solar panels
2	New Packaging (Advanced packaging)	Heterogeneous integration
	New Materials (New materials)	Environmentally friendly materials, Quantum dots
1	Smart Manufacturing/Components (Smart equipment/components)	Cyber security, Digital transformation, Digital twins, Components
F	Frontier (New markets, new fields)	Neuro-computing, Quantum computing, Biomedical
S	SaaS (Service as a Business)	New services

ULVAC's technical advantage: Integration of core technologies (semiconductors, electronic device, energy, packaging)

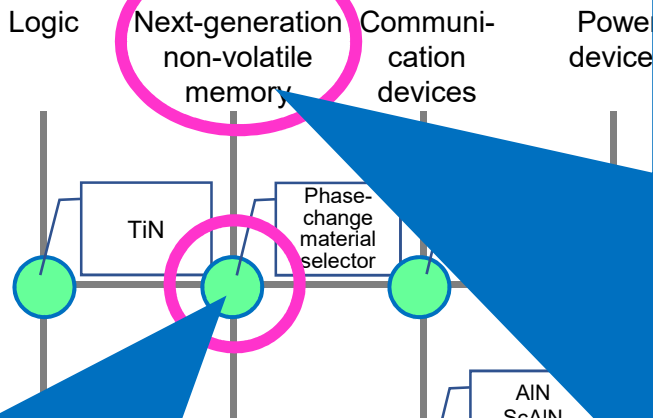


Thin-film processing technology and new materials are needed to support these technologies!!

ULVAC's technical advantage matrix for growth markets (key technologies)



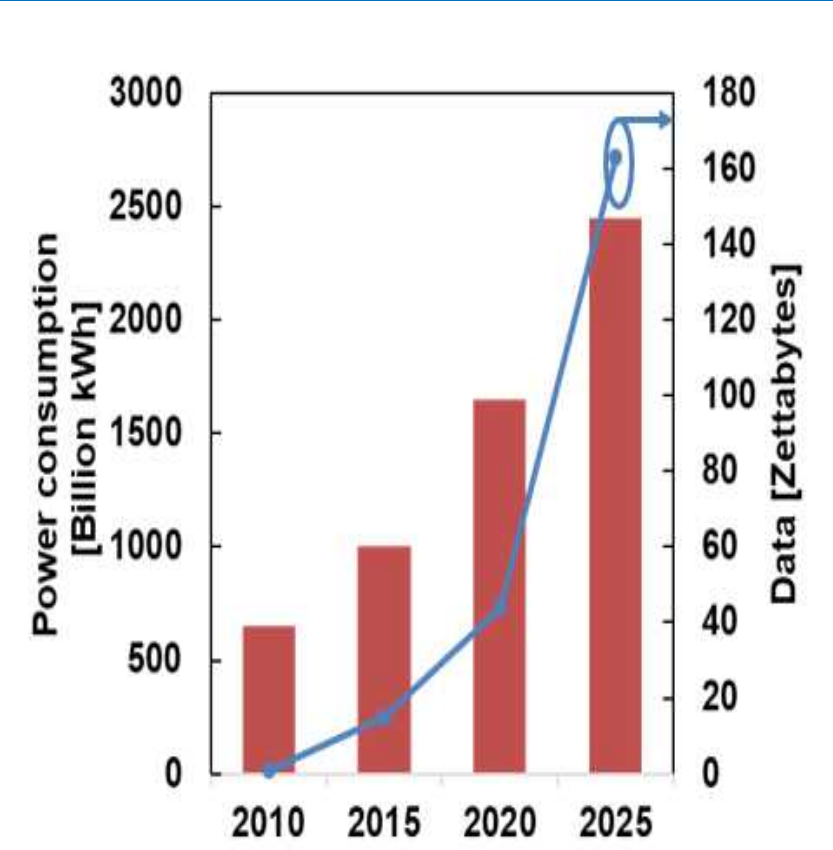
ULVAC's technical advantage matrix for growth markets (key technologies)



ULVAC's unique technologies (Deposition of special materials)

- Phase-change materials
- Selector materials
- Carbon electrodes

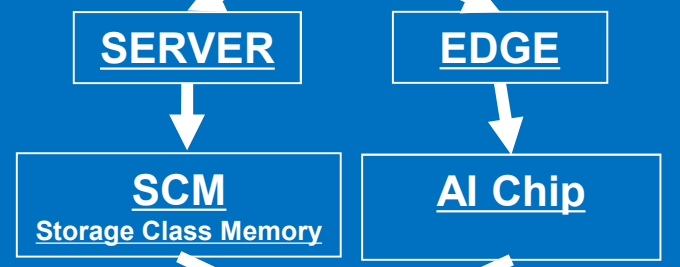
Reasons for growth of non-volatile memory



Source: IDC's Data Age 2025 study, sponsored by Seagate, April 2017
 Ministry of Economy, Trade and Industry's report, グリーンITについて, 2008

DATA Explosion (2010-2025)
 Data amount : 160x
 Power consumption : 4x

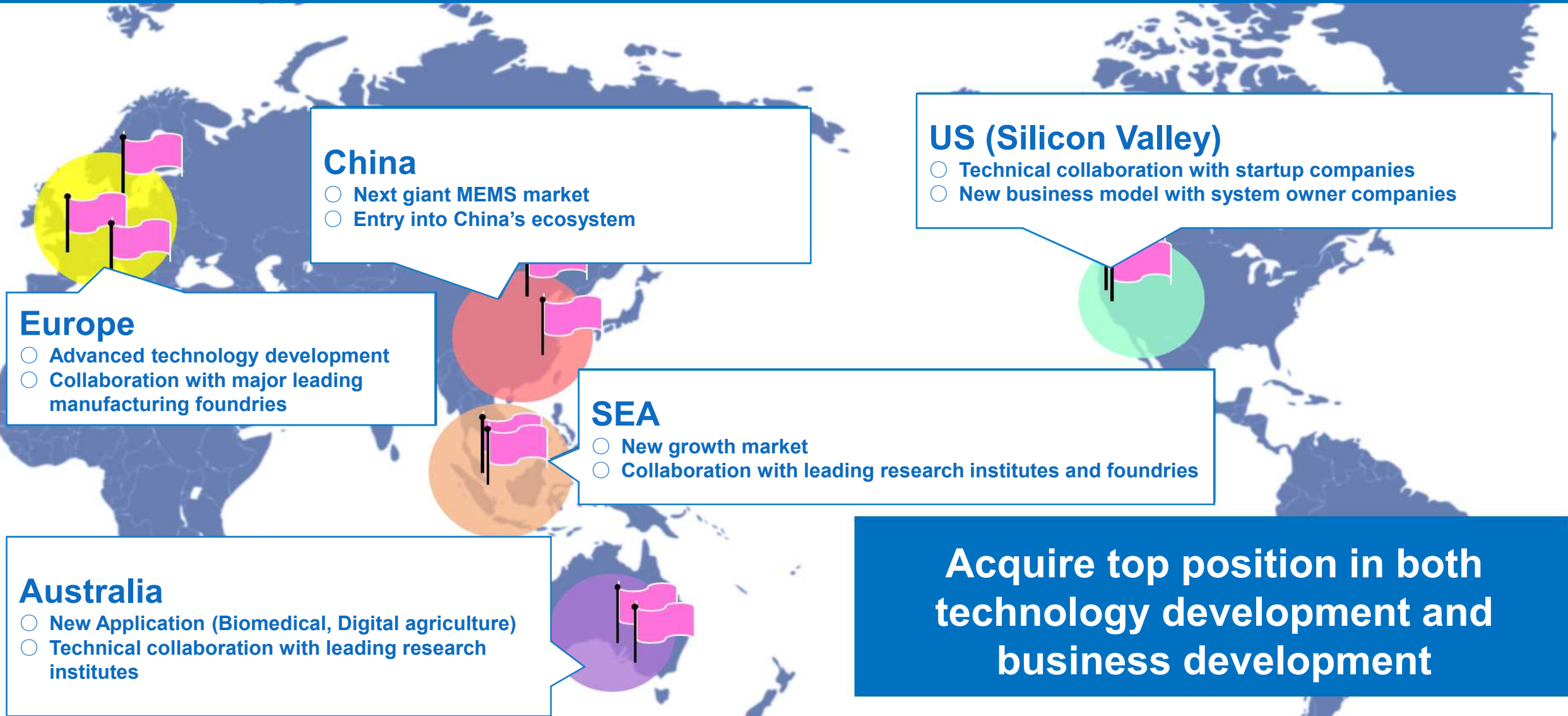
Technological challenges
 High-speed processing
 Low-power consumption



Solutions
 New non-volatile memory (PCRAM)



ULVAC's strategic collaborations in PiezoMEMS

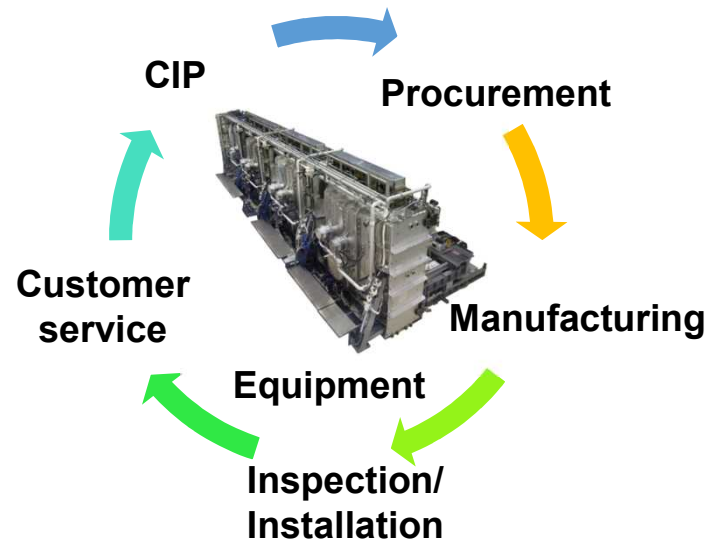


Local production systems, supply chains, and networks built in individual expanding markets and regions

Global Production



Regional supply chain



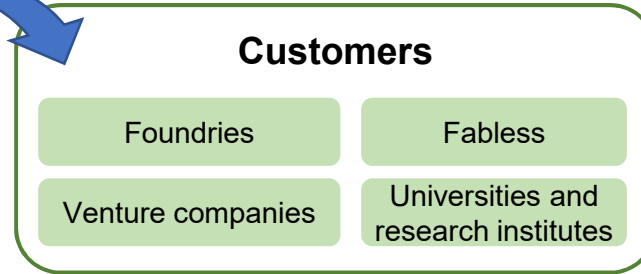
Customer Service (e.g., China)

China Network



Realizing new value: SaaS (Service as a Business)

Attract new customers by using ULVAC's wide technical coverage, strengthen marketing

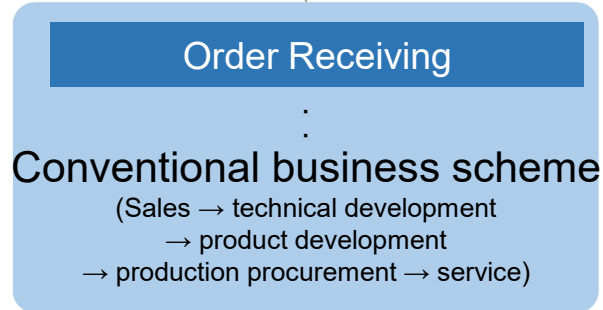


Customer ideas

Design

Initial prototypes

Testing



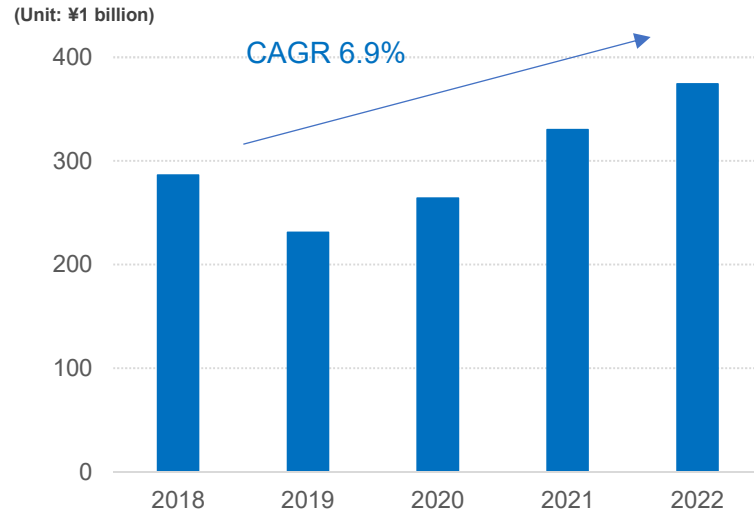
- ◆ **Use ULVAC technology platform**
 - Using ULVAC equipment for prototyping and testing as a business expansion tool.
 - Capture new potential customers
- ◆ **Provide One-Stop Service**
 - Achieve mass production in a short time through one-stop service from prototyping to mass production stage

**Market expansion,
New business creation**



New non-volatile memory: PCRAM

Investment forecast



Note: Emerging Memory includes MRAM, ReRAM, PCRAM, etc.

Source: Gartner 2018

Characteristics and market growth

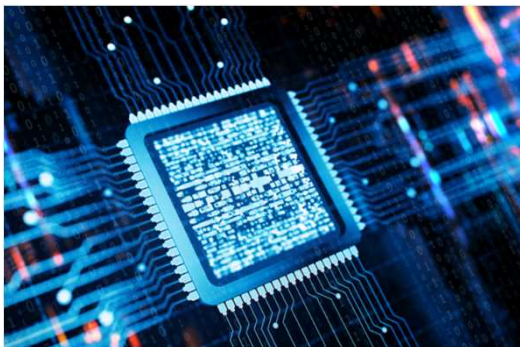
- Focus on PCRAM and other non-volatile memory, which have the characteristics of both DRAM (faster processing speed) and NAND (memory preserved even when the power supply is cut), in order to increase processing speed and conserve energy
⇒ expectations for future expansion
- Based on the technology strategy and market development of manufacturing leaders using ULVAC equipment, the market will expand by responding to requests for higher data capacity and low latency through 5G and IoT over the medium-term

ULVAC's strengths

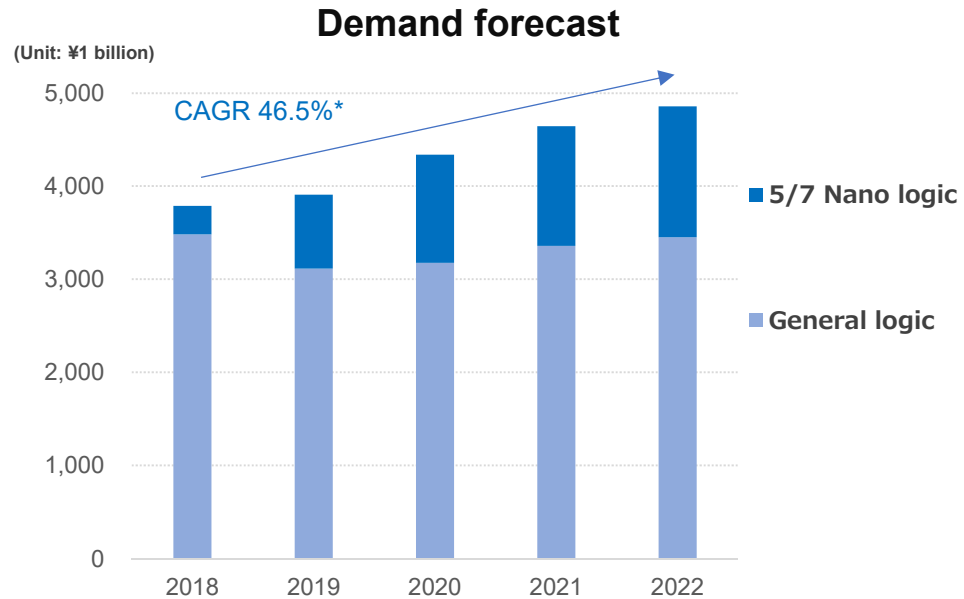
- Being the only sputtering system supplier to enable mass-produced film deposition for PCRAM, we have provided mass production results to several manufacturers and work in partnership to support the development for their next-generation products

Growth strategy

- Based on our one and only mass production experience, we can work in partnership with IC manufacturers to support the development for their next-generation products while striving to improve productivity



Semiconductor production equipment



*CAGR for advanced logic

Source: Figures estimated based on Gartner 2019

Characteristics and market growth

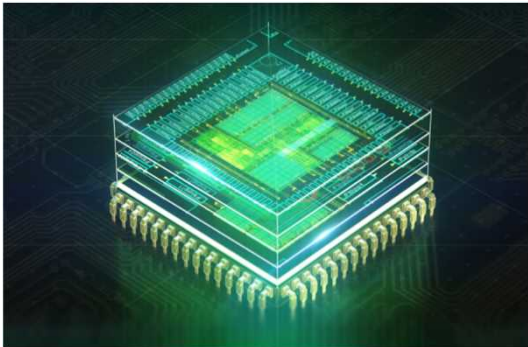
- Logic market maintains at a stable size of CAPEX
- Adoption of EUV lithography will accelerate mass production of advanced miniaturized products
⇒ Boost up the mobile and AI fields
- Start of investment in the mass production of advanced miniaturized products

ULVAC's strengths

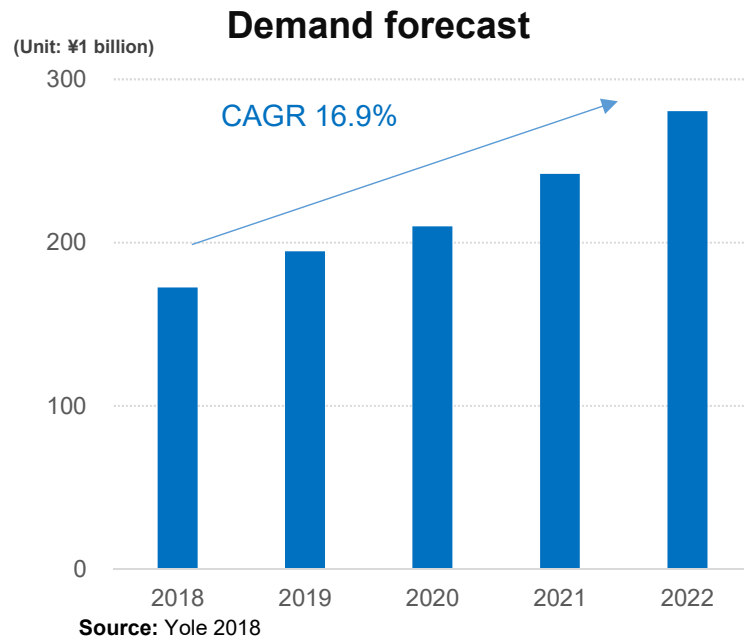
- Two major companies have decided to adopt ULVAC's equipment as standard solution in key processes of miniaturization through EUV lithography (Highly rated by Easy-to-combine processes, stable, competitive in CoO,* etc.,)
*CoO: Cost of Ownership

Growth strategy

- Support next-generation development toward expanding mass production and further miniaturization, and also promote to increase more solution



Semiconductor production equipment



Characteristics and market growth

- Expansion of market for VR/AR, microphones, LIDAR, and other sensors to support 5G/smart society
- Anticipated expansion of applications and markets by raising the performance and lowering the cost of MEMS devices used in sensors

ULVAC's strengths

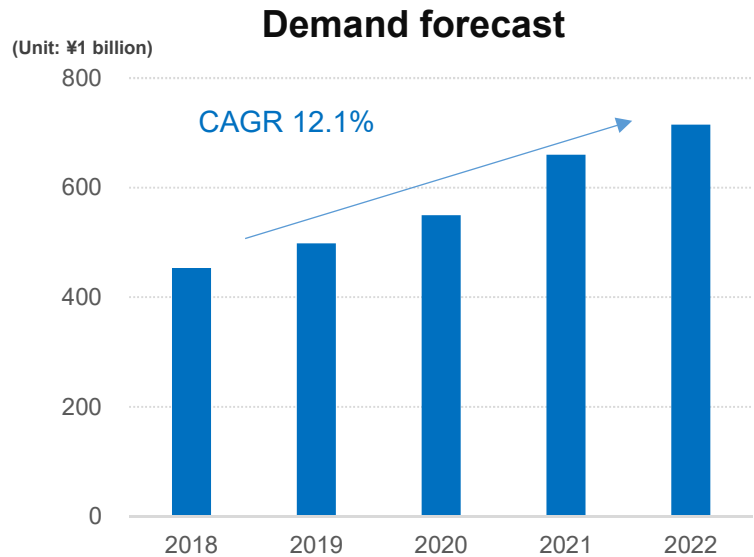
- Achieved low-temperature process using PZT sputtering equipment
 - ⇒ Enable PZT thin-films on CMOS
 - ⇒ Enable development and production of high-performance MEMS devices

Growth strategy

- Leverage our PZT-MEMS sputtering equipment technology, which we launched ahead of our competitors
- Capture market share by using the advantage being the first development, mass production supplier working with major research institutes and manufacturers in Europe and Asia
- Support next-generation process development



PZT-MEMS production equipment



Source: Yole 2017

Characteristics and market growth

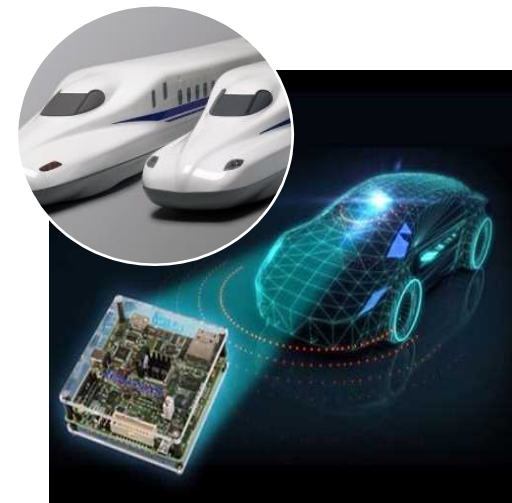
- Increase in Si-IGBT production expected mainly for Japanese automobiles
- Increase in market entries by Taiwanese, Chinese, and South Korean manufacturers (China particularly is moving in the direction of domestic-made products: currently around 5%)
- In China and Europe, demand for SiC for replacements in electric vehicles is expected starting around 2023

ULVAC's strengths

- Si-IGBT experience in Japan (more than 100 units for sputtering of 200 mm mass production line (backside))
- Maintain a share of nearly 50% in stable high-temperature injection technology for SiC implants

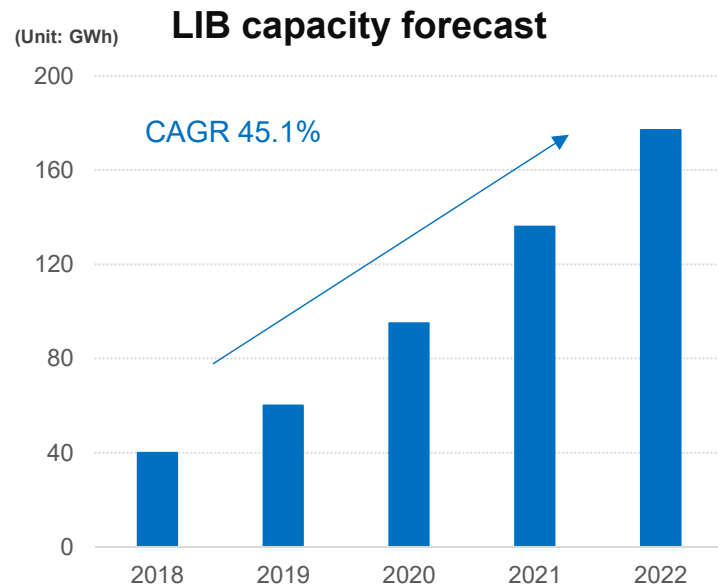
Growth strategy

- In addition to the existing 200 mm sputtering equipment, we will add 300 mm to the development lineup to maintain and increase our share
- Ion injection increases incoming orders by promoting equipment that is cost-effective due to in-house sourcing of ions, 300 mm-compatible equipment, and by installing Si-IGBT mass production lines



SiC power device production equipment

Next-generation Li-ion Battery



Source: Interviews by ULVAC



RTR Li-ion battery production equipment

Characteristics and market growth

- In-vehicle LIB demand: 40 GWh in 2018 \Rightarrow 177 GWh in 2022
- The challenge is to increase the running distance of electric vehicles (EV) \Rightarrow Need to increase in-vehicle LIB capacity, reduce size and weight, develop quick recharging capability, etc.
- Solution: Focus on lithium metal thin film (vacuum evaporation using RTR*) as a negative electrode material for next-generation LIBs

ULVAC's strengths

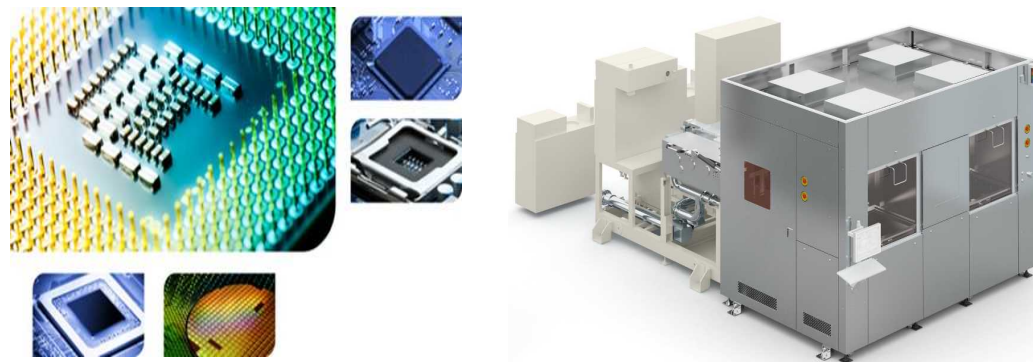
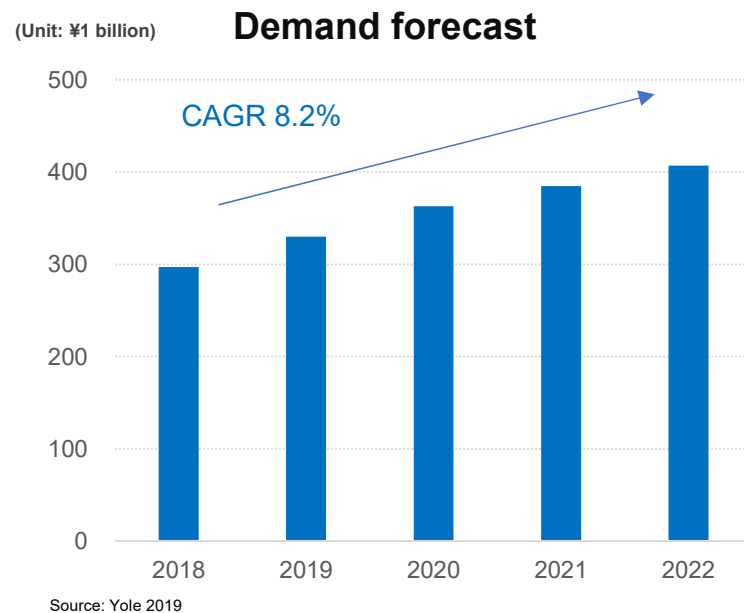
- Collaboration with leading companies, universities, and research institutes \Rightarrow Establish RTR*-type metal lithium evaporation technology
- Developing and testing mass production manufacturing with leading companies (use experience in two-sided deposition for LIBs)

*RTR (Roll to roll: ULVAC's market share is over 90% in RTR evaporation equipment for in-vehicle high-capacity capacitors)

Growth strategy

- Support the advancement of mass production for leading global battery manufacturers using technology experience of RTR evaporation and RTR metal lithium evaporation (two-sided deposition equipment)

Advanced packaging (heterogeneous packaging)



Advanced packaging production equipment

Characteristics and market growth

- Development of diverse chip packaging (heterogeneous) and fan-out solutions for smaller and more precise sensors, communication devices etc. ⇒ Expansion of the packaging market
- In addition to investment of increased production in the WLP* market, PLP* production equipment construction for mass production and cost reduction as well as the technological revolution will expand the market

ULVAC's strengths

- Certified ashing equipment used in the world's largest foundries for the descum etching process
- Use of PLP* to demonstrate technical ability in panel deposition developed through FPD deposition experience

*WLP: Wafer Level Packaging (conventional)

*PLP: Panel Level Packaging, which makes large-scale high volume manufacturing possible

Growth strategy

- Multifaceted development based on experience in the world's largest foundries
- Promote PLP-compatible development with leading manufacturers by using FPD deposition technology
- Realize mass production and cost reduction for WLP solutions
- Meet customer needs by recommending processes and equipment solutions for ashing, etching, and sputtering

ULVAC vacuum technology contributes to many industries and applications



Automobile

自動車



Semiconductor

半導体



Flat Panel Display

フラットパネルテレビ



Photovoltaic

太陽電池



Food Processing

食品



Aircraft

航空



Bio

バイオ



Smart Phone

スマートフォン



Magnetic Device

磁気デバイス



Home Appliance

家電製品



Aerospace

宇宙産業



Pharmaceutical

医療・薬剤



Wearable/VR

ウェアラブル/VR



Power Device

パワーデバイス



MEMS Device

MEMS デバイス



Architectural Glass

建材・スマートガラス



Optical

光学



Flexible

フレキシブル



Packaging Materials

パッケージング



Next Generation Light

次世代照明

Vacuum technology /
/ for manufacturing

ULVAC