

# FY2020 Q1 Business Briefing

- Medium to Long Term Business Strategy
- Establishment of Joint Venture “CHVT”
- Subsidiary Acquisition of NanoSystem Solutions, Inc.

Date: August 19, 2019 16:30-17:30

Venue: Headquarters of Daiwa Securities

**V-Technology Co., Ltd.**

**President & CEO: Shigeto Sugimoto**

Revised Edition:  
Updated on August 28, 2019

# Forward-Looking Statements

This material contains forward-looking statements regarding V Technology Co., Ltd.'s corporate plans, strategies, forecasts, and other statements that are not historical facts. They are based on current expectations, estimates, forecasts and projections about the industries in which V Technology Co., Ltd. operates.

As the expectations, estimates, forecasts and projections are subject to a number of risks, uncertainties and assumptions, including without limitation, changes in economic conditions; fluctuations in currency exchange rates; changes in the competitive environment; the outcome of pending and future litigation; and the continued availability of financing and financial instruments and financial resources, they may cause actual results to differ materially from those presented in such forward-looking statements.

V-Technology Co., Ltd., therefore, wishes to caution that readers should not place undue reliance on forward-looking statements, and, further that V Technology Co., Ltd. undertakes no obligation to update any forward-looking statements as a result of new information, future events or other developments.

## **Influence of Foreign Exchange Rates on Equipment Sales**

In principle, export sales of our feature FPD production equipment is denominated in yen. There are also some foreign currency settlements, however the risk of exchange fluctuations denominated in foreign currencies are hedged using the forward exchange contract if necessary. Accordingly, the effect of exchange rates on sales of our equipment is negligible.

## **Numerical Treatment**

The amounts listed are rounded down to the nearest unit, and the ratio is rounded off to the unit amount, so it may not match the breakdown.

## **About the Revised Edition**

From the material released on August 19, we have omitted pages 12, 13, 13, 20, and the figure on page18.

# Our Sales Development and Our Mainstay Products

■ Phase1&2... Due to the wave of capital investment (crystal cycle) and economic fluctuations, there were deficits depending on the year in Phase 1&2

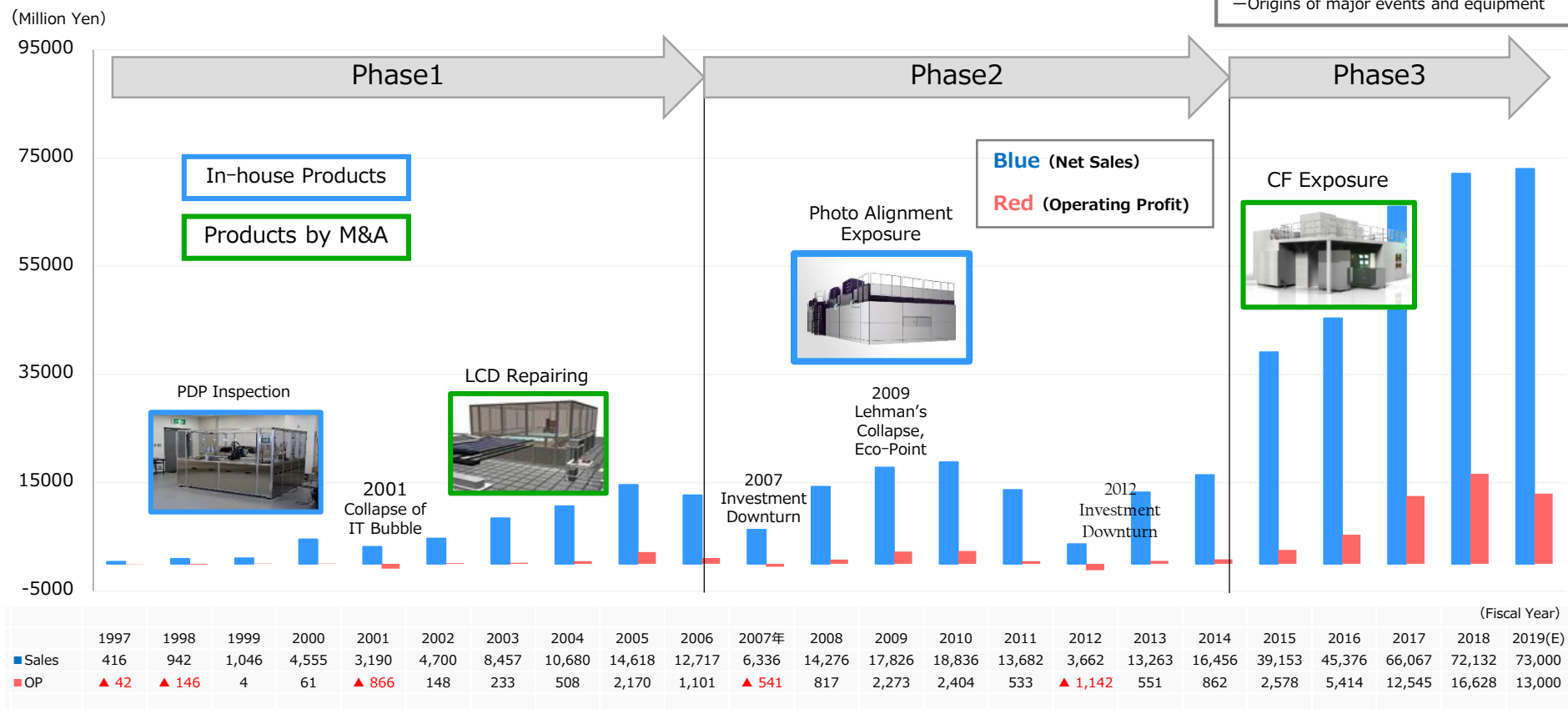
Phase3... Progress due to success of In-house Products, M&A and market recovery (accelerating business development in China)

Taking the initiatives in the capital investment cycle and technological evolution, we are promoting various technological developments and projects.

- New product development utilizing the Opto-mechatronics technologies
- Expansion in different fields through the business alliance, collaboration, and business acquisition through M & A.

## Graphs and figures

- Trends in sales and operating profit
- Major equipment that led growth
- Origins of major events and equipment



# FPD

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V-Tech was founded in 1997 in the inspection equipment business for FPD, and we have grown by succeeding in the development of our technology ahead of the change and incorporating external technology through M & A, despite being exposed to severe market environment changes.

Our current product lineup has high added value, significant market share, and has made tremendous progress as a company that has a unique presence in the FPD equipment market. (We achieved our earnings record for the fourth consecutive quarter in the fiscal year ended March 31, 2019)

The FPD market is expected that would continue growing steadily as one of the world's leading markets, with its development in the vast flow of information revolution typified by 5G.

To achieve the next growth and excellence of FPD-related business, we have been promoting projects such as the development of OLED-related core technologies, which will be the next mainstream of the industry. We shall further accelerate various initiatives in the future to ensure success in these projects.

# Overview of Main Projects in the FPD Field

- We have been promoting technology development for high-value-added equipment and materials related to OLED which is expected to grow as the next mainstream in the FPD industry, commercialization of new services, and projects ahead of changes such as in FPD related technologies and business environment.
  - Development of laser annealing equipment which is the key driver to popularizing large OLED TV for the next generation
  - Parallel development of four OLED-related businesses (in the gray frame below) that lead to the establishment of our original ecosystem
  - Providing valuable and useful services that clients really desire (eg: Salvage Service)

## Materials and Services

- Deposition Mask Business for Next generation OLED
  - FHM(Sheet/ No assembly required / Lightweight / Vertical type)
  - Scheduled to start shipping in November
- Salvage Services
  - Fix panel mura defective with “Demura” technologies
  - No equipment investment required since it's pay-for-use service
- OLED Materials
  - Subsidiary acquisition of material venture "FLASK Corporation" with the aim of developing materials that replace existing organic materials.
  - Development of materials for lighting / OLED
- OLED Lighting Business
  - Development of China business utilizing CHVT

## Equipment

- Development of Laser Annealing Equipment
  - Compatible with small to medium size and large size
  - **LTPS-Like**
    - ◆ Improvement of TFT characteristics
      - Electron mobility / Crystal properties / Cost
- Development of Vapor Deposition Equipment for OLED
  - Vertical deposition equipment for small and medium size
    - ◆ **FHM makes it possible**/Compatible with G6/Space-saving/Demo Machine is planned to be completed within this fiscal year
  - Horizontal vapor deposition equipment for large size
- Development of Photomask Imaging Equipment
- Development of Fully Automatic Correction Equipment
- $\mu$ LED Manufacturing Process Development (exclusive joint development)

# Current Projects in the FPD Field 1/2

-Establishment of JV "CHVT" and the aim of CHVT

## ■ CHOT's OLED Strategy

- CHOT would like to realize the commercialization of large OLED by WOLED ahead of other companies in China.
  - ◆ Delay in investment decisions by major manufacturers
    - Long-term technology development
    - Price strategy strays with consideration for separation from LCD
    - Financial situation
  - ◆ **Panel mass production proposal with WOLED + laser annealing technology by V-Tech**
    - Evaluated as a highly feasible technology development (early product shipment) in the medium term
    - Start research prior to commercialization
- The largest state-owned enterprise in China, "CEC"'s group company
  - ◆ CEC is one of the largest state-owned enterprises in China, with sales of 217 billion yuan in 2018 and multiple business groups in the electronics and information fields
  - ◆ CHOT is a key player in the display business within the CEC Group



Appearance of CHOT head office (building area 600,000 m<sup>2</sup>),  
Compatible with state-of-the-art G8.6 (2250mm x 2610mm) substrates



# Current Projects in the FPD Field 2/2

-Establishment of JV "CHVT" and the aim of CHVT

## ■ Purposes and aim of Establishing CHVT

\*Aim: marked with Red

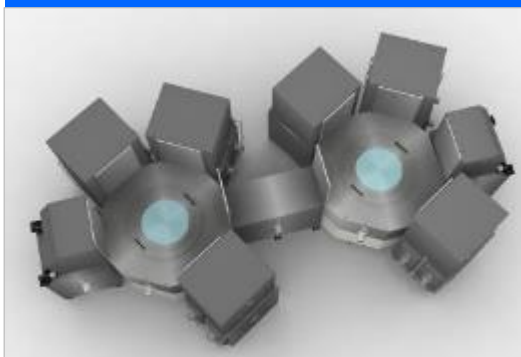
- Accelerate technology development for large OLED (TFT technology / vapor deposition technology, etc.)
  - ◆ Adoption of our technology to CEC Group's large-scale OLED mass production plant
- Commercialization of OLED lighting in China
  - (CHVT is planning to have contract-manufacturing for organic LED lighting)
  - ◆ Commercialization of OLED lighting in China

### Laser Annealing Equipment



- ◆ Compatible with small to medium size, and large size
- ◆ LTPS-Like
- ◆ Improves TFT characteristics
  - Electron mobility
  - Crystal properties
  - Cost

### Deposition Equipment



- ◆ Deposition Equipment for large size
  - Compatible with G8.6
  - Horizontal substrate transfer
  - Improvement of deposition quality

### OLED Lighting



- ◆ Subsidiary: Lumiotec
  - Commercialization in Japan
  - Yonezawa City, Yamagata
- ◆ Overseas Market
  - Contract-manufacturing by CHVT
- ◆ R&D (Japan)
  - Improvement of luminous efficiency

# \*Reference: Overview of CHVT

<b>Trade Name</b>	咸阳虹微新型显示技术有限公司 (Xianyang CHVT New Display Technology Co., Ltd.)
<b>Establishment Date</b>	August 2019
<b>Address</b>	No.1, Gaoke Yilu, Qindu District, Xianyang, Shaanxi, P.R.CHINA
<b>Major Businesses</b>	-Research and Development, Design, Manufacture and Sales of Production Equipment such as new displays and parts, other electronic parts and related peripheral products  -Commissioned Production of OLED lighting products and its parts
<b>Capital</b>	186 million RMB (JPY conversion reference value: 2,923.92 million yen, 15.72 yen / RBM)
<b>Equity Ratio</b>	V-Tech: 32.4%, CHOT: 67.6%
<b>Title and Name of the Representative</b>	Chairman: Chen ZhongGuo



# Semiconductor

Our challenge following FPD began with the entry into the semiconductor manufacturing equipment market. We assumed that it would be challenging to prepare and enter original solutions in the semiconductor field in a short time since we have been concentrating management resources in the FPD field from its establishment. Therefore, we examined collaboration with companies with reliable technologies and products in the semiconductor field.

In April 2018, we established a joint venture called “Z-CSET” in a relatively short period as a new business platform that utilizes resources we cultivated in FPD-related businesses to build contact points between collaborating companies and overseas customers.

Z-CSET provides overseas sales channels and local productivity if collaborating companies require those. Partners will provide technical support to Z-CSET. Currently, there are two on-going projects at Z-CSET, which are the wafer polishing equipment, and tester business (business alliance with INNOTECH). Z-CSET plans to ship its first Wafer polishing equipment in December 2019. We are expecting increased demand for related equipment since there are plans for new wafer factories, and NAND flash memory factories to be built in China.

We shall accelerate new business collaborations to meet these demands in the future, and we are also taking developing total solutions covering the wafer manufacturing process and chip manufacturing into consideration.

On the other hand, we have been pursuing activities to acquire excellent companies through M & A to develop cutting-edge technologies independently in Japan and establish direct contact with customers. NanoSystem Solutions, called "NSS" (which became our subsidiary on August 19, 2019) is our first M&A in the semiconductor field. NSS has a high potential with advanced wafer inspection technologies and high mask-less exposure technologies. We can expect a synergistic effect between the wafer polishing equipment business that we are already working on and the wafer inspection equipment business of NSS. Also, many other effects can be expected, such as synergies between NSS's mask-less exposure technology and our FPD-related business.

To foster the semiconductor-related business scale beyond the FPD-related business, we shall continue to make various efforts for productive business growth utilizing such as Z-CSET, M&A, business alliances.

# Our Next Big Challenge: (1/5)

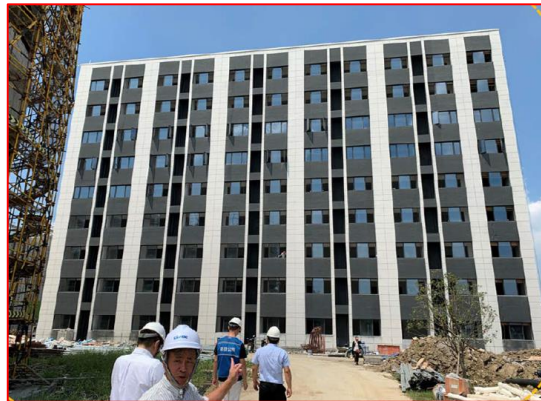
## Entering the Semiconductor Manufacturing Equipment Market

- We have been concentrating management resources in the FPD field from its establishment, therefore it would be challenging to prepare and enter original solutions in the semiconductor field in a short time.
  
- Two Considerations
  1. Collaboration with companies with reliable technologies and products in the semiconductor field
    - Utilize our network we built up in FPD-related businesses
  2. Building a new business platform
    - A platform that can create contact points between collaborating companies and overseas customers.
      - Securing access to local markets and customers, local production
    - Utilize our network we built up in FPD-related businesses

# Our Next Big Challenge: (2/5)

## Entering the Semiconductor Manufacturing Equipment Market

- Established a joint venture “Z-CSET” as a new business platform
  - Zhejiang Chip Sunshine Equipment Technology Co., Ltd.
    - ◆ Company Name in Chinese: 浙江芯晖設備技術
    - ◆ Located in Haining, Kailuan District, Haining City, Jiaxing City, Zhejiang Province
    - ◆ Established in April, 2018
    - ◆ Equity Ratio: V-Tech:30%, Local Government Fund: 60%,INNOTECH:10%
    - ◆ Local Government Fund provides buildings and personnel
    - ◆ [Opening ceremony] : September,2019 [Sales Launch] : scheduled in December,2019
    - ◆ 15,000 m<sup>2</sup> out of the 55,800 m<sup>2</sup> of building area, we will use for development and manufacturing of semiconductor manufacturing equipment (Marked in Red on the photo below)
  - Aiming to secure local sales channels and products
  - Expect to enter the market in a short period



Residence Building  
(As of June, 2019)

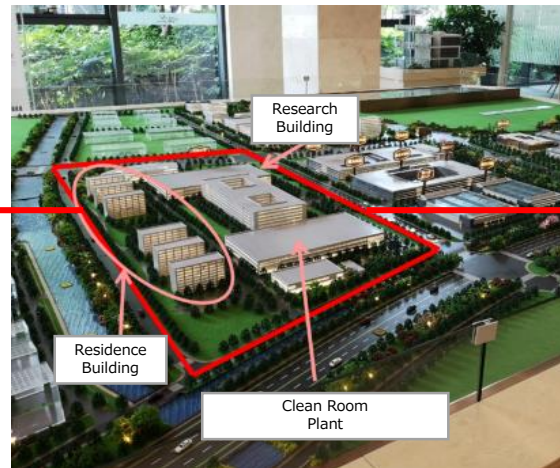


Image Figure of  
Haining Semiconductor  
Peripheral Industry Park



Plant  
(As of June, 2019)

# Our Next Big Challenge: (4/5)

## Entering the Semiconductor Manufacturing Equipment Market

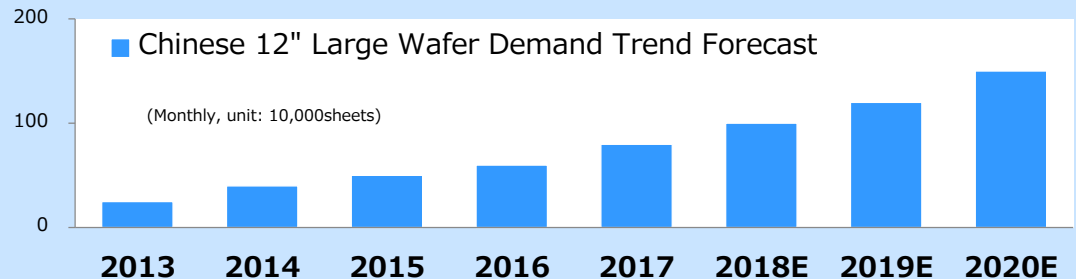
- Z-CSET is developing the semiconductor business such as Wafer polisher and Tester, and we will launch the sales of the Wafer Polisher Equipment from December 2019.

### Wafer Polisher Business

- Assembling the Demo Model of Wafer Polisher which are available to 8 and 12 inch for Z-CSET.
- Scheduled to produce locally and sell as equipment made in China.  
(Local Production for Local Consumption of Manufacturing Equipment)
- Forecast for Chinese 12" Wafer demand in 2020, to be 150 million sheets/month  
(ref: Semiconductor device industry chain report 2017)
- 10+ new fab plans for 12" Wafer in China



Wafer Polisher



1<sup>st</sup>  
Project

### Semiconductor Tester Business

- INNOTECH has No.1 market share of NAND tester in Japan.
- V-Tech and Z-CSET support INNOTECH, which aims to expand into China where we can expect growth
- Assembling the tester in Japan for demonstration, this tester will be evaluated in China from 2019.
- Japanese and US tester manufacturers dominate tester market in China. We aim to achieve expanding our market share to 30% in this market by using our unique business scheme.



RETSET :  
NAND Flash  
Memory Tester



Polaris : CIS Tester

		2016	2017	2018(Forecast)
Memory Tester	Global	53,880	86,920	96,640
	YOY	4.0%	61.3%	11.2%
	Japan	4,830	4,580	4,790
	YOY	38.4%	-5.2%	4.6%
	China	14,660	21,810	30,970
	YOY	3.5%	48.8%	42.0%
China/Global		27.2%	25.1%	32.0%

\* Ref: Global Net Company  
Global Semiconductor Manufacturing Equipment / Test / Inspection Equipment Market Yearbook 2018

Tester market in China is expected to grow continuously

2<sup>nd</sup>  
Project

# Recent Projects in the semiconductor field: Making NSS a subsidiary (1/3)

- First M&A in Semiconductor Business: An Important Step for Our Semiconductor Business
  - Develop state-of-the-art equipment with customers in the most advanced fields in Japan
  - Secure the sales channels for Wafer Inspection Equipment in Japan
- About NSS (NanoSystem Solutions, Inc.)
  - NSS was established in December 2004 with support from the “National Institute of Advanced Industrial Science and Technology”. With a focus on their unique optical technology at their core, they started as a research and development venture that addresses needs using specialized technology in the fields of Nano-manufacturing and measurement.
  - NSS's wafer visual inspection system uses unique optical technology and image processing technology to achieve high-accuracy and high-speed inspection of various defects occurring inside and outside of the wafer and has won high praise from customers.
  - Mask-less exposure equipment is indispensable for prototyping semiconductor products and manufacturing photomasks and has gained a wide range of reputations from customers of semiconductor manufacturers and research institutions such as universities in Japan.
  - Founder of NSS, Kazumi Haga has rich experience in working at Ricoh as an optical design engineer.



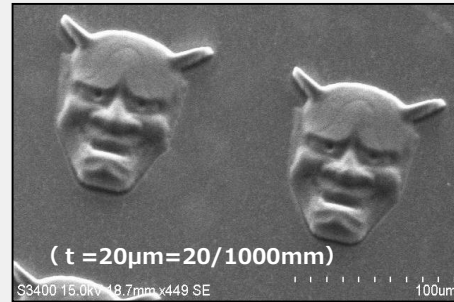
Head Office Plant (Uruma City, Okinawa)



## \*Reference: Major Products of NSS

### Mask-less Exposure Equipment

D-light DL-1000 Series



Sample of Posi-Resist Exposure

- Achieved the world's highest class drawing resolution and processing speed!
- More than 60 units has been shipped in Japan and overseas!

### Wafer Inspection Equipment



Edge Inspection



Flatness Inspection

- Accomplished MFP Throughput 100wafers/hr

# Recent Projects in the semiconductor field: Making NSS a Subsidiary (2/3)

- Purpose for making NSS a subsidiary #1
  - Establish cutting-edge wafer inspection technologies  
(our company supports NSS in terms of development funds)
  - Total Solution for Semiconductor Wafer Manufacturing
  - Hiring Engineers who are proficient in Wafer inspection technologies
  - Collaboration with Wafer Manufacturers
  - Cost Reduction effect using V-Tech supply chain





# Recent Projects in the semiconductor field: Making NSS a Subsidiary (3/3)

## ■ Purpose for making NSS a subsidiary #1

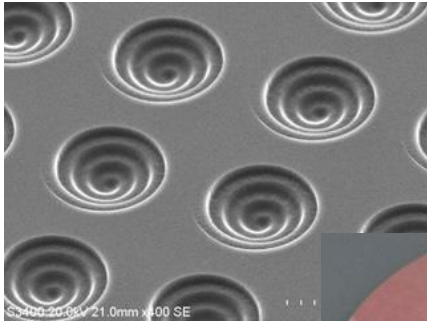
- Development of direct imaging equipment for printed circuit boards
- Further leap forward in Inspection Equipment Business by integrating with optical technology and image processing technology of V-Tech

## Mask-less Exposure Equipment: More than 60 units have been sold to Japan and Overseas

### Mask-less Exposure Equipment

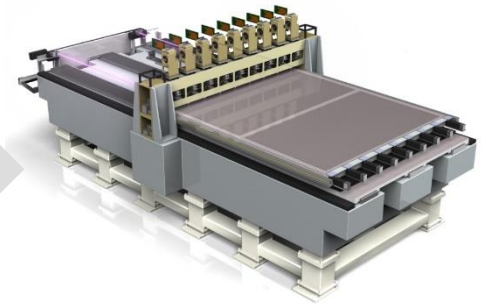
- High-speed / High-definition drawing with DMD
- 3D exposure is possible

(Image) Sample of exposure



### Expected effects /Synergies

**1)Technology deployment to existing V-Tech products**



**2)Development of V-Tech 's image inspection and repairing technologies**



# About the Future

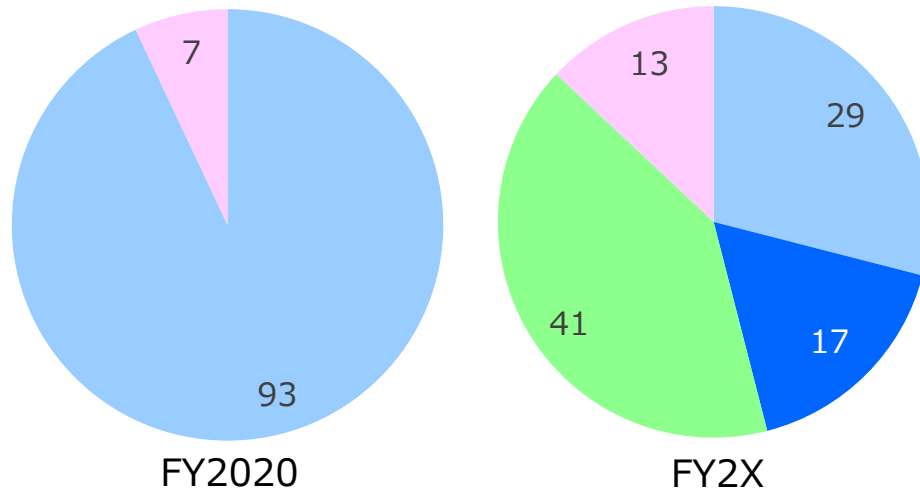
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# Evolve into one of the world's leading manufacturing solution providers

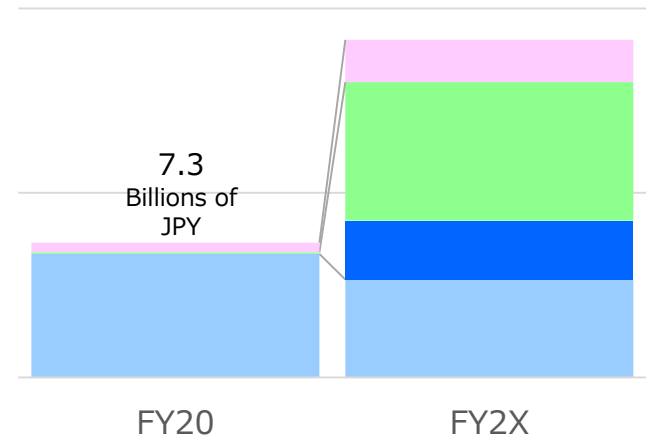
- Promote various technological developments and projects ahead of the capital investment cycle and technology evolution

## Medium- to long-term Target Company Size and Business Portfolio

Classified by use (Ratio)



Classified by use (Amount)



Existing FPD Equipment    New FPD Equipment    Related to Semiconductor    Parts/Materials/AS

