Investor Relations **2018**

MACHINE VISION
NO.1 TECHNOLOGY

V-ONE Tech

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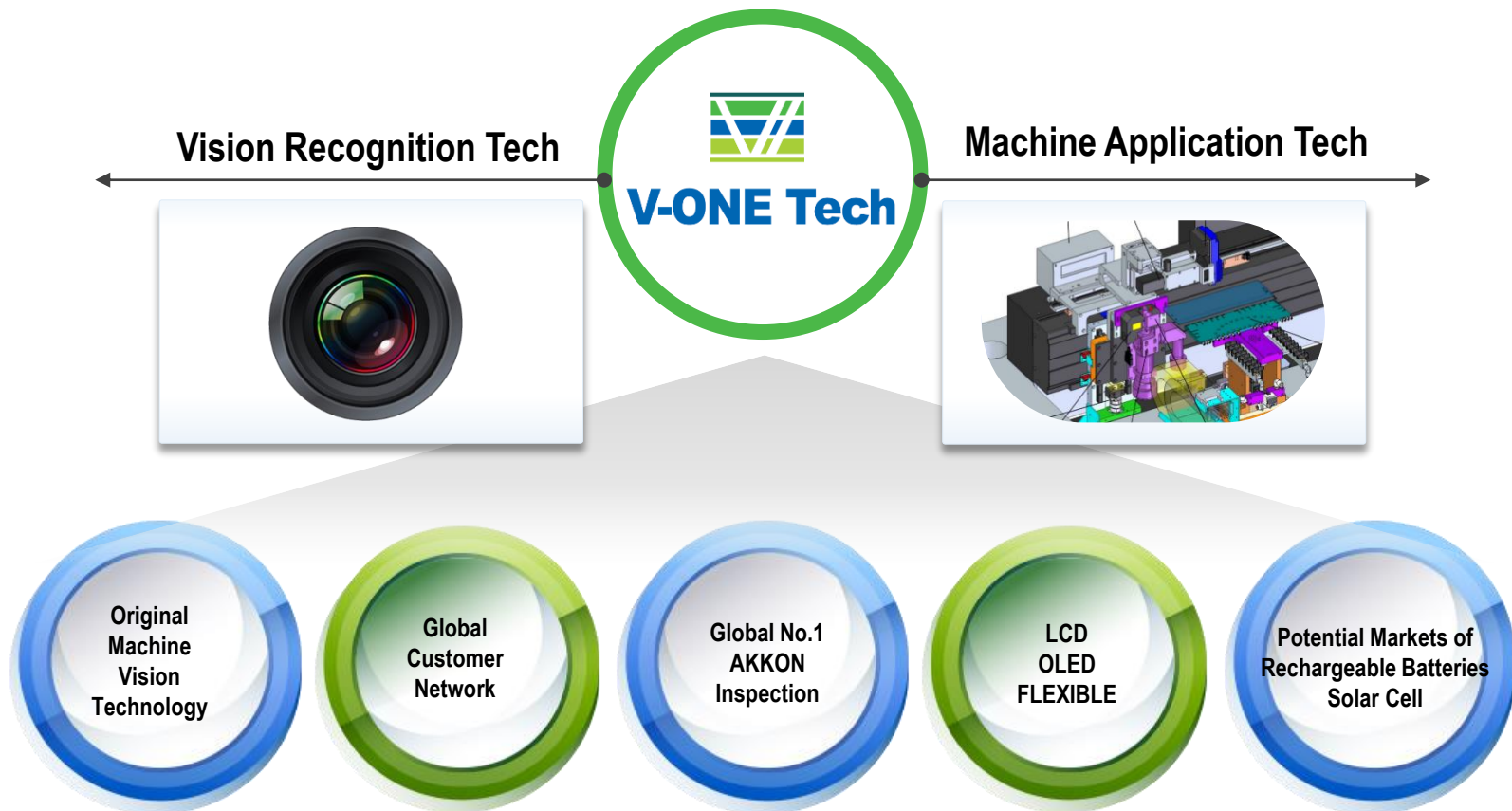**MACHINE VISION
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Prologue

01.Company Identity

Global Machine Vision No.1 Technology

Vision Recognition Tech

V-ONE Tech

Machine Application Tech

Original Machine Vision Technology	Global Customer Network	Global No.1 AKKON Inspection	LCD OLED FLEXIBLE	Potential Markets of Rechargeable Batteries Solar Cell

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01
Company Overview

01 Company Overview

General Information

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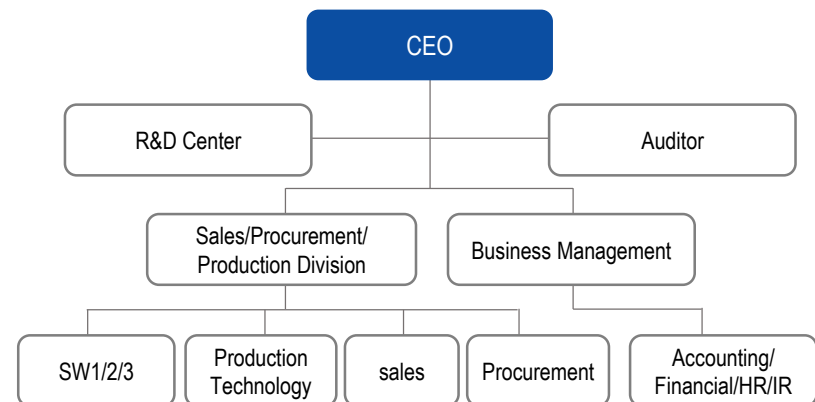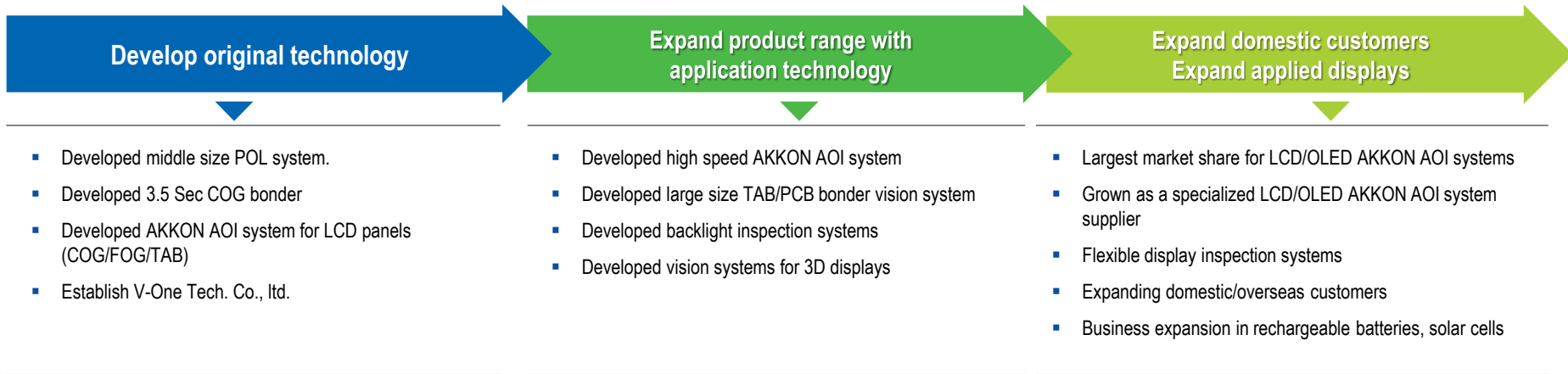|	
CEO	KIM Sunjoong
Established	May 30th, 2006
HQ	1A 710 (Sampyeong-dong Uspace1), 660, Daewangpangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea 463-400
Employees	69
Equity Capital	3.76 billion KRW
Main Business	LCD, OLED Inspection System Production Industrial Inspection System Development Industrial Machine Vision System Development

CEO Profile

CEO KIM Sunjoong

- Master, Hanyang University
- LG Electronics Inc.
- Ko-Sam Co.,Ltd.
- Global Link Co., Ltd.
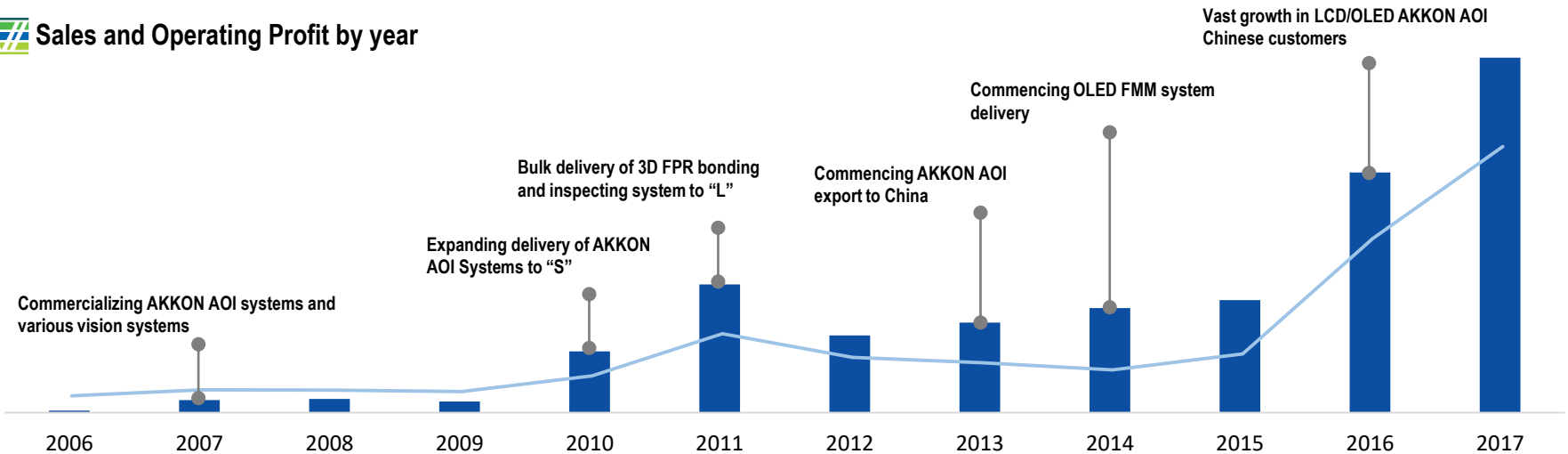- CEO, V-One Tech. Co., Ltd.

Organization Chart

- CEO
  - R&D Center
  - Auditor
  - Sales/Procurement/Production Division
    - SW1/2/3
    - Production Technology
    - sales
  - Business Management
    - Procurement
    - Accounting/Financial/HR/IR

02 History

V-ONE Tech

Develop original technology	Expand product range with application technology	Expand domestic customers Expand applied displays

Develop original technology
- Developed middle size POL system.
- Developed 3.5 Sec COG bonder
- Developed AKKON AOI system for LCD panels (COG/FOG/TAB)
- Establish V-One Tech. Co., ltd.

Expand product range with application technology
- Developed high speed AKKON AOI system
- Developed large size TAB/PCB bonder vision system
- Developed backlight inspection systems
- Developed vision systems for 3D displays

Expand domestic customers / Expand applied displays
- Largest market share for LCD/OLED AKKON AOI systems
- Grown as a specialized LCD/OLED AKKON AOI system supplier
- Flexible display inspection systems
- Expanding domestic/overseas customers
- Business expansion in rechargeable batteries, solar cells

Sales and Operating Profit by year

Commercializing AKKON AOI systems and various vision systems

Expanding delivery of AKKON AOI Systems to "S"

Bulk delivery of 3D FPR bonding and inspecting system to "L"

Commencing AKKON AOI export to China

Commencing OLED FMM system delivery

Vast growth in LCD/OLED AKKON AOI Chinese customers

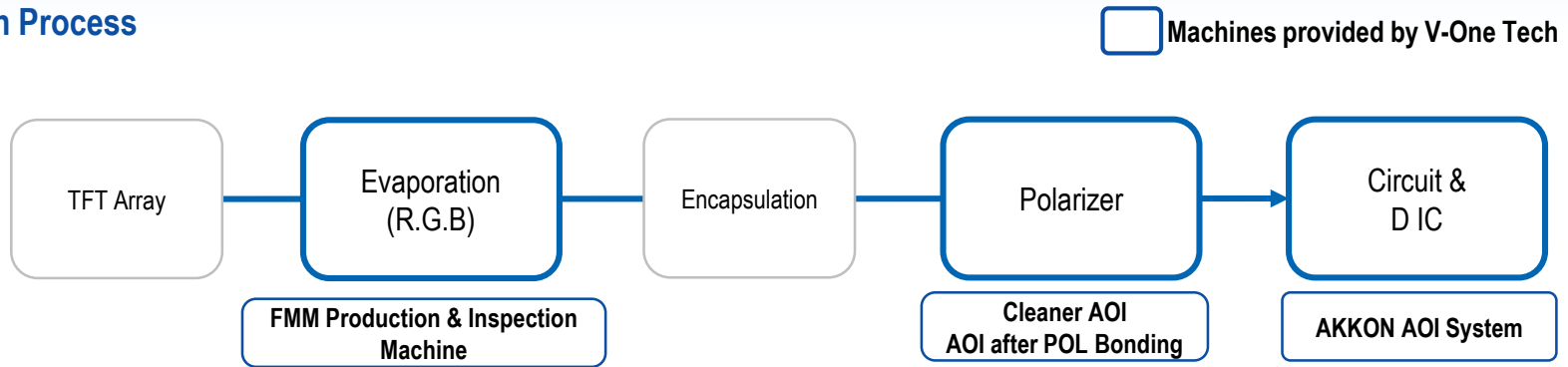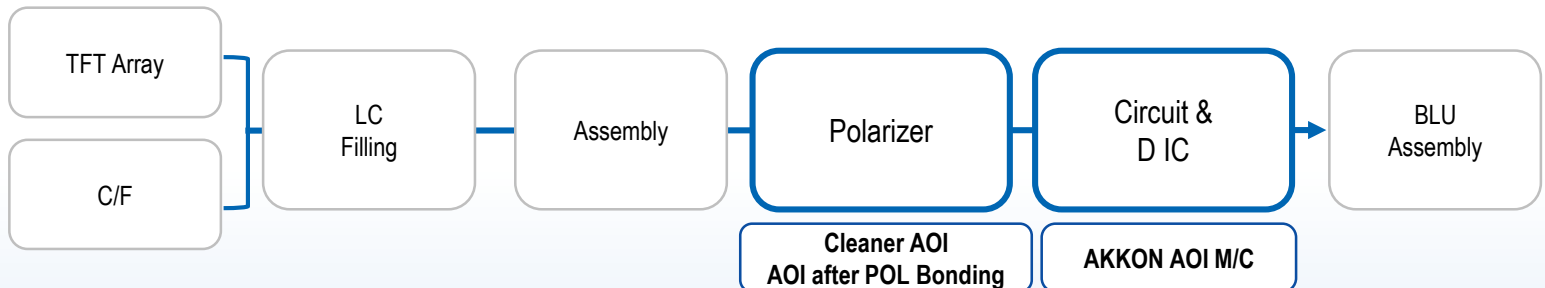2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

03 Display Application Process

V-ONE Tech

LCD/OLED Display Inspection M/C Produced with Machine Vision Systems

OLED Application Process

Machines provided by V-One Tech

TFT Array → Evaporation (R.G.B) → Encapsulation → Polarizer → Circuit & D IC

FMM Production & Inspection Machine

Cleaner AOI
AOI after POL Bonding

AKKON AOI System

LCD Application Process

TFT Array / C/F → LC Filling → Assembly → Polarizer → Circuit & D IC → BLU Assembly

Cleaner AOI
AOI after POL Bonding

AKKON AOI M/C

Middle & Small Sized LCD/OLED Display Inspection Machine

Inspection Machines		Inspection Systems	

OLED

Rigid AKKON AOI M/C

Flexible AKKON AOI M/C
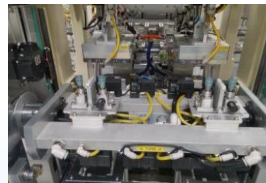

FMM S/W & Inspection M/C

Cleaner AOI System

LCD

AKKON AOI M/C

3D POL FPR Alignment & Inspection System

COG/FOG/TAB Bonding Alignment System

Rechargeable Battery / Solar

Rechargeable Battery Inspection System
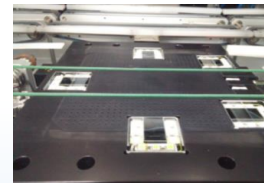
Solar Cell Alignment System

04 Major Equipment-LCD/OLED AKKON AOI M/C

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Panel Bonding Inspection via Machine Vision System

Display Panel

Indentation and Align of Conductive Ball

AKKON AOI / Alignment Inspection

[COG]　[FOG]　[TCP]

[Normal] ←→ [Excessive]

[Key Technological Competitiveness]

Key Technology	V-One Tech. Co., Ltd.	Competitors
COG Alignment Inspection	Line Scan IR Patented	Area
FOG Alignment Inspection	Independent light source	Conventional light source
AKKON Image	Stable & Vivid Image	Blur image according to facility vibration
SW/HW Optimization	Optimized combination from years of experience	Lack of experience by focusing on production facilities
Flexible Response	Flexible OLED M/S 80%	Lack of experience

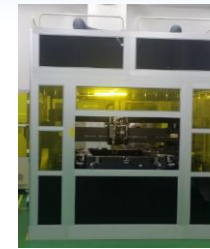## FMM Tension & PPA Inspection of Full HD/UHD OLED

FMM Tensioner S/W
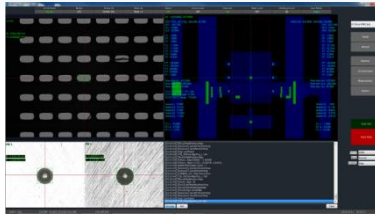
Tension FMM and meticulously adjust Pixel Pattern Hole to bond on Frame
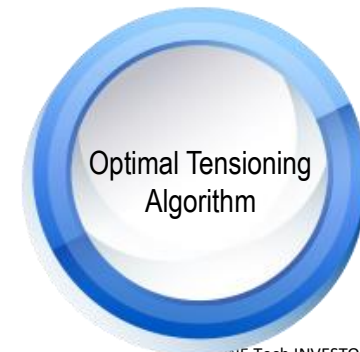
*FMM : Fine Metal Mask

PPA Inspection M/C

Test of FFM Hole position, Pitch, CD

*PPA : Pixel Position Accuracy

[Key Technologies]

Precision Control Technology

Precision Position Measurement Algorithm

Optimal Tensioning Algorithm

04 Major Equipment-Alignment System of Rechargeable Battery

V-ONE Tech

Increase Significance due to explosion incidents

Types of Battery Cell

Rechargeable Battery Inspection System (Stack & Tacking Press)

Close Examination due to explosion incidents
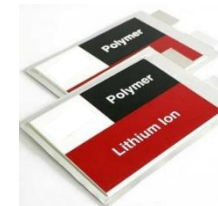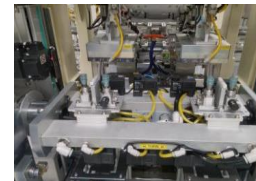
05 Business Performance

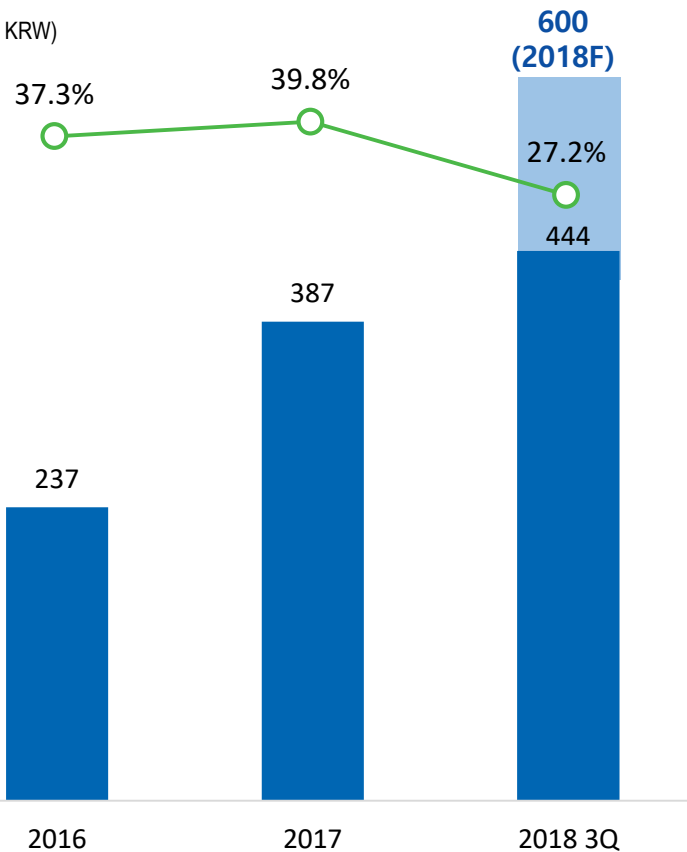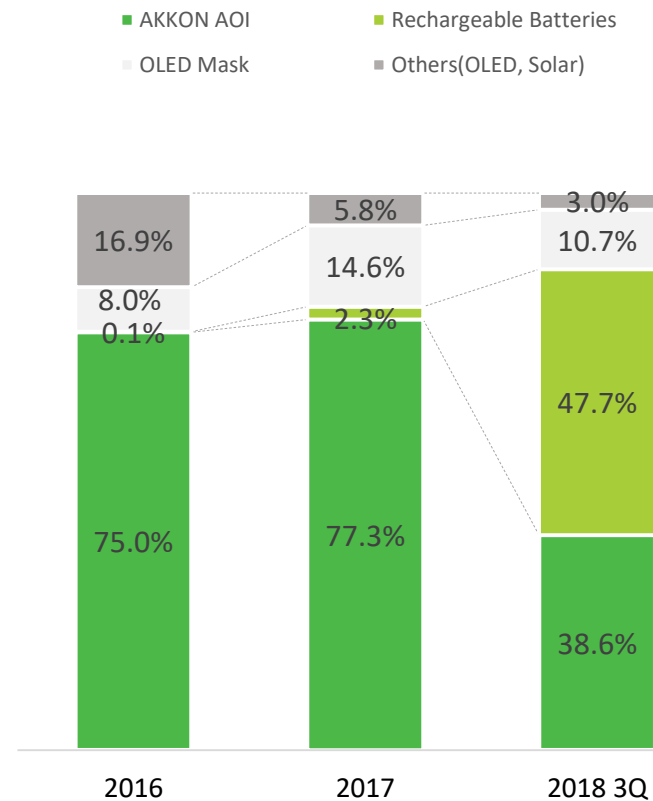**V-ONE Tech**

Constant Increase in Sales & Operating Profits with diversified products

Sales & Rate of Operating Profits

(100mil KRW)

600 (2018F)

37.3% 39.8%

27.2%

444

387

237

2016 2017 2018 3Q

Sales Contribution by Product

- AKKON AOI
- Rechargeable Batteries
- OLED Mask
- Others(OLED, Solar)

	2016	2017	2018 3Q
Others(OLED, Solar)	16.9%	5.8%	3.0%
OLED Mask	8.0%	14.6%	10.7%
Rechargeable Batteries	0.1%	2.3%	47.7%
AKKON AOI	75.0%	77.3%	38.6%

06 Global Customer Network

Customers in Korea and China based on Outstanding Machine Vision Technology

LG전자
LG디스플레이
SAMSUNG 삼성전자
SAMSUNG 삼성디스플레이

SHARP
JDI

AUO
INNOLUX
群創光電股份有限公司

京東方 BOE
华星光电 CSOT
TIANMA
TRULY®
GVO 国星光电
Middle-Small companies

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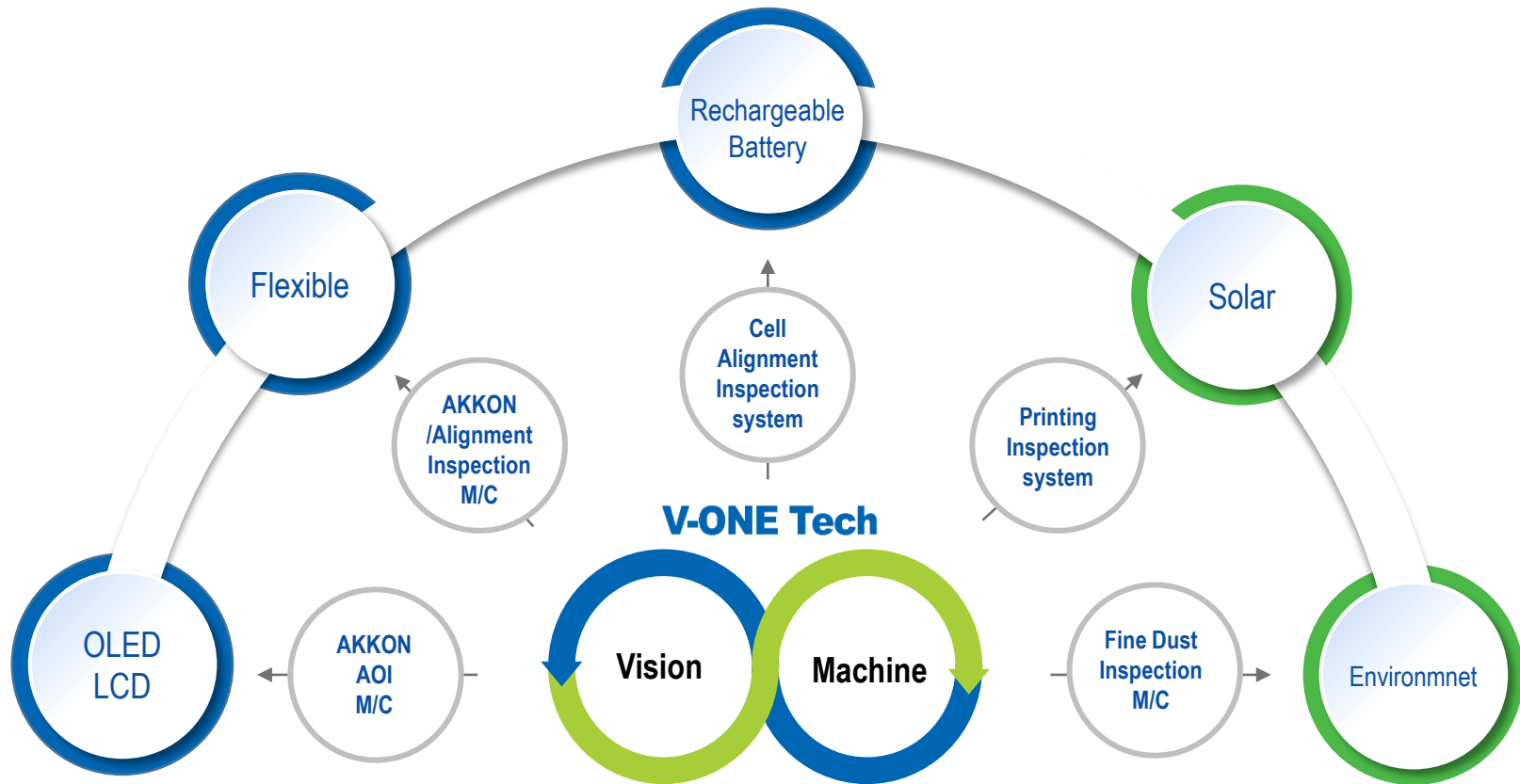**02**

Core Competence

01. Various Applications
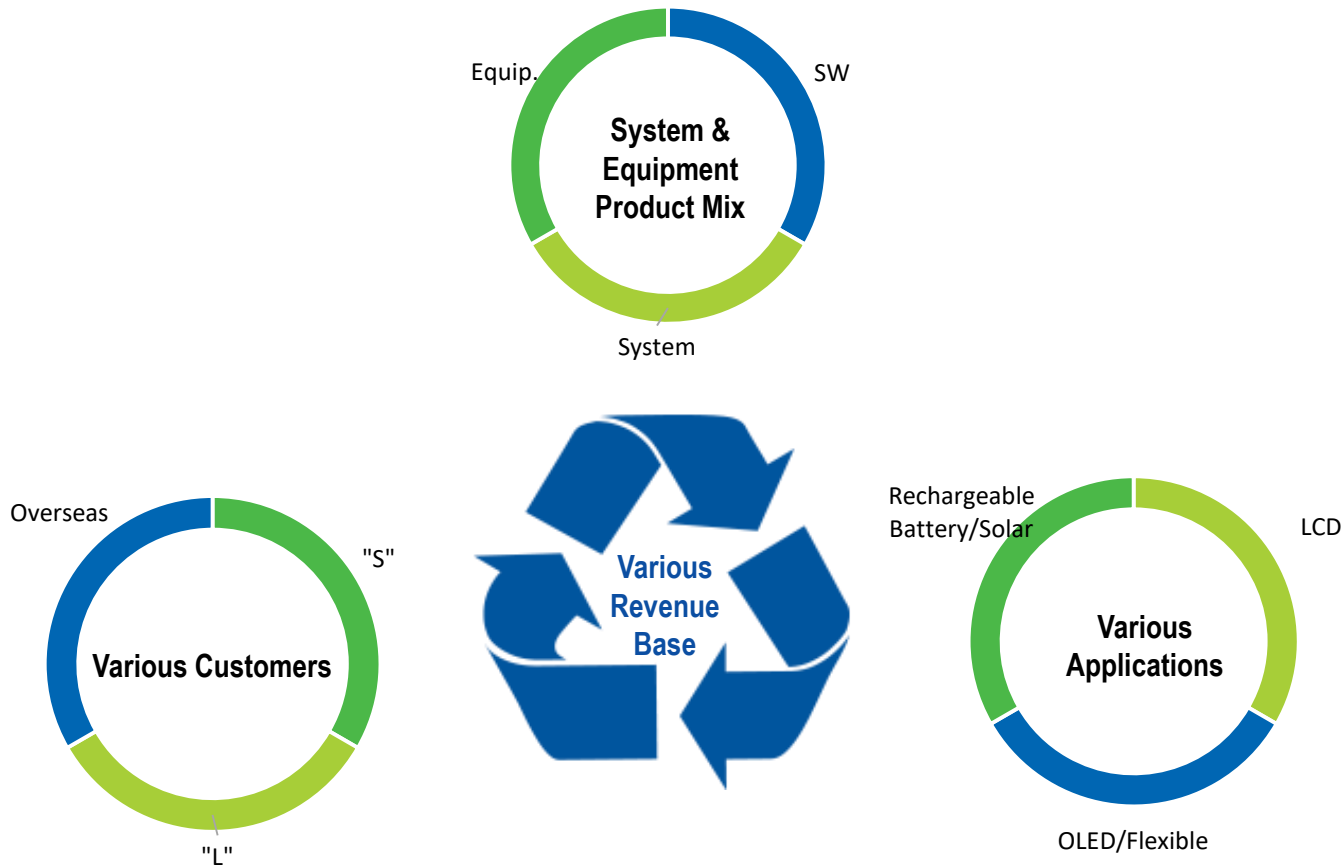02. Stable Revenue through Various Customers and Markets

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Endless Scalability as Machine Vision-based Equipment Supplier

04 Stable Revenue through Various Customers and Markets

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Secured Stable Revenue based on Various Customers and Broad Product Portfolio

Equip.
SW

System & Equipment Product Mix

System

Overseas
"S"

Various Customers

"L"

Various Revenue Base

Rechargeable Battery/Solar
LCD

Various Applications
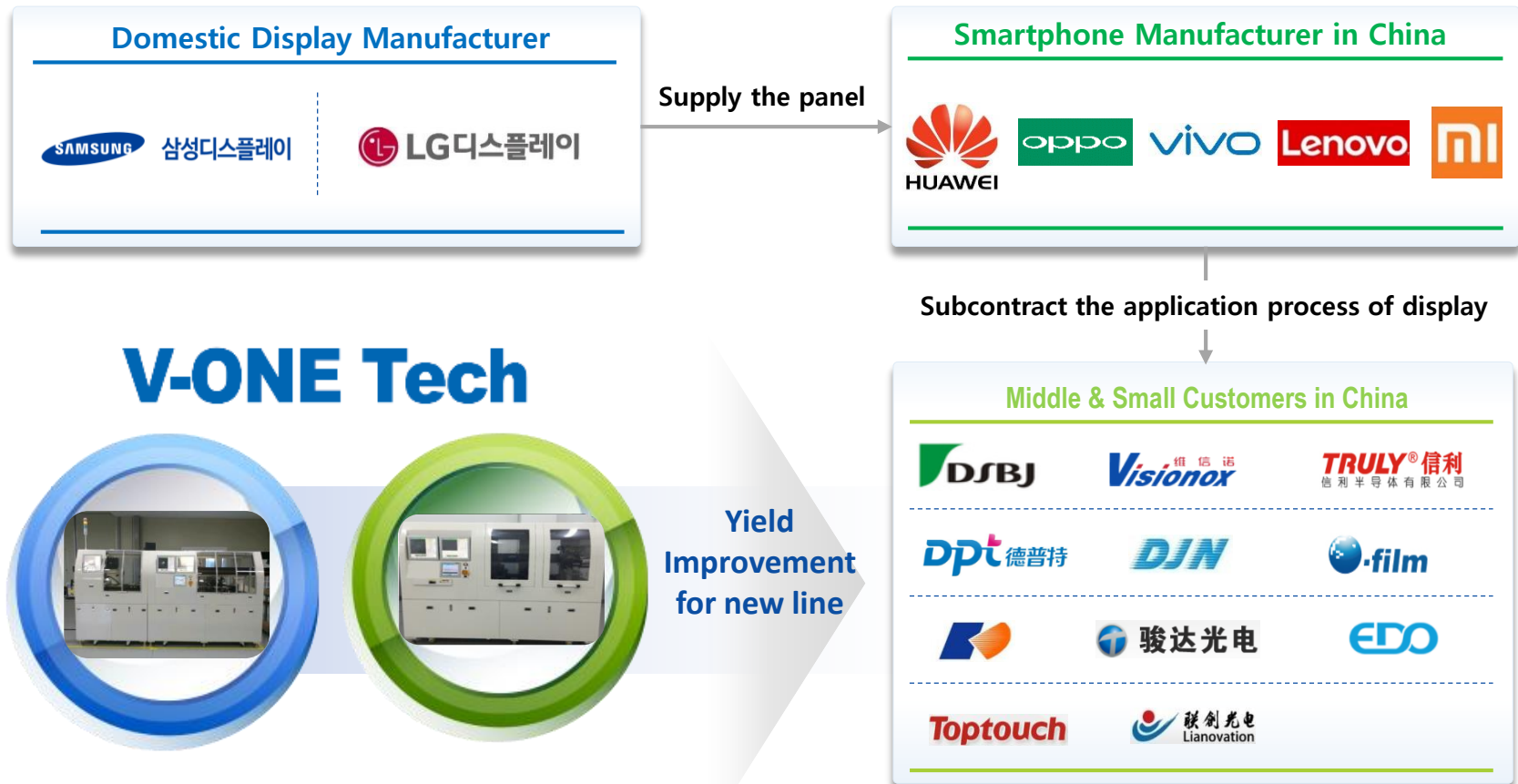
OLED/Flexible

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03

Investment Points

01. Continuous Demand Pursuant to Yield Improvement Investments
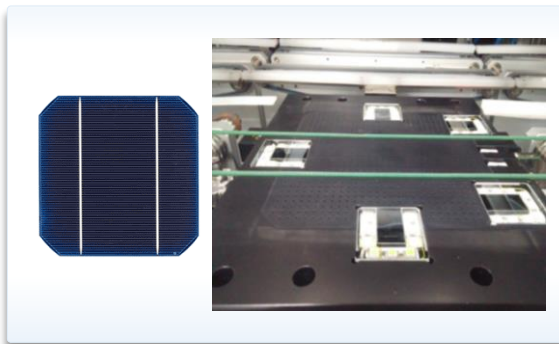02. Entering New Markets and Broader Equipment Portfolio
VISION

06 Entering New Markets and Broader Equipment Portfolio

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Expanding Markets with applied Machine Vision Technology

Solar Printed Alignment

- Increased Efficiency of Solar Cell and Module via Precision Electrode Printing

| Wafer & Mask Alignment |
| Electrode Printing |
| Printed Output Inspection |

Measuring set of Fine dust

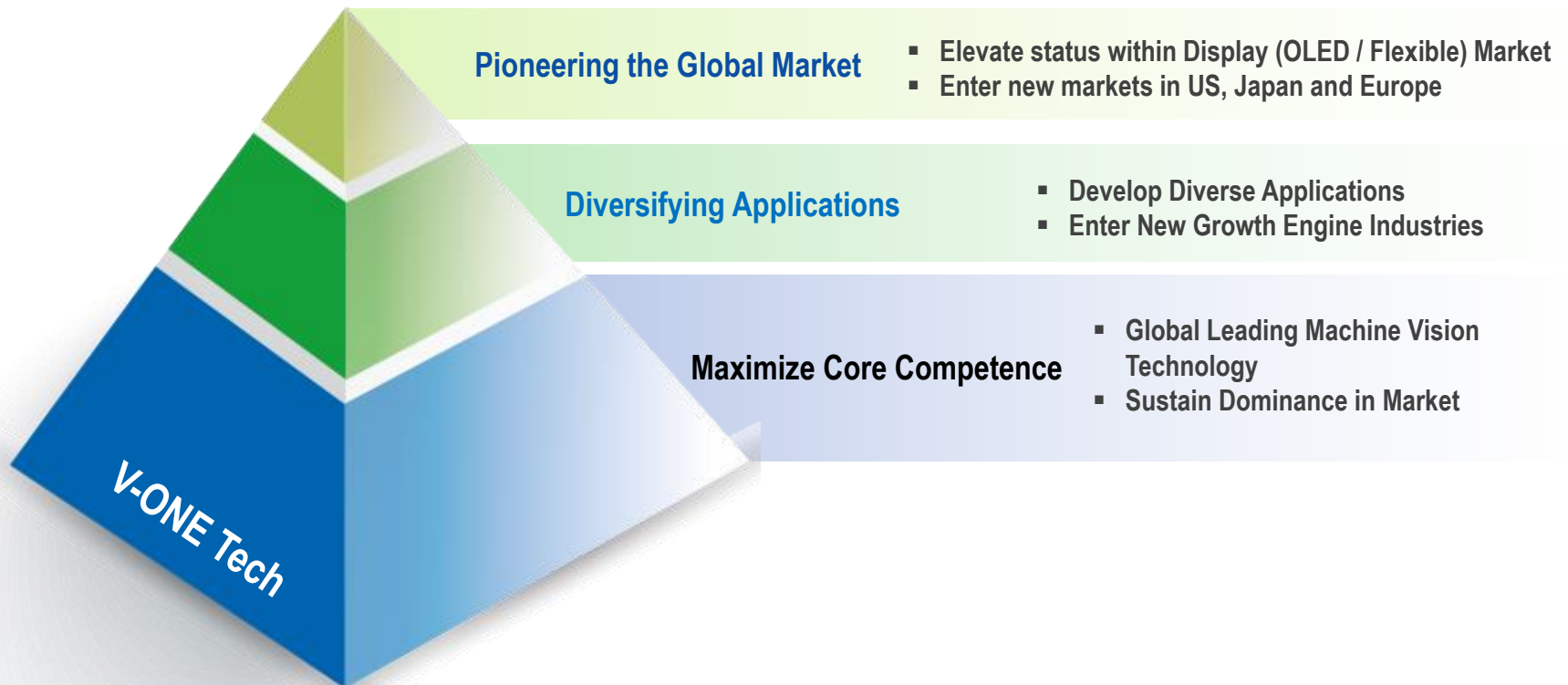- Real time measurement of fine dust due to attention about air pollution

| Developing the high-tech sensor to measure fine dust |
| Expecting school to conduct it By reduction measures establishment |
| Measuring both PM2.5(ultrafine dust) and PM10(fine dust) |

VISION

V-ONE Tech

"Enter Various Markets as the Global No.1 Machine Vision Technology Company "

Pioneering the Global Market
- Elevate status within Display (OLED / Flexible) Market
- Enter new markets in US, Japan and Europe

Diversifying Applications
- Develop Diverse Applications
- Enter New Growth Engine Industries

Maximize Core Competence
- Global Leading Machine Vision Technology
- Sustain Dominance in Market

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Appendix

Pangyo – 2nd Techno Valley

Pangyo – 2nd Techno Valley

Pangyo – 2nd Techno Valley

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Thank you.