



AIXTRON Investor Presentation

IR Presentation – FY/2017
(FSE: AIXA, ISIN DE000A0WMPJ6)

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AIXTRON

Forward-Looking Statements

This document may contain forward-looking statements regarding the business, results of operations, financial condition and earnings outlook of AIXTRON. These statements may be identified by words such as “may”, “will”, “expect”, “anticipate”, “contemplate”, “intend”, “plan”, “believe”, “continue” and “estimate” and variations of such words or similar expressions. These forward-looking statements are based on the current assessments, expectations and assumptions of the executive board of AIXTRON, of which many are beyond control of AIXTRON, based on information available at the date hereof and subject to risks and uncertainties. You should not place undue reliance on these forward-looking statements. Should these risks or uncertainties materialize, or should underlying expectations not occur or assumptions prove incorrect, actual results, performance or achievements of AIXTRON may materially vary from those described explicitly or implicitly in the relevant forward-looking statement. This could result from a variety of factors, such as those discussed by AIXTRON in public reports and statements, including but not limited to those reported in the chapter “Risk Report”. AIXTRON undertakes no obligation to revise or update any forward-looking statements as a result of new information, future events or otherwise, unless expressly required to do so by law. This document is an English language translation of a document in German language. In case of discrepancies, the German language document shall prevail and shall be the valid version.

Due to rounding, numbers presented throughout this report may not add up precisely to the totals indicated and percentages may not precisely reflect the absolute figures for the same reason.

Our registered trademarks: AIXACT[®], AIXTRON[®], APEVA[®]; Atomic Level SolutionS[®], Close Coupled Showerhead[®], CRIUS[®], EXP[®], EPISON[®], Gas Foil Rotation[®], Optacap[™], OVPD[®], Planetary Reactor[®], PVPD[®], STExS[®], TriJet[®]

Our Vision

Technology. Materials. Performance.

Technology.

We are the **recognized technology leader** in complex material deposition.

Materials.

We **enable our customers** to successfully shape the markets of the future, exploiting the potential offered by **new materials**.

Performance.

We **deliver the performance** driving **economic success** through our expertise, our employees and the quality of our products.

Who we are



- Headquarters based near Aachen, Germany
- Worldwide presence in 7 countries
- R&D and production facilities in Germany and UK
- ~ 600 employees
- Company founded in 1983 – 35 years of experience
- Technology leader in deposition systems
- More than 2,700 deposition systems installed worldwide

Global Presence




Technology Portfolio for Complex Material Deposition

OLED: OVPD®/PVPD®
APEVA

Carbon – PECVD

NANO: Innovation Pool



Photonics
(e.g. VCSEL for 3D Sensing, Lasers for CE, Datacom)



GaN Power
(e.g. Wireless Charging; RF, Fast Charging)



Specialty LED
(MicroLED-, Fine Pitch Displays; Horticulture; Purification; IR & UV LEDs)



SiC Power
(e.g. EVs, Charging Stations, Infrastructure)

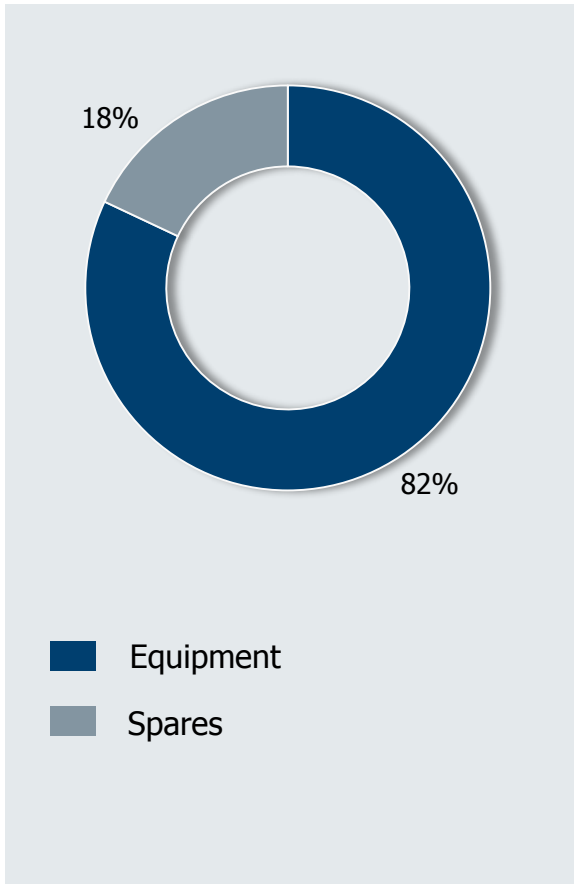
AIXTRON
Our technology. Your future.

MOCVD Core Technology

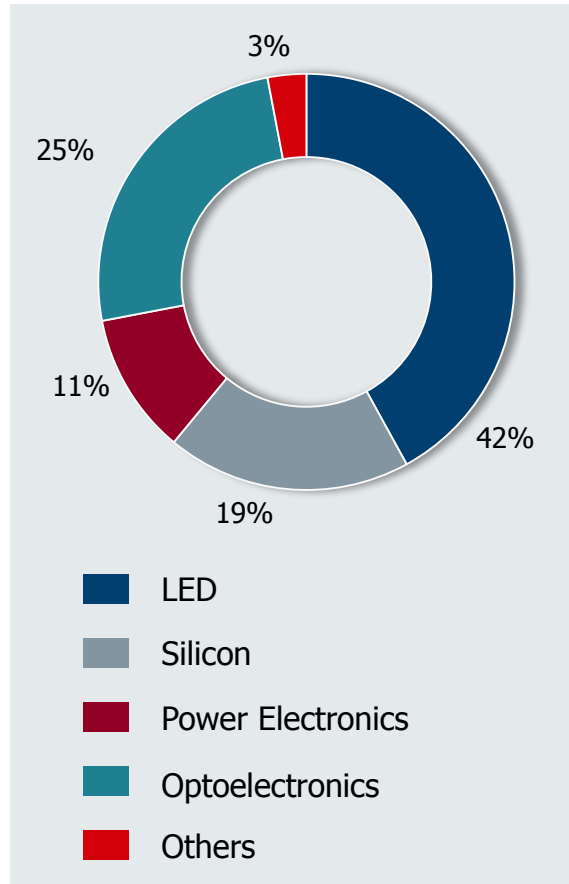
Revenue Analysis*

* Rounded figures; may not add up

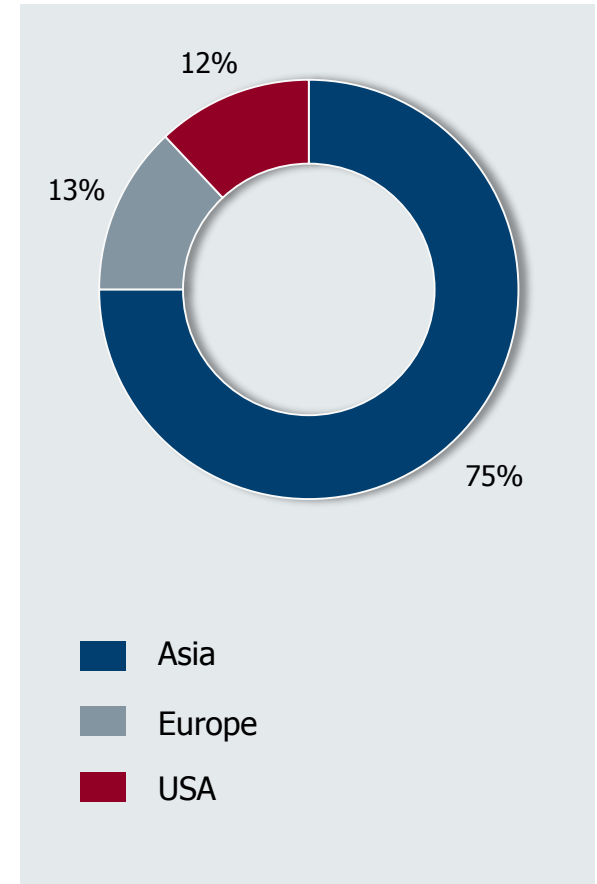
FY/2017:
by equipment & spares



FY/2017:
by end application
(equipment only)



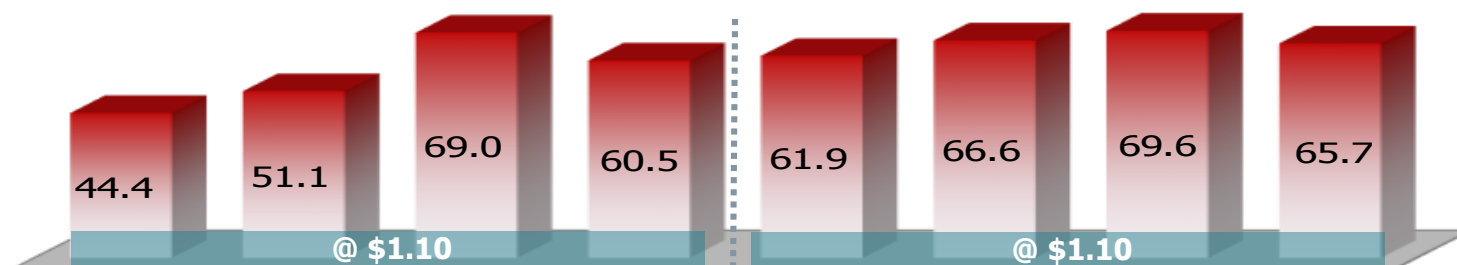
FY/2017:
by region



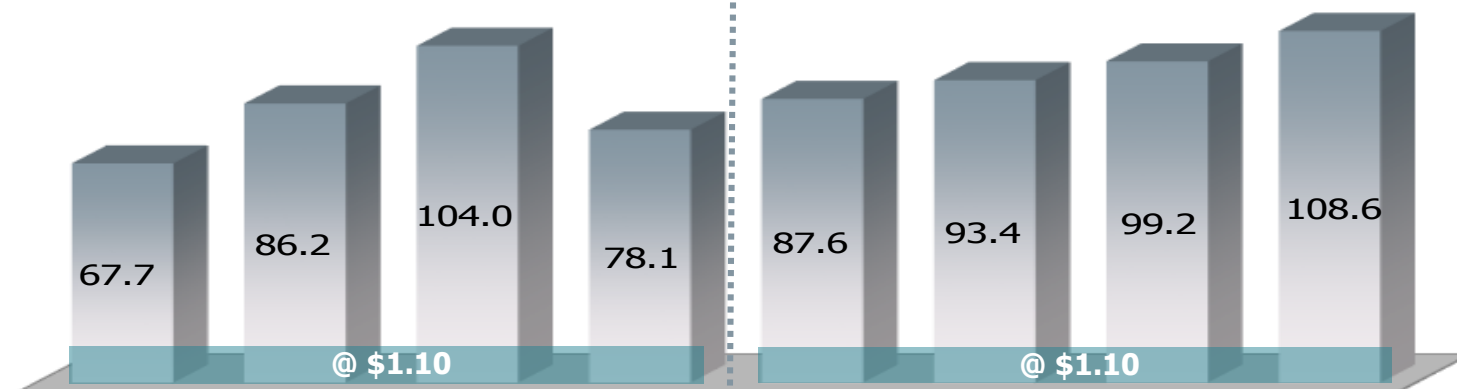
24 - Month Business Development

(€ million)

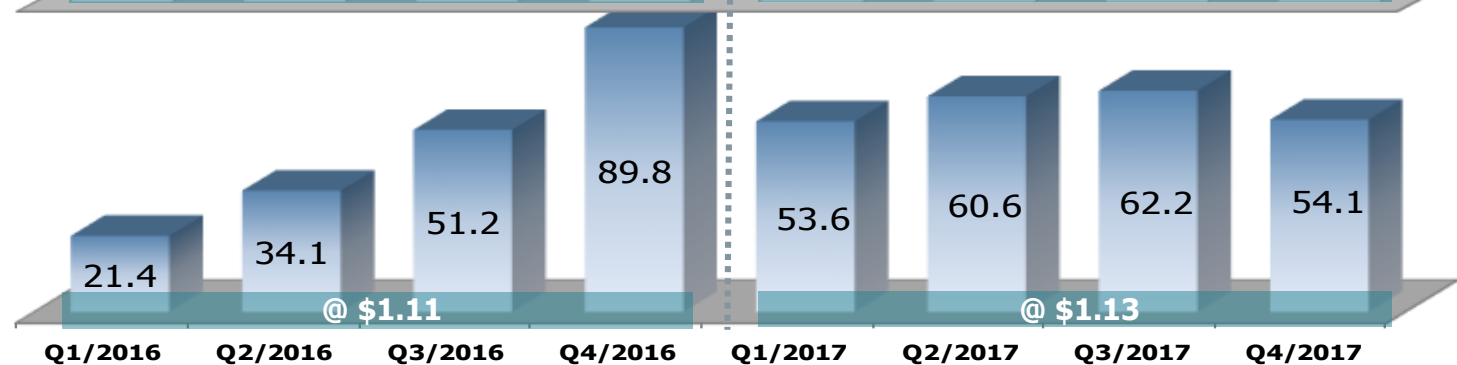
Order Intake
(incl. equipment,
service, spare parts)



Order Backlog
(equipment only)



Revenues
(incl. equipment,
service, spare parts)



USD order intake and backlog were recorded at the prevailing budget rate (2017: \$1.10/€; 2018: \$1.20/€)

USD revenues were converted at the actual period average FX rate (2017: \$1.13/€)

Consolidated Income Statement*

* Rounded figures; may not add up

(€ million)	FY/17	FY/16	+/- %	Q4/17	Q3/17	+/- %
Revenues	230.4	196.5	17	54.1	62.2	-13
Cost of sales	156.4	140.2	12	33.1	37.5	-12
Gross profit	74.0	56.3	31	21.0	24.7	-15
%	32	29	3 pp	39	40	-1 pp
Selling expenses	10.2	13.8	-26	2.2	2.7	-17
General & admin expenses	17.1	17.1	0	2.6	5.2	-50
R&D	68.8	53.9	28	16.5	12.8	29
Net other operating income	27.0	7.2	275	24.7	0.5	n.m.
EBIT	4.9	-21.4	123	24.4	4.6	n.m.
%	2	-11	13 pp	45	7	38 pp
Net result	6.5	-24.0	127	27.2	4.3	n.m.
%	3	-12	15 pp	50	7	43 pp

Balance Sheet*

* Rounded figures; may not add up

(€ million)	31/12/17	30/09/17	31/12/16
Property, plant & equipment	64.3	64.0	74.2
Goodwill	71.2	71.1	74.6
Other intangible assets	1.8	1.8	5.4
Others	4.0	1.9	2.4
Non-current assets	141.3	138.8	156.5
Inventories	43.0	40.2	54.2
Trade receivables	19.3	21.1	60.2
Others	5.0	4.8	5.3
Assets classified as held for sale	0.0	15.4	0.0
Cash & Cash Deposits	246.5	203.9	160.1
Current Assets	313.8	285.3	279.7
Shareholders' equity	368.9	342.2	369.7
Non-current liabilities	2.0	1.7	4.2
Trade payables	14.3	13.1	14.6
Advance payments from customers	30.3	41.7	26.1
Others	39.7	25.3	21.6
Current liabilities	84.2	80.2	62.3
Balance Sheet total	455.1	424.1	436.2

Consolidated Statement of Cash Flows*

* Rounded figures; may not add up

(€ million)	2017	2016	Q4/17	Q3/17
Net Result	6.5	-24.0	27.2	4.3
Adjust for				
Non Cash Items	-7.9	15.7	-24.6	2.6
Changes in Working Capital	71.4	-29.4	11.0	6.3
Cash Flow from Operating Activities	70.1	-37.7	13.6	13.2
Capital Expenditures	9.7	5.3	1.1	-8.5
Fixed Asset disposals/FX / Other	26.0	-2.2	30.1	-1.4
Total Cash Flow	86.4	-49.3	42.6	6.8
Cash & Deposits	246.5	160.1	246.5	203.9

Market Prospects

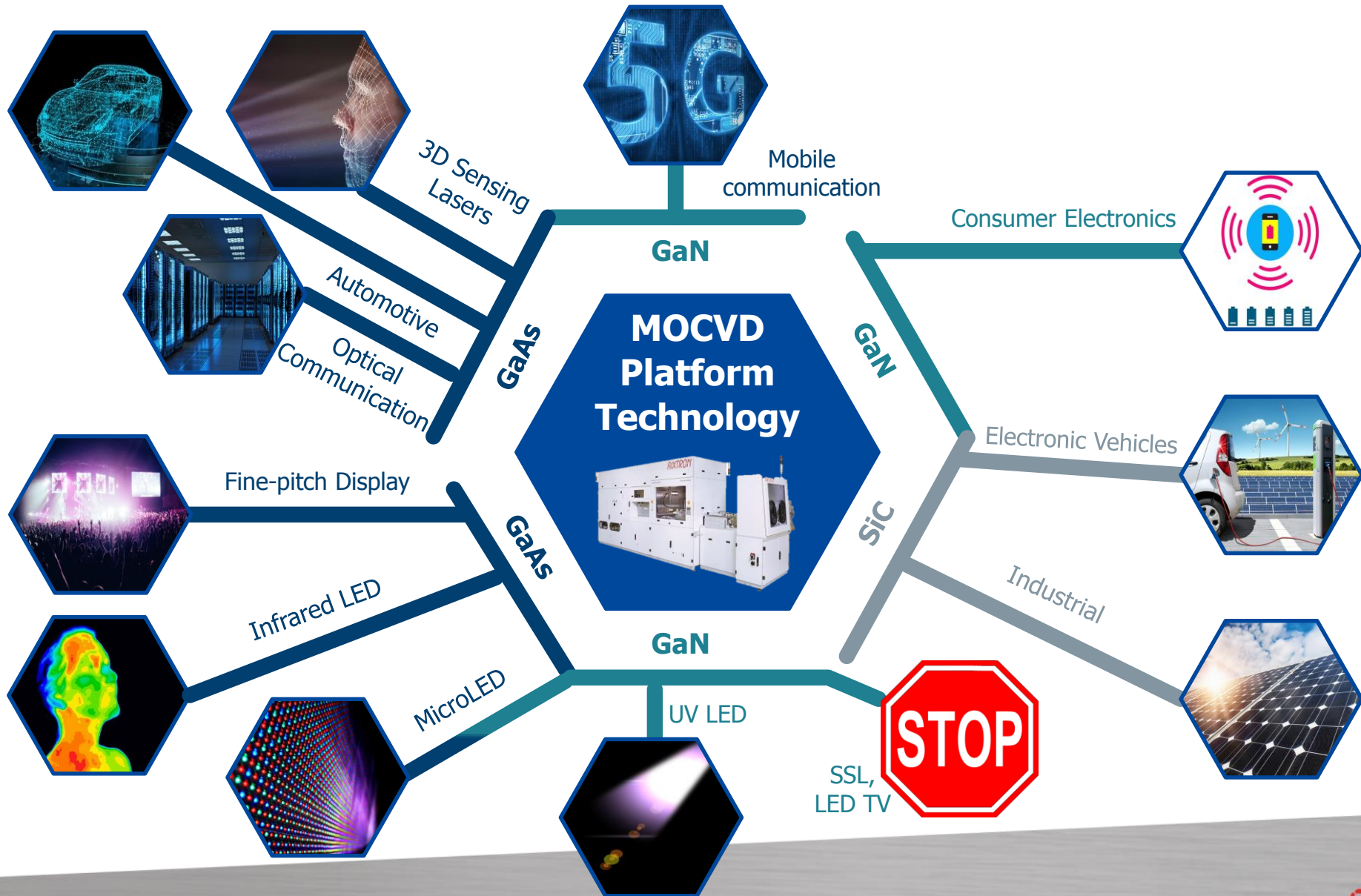
Short-Term

- Increasing application of compound semi-conductor-based lasers for the 3D sensor systems in mobile end device as well as sensors for infrastructure applications.
- Further increasing use of LEDs and special LEDs (esp. red-orange-yellow, UV or IR) with displays and others applications.
- Further increasing demand for lasers for ultra-fast optical data transmission of large volumes, such as for video streaming and Internet-of-Things (IOT) applications.
- Increasing use of wide-band gap GaN- or SiC-based components for energy-efficient communication and performance control in cars, entertainment electronics and mobile devices.
- Progress in the further development of large-area OLED components that require an efficient deposition technology.

Mid- to Long-Term

- Development of new applications based on materials with wide-band-gap such as high-frequency chips or system-on-chip architectures with integrated power management.
- Increased use of compound semi-conductor-based sensors for autonomous driving.
- Increased development activities for specialized application of solar cells made of compound semi-conductors.
- Development of new materials with the help of carbon nanostructures (carbon nanotubes, -wires and graphene).
- Development of alternative LED applications, such as visual-light communication technology or micro LED displays.

AIXTRON – Enabling Emerging Global Mega Trends



Application: Short Term – Compound Semis in Next-Gen CE

Photonics

Specialty LED

GaN Power

APEVA

NANO: Innovation Pool



AIXTRON Enables GaAs Applications

RF Switches
MMIC

RF Power transistors

Base Station for 3G / 4G

Logic processor

AIXTRON also in...

OLED
Flexible Display
CNT based LiB

RF energy solution

MMIC

Fast charger

Base station for 5G

Wireless PAs

Noise cancelation

GaN ICs

HMIC Pin diode

3D gesture sensors

Iris scan

Proximity sensor

Camera autofocus

Environmental scan

HDMI interconnects

Body functions

Night vision camera

Displays

Wireless charger
Camera Flash

Pulsed power transistor

AIXTRON Enables GaN Applications

Application: Mid Term – Compound Semis in Connected E-Vehicles



Photonics



Specialty LED



GaN Power



SiC Power



NANO: Innovation Pool



AIXTRON Enables GaAs Applications

Vehicle speed sensing (IR)

Night vision IR

Emergency break assist (IR)

Adaptive cruise control (IR)

Pedestrian detection (IR)

Driver condition monitoring (VCSEL)

AIXTRON also in...

OLED

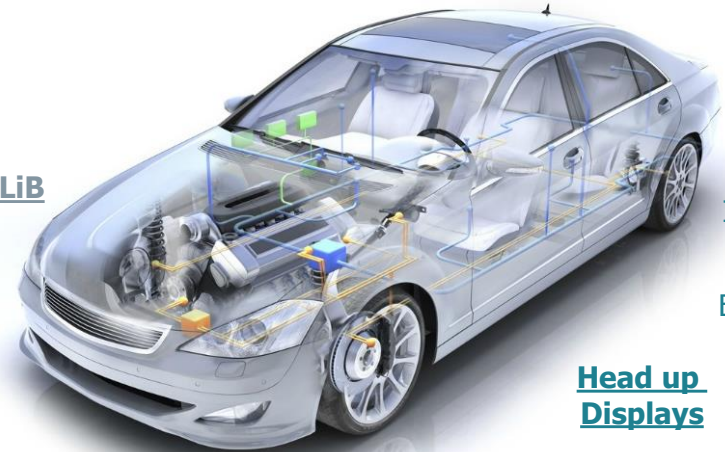
CNT based LiB

Charging infrastructure

On board battery charger

DC/DC conversion

Main inverter



Interior Lighting LED

Exterior Lighting LED

Head up Displays

48V system

Lidar

Wireless charger

Headlights

Infotainment

AIXTRON Enables SiC Applications

AIXTRON Enables GaN Applications

Application: Long Term – Compound Semis in Smart Homes

Photonics

Specialty LED

GaN Power

SiC Power

APEVA

NANO: Innovation Pool



AIXTRON Enables GaAs Applications

Night vision IR

Terrestrial CPV

FTTH

3D gesture sensors

Motion sensors

Environmental sensors

5G Home Internet

Smart Lighting LED

Wireless PAs

Med-Tech wearables

Wireless charger



AIXTRON also in...

OLED

CNT based LiB

Charging infrastructure

Main inverter

DC/DC conversion

AIXTRON Enables SiC Applications

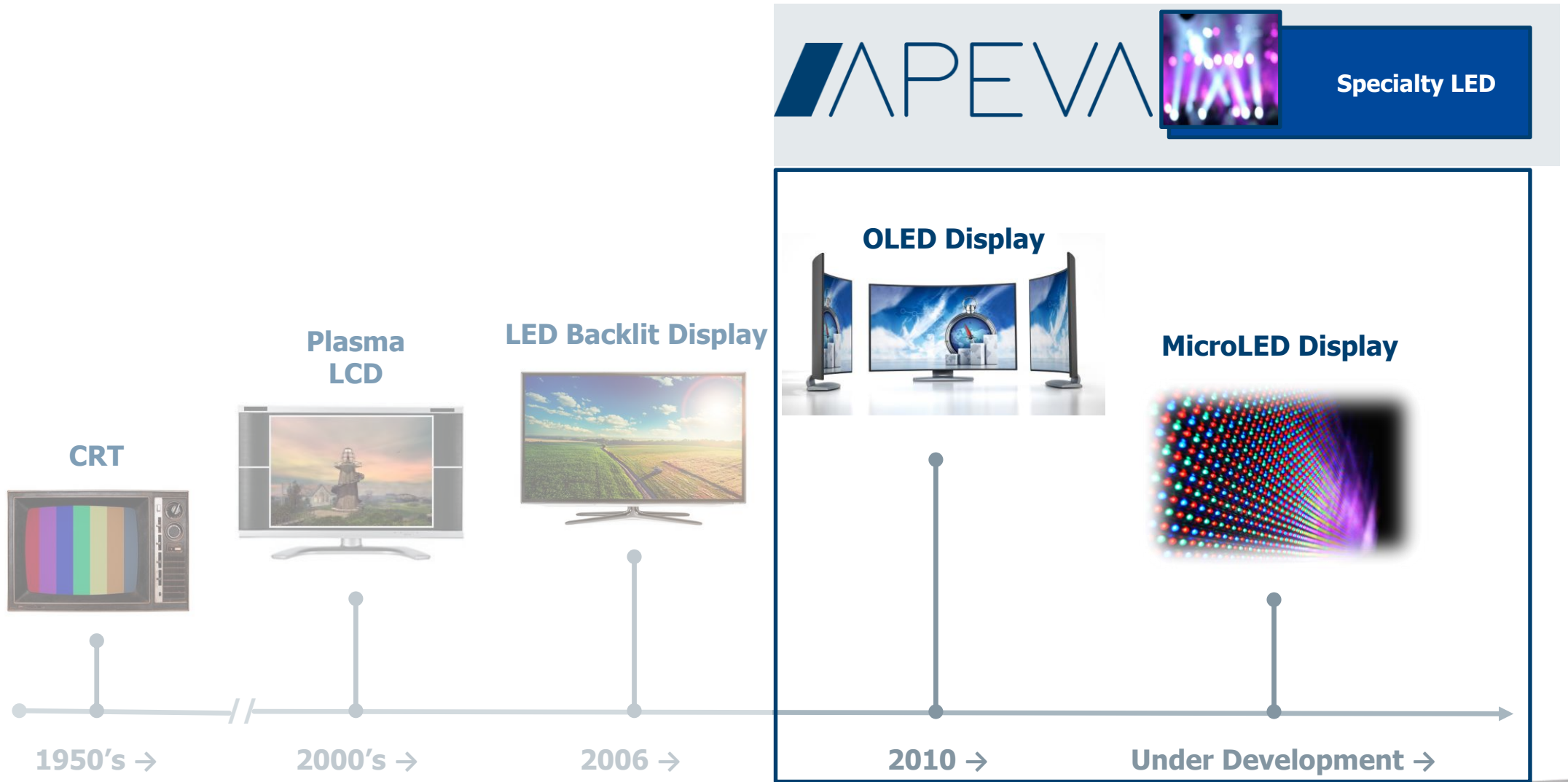
Fast charger

LiDAR
AR Gaming






Infotainment

AIXTRON Enables GaN Applications

AIXTRON – Instrumental in Evolving Display Technologies



Overview: GaN/SiC as Wide Band Gap (WBG) Power Electronics

Consumer Electronics & IT		Automotive	Energy	Industrial
Power Management		Power Switching		
30V	600V	1.2 kV	≥2kV	
<ul style="list-style-type: none"> • Electronic appliances • Computing • Wireless charging • Power supplies • PFC 	<ul style="list-style-type: none"> • Infotainment • GPS • Connected car • Autonomous driving • EMI/EMC • Adaptive cruise control 	<ul style="list-style-type: none"> • General automotive electronic • HEV/EV • Charging station • Inverter / motor drives • Converter • Radar test applications 	<ul style="list-style-type: none"> • Power Grid / Smart meter / appliances • Solar / Wind inverters • Solar / Wind power DC distribution • storage • UPS 	<ul style="list-style-type: none"> • UPS • Industrial machines • Building • Mining, oil, gas power generation • Shipping/Rail 
GaN		GaN / SiC		SiC

Volume segment

Niche segment

Devices: GaN/SiC Power Electronics – Superior Performance

Source: icons from www.flaticon.com



More Efficient



Energy Saving

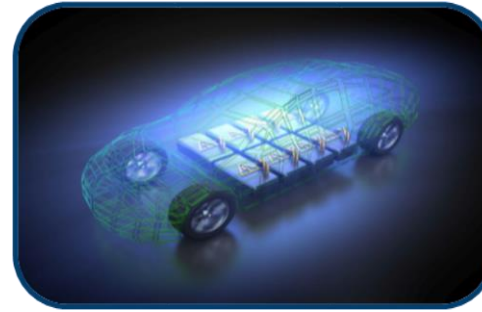
Less Heat

Light Weight

Lower System Cost



Smaller



Electric Vehicles



EV-charging



Data Centers



Renewable Energy



Wireless Charging

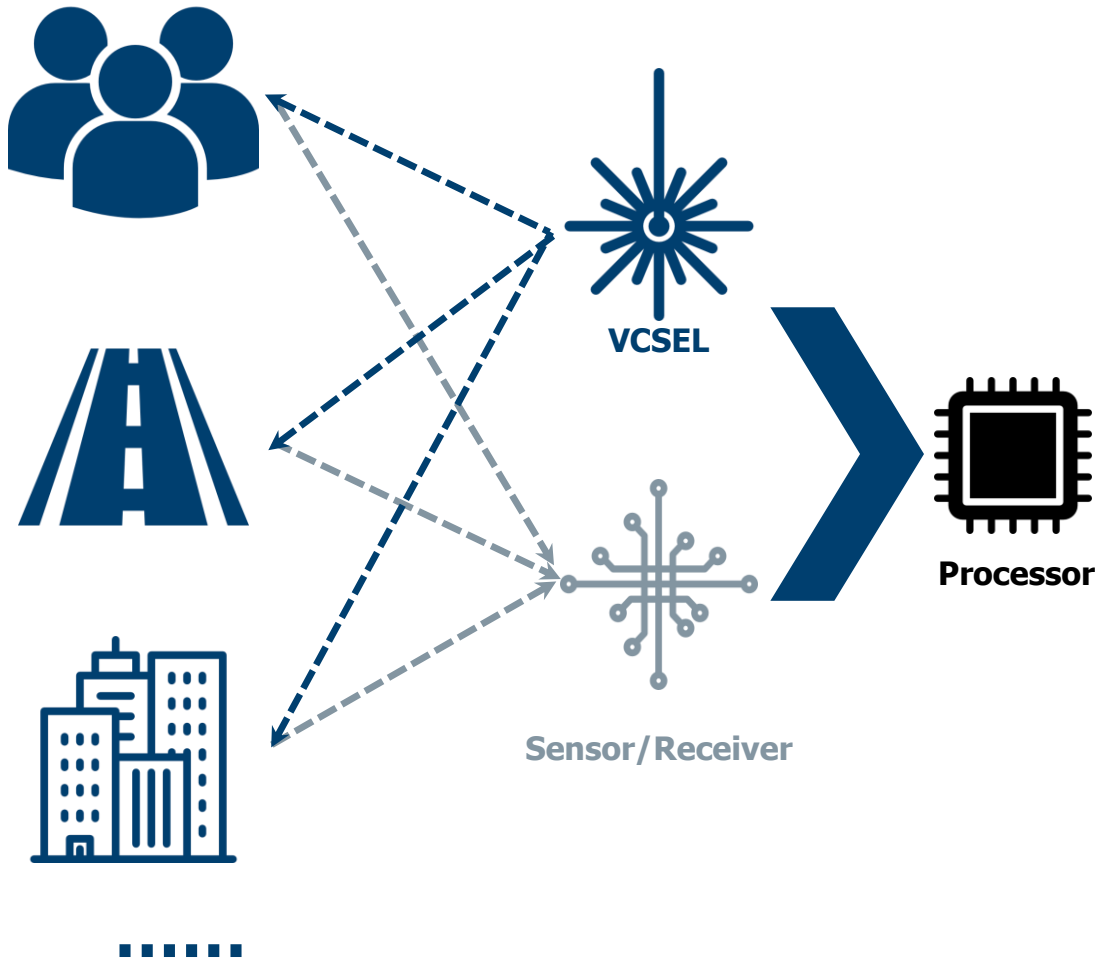


Fast Charging

Devices: VCSEL – Internet of Things Creates New Opportunities

Source: icons from www.flaticon.com

3D Sensing Functionality



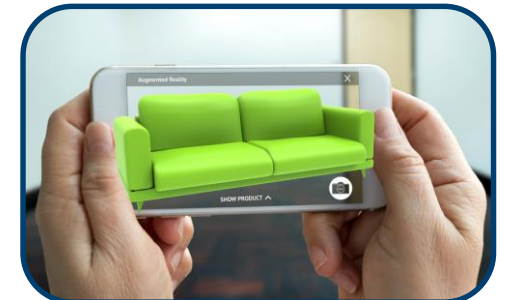
Facial Recognition



Autonomous Driving



Tailor-made clothing/shoes



Interior Design



Mapping

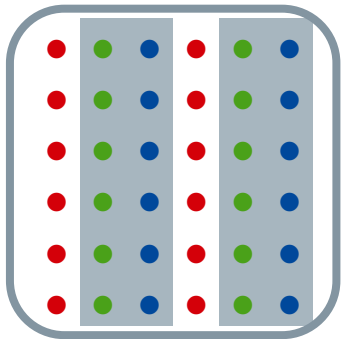


Industry 4.0

Devices: ROY LEDs for RGB Displays; UV LEDs for Niche Markets

Source: LEDinside

ROY LED

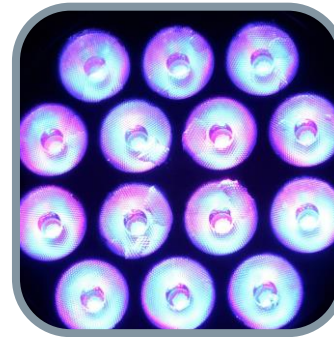


RGB Fine-Pitch Indoor Display
(Pixel Pitch $\leq 2.5\text{mm}$)



RGB Stadium Outdoor Display
(Pixel Pitch $\geq 10\text{mm}$)

UV LED



Curing



Water Disinfection



Air Purifier

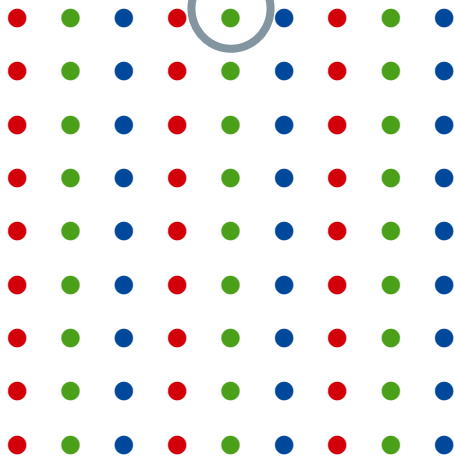
Devices: MicroLED – The Perfect Future Display Technology

RGB
MicroLED
Display



1

100



RGB
LED
Display

Self-Emissive

Low Power
Consumption

Perfect
Contrast

High
Brightness

Fast
Response

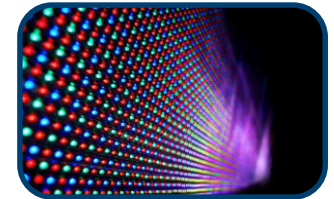
Source: LEDinside



Wearables



AR/VR



Signage



Smartphones/Tablets/TVs

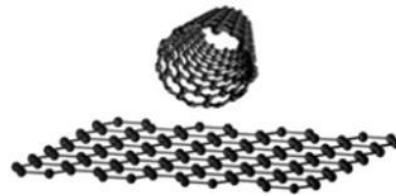
Carbon Nanomaterials – PECVD

Graphene and Carbon Nanotube Deposition Systems

- Proprietary thermal and plasma enhanced chemical vapor deposition technology
- Excellent uniformity and reproducibility with fast turnaround cycle times
- BM platform: BM R&D (2-inch), BM Pro (4-inch and 6-inch), BM GB (4-inch glovebox), BM HT (high temperature, 1,700C), BM300T (300mm)
- Graphene and carbon nanotube films for electronics, energy storage, thermal management, sensors and flexible/transparent applications

Product features

- Fast response heater and turnaround
 - Thermal CVD
 - Substrate and top heating
-
- Closed loop infrared wafer temperature control
 - Plasma enhanced CVD with frequency control
 - Flexible processing for different applications
-
- Low cost of ownership
 - Easy maintenance and cleaning
 - User management features and growth library



Graphene (2D) and Carbon nanotube (1D)
 Unique combination of high electrical/thermal conductivity, mobility, flexibility and transparency



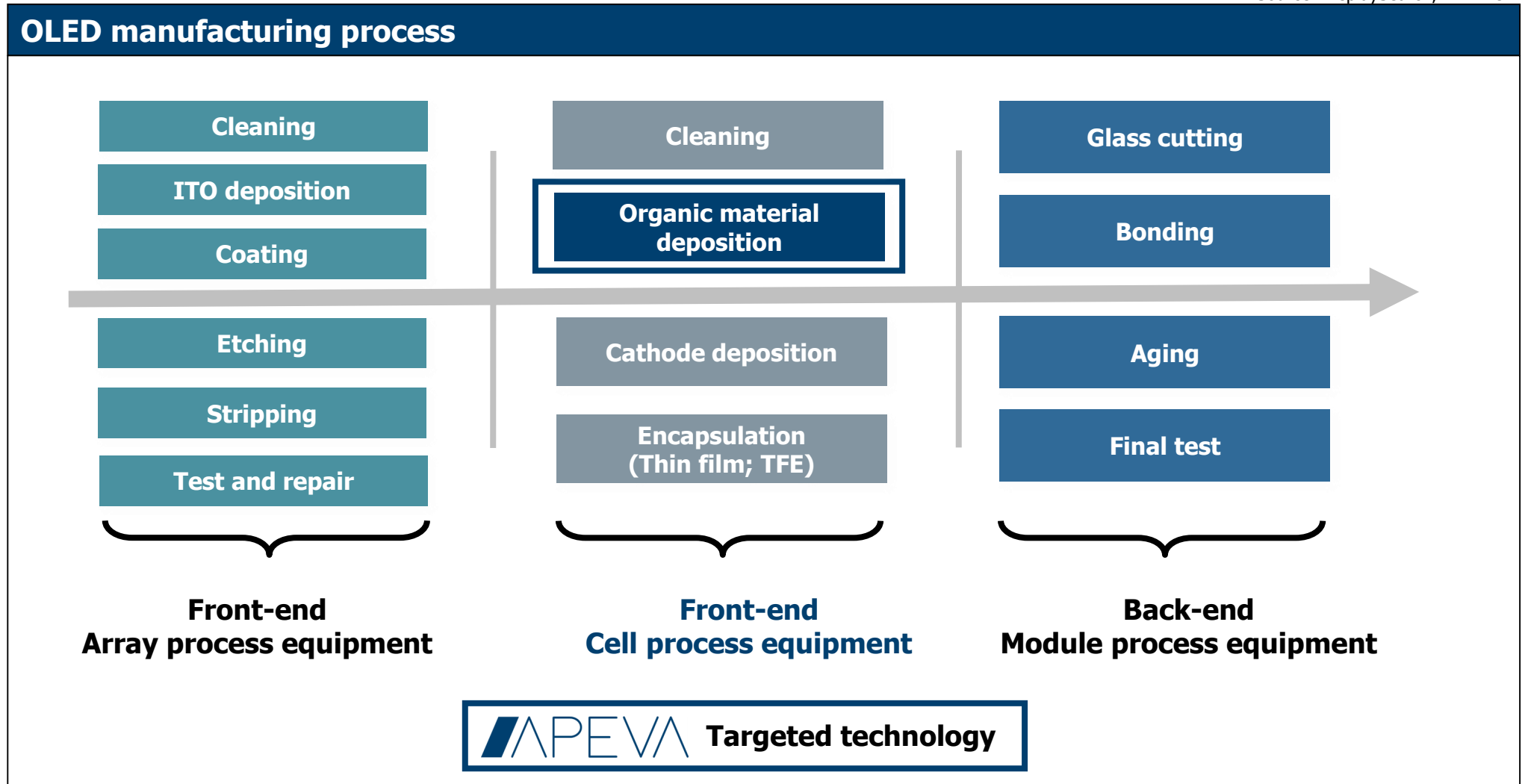
Serving R&D market today
 AIXTRON BM Pro



Production ready for tomorrow
 AIXTRON BM Pro 300

Organic Electronics – OVPD[®] – APEVA

Source: DisplaySearch, AIXTRON

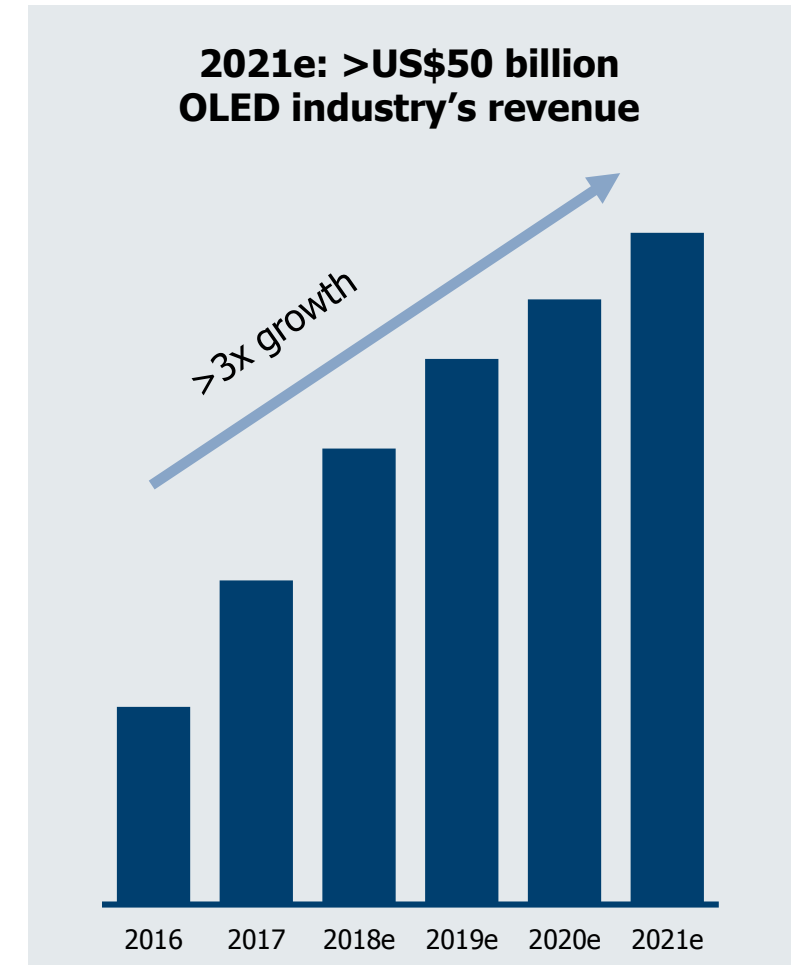


OVPD[®] – APEVA: Disruptive OLED Manufacturing Technology

Source: UBI Research, Display Supply Chain

OVPD[®] enables production of next generation displays

- ✓ Higher quality displays
- ✓ High material utilization efficiency
- ✓ Lower production cost and smaller footprint
- ✓ Free scalability



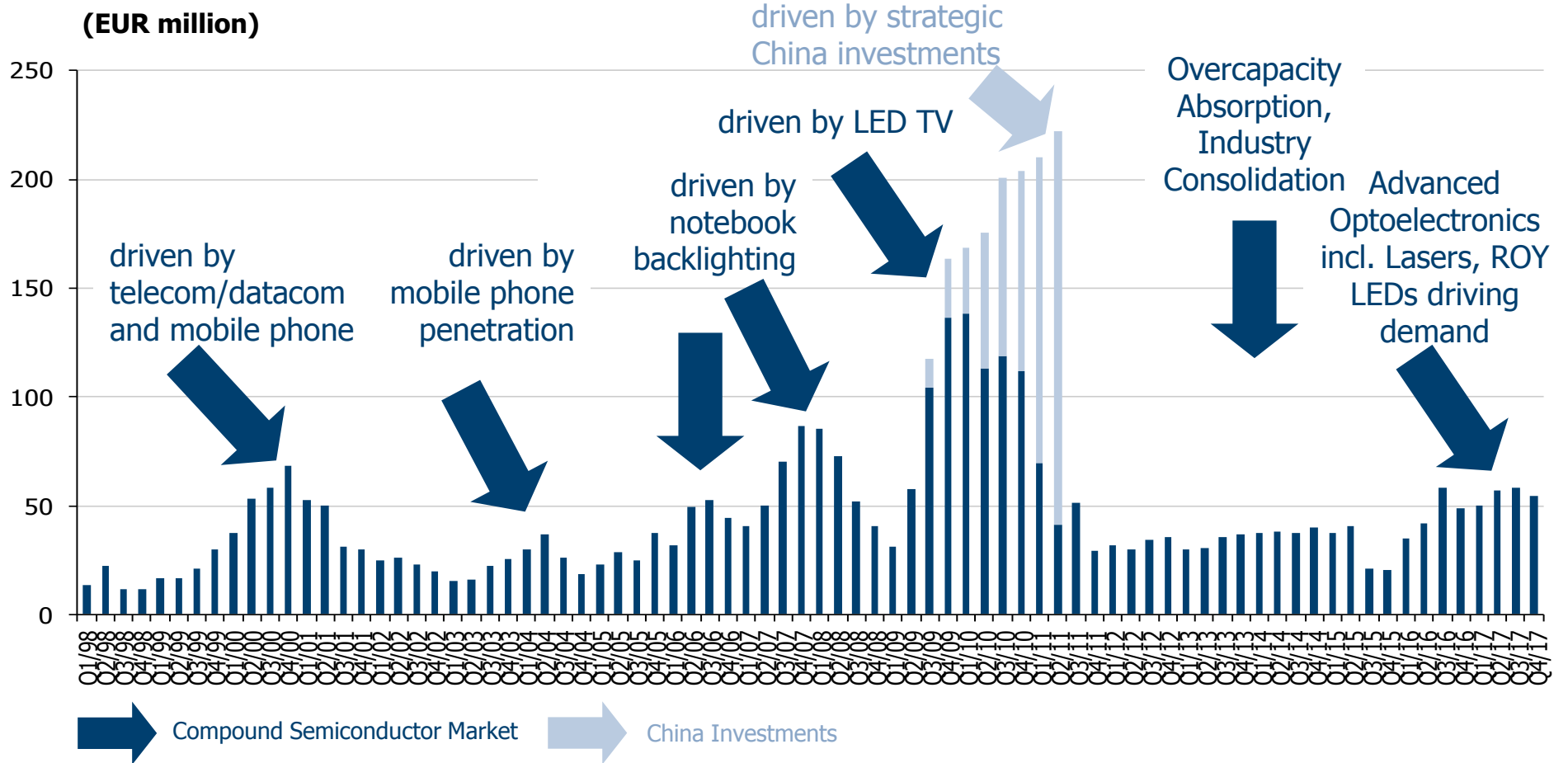
AIXTRON Competitive Landscape

		USA	Europe	China	Korea	Japan
Opto	GaAs/InP Optoelectronics, ROY LED					
	GaN LED			 		
Power	GaN Power					
	SiC Power					 
OLED					    	 CANON TOKKI CORPORATION 

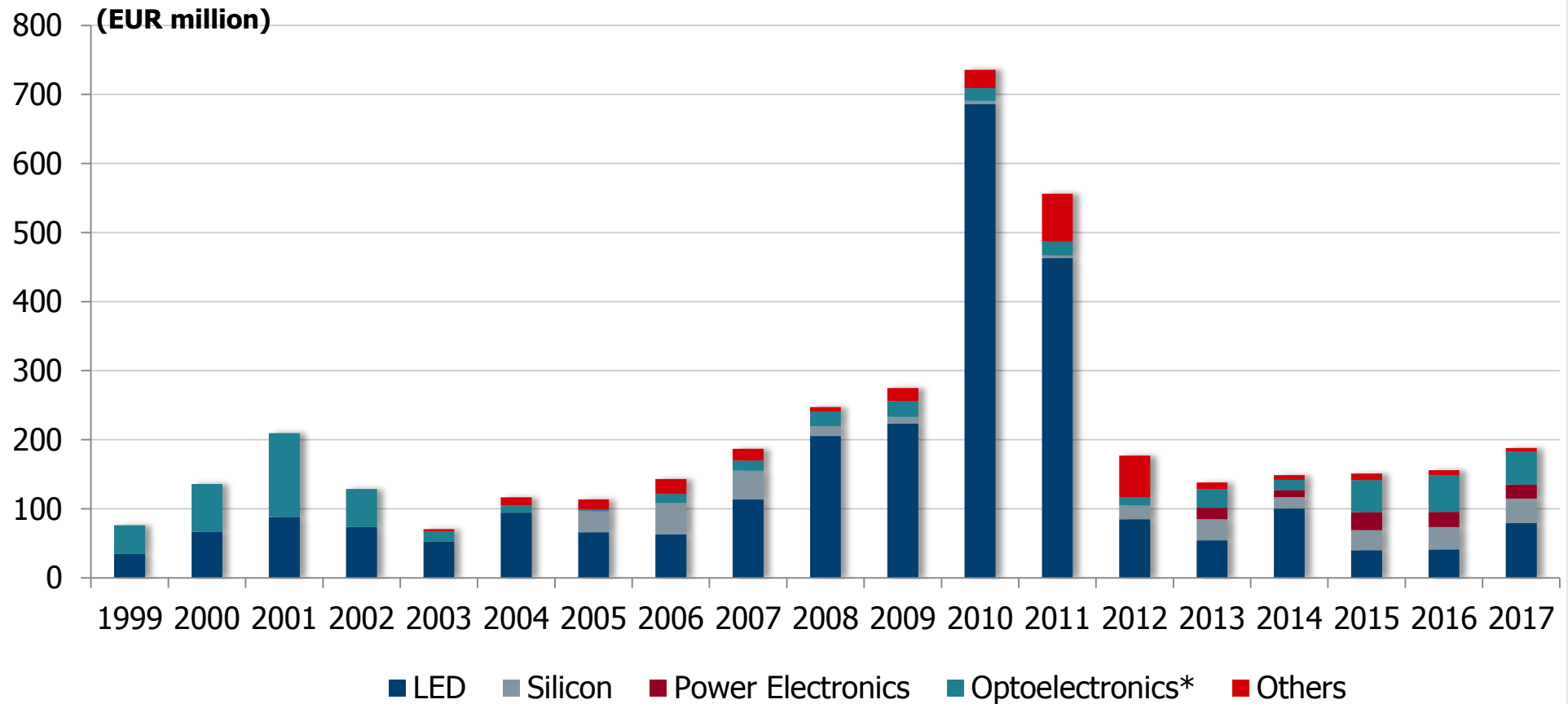


Our *technology*. YOUR FUTURE.

Equipment Order Intake per Quarter



Annual Equipment Revenues by Application (excl. spares)



* Optoelectronics includes applications in Consumer Optoelectronics, Telecom/Datacom, Solar, etc.

Consolidated Income Statement*

* Rounded figures; may not add up

(€ million)	2017	2016	2015
Revenues	230.4	196.5	197.8
Cost of sales	156.4	140.2	147.9
Gross profit	74.0	56.3	49.8
%	32 %	29 %	25 %
Selling expenses	10.2	13.8	11.5
General & admin expenses	17.1	17.1	16.3
R&D	68.8	53.9	55.4
Net other operating income	27.0	7.2	6.7
EBIT	4.9	-21.4	-26.7
%	2 %	-11 %	-14 %
Result before tax	5.5	-21.0	-26.0
%	2 %	-11 %	-13 %
Net result	6.5	-24.0	-29.2
%	3 %	-12 %	-15 %

Balance Sheet*

* Rounded figures; may not add up

(€ million)	31/12/17	30/09/17	31/12/16
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Current liabilities	84.2	80.2	62.3
Balance Sheet total	455.1	424.1	436.2

Consolidated Statement of Cash Flows*

* Rounded figures; may not add up

(€ million)	2017	2016	2015
Cash Flow from operating activities	70.1	-37.7	-45.7
Cash Flow from investing activities	40.7	43.4	41.2
Cash Flow from financing activities	1.2	0.3	-0.1
Exchange rate changes	-5.5	-2.3	4.3
Net change in Cash & Cash Equivalents	106.5	3.7	-0.3
Cash & Cash Equivalents (beginning of period)	120.0	116.3	116.6
Cash & Cash Equivalents (end of period)	226.5	120.0	116.3
Change in Cash deposits	-19.5	-52.8	-60.5
Free Cash Flow**	91.4	-42.9	-57.3
Capex	9.7	5.3	13.3

**) Operating CF + Investing CF + Changes in Cash Deposits, adjusted for acquisition effects

Financial Calendar & Contact Data

- April 26, 2018 Q1/2018 Results, Conference Call
- May 16, 2018 2018 Annual General Meeting, Aachen, Germany
- July 26, 2018 H1/2018 Results, Conference Call
- October 30, 2018 Q3/2018 Results, Conference Call

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Technology. Materials. Performance.

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