INVESTOR PRESENTATION

November 2019

Safe Harbor Statement

This presentation contains statements about management's future expectations, plans and prospects of our business that constitute forward-looking statements, which are found in various places throughout the press release, including, but not limited to, statements relating to expectations of orders, net sales, product shipments, expenses, timing of purchases of assembly equipment by customers, gross margins, operating results and capital expenditures. The use of words such as “anticipate”, “estimate”, “expect”, “can”, “intend”, “believes”, “may”, “plan”, “predict”, “project”, “forecast”, “will”, “would”, and similar expressions are intended to identify forward looking statements, although not all forward looking statements contain these identifying words. The financial guidance set forth under the heading “Outlook” contains such forward looking statements. While these forward looking statements represent our judgments and expectations concerning the development of our business, a number of risks, uncertainties and other important factors could cause actual developments and results to differ materially from those contained in forward looking statements, including any inability to maintain continued demand for our products; failure of anticipated orders to materialize or postponement or cancellation of orders, generally without charges; the volatility in the demand for semiconductors and our products and services; failure to develop new and enhanced products and introduce them at competitive price levels; failure to adequately decrease costs and expenses as revenues decline; loss of significant customers, including through consolidation or the emergence of industry alliances; lengthening of the sales cycle; acts of terrorism and violence; disruption or failure of our information technology systems; inability to forecast demand and inventory levels for our products; the integrity of product pricing and protection of our intellectual property in foreign jurisdictions; risks, such as changes in trade regulations, currency fluctuations, political instability and war, associated with substantial foreign customers, suppliers and foreign manufacturing operations, particularly to the extent occurring in the Asia Pacific region; potential instability in foreign capital markets; the risk of failure to successfully manage our diverse operations; any inability to attract and retain skilled personnel; those additional risk factors set forth in Besi's annual report for the year ended December 31, 2018; and other key factors that could adversely affect our businesses and financial performance contained in our filings and reports, including our statutory consolidated statements. We expressly disclaim any obligation to update or alter our forward-looking statements whether as a result of new information, future events or otherwise.

Agenda

I. Company Overview

II. Market

III. Strategy

IV. Financial Update and Summary

V. Appendix

I. COMPANY OVERVIEW

Besi Overview

Corporate Profile	• Leading assembly equipment supplier with #1 and #2 positions in key markets. 32% addressable market share • Broad portfolio: die attach, packaging and plating • Strategic positioning in substrate and wafer level packaging • Global operations in 6 countries; 1,634 employees. HQ in the Netherlands
Financial Highlights	• LTM revenue and net income of € 356.3 million and € 70.3 million • Cash/deposits at Q3-19: € 383.7 million • Net cash/deposits at Q3-19: € 106.9 million • € 643.6 million of dividends and share repurchases since 2011*
Investment Considerations	• Applications for emerging digital society are key long term drivers: Internet of Everything, AI, Big Data, Cloud computing, 3D imaging, 5G network roll out • Advanced packaging is critical part of semi value chain to realize promise • China market growth and share gains also benefit revenue development • European overhead reduction, optimization of Asian production and common parts initiatives also help drive profit potential

* Includes 2018 dividend payment of € 1.67 per share and share repurchases through October 31, 2019.

Company History

Die Attach Acquisitions

- RoA • 2000
- Laurier • 2002
- Datacon • 2005
- Oerlikon esec • 2009

Product Strategy

- Expanded advanced packaging leadership into die attach area
- Gained market share organically and via acquisitions
- Gained mindshare with key industry leaders
- Growth in China, key customers and electronics supply chains

Successful Execution of Strategic Plan Initiatives

- Asian production transfer combined with European restructuring enhanced profit potential
- Developed two key Asian production hubs (MY and CN), Singapore development/support center and Asian supply chain
- Scalability enhanced. Break even revenue levels reduced

Financial Metrics

- Achieved peer leading gross and net margins
- Improved cash flow generation
- Implemented attractive capital allocation policy

Revenue (€ millions): 0, 100, 200, 300, 400

Gross Margin (%): 20%, 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%

	2003 (BE Semiconductor Industries)	LTM (Besi)
Revenue	€ 85.5	€ 356.3
Gross Margin	25.9%	55.8%

Legend: Revenue, Gross Margin

Best in Class Product Portfolio

Die Attach

Die Bonding
- 2100 xP plus / hS
- 2100 sD plus / PPP plus
- 2100 sD advanced New
- 2100 SSI
- 2100 DS New
- 2100 SC
- 2100 hS i New
- 2100 sD advanced i New

Multi Module Attach
- 2200 evo
- 2200 evo plus
- 2200 evo hS New
- 2200 evo advanced New

Flip Chip
- 8800 CHAMEO advanced New
- 8800 TC advanced New
- 8800 FC QUANTUM advanced New
- 2100 FC hS New

Die Sorting
- WTT New
- TTR New

Die Lid Attach
- DLA New

Packaging

AMS-i/X
- Leadframe
- MEMS
- Sensors

AMS-LM
- Substrate

FML New
- Wafer
- Panel

FCL
- X
- P New
- X/P New

FSL
- Singulation
- Sorting

Plating

Plating
- Leadframe
- Solar
- Film & Foil
- Battery

In Development

- Next generation Die Attach
- Next generation Packaging
- Common modules

Customer Ecosystem

- Diversified, blue chip customer base, top 10 = 54% of 2018 revenue
- Leading IDMs and subcontractors. 68%/32% split in 2018
- Also supply leading fabless companies: Qualcomm, Broadcom, MediaTek via subcontractors
- Long term relationships, some exceeding 50 years

Product Positioning

Semiconductor Manufacturing Equipment (2018: $68.6B)*		
Front end: $57.8B (84.3%)	**Assembly: $4.3B (6.3%)**	Test: $6.5B (9.4%)

Semiconductor Assembly Process

Dicing	Die Attach	Wire Bond	Packaging**	Plating	
	Besi		Besi	Besi	Leadframe Assembly
	Besi		Besi		Substrate Wire Bond Assembly
	Besi		Besi		Substrate Flip Chip Assembly/TCB
	Besi		Besi		Wafer Level Packaging Flip Chip Assembly/Fan Out

* Source: VLSI November, 2019
** Includes Molding, Trim and Form and Singulation Systems

Operational Profile

Duiven & Drunen, (The Netherlands)
Steinhausen, (Switzerland)
Radfeld, (Austria)
Chandler
Suzhou
Chengdu
Korea
Shanghai
Leshan
Taiwan
Shenzhen
Philippines
Malaysia
Singapore

- Sales Office
- Production Site
- Sales, Production and R&D Site

- Development activities in Europe
- Production in Asia
- Sales/service activities in Asia, US and Europe

LTM September 30, 2019				
	Europe/NA		Asia	
Revenue (MMs)	€ 95.2	26.7%	€ 261.1	73.3%
Headcount	507	31.0%	1,127	69.0%

Summary Financials

Year Ended December 31, (€ millions, except share data)	2016	2017	2018	YTD-18	YTD-19
Revenue	375.4	592.8	525.3	432.7	263.8
% seq. change	*8%*	*58%*	*-11%*		*(39%)*
Gross margin	*51%*	*57%*	*57%*	*57%*	*56%*
EBITDA	89.8	222.8	187.7	157.2	79.9
Pretax income	73.6	199.2	154.9	132.9	54.7
Net income	65.3	173.2	136.3	113.5	47.6
Net margin	*17%*	*29%*	*26%*	*26%*	*18%*
EPS (diluted) [a]	0.85	2.17	1.68	1.40	0.63
EPS (basic) [a]	0.87	2.32	1.83	1.52	0.63
Dividend per share [a]	0.87	2.32	1.67		
Net cash	168.1	247.6	199.4	160.1	106.9

[a] Adjusted for 2:1 stock split in May 2018

Long term, step function revenue growth
- Last peak reached in 2017 at € 592.8 million
- Current revenue trends affected by market downturn starting in mid 2018
- Orders have stabilized in 2019

Strong margins and profit potential
- Attractive gross margin of 55%+ achieved
- Net margin of 18% in YTD-19 despite 39% YOY revenue decrease
- 29% net margin realized in last market peak
- Flexible production and strategic headcount initiatives have kept costs under control

Cash generation supports shareholder friendly capital allocation policy
- € 161.3 million paid in YTD-19 in form of dividends and share repurchases

Business Model Objectives

Objectives

	Objectives
Revenue	€ 800MM
Addressable Market Share	40%+
Gross Margin	55-60%
Net Margin	30-35%
Headcount Split	80% Asia/20% Euro

Capital Allocation Trends

€ millions

	2011	2012	2013	2014	2015	2016	2017	2018	YTD 2019*
Dividends	6.8	8.1	11.3	12.4	56.9	45.4	65.3	174.0	122.4
Share Repurchases	15.1	0.9	2.7			22.0	23.5	35.5	42.6
Total	21.9	9.0	14.0	12.4	60.4	67.4	88.8	209.5	165.0
Dividends (%)	31%	90%	81%	100%	94%	67%	74%	83%	74%
Share Repurchases (%)	69%	10%	19%		6%	33%	26%	17%	26%

- Shareholder friendly capital allocation program
- € 643.6 million distributions since 2011:
  - € 165.0 million YTD 2019
  - Share repurchases have increased as % of mix in recent years
- Current share repurchase program extended until October 2020:
  - At end of Q3-19, 7.7 million shares in treasury relative to 8.0 million authorization (10% of shares outstanding)

* Dividend and share repurchases through October 31, 2019

II. MARKET

What Drives Besi's Business?

Macro GDP trends

Tech capabilities in 24/7 production environment

IDM customer and supply chain choice

Timing of customer roadmaps and capital spending programs

Competitive cycle times and scalability

Assembly Equipment Market Trends

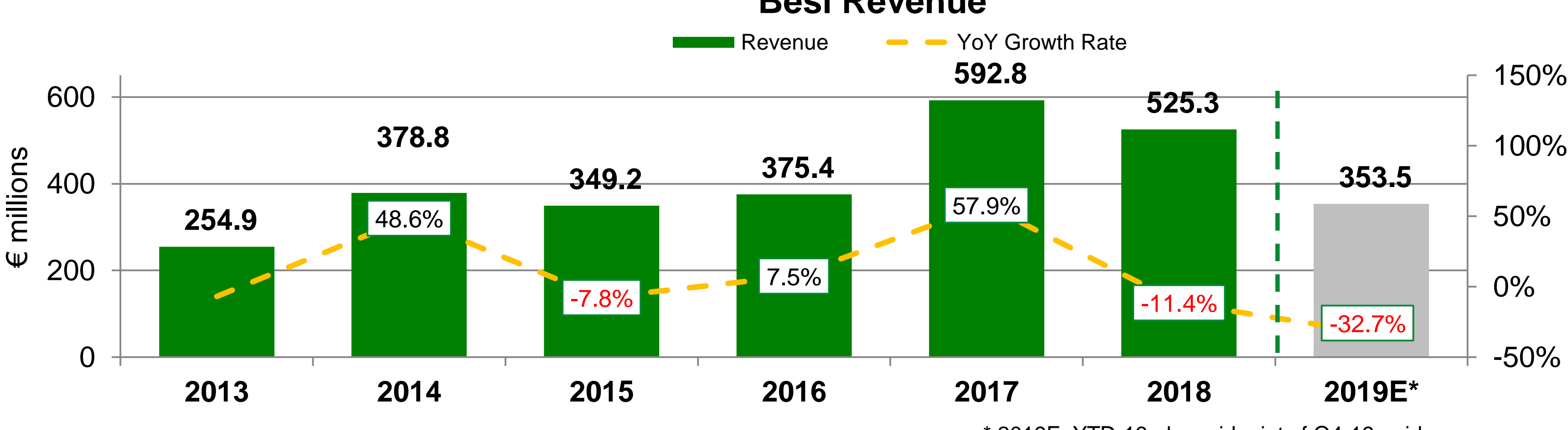
Assembly Equipment Market

Market Size | YoY Growth Rate

US$ billions

	2013	2014	2015	2016	2017	2018	2019E	2020E	2021E
Market Size	3.0	3.7	3.1	3.5	4.4	4.3	3.1	3.5	3.8
YoY Growth Rate		22.3%	-16.3%	12.7%	25.8%	-2.5%	-27.0%	10.3%	10.3%

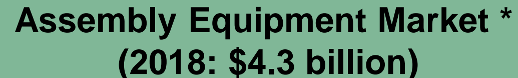
Source: VLSI November 2019



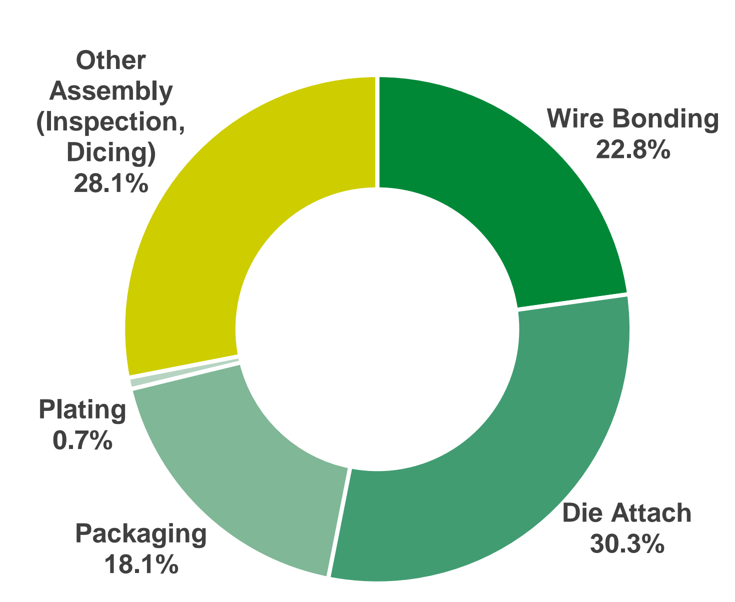
* 2019E: YTD-19 plus midpoint of Q4-19 guidance

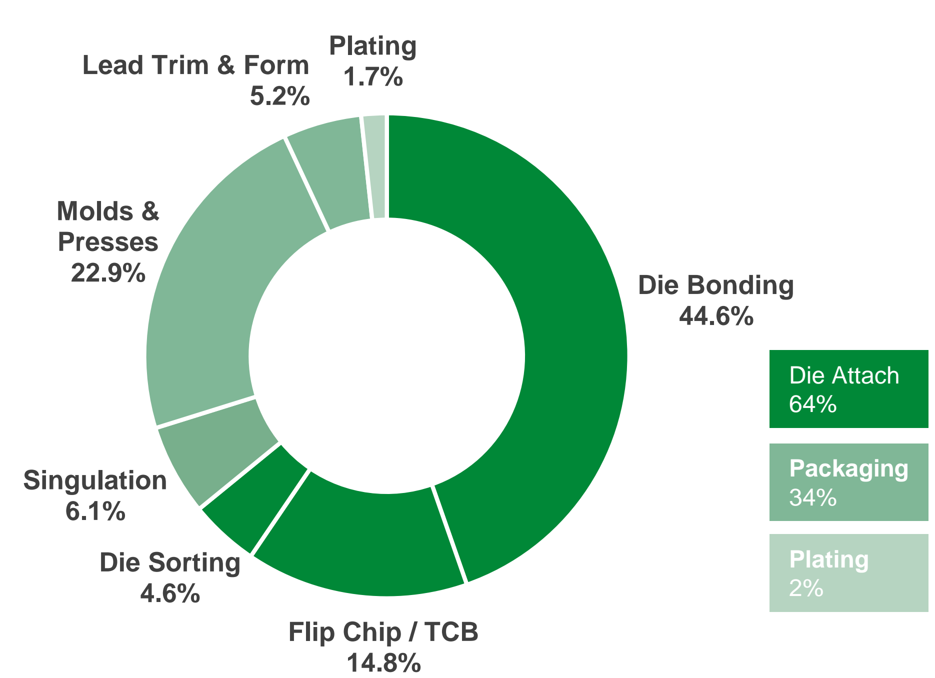
- VLSI now forecasts -27.0% for 2019 with recovery estimated in 2020 and 2021

Assembly Equipment Market Composition



Besi Addressable Market *
(2018: $1.8 billion)





* Source: VLSI July 2019

- Roughly half of assembly market represented by die attach and packaging equipment
- Die Attach represents Besi's largest addressable market

Besi Market Share Trends

	2014	2015	2016	2017	2018
Total Assembly Market ($MM)	$3,725	$3,119	$3,515	$4,421	$4,313
Besi Market Share	13.5%	12.4%	11.9%	15.1%	13.9%
Addressable Market ($MM)	$1,622	$1,286	$1,540	$1,983	$1,848
Besi Market Share	30.4%	29.6%	27.0%	33.5%	32.4%
Die Attach	36.9%	34.8%	32.9%	40.6%	38.6%
Packaging	17.9%	17.5%	14.4%	16.2%	18.3%
Plating	75.4%	78.5%	85.5%	78.1%	83.6%

- Market share trending upwards
- Can vary p.a. based on customer road maps and advanced packaging needs

% Total Revenue	2017	2018
Die Attach	76.4%	81.6%
Packaging	19.2%	15.2%
Plating	4.4%	3.2%

Source: VLSI November 2019 and Besi estimates

New Era of Chip Growth and Applications Will Drive Greater Computing and Data Needs

PC Internet

Mobile
Social Media
Cloud

AI & Big Data

Data in zettabytes

50
45
40
35
30
25
20
15
10
5
0

AI inflection point

New wave of computational requirements

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

gigabytes exabytes zettabytes

Source: IMEC ITF 2018

KB	MB	GB	TB	PB	EB	ZB	YB
3	6	9	12	15	18	21	24

Digital society

Driven by new technologies

- 5G
- AI – big data
- Robotics
- Transportation
- Environment
- Health care

Will need continuous new solutions

- 1zb = 1,000,000,000 tb
- 1zb= 1,000 data centres
- 1zb = 180,000,000 homes (energy requirements)

Requiring Increased Density, Higher Accuracy and Smaller Form Factors for Next Generation Devices

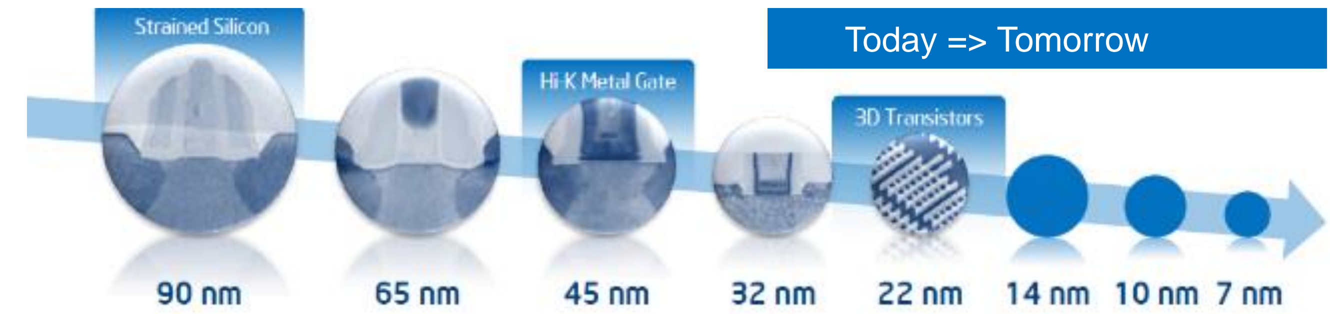
Front End

Transistor scaling

Lithography

New structures 3D

Today => Tomorrow



Back End Assembly

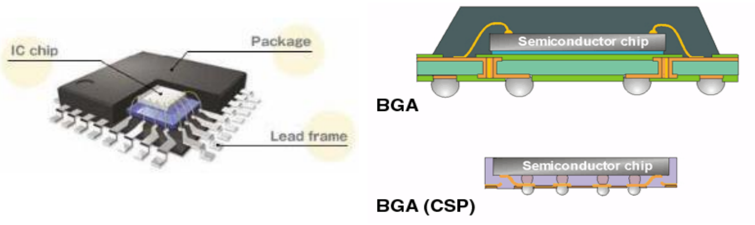
More contacts

Smaller pitches

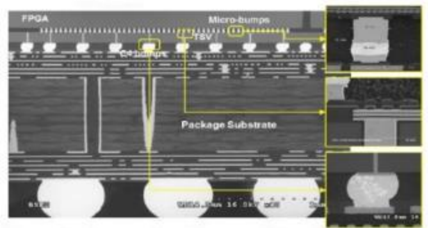
Thinner/denser
more complex packages

Stacked structures 3D

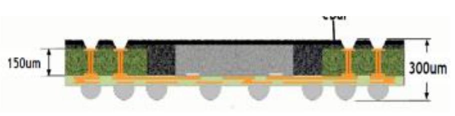
WLP/FOWLP packages



From simple Wire Bond to BGA/Flip Chip



to complex 3D structures with TSVs, microbumps and thin dies



to WLP/FOWLP packages
without substrate interposer

Advanced Packaging Critical to Next Generation Applications

Mobile Revolution

- Mobile internet
- Messaging
- Social media
- Shared economy
- Gaming
- Geo-location
- Audio/video
- Auto electronics

Digital Society

- Smart mfg, cities, mobility and homes
- Driverless cars
- Data mining
- Cloud servers
- IoT
- Wearable devices
- Artificial intelligence
- VR/AR
- High performance Computing
- MEMS

Greater Miniaturization

Greater Complexity

Increased Density

Higher Performance

Lower Power Consumption

Higher Accuracy

Die Bond

Datacon 8800 TC
Datacon 8800 CHAMEO fan-out
Esec DB2009
Esec DB2100

Packaging

Fico AMS-LM
Fico Singulation Line
FML Wafer Molding
Fico Compact Line - X

Besi Portfolio Well Positioned by Node Size and Accuracy

Estimated % of 2018 Revenue

Share of revenue	Accuracy Micron	Size NM	Typical Application	Besi Equipment
25%	10+	28+	*Automotive, SiP Power*	*Die Attach Packaging Plating*
20%	10	28	*IOT General ICs*	*Die Attach Packaging Plating*
40%	7	18	*Computer, PC, Mobile Cloud Computing*	*Die Attach Packaging*
15%	3	10	*High Performance Computing Memory*	*Die Attach Packaging*

- **75% of Besi equipment revenue advanced packaging as per VLSI definition**
- 55% equipment revenue is < 7 micron accuracy and sub 18 nanometer
- Most rapidly growing market segment

Advanced Packaging Unit Volume and Market Share Are Increasing

Advanced Packaging Silicon Demand Growth & Market Share 2011 - 2023

CAGR 2011-2023: 16.6%

M wafers, 300MM Eq.: 55, 45, 35, 25, 15, 5, (5)

AP Market Share %: 50%, 40%, 30%, 20%, 10%, 0%

2011 13%
2012 19%
2013 26%
2014 31%
2015 32%
2016 34%
2017 36%
2018 37%
2019 38%
2020 39%
2021 40%
2022 41%
2023 43%

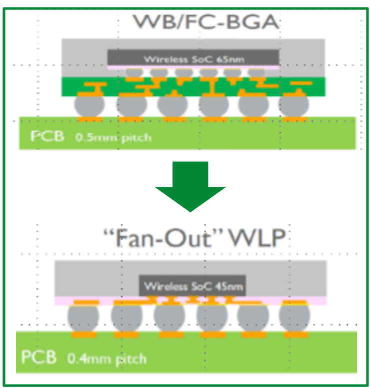
Flip Chip
Wafer Level Packaging
Fan-Out Wafer Level Packaging
TSV (3D & 2.5D)
Advanced Packaging Unit Market Share (%)

- Advanced packaging applications have grown significantly since 2010
  - Currently, estimated 37% of wafers use advanced packaging interconnects
- Leading growth segment of assembly equipment market
- Flip chip and WLP are leading AP assembly processes next five years

Source: VLSI March 2019

Fan Out WLP and TCB/TSV Are Emerging Advanced Packaging Process Technologies

Fan Out WLP (Wafer Level)

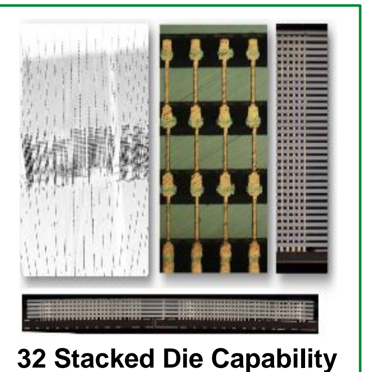


Preferred process for high data transfer and optical devices in IoT, mobile and power

Fan Out Advantages:
- Wafer scale. Eliminates expensive substrate
- No wire bonding
- More cost effective than TSV in many applications by factor of 2x

Leading market position:
- Installed base of ~70 systems in production
- Estimated 70% market share
- Principal Competition: Shibaura

TCB/TSV (Substrate Based)



32 Stacked Die Capability

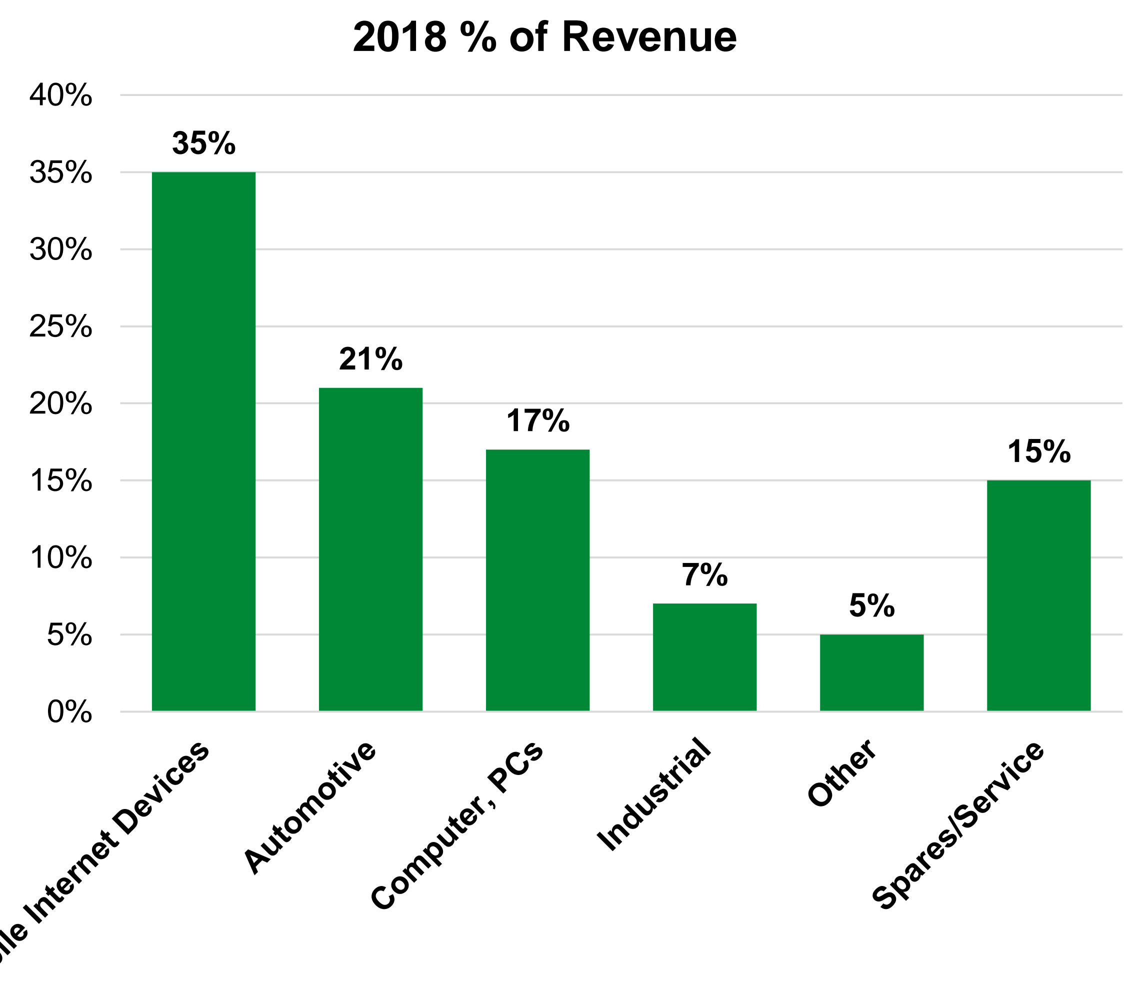
Enabling technology for high end memory and optical applications

Next step beyond Flip Chip

Besi TCB Advantage
- 32 die stack at <5 micron accuracy (current market: 4-8 die stack)
- High accuracy over large area placement
- Highly stable
- Industry leading throughput
- Compact form factor

Leading market position
- Installed base of 40 systems in production
- Estimated 25% market share of active systems
- Highest penetration of memory and GPU markets
- Principal competition: Toray, ASM PT, Shinkawa

Besi End User Application Trends



Source: Company Estimates

- Mobile Internet, Computing and Automotive are largest end markets
  - Estimated 73% of revenue in 2018
  - Percentages vary p.a. based on customer roadmaps
- Mobile is largest market
  - % varies based on timing and success of new product introductions
- Growth in automotive reflects ever increasing electronic content
- Computing growth associated with increased demand for high end logic, cloud and memory solutions
- Spares/service: 15% of 2018 revenue
  - Growth in installed base
  - Less volatile revenue stream

Mobile: 5G Is Coming
Will Drive Increased Mobile Data Traffic and New Applications

Mobile subscriptions by technology (billion)

Source: Ericsson Mobility Report Nov 2018

Mobile: Adoption of 5G Will Expand Applications and Features With Increased Performance

5G

A unifying connectivity fabric

Always-available, secure cloud access

Enhanced mobile broadband

Mission-critical services

Massive Internet of Things

Unifying connectivity platform for future innovation

Convergence of spectrum types/bands, diverse services, and deployments, with new technologies to enable a robust, future-proof 5G platform

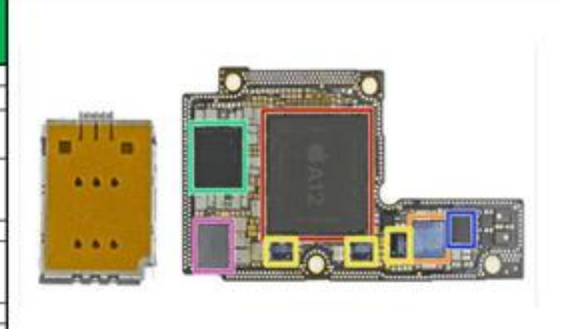
10x	10x	10x	3x	100x	100x
experienced throughput	decrease in end-to-end latency	connection density	spectrum efficiency	traffic capacity	network efficiency

ed on ITU vision for IMT-2020 compared to IMT-advanced

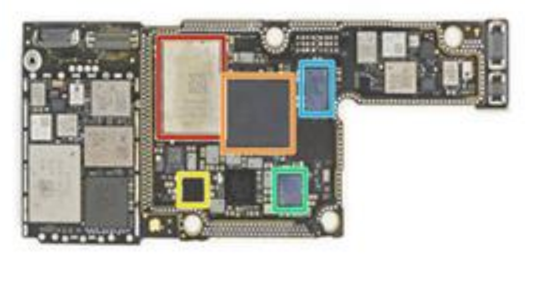
Source: Qualcomm May 2017 ITF Conference

Besi Addressable Market Share of Mobile Increasing

Main Components		Generation 2012	Generation 2014	Generation 2017 iPhone X	Generation 2018 iPhone XS	Manufacturer	IDM/OSAT	Besi system Utilized
Processor		X	X	X	X	Apple	TSMC ->TSMC	8800CHM, MMS-LM
DRAM Memory		X	X	X	X	Hynix/Micron/Samsung	Hynix/Micron/Hanamicron	2100sD, FSL
NAND Flash		X	X	X	X	Hynix/Toshiba/SanDisk	Hynix/Amkor/Toshiba/San disk	2100sD, AMS-W/LM/FCQ8800
Power Management	Apple PM IC		X	X	X	Apple/Dialog	Jcet/Amkor	2100sD, AMS-W/LM
	PMIC	X	X	X	X	STM		N/A
	Power management IC				X	Intel	Amkor	2100sD, AMS-W/LM
M11 Motion coprocessor			X	X		Apple	Amkor/ASE	Amkor/ASE
Accelerometer/Gyroscope/Barometric	Gyroscope	X	X			Invensense	Amkor/ASE/STM	2100xP, 2100sD, AMS-W/LM, FCL
	3-ax accelerometer		X	X	X	Bosch	Bosch	2200evo
	barometric sensor		X	X	X	Bosch	Bosch	2200evo
Charging IC				X	X	TI	Amkor/ASE/TI	2100xP, 2100sD, AMS-W/LM, FCL
Power Delivery IC					X	Cypress	Amkor	None
Wireless charging IC				X		Broadcom		2100xP, 2100sD, AMS-W/LM



Communications		Generation 2012	Generation 2014	Generation 2017 iPhone X	Generation 2018 iPhone XS	Manufacturer	IDM/OSAT	Besi system Utilized
Wifi/NFC	Wifi/Bluetooth module	X	X	X	X	Apple/Murata/	USI	AMS-W/LM / 2100HSi
	NFC		X	X	X	NXP	Amkor /NXP	8800FCQ, AMS-W/LM,2009SSI
	NFC Booster IC		X			AMS	Daca	N/A
LTE	LTE Modem		X	X	X	Qualcomm/Intel	Amkor/Stats/Spil/ASE	8800FCQ, AMS-W/LM
	Low Band LTE PAD		X			Skyworks	Skyworks	2200evo, FSL
	Mid Band PAD		X			Skyworks	Skyworks	2200evo, FSL
	High Band PAD		X			Avago	ASE/Amkor	2100xP, 2100sD, AMS-W/LM
Receiver/ Transceiver	RF Transceiver	X	X	X	X	Qualcomm/Intel	Amkor/ASE	2100xP, 2100sD, AMS-W/LM
	RF Receiver	X	X	X	X	Qualcomm/Intel	Amkor/ASE	N/A
	Envelop Tracking IC		X	X	X	Qorvo	Qorvo	8800FCQ, AMS-W/LM
Antenna Switch		X	X			RFMD	Amkor/ASE,/RFMD	2100xP, 2100sD
PA	PA	X	X	X	X	Skyworks	ASE/Amkor	2100xP, 2100sD, AMS-W/LM
	PA Module		X	X	X	Skyworks/Broadcom	ASE/Amkor	2200evo, 2100sD



Video/Audio		Generation 2012	Generation 2014	Generation 2017 iPhone X	Generation 2018 iPhone XS	Manufacturer	IDM/OSAT	Besi system Utilized
Camera	Back side 12M (OSI)	X	X	X	X	Apple	LG, Sharp	2200evo
	Front 7M	X	X	X	X	Apple	LG	2200evo
	Face ID			X	X	Apple	LG	2200evo
	Dot Projectors (VCSEL)			X	X	Finisar / Lumentum	Finisar / Lumentum	2200evo
Audio	2+4 microphones		X	X	X	Knowles/Goertek	Knowles/Goertek	2100sD
	Audio Codec	X	X	X	X	Apple	Amkor	2100xP, 2100sD, AMS-W/LM
Touch screen control	Touch screen control	X	X	X	X	Broadcom	Signetics	2100sD
	Touch Transmitter		X			TI	TI	FCL
	OLED PMIC			X	X	ST	ST	2100xP
Display Port Multiplexer					X	NXP	Amkor/ASE	
Sensor	Gyroscope+Accelerometer	X	X	X	X	InvenSense/Bosch	STMicroelectronics	2200evo
	Barometric Pressure Sensor			X	X	BOSCH	Carsem/Amkor/Unisem	2200evo
	Image Sensor			X	X	AMS/STMicroelectronics	AMS/STMicroelectronics	2200Evo

Source: www.ifixit.com

Besi technology can support virtually all device platforms utilized in latest mobile devices.

Automotive: Long-Term Outlook Favorable As Electronic Content and Features Continue to Increase

FOUR MAIN TRENDS IN THE AUTOMOTIVE MARKET

The impact of electrification should be limited over the next five years. Innovations relating to car automation will take over.

Combustion vehicles
EV/HEV/hybrids

Electrification*
Non-thermal vehicles sold
- ~14Munits in 2022
- ~25-30Munits in 2027

Automation
Automated vehicles sold
- ~1-2Munits in 2022
- ~5M level 3** units in 2027

Connectivity
- External connectivity
- In-cabin connectivity

Comfort
- In-cabin comfort

*Includes hybrids; **Level 3 = hands-off

2017
94Munits

2027
105Munits

YOLE Développement

©2018 | www.yole.fr | Trends in Automotive Packaging 7

Source: Yole

Automotive: Requiring a Variety of Package Formats For Customers

Advanced Packages

SiP

Infotainment
A/V, Center Stack, HUD, Telematics

FCBGA

ADAS
Park Assist, Radar, Blind Spot Detection

WLFO

SOIC

Body Electronics
Comfort, HVAC, Lighting

Wirebond Packages

EV/HEV

Power

LQFP

Powertrain
Engine Control Unit, Fuel Injection

QFN

Chassis
Antilock Brakes, Traction Control

Source: Amkor investor presentation April 2019

Computing: Demand for Computing Power Growing Exponentially

EXPLOSION IN DEMAND FOR COMPUTE

INCREASING COMPUTE DEMAND
DIVERSIFYING WORKLOAD NEEDS

COMPUTE DEMAND (MIPS)
~60% CAGR

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

AI
ANALYTICS
HPC
MULTI-CLOUD & ORCHESTRATION
NETWORK
IN-MEMORY DATABASE
VIRTUALIZATION
SECURITY

intel 2019 INVESTOR MEETING Source: Amalgamation of analyst data and Intel analysis.

Source: Intel May 2019

Computing: Assembly Process Becoming Even More Critical Step In CPU Value Chain

3D STACKING AND MULTI CHIP ARCHITECTURE AS IMPORTANT OR EVEN MORE IMPORTANT THAN FRONT END PROCESSES !!!!!!

Log Scale System Performance/Watt

2X /2.4 years

>2X /2.4 years

2008 2018 2028

Improvement opportunities for the next decade

Besi

100% 80% 60% 40% 20% 0

3D stacking

Multi-chip architecture

Memory integration

Software

Micro-architecture

Power management

Process Technology

Includes litho

Source: ASML Investor Day Nov 2018

III. STRATEGY

Summary Operating Strategy

Maintain Best in Class Tech Leadership

- Expand capabilities for:
  - eWLB, TCB, panel size, ultra thin die bonding
  - Large area, ultra thin, wafer level molding
  - Solar and lithium ion battery plating
- Introduce next generation products for next investment round

Increase Market Presence and Share

- Leverage technology leadership to gain share in next upturn
- Increase mainstream penetration of global supply chains with high quality mid-range products
- Expand presence and share of wallet in China

Grow via Timely Acquisitions

- Acquire companies with complementary technologies and products
- Emphasis on wafer level processing
- Seek to leverage Asian production platform and supply chain

Increase Scalability Reduce Cost

- Continue West-East personnel transfer
- Target 80% Asian headcount
- Further reduce euro based costs
- Target local production. Shorten cycle times
- Accelerate common parts development
- Seek € 15-20 million cost savings

Revenue Opportunities

Favorable Drivers:

Digital Society
Big Data
Smart Everything
Cloud Expansion

- Roll out 3D imaging and other features to 4G and 5G mobile customers
- Expand share of Korean and Chinese Android mobile customers
- Increase share of wallet in Memory/Logic space
- Expand share of Japanese automotive supply chain
  - Capitalize on steady growth of electronic content and safety requirements
- Government expansion of Chinese semi infrastructure
- Sale of complete Besi portfolio in local Chinese market
- Renewed customer interest in WLP, Panel WLP and TCB processes

Asian Production Transfer Has Helped Reduce Break Even Revenue Levels and Improved Cash Generation

Asian Production Has Significantly Expanded

Shipments

	China	Other Asian	Total	% Direct
2010	-	396	396	43%
2018	198	937	1,135	98%

Legend: China, Other Asian, % Direct

Leading to Lower Fixed European + NA Headcount

Headcount

	Europe/NA Fixed HC	Asia Fixed HC	Total
2011	741	802	1,543
2018	462	1,230	1,692

Europe/NA Fixed HC change: (37.7%)

And Reduced Break Even Revenue Levels

€ millions

	Break Even Revenue
2011	270
2018	210

Change: (22.2%)

Improved Cash Generation

€ millions

	Cash Flow Ops	CF from Ops/ Revenue
2011	49	15%
2018	184	35%

Materials Cost Reduction Is Also a Key Priority

Material costs are significant = ~35% of revenue

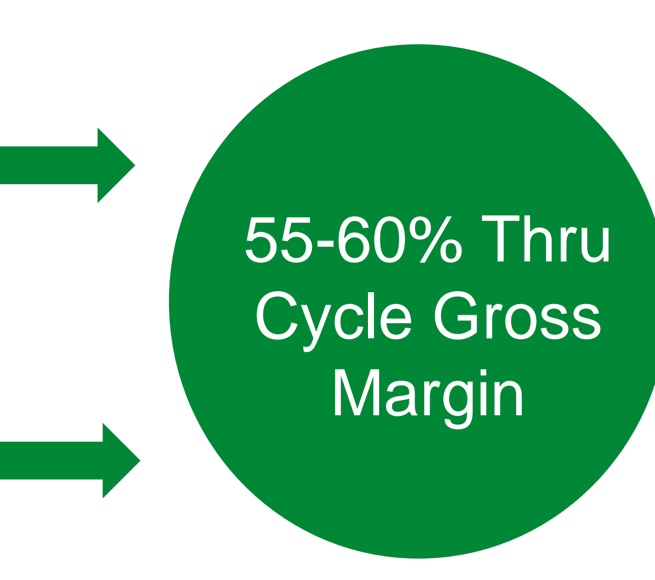
Supply Chain Actions

- 80% of material now purchased in Asia
- Increased outsourcing of modules and high level systems
- Vendor consolidation and volume discounts
- Increased common parts
- Increased Asian sourcing/selected products

- Asian supply chain expansion has:
  - Increased scalability
  - Limited capex and inventory investment
  - Reduced personnel, transport and logistic cost

Development Actions

- Redesign products for common parts, platforms
- Increase standardization
- Lower unit cost, design and maintenance hours
- Shorten cycle times



- Management reviews progress weekly component by component

Flexible Production Model Has Generated Consistent Gross Margins in Market Cycles

Revenue / Gross Margin (€ millions; Gross Margin %)

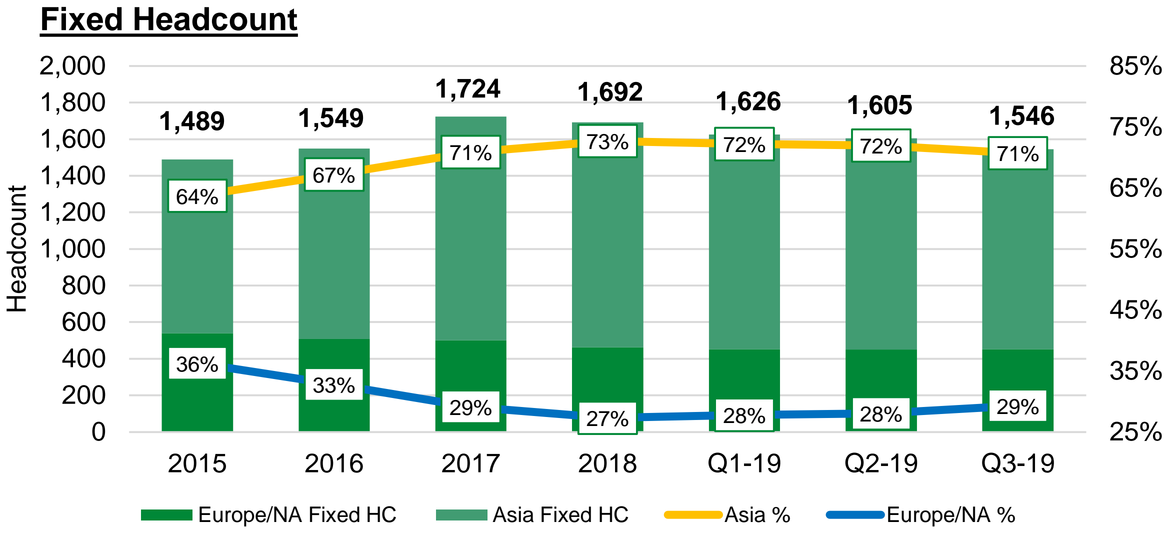
Quarter	Q1-16	Q2-16	Q3-16	Q4-16	Q1-17	Q2-17	Q3-17	Q4-17	Q1-18	Q2-18	Q3-18	Q4-18	Q1-19	Q2-19	Q3-19	Q4-19*
Revenue	79	109	94	93	110	170	159	153	155	161	117	93	81	93	90	90
Gross Margin	49.2%	50.9%	50.5%	53.1%	55.7%	57.3%	58.7%	56.3%	56.5%	56.5%	58.0%	56.4%	55.9%	56.0%	55.1%	55%

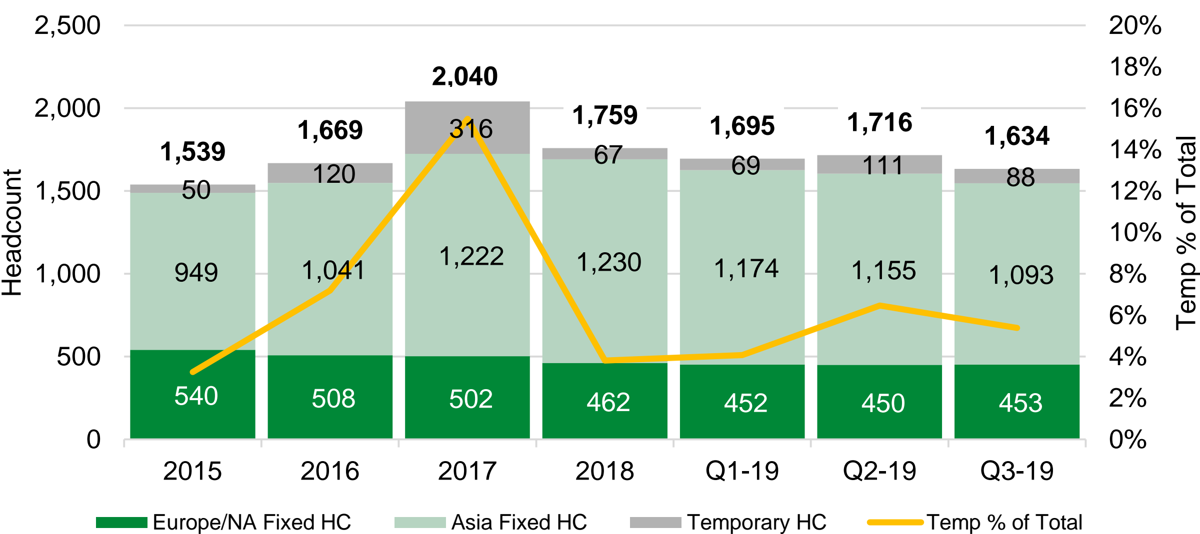
Current Downturn: Q3-18 – Q4-19*

* Midpoint of guidance: Revenue flat (+/- 5%) vs. Q3-19, Gross Margin 54-56%.

Flexible Asian Workforce Has Significantly Enhanced Scalability

Fixed Headcount





- **Headcount adjusted consistent with downturn:**
  - 23.5% reduction realized from peak in Q1-18 to Q3-19
  - Particular focus on SG&A structure currently

- **Asian HC being rationalized in 2019 post large 2015-2018 ramp**
  - Both fixed and temporary workers

- **European and NA fixed HC has declined significantly in recent years:**
  - -39.0 % since 2011
  - -16.2% vs. 2015
  - Stable in 2019 due to R&D ramp

Overhead Tightly Controlled Creating Significant Operating Leverage

Operating Expenses (€ millions)							
	Q3-16	Q3-17	Q3-18	Q3-19	High	Low	Average
Base Line Opex	**24.6**	**27.1**	**26.3**	**23.3**	**27.1**	**23.3**	**25.3**
Other Opex*	3.6	3.3	2.8	0.9	3.3	0.9	2.7
Total	**28.2**	**30.4**	**29.1**	**24.2**	**30.4**	**24.2**	**28.0**

* Includes short-term and long-term incentive compensation, forex effects, restructuring costs and selected one-time effects

- Substantial operating leverage in business model:
  - Average Baseline opex of € 25.3 million has stayed within narrow band over past three years
- Scaled back operations since Q1-18 in alignment with market conditions. Back to 2015-2016 levels

Besi Strategic CSR Objectives

CSR Objectives

- Safeguard safe and healthy working conditions
- Maintain best practices environmental and ethical behavior
- Reduce environmental impact of products and operations
- Promote employee talent, training and diversity
- Conserve natural resources
- Develop sustainable supply chain. Minimize impact of conflict materials
- Reduce packaging, waste, transportation and energy
- Responsible tax practices in all jurisdictions

CSR Activities 2018

- Improvement in KPI metrics for supply chain activities
- RBA certification received
- Conducted customer satisfaction surveys

IV. FINANCIAL UPDATE AND SUMMARY

Attractive Profit and Margins Maintained in Downturn

Q2-19/Q3-19

	Q2-19	Change	Q3-19
Revenue (€ millions)	€ 92.7	- 3.2%	€ 89.7
Gross Margin	56.0%	-0.9 points	55.1%
OPEX	€ 26.8 MM	- 9.7%	€ 24.2 MM
Headcount	1,716	- 82	1,634
Effective Tax Rate	13.5%	- 0.8 points	12.7%
Net Margin	20.4%	+ 1.0 points	21.4%
Net Income	€ 18.9		€ 19.2

YTD-18/YTD-19

	YTD-18	Change	YTD-19
Revenue (€ millions)	€ 432.7	- 39.0%	€ 263.8
Gross Margin	56.9%	- 1.2 points	55.7%
OPEX	€ 99.9 MM	- 18.2%	€ 81.7 MM
Headcount	1,914	- 280	1,634
Effective Tax Rate	14.5%	- 1.5 points	13.0%
Net Margin	26.2%	- 8.2 points	18.0%
Net Income	€ 113.5		€ 47.6

Liquidity Trends

Cash and Deposits / Net Cash (€ millions)

	Q1-18	Q2-18	Q3-18	Q4-18	Q1-19	Q2-19	Q3-19
Cash and Deposits	571.0	395.5	443.5	475.5	507.5	361.7	383.7
Net Cash	290.1	110.2	160.1	199.4	229.7	86.1	106.9

€ 174.0 MM Dividend 2017 (Q2-18)

€ 122.4 MM Dividend 2018 (Q2-19)

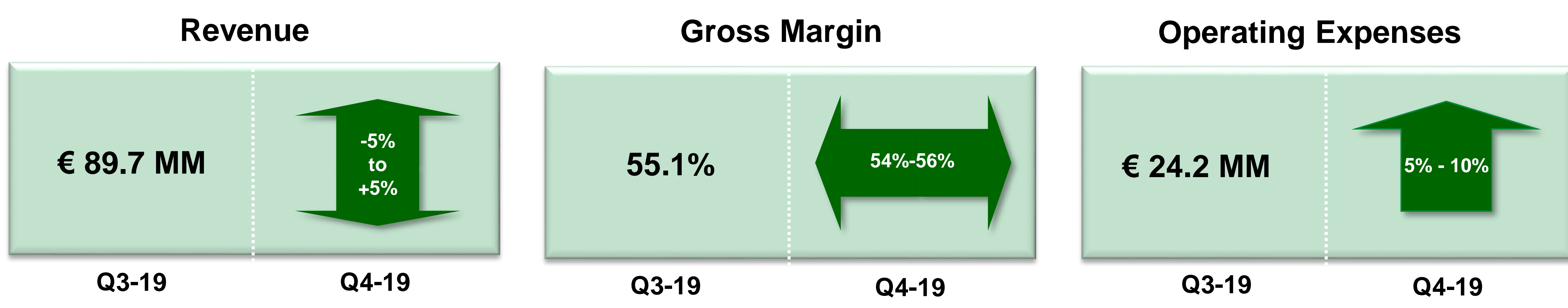
Q3-19 vs. Q2-19

- Net cash increased by € 20.8 million (+24.2%) to € 106.9 million

Q3-19 cash movements

- +€ 38.8 million cash provided by operations
- -€ 13.3 million share repurchases
- -€ 3.2 million capitalized R&D
- -€ 1.0 million capex

Guidance Q4-19



Summary

Assembly market ever more critical step in semiconductor value chain

Long term secular trends drive continued advanced packaging growth

Disciplined strategic focus has created an industry leader

Market presence has grown via key IDM customers and supply chains

Successful Asian production expansion has been a game changer

Tech leadership, scalability and cycle times have led to benchmark financial returns

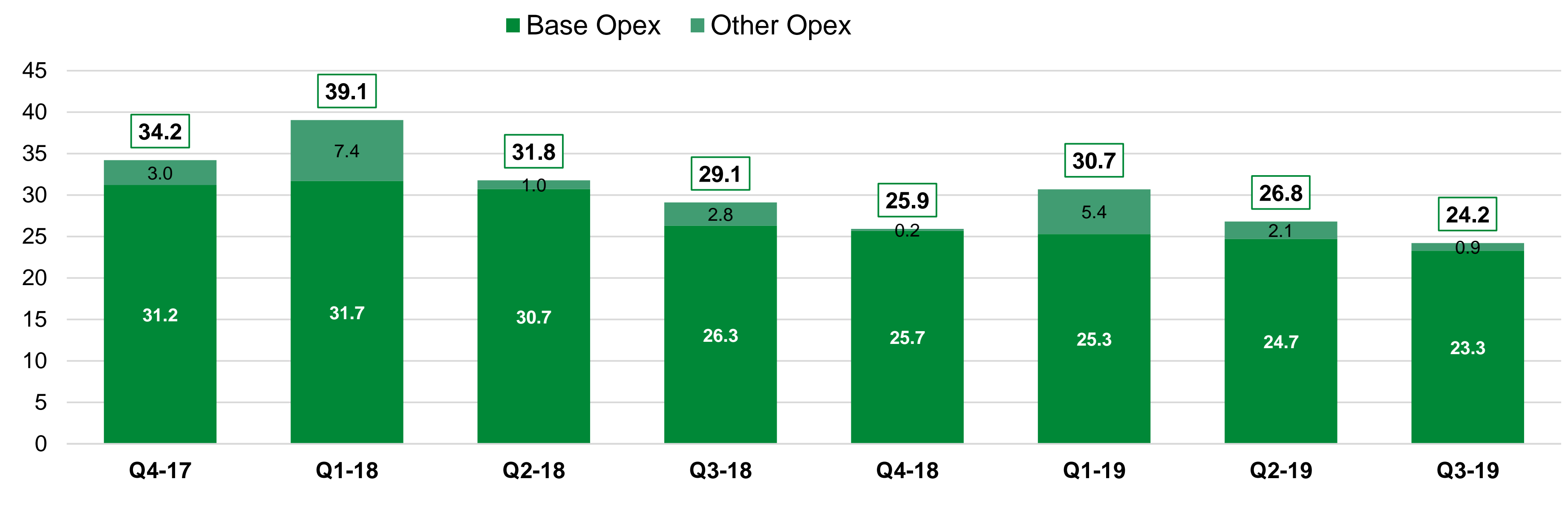
Attractive capital allocation policy rewards shareholders

V. APPENDIX

Revenue and Gross Margin Cycles Since 2006

* 2019E: YTD-19 plus midpoint of Q4-19 guidance

Baseline Operating Expense Trends



Baseline Opex	**31.2**	**31.7**	**30.7**	**26.3**	**25.7**	**25.3**	**24.7**	**23.3**
As % of Revenue	*20.4%*	*20.5%*	*19.1%*	*22.5%*	*27.8%*	*31.0%*	*26.6%*	*25.9%*
Other Operating Expenses								
Capitalization of R&D	(1.8)	(2.6)	(3.4)	(2.7)	(2.7)	(2.9)	(3.0)	(3.2)
Amortization of R&D	2.1	2.1	2.1	2.4	2.3	2.5	2.5	2.6
Capitalization & Amortization , net	*0.3*	*(0.5)*	*(1.3)*	*(0.3)*	*(0.3)*	*(0.5)*	*(0.5)*	*(0.6)*
Variable Pay (a)	3.9	9.5	3.3	2.7	3.1	5.9	3.0	2.7
Restructuring cost/(benefit)	-	-	0.1	0.4	0.2	-	-	0.1
Forex (b) and other	(1.2)	(1.6)	(1.0)	0.0	(2.8)	0.0	(0.4)	(1.3)
Subtotal	**3.0**	**7.4**	**1.1**	**2.8**	**0.2**	**5.5**	**2.1**	**0.9**
Total Opex	**34.2**	**39.1**	**31.8**	**29.1**	**25.9**	**30.7**	**26.8**	**24.2**

(a) Includes both short term and long term incentive comp
(b) Year over year variance per quarter

Net Income Trends

Net Income | Variable Compensation (a) | Net Margin

€ millions

	Q4-17	Q1-18	Q2-18	Q3-18	Q4-18	Q1-19	Q2-19	Q3-19
Total	47.9	47.1	51.0	29.3	26.2	15.9	22.4	22.3
Variable Compensation (a)	4.3	10.0	3.8	3.1	3.5	6.4	3.5	3.1
Net Income	43.6	37.1	47.2	26.2	22.7	9.5	18.9	19.2
Net Margin	28.4%	24.0%	29.3%	25.1%	24.5%	11.7%	20.4%	21.4%

(a) Includes variable compensation from both cost of goods sold and operating expenses

Currency Exposure Trends

	Revenue				Expenses			
	2016	**2017**	**2018**	**2018 ∆ vs. €***	**2016**	**2017**	**2018**	**2018 ∆ vs. €***
Euro	25%	18%	33%		26%	21%	29%	
US dollar	74%	82%	67%	↓	5%	9%	9%	↓
Swiss franc	-	-	-		21%	19%	12%	↓
Malaysian ringgit	-	-	-		30%	31%	31%	↑
Chinese renminbi	-	-	-		11%	13%	10%	↓
Singapore dollar	-	-	-		4%	5%	6%	↓
Other	1%	-	-		3%	2%	3%	
Total	**100%**	**100%**	**100%**		**100%**	**100%**	**100%**	

* Currency variance in 2018 based on average forex rates vs. the euro

- USD is largest revenue exposure
- Cost exposure shifting to Asia:
  - Asian costs grew to 47% of 2018 total from 30% in 2013
  - Production transfer increases importance of MYR, CNY and SGD

Cash Generation Trends

€ millions | % of Revenue

Legend: Total Cash Flow from Operations; As % of Revenue

	2014	2015	2016	2017	2018	YTD-18	YTD-19
Total Cash Flow from Operations (€ millions)	73.3	86.5	98.7	168.2	184.1	127.5	83.8
As % of Revenue	19.3%	24.8%	26.3%	28.4%	35.0%	29.0%	31.8%

Share Repurchase Activity

	2015	2016	2017	2018	YTD*
Share Repurchases (€ millions)	4.0	22.4	22.8	35.5	42.6
Average Cost per Share	€ 8.93	€ 12.44	€ 23.74	€ 21.86	€ 23.98

* Through October 31, 2019

- 3.0 million shares bought cumulatively through October 31, 2019 under current € 75 million share repurchase program (average price € 21.67)
- € 42.6 million purchased to date in 2019
- 7.8 million shares held in treasury at October 31, 2019 at average price per share of € 16.78 per share

Dividend Trends

Dividend (€) / Dividend Yield(a)

Cumulative dividends: € 6.70/per share since 2011

	2014	2015 (c)	2016 (c)	2017	2018
Dividend (€)	0.75	0.60	0.87	2.32	1.67
Total Dividend Yield (a)	8.1%	6.5%	5.5%	6.6%	9.0%
Payout Ratio (b):	*77%*	*79%*	*93%*	*100%*	*91%*

a) Based on year end stock price
b) Based on Basic EPS
c) Includes special dividend of € 0.10 and € 0.17 in 2015 and 2016, respectively

Dividend Yield vs. Peers*

Company	Dividend Yield
BE Semiconductor	5.1%
Towa Corp.	3.1%
ASM Pacific Technology	2.5%
Tokyo Seimitsu	2.2%
ASM International NV	2.0%
Kulicke & Soffa Industries Inc	2.0%
Cohu, Inc.	1.4%
ASML Holding NV	1.3%
Disco Corporation	1.3%
Brooks Automation, Inc.	0.9%
Shinkawa	
Suss Microtec	
Axcelis Technologies, Inc.	
Veeco Instruments Inc	

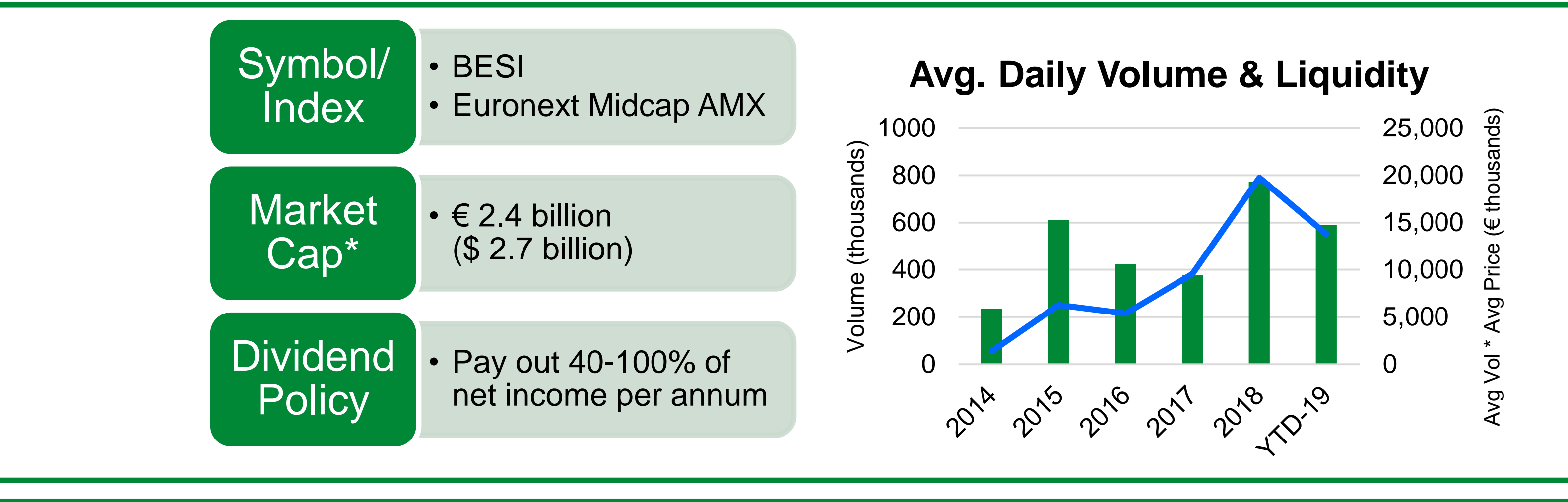
Y-axis: 0.0%, 1.0%, 2.0%, 3.0%, 4.0%, 5.0%, 6.0%

* Current quarterly dividend (annualized)/current stock price. As of October 31, 2019

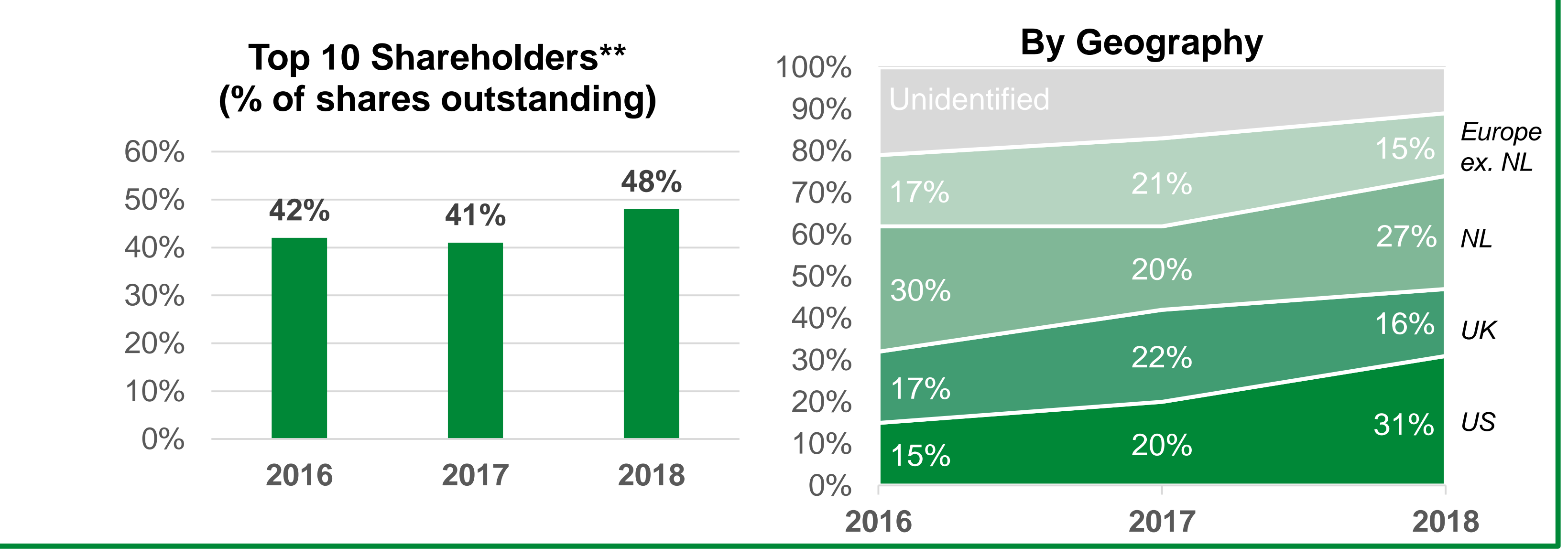
Source: Morningstar

Besi Shareholder Information

Market Profile



Share Ownership



* As of October 31, 2019 ** Besi estimates