INVESTOR PRESENTATION

August 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; 1,716 employees. HQ in the Netherlands

Financial Highlights

- LTM revenue and net income of € 388.3 million and € 80.4 million
- Cash/deposits at Q2-19: € 361.7 million
- Net cash/deposits at Q2-19: € 86.1 million
- € 631.0 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 July 31, 2019.
Company History

Die Attach Acquisitions
- 2000
- 2002
- 2005
- 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

August 2019
Best in Class Product Portfolio

Die Attach

Die Bonding
- 2100 xP plus / hS
- 2100 sD plus / PPP plus
- 2100 sD advanced
- 2100 SSI

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

Flip Chip
- 8800 CHAMEQ
- 8800 TC
- 8800 FC QUANTUM
- 2100 FC hS

Die Sorting
- WTT
- TTR

Die Lid Attach
- DLA

Packaging

AMS-i/X
- Leadframe
- MEMS
- Sensors

AMS-LM
- Substrate

FML
- Wafer
- Panel

FCL
- X
- P
- X/P

FSL
- Singulation
- Sorting

Plating

Plating
- Leadframe
- Film & Foil
- Solar
- Battery

In Development

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

August 2019
• 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

<table>
<thead>
<tr>
<th>Dicing</th>
<th>Die Attach</th>
<th>Wire Bond</th>
<th>Packaging**</th>
<th>Plating</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

* Source: VLSI July 2019
** Includes Molding, Trim and Form and Singulation Systems
Operational Profile

- 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

<table>
<thead>
<tr>
<th></th>
<th>Europe/NA</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (MMs)</td>
<td>€ 118.3</td>
<td>€ 265.0</td>
</tr>
<tr>
<td></td>
<td>30.9%</td>
<td>69.1%</td>
</tr>
<tr>
<td>Headcount</td>
<td>507</td>
<td>1,209</td>
</tr>
<tr>
<td></td>
<td>29.5%</td>
<td>70.5%</td>
</tr>
</tbody>
</table>
### Summary Financials

<table>
<thead>
<tr>
<th>Year Ended December 31, (€ millions, except share data)</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>HY1-18</th>
<th>HY1-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>375.4</td>
<td>592.8</td>
<td>525.3</td>
<td>316.0</td>
<td>174.1</td>
</tr>
<tr>
<td>% seq. change</td>
<td>8%</td>
<td>58%</td>
<td>-11%</td>
<td>(45%)</td>
<td></td>
</tr>
<tr>
<td>Gross margin</td>
<td>51%</td>
<td>57%</td>
<td>57%</td>
<td>57%</td>
<td>56%</td>
</tr>
<tr>
<td>EBITDA</td>
<td>89.8</td>
<td>222.8</td>
<td>187.7</td>
<td>114.8</td>
<td>49.7</td>
</tr>
<tr>
<td>Pretax income</td>
<td>73.6</td>
<td>199.2</td>
<td>154.9</td>
<td>98.5</td>
<td>32.7</td>
</tr>
<tr>
<td>Net income</td>
<td>65.3</td>
<td>173.2</td>
<td>136.3</td>
<td>84.3</td>
<td>28.4</td>
</tr>
<tr>
<td>Net margin</td>
<td>17%</td>
<td>29%</td>
<td>26%</td>
<td>27%</td>
<td>16%</td>
</tr>
<tr>
<td>EPS (diluted) (a)</td>
<td>0.85</td>
<td>2.17</td>
<td>1.68</td>
<td>1.13</td>
<td>0.39</td>
</tr>
<tr>
<td>EPS (basic) (a)</td>
<td>0.87</td>
<td>2.32</td>
<td>1.83</td>
<td>1.03</td>
<td>0.38</td>
</tr>
<tr>
<td>Dividend per share (a)</td>
<td>0.87</td>
<td>2.32</td>
<td>1.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net cash</td>
<td>168.1</td>
<td>247.6</td>
<td>199.4</td>
<td>110.2</td>
<td>86.1</td>
</tr>
</tbody>
</table>

(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
- Order stabilization in H1-19

**Strong margins and profit potential**
- Attractive gross margin of 55-57% reached
- Net margin of 16% in H1-19 despite 45% YOY revenue decrease
- 29% net margin in last market peak
- Flexible production and strategic headcount initiatives have kept costs under control

**Cash generation supports shareholder friendly capital allocation policy**
- € 147.9 million paid in H1-19 in form of dividends and share repurchases
Business Model Objectives

- **Revenue**: €800MM
- **Addressable Market Share**: 40%+
- **Gross Margin**: 55-60%
- **Net Margin**: 30-35%
- **Headcount Split**: 80% Asia/20% Euro
• Shareholder friendly capital allocation policy

• € 631.0 million distributions since 2011: €152.4 million YTD 2019

• High dividend payout ratio

• Share repurchases increasing as % of mix

* Dividend and share repurchases through July 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

<table>
<thead>
<tr>
<th>Year</th>
<th>Market Size (€ millions)</th>
<th>YoY Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3.0</td>
<td>22.3%</td>
</tr>
<tr>
<td>2014</td>
<td>3.7</td>
<td>-16.3%</td>
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<tr>
<td>2015</td>
<td>3.1</td>
<td>12.7%</td>
</tr>
<tr>
<td>2016</td>
<td>3.5</td>
<td>25.8%</td>
</tr>
<tr>
<td>2017</td>
<td>4.4</td>
<td>-2.5%</td>
</tr>
<tr>
<td>2018</td>
<td>4.3</td>
<td>-20.8%</td>
</tr>
<tr>
<td>2019E</td>
<td>3.4</td>
<td>6.6%</td>
</tr>
<tr>
<td>2020E</td>
<td>3.6</td>
<td>19.1%</td>
</tr>
<tr>
<td>2021E</td>
<td>4.3</td>
<td>34.9%</td>
</tr>
</tbody>
</table>

Besi Revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue (€ millions)</th>
<th>YoY Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>254.9</td>
<td>48.6%</td>
</tr>
<tr>
<td>2014</td>
<td>378.8</td>
<td>-7.8%</td>
</tr>
<tr>
<td>2015</td>
<td>349.2</td>
<td>7.5%</td>
</tr>
<tr>
<td>2016</td>
<td>375.4</td>
<td>57.9%</td>
</tr>
<tr>
<td>2017</td>
<td>592.8</td>
<td>-11.4%</td>
</tr>
<tr>
<td>2018</td>
<td>525.3</td>
<td>-44.9%</td>
</tr>
<tr>
<td>HY-18</td>
<td>316.0</td>
<td>0%</td>
</tr>
<tr>
<td>HY-19</td>
<td>174.1</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: VLSI July 2019

- VLSI revised forecast downwards to -20.8% for 2019, with recovery estimated in 2020 and 2021
Assembly Equipment Market Composition

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

Assembly Equipment Market *(2018: $4.3 billion)*

- Wire Bonding 22.8%
- Die Attach 30.3%
- Packaging 18.1%
- Plating 0.7%
- Other Assembly (Inspection, Dicing) 28.1%

Besi Addressable Market *(2018: $1.8 billion)*

- Die Bonding 44.6%
- Die Attach 64%
- Packaging 34%
- Plating 2%
- Flip Chip / TCB 14.8%
- Lead Trim & Form 5.2%
- Molde & Presses 22.9%
- Singulation 6.1%
- Die Sorting 4.6%

* Source: VLSI July 2019
### Besi Market Share Trends

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

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

### Addressable Market (% Total Revenue)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Die Attach</td>
<td>76.4%</td>
<td>81.6%</td>
</tr>
<tr>
<td>Packaging</td>
<td>19.2%</td>
<td>15.2%</td>
</tr>
<tr>
<td>Plating</td>
<td>4.4%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

Source: VLSI June 2019 and Besi estimates
New Era of Chip Growth and Applications Will Drive Greater Computing and Data Needs

Digital society

Driven by new technologies
- 5G
- AI – big data
- Robotics
- Transportation
- Environment
- Health care

Will need continuous new solutions
- 1zb = 1,000,000,000,000 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

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
- Higher Accuracy
- Lower Power Consumption
- Greater Complexity
- Increased Density
- Higher Performance

**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

**August 2019**
### Estimated % of 2018 Revenue

<table>
<thead>
<tr>
<th>Accuracy Micron</th>
<th>Size NM</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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<tr>
<td>10+</td>
<td>28+</td>
<td>25%</td>
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<tr>
<td>10</td>
<td>28</td>
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<td>20%</td>
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<td>7</td>
<td>18</td>
<td></td>
<td></td>
<td>40%</td>
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<tr>
<td>3</td>
<td>10</td>
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<td>15%</td>
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### Typical Application

<table>
<thead>
<tr>
<th>Besi Equipment</th>
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<tbody>
<tr>
<td><strong>Automotive, SiP Power</strong></td>
</tr>
<tr>
<td><strong>Die Attach Packaging Plating</strong></td>
</tr>
<tr>
<td><strong>IOT General ICs</strong></td>
</tr>
<tr>
<td><strong>Die Attach Packaging Plating</strong></td>
</tr>
<tr>
<td><strong>Computer, PC, Mobile Cloud Computing</strong></td>
</tr>
<tr>
<td><strong>Die Attach Packaging</strong></td>
</tr>
<tr>
<td><strong>High Performance Computing Memory</strong></td>
</tr>
<tr>
<td><strong>Die Attach Packaging</strong></td>
</tr>
</tbody>
</table>

- 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 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

**Advanced Packaging Silicon Demand Growth & Market Share 2011 - 2023**

- CAGR 2011-2023: 16.6%

Source: VLSI March 2019

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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)

- 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

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Besi End User Application Trends

2018 % of Revenue

- **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

Source: Company Estimates

August 2019
Mobile: 5G Is Coming Will Drive Increased Mobile Data Traffic and New Applications

Source: Ericsson Mobility Report Nov 2018
Mobile: Adoption of 5G Will Expand Applications and Features With Increased Performance

Source: Qualcomm May 2017 ITF Conference
Besi Addressable Market Share of Mobile Increasing

August 2019

### Main Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Generation 2017</th>
<th>Generation 2018</th>
<th>Manufacturer</th>
<th>IDM/SiOFAT</th>
<th>Best system Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>X X X Apple</td>
<td>TSMC, TMSC</td>
<td>8000CHIPS, AMIS-LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRAM Memory</td>
<td>X X X Hyxton/Micron/3Sung</td>
<td>Hyxton/Micron/Taiwan</td>
<td>2000SD, TSL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAND Flash</td>
<td>X X X Hyxton/Toshiba/SanDisk</td>
<td>Hyxton/Amkor/Toshiba/SanDisk</td>
<td>2000SD, AMS-WL/AM/FCBB00</td>
<td>2000SD, AMS-WL/AM</td>
<td></td>
</tr>
<tr>
<td>Power Management</td>
<td>Apple PMIC, PMIC</td>
<td>Intel, Amkor</td>
<td>2000SD, AMS-WL/AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M13 Mother processor</td>
<td>X X Apple</td>
<td>Amkor/AMS-LM</td>
<td>2000SD, AMS-WL/AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerometer/Temperature Sensor</td>
<td>X X X Bosch</td>
<td>Bosch</td>
<td>2000SD, AMS-WL/AM, FCL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charging IC</td>
<td>X X X TI</td>
<td>Amkor/AMS-LM</td>
<td>2000SD, AMS-WL/AM, FCL</td>
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<tr>
<td>Power Delivery IC</td>
<td>X X X Cypress</td>
<td>Amkor/AMS-LM</td>
<td>2000SD, AMS-WL/AM, FCL</td>
<td></td>
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</tbody>
</table>

### Communications

<table>
<thead>
<tr>
<th>Component</th>
<th>Generation 2017</th>
<th>Generation 2018</th>
<th>Manufacturer</th>
<th>IDM/SiOFAT</th>
<th>Best system Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>WiFi/NFC</td>
<td>X X X Apple/Murata</td>
<td>Ankor/NSP</td>
<td>AMS-WL, 2000SD</td>
<td></td>
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<tr>
<td>NFC</td>
<td>X X X Ankor/NSP</td>
<td>2000SD, AMS-WL/AM, 2000SD</td>
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<tr>
<td>NFC Booster IC</td>
<td>X X X AMIS</td>
<td>2000SD, AMS-WL/AM, 2000SD</td>
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<tr>
<td>LTE</td>
<td>X X X Qualcomm/Intel</td>
<td>Ankor/SEM/ASE</td>
<td>AMS-WL/AM, 2000SD</td>
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</tr>
<tr>
<td>Mobile Band</td>
<td>X X X Qualcomm/Intel</td>
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<td>AMS-WL/AM, 2000SD</td>
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<td>High Band PAD</td>
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<td>Ankor/SEM/ASE</td>
<td>AMS-WL/AM, 2000SD</td>
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<tr>
<td>Receiver/Transceiver</td>
<td>X X X Ankor/ASE</td>
<td>Ankor/SEM/ASE</td>
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<td>Antenna Switch</td>
<td>X X X PMIC</td>
<td>Ankor/SEM/ASE</td>
<td>AMS-WL/AM, 2000SD</td>
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<tr>
<td>PA</td>
<td>X X X Skyworks</td>
<td>Ankor/SEM/ASE</td>
<td>AMS-WL/AM, 2000SD</td>
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</table>

### Video/Audio

<table>
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<tr>
<th>Component</th>
<th>Generation 2017</th>
<th>Generation 2018</th>
<th>Manufacturer</th>
<th>IDM/SiOFAT</th>
<th>Best system Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera</td>
<td>X X X Apple</td>
<td>SLS, Sharp</td>
<td>2000SD,AMS-LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td>X X X Knowles/Goertek</td>
<td>Knowles/Goertek</td>
<td>2000SD, AMS-LM</td>
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<tr>
<td>Touch screen control</td>
<td>X X X Broadcom</td>
<td>Ankor/SEM/ASE</td>
<td>AMS-WL/AM, 2000SD</td>
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<td>Display Port Multiplier</td>
<td>X X X OLED PMIC</td>
<td>Amkor/SEM/ASE</td>
<td>AMS-LM, 2000SD</td>
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<td></td>
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<tr>
<td>Sensor</td>
<td>Gyroscope+Accelerometer</td>
<td>Bosch</td>
<td>2000SD, AMS-WL/AM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

**FOUR MAIN TRENDS IN THE AUTOMOTIVE MARKET**

- **Combustion vehicles**
  - EV/HEV/hybrids

- **Electrification***
  - ~14M units in 2022
  - ~25-30M units in 2027

- **Automation**
  - ~1-2M units 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**
- Combustion vehicles: 94M units

**2027**
- Electrification: 105M units

Source: Yole
Automotive: Requiring a Variety of Package Formats For Customers

Advanced Packages
- SIP
- SOIC
- Infotainment
  - AV, Center Stack,
  - HUD, Telematics
- FCBGA
- ADAS
  - Park Assist, Radar,
  - Blind Spot
  - Detection
- WLFO

Wirebond Packages
- Body Electronics
  - Comfort, HVAC,
  - Lighting
- EV/HEV
- Power
- Chassis
  - Anti-lock Brakes,
  - Traction Control
- QFN

Source: Amkor investor presentation April 2019
Computing: Demand for Computing Power Growing Exponentially

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 !!!!!!

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

August 2019
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

August 2019
Asian Production Has Significantly Expanded

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

Leading to Lower Fixed European + NA Headcount

And Reduced Break Even Revenue Levels

Improved Cash Generation

August 2019
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

55-60% Thru Cycle Gross Margin
Flexible Production Model Has Generated Consistent Gross Margins in Market Cycles

August 2019

* Midpoint of guidance: Revenue approximately -10% vs. Q2-19, Gross Margin 55-57%.
Flexible Asian Workforce Has Significantly Enhanced Scalability

- Asia now represents 72% of total fixed headcount, up from 60% in 2013
- European and NA fixed headcount continues to decline:
  - -37.4% since 2011
  - -19.3% vs. 2015
  - Particular focus on SG&A structure currently
- Flexible production model aligned with market conditions:
  - 29.7% headcount reduction realized from peak in Q1-18 to Q2-19
  - Mostly Asian production temps (236 or 81% reduction)
Overhead Tightly Controlled Creating Significant Operating Leverage

- Baseline opex has stayed within narrow band over past three years. €27.5 million average
- Scaled back operations since Q1-18 in alignment with market conditions. Back to 2015-2016 levels
- Substantial operating leverage in business model

*Includes short-term and long-term incentive compensation, forex effects and restructuring costs.

<table>
<thead>
<tr>
<th>Operating Expenses (€ millions)</th>
<th>Q2-16</th>
<th>Q2-17</th>
<th>Q2-18</th>
<th>Q2-19</th>
<th>High</th>
<th>Low</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Line Opex</td>
<td>24.8</td>
<td>29.7</td>
<td>30.7</td>
<td>24.7</td>
<td>30.7</td>
<td>24.7</td>
<td>27.5</td>
</tr>
<tr>
<td>Other Opex*</td>
<td>4.3</td>
<td>4.4</td>
<td>1.1</td>
<td>2.1</td>
<td>4.4</td>
<td>1.1</td>
<td>3.0</td>
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<tr>
<td>Total</td>
<td>29.1</td>
<td>34.1</td>
<td>31.8</td>
<td>26.8</td>
<td>34.1</td>
<td>26.8</td>
<td>30.5</td>
</tr>
</tbody>
</table>

August 2019
Besi Strategic 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
- Responsible tax practices in all jurisdictions
- Reduce packaging, waste, transportation and energy
- Develop sustainable supply chain. Minimize impact of conflict materials
- Conserve natural resources

CSR Activities 2018

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

August 2019
IV. FINANCIAL UPDATE AND SUMMARY
Q2-19 Net Income Doubles vs. Q1-19
Attractive Profit and Margins Maintained

**Q1-19/Q2-19**
- **Revenue**
  - €81.4
- **Net Margin**
  - 13.9%

**Revenue**
- €81.4
- €92.7

**Gross Margin**
- 55.9%
- +0.1 points
- 56.0%

**OPEX**
- €30.7 MM
- -12.7%
- €26.8 MM

**Headcount**
- 1,695
- +21
- 1,716

**Effective Tax Rate**
- 12.5%
- +1.0 points
- 13.5%

**Q1-19**
- €9.5
- +8.7 points
- €18.9

**Q2-19**
- €26.7%

**HY1-18/HY1-19**
- **Revenue**
  - €316.0
- **Net Margin**
  - -44.9%

**Gross Margin**
- 56.5%
- -0.6 points
- 55.9%

**OPEX**
- €70.8 MM
- -18.8%
- €57.5 MM

**Headcount**
- 2,097
- -381
- 1,716

**Effective Tax Rate**
- 14.4%
- -1.2 points
- 13.2%

**HY1-18**
- €84.3

**HY1-19**
- €28.4

August 2019
Liquidity Trends

Strong liquidity position:
- Total cash of € 361.7 million and net cash of € 86.1 million as of Q2-19
- € 135.1 million of dividends and share repurchases in Q2-19

Attractive funding obtained to help finance growth:

Convertible debt:
- € 300 million (2 issues/1.33% blended rate)
- Minimal operating restrictions
- 5 year blended average maturity

Revolving credit facility:
- € 80 million expandable to € 136 million
- 5 year term extendable to 7 years
- Consolidates various subsidiary credit lines at N.V.
Guidance Q3-19

- Revenue: €92.7 MM (Q2-19), €26.8 MM (Q3-19), 10% decrease
- Gross Margin: 56.0% (Q2-19), 55%-57% (Q3-19)
- Operating Expenses: €26.8 MM (Q2-19), 0-5% (Q3-19)
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

August 2019

Revenue and Gross Margin:

- **2006**: Revenue €191 million, Gross Margin -12.9%
- **2007**: Revenue €164 million, Gross Margin -12.9%
- **2008**: Revenue €229 million, Gross Margin -10.0%
- **2009**: Revenue €281 million, Gross Margin -6.9%
- **2010**: Revenue €351 million, Gross Margin 39.5%
- **2011**: Revenue €302 million, Gross Margin 31.0%
- **2012**: Revenue €379 million, Gross Margin 39.5%
- **2013**: Revenue €424 million, Gross Margin 51.1%
- **2014**: Revenue €593 million, Gross Margin 57.4%
- **2015**: Revenue €559 million, Gross Margin 56.8%
- **2016**: Revenue €525 million, Gross Margin 51.1%
- **2017**: Revenue €483 million, Gross Margin 56.8%
- **2018**: Revenue €559 million, Gross Margin 56.8%

**4 year averages**
- Revenue €372 million, Gross Margin 38.3%
Baseline Operating Expense Trends

<table>
<thead>
<tr>
<th>Baseline Opex</th>
<th>Other Opex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3-17</td>
<td>30.4</td>
</tr>
<tr>
<td>Q4-17</td>
<td>34.2</td>
</tr>
<tr>
<td>Q1-18</td>
<td>39.1</td>
</tr>
<tr>
<td>Q2-18</td>
<td>31.8</td>
</tr>
<tr>
<td>Q3-18</td>
<td>29.1</td>
</tr>
<tr>
<td>Q4-18</td>
<td>30.7</td>
</tr>
<tr>
<td>Q1-19</td>
<td>30.7</td>
</tr>
<tr>
<td>Q2-19</td>
<td>26.8</td>
</tr>
</tbody>
</table>

As % of Revenue

<table>
<thead>
<tr>
<th>Q3-17</th>
<th>Q4-17</th>
<th>Q1-18</th>
<th>Q2-18</th>
<th>Q3-18</th>
<th>Q4-18</th>
<th>Q1-19</th>
<th>Q2-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.1</td>
<td>31.2</td>
<td>31.7</td>
<td>30.7</td>
<td>26.3</td>
<td>25.7</td>
<td>25.3</td>
<td>24.7</td>
</tr>
</tbody>
</table>

Other Operating Expenses

- Capitalization of R&D
  Q3-17: (1.2)
  Q4-17: (1.8)
  Q1-18: (2.6)
  Q2-18: (3.4)
  Q3-18: (2.7)
  Q4-18: (2.7)
  Q1-19: (2.9)
  Q2-19: (3.0)

- Amortization of R&D
  Q3-17: 1.9
  Q4-17: 2.1
  Q1-18: 2.1
  Q2-18: 2.1
  Q3-18: 2.4
  Q4-18: 2.4
  Q1-19: 2.3
  Q2-19: 2.5

- Capitalization & Amortization, net
  Q3-17: 0.8
  Q4-17: 0.3
  Q1-18: (0.5)
  Q2-18: (1.3)
  Q3-18: (0.3)
  Q4-18: (0.3)
  Q1-19: (0.5)
  Q2-19: (0.5)

- Variable Pay (a)
  Q3-17: 3.2
  Q4-17: 3.9
  Q1-18: 9.5
  Q2-18: 3.3
  Q3-18: 2.7
  Q4-18: 3.1
  Q1-19: 5.9
  Q2-19: 3.0

- Restructuring cost/(benefit)
  Q3-17: -
  Q4-17: -
  Q1-18: -
  Q2-18: 0.1
  Q3-18: 0.4
  Q4-18: 0.2
  Q1-19: -
  Q2-19: -

- Forex (b) and other
  Q3-17: (0.7)
  Q4-17: (1.2)
  Q1-18: (1.6)
  Q2-18: (1.0)
  Q3-18: 0.0
  Q4-18: (2.8)
  Q1-19: 0.0
  Q2-19: (0.4)

Subtotal

<table>
<thead>
<tr>
<th>Q3-17</th>
<th>Q4-17</th>
<th>Q1-18</th>
<th>Q2-18</th>
<th>Q3-18</th>
<th>Q4-18</th>
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<td>3.3</td>
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<td>2.8</td>
<td>0.2</td>
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<td>2.1</td>
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Total Opex

<table>
<thead>
<tr>
<th>Q3-17</th>
<th>Q4-17</th>
<th>Q1-18</th>
<th>Q2-18</th>
<th>Q3-18</th>
<th>Q4-18</th>
<th>Q1-19</th>
<th>Q2-19</th>
</tr>
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<tbody>
<tr>
<td>30.4</td>
<td>34.2</td>
<td>39.1</td>
<td>31.8</td>
<td>29.1</td>
<td>25.9</td>
<td>30.7</td>
<td>26.8</td>
</tr>
</tbody>
</table>

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

August 2019
August 2019

Net Income Trends

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

### Revenue vs Expenses

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<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Euro</td>
<td>25%</td>
<td>18%</td>
<td>33%</td>
<td></td>
<td>26%</td>
<td>21%</td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td>US dollar</td>
<td>74%</td>
<td>82%</td>
<td>67%</td>
<td></td>
<td>5%</td>
<td>9%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Swiss franc</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>21%</td>
<td>19%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Malaysian ringgit</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>30%</td>
<td>31%</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>Chinese renminbi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>11%</td>
<td>13%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Singapore dollar</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>4%</td>
<td>5%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td></td>
<td>3%</td>
<td>2%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

* 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

August 2019
Share Repurchase Activity Has Increased

- € 30.0 million purchased to date in 2019
- 7.3 million shares held in treasury at July 31, 2019. Average price: € 16.10 per share
- 2.2 million shares bought cumulatively (€ 52.5 million) under current € 75 million share repurchase program (average price € 20.57)
Dividend Trends

Cumulative dividends: € 6.70/per share since 2011

Dividend (€)

<table>
<thead>
<tr>
<th>Year</th>
<th>Dividend (€)</th>
<th>Payout Ratio (%</th>
<th>Total Dividend Yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>0.75</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>2015</td>
<td>0.60</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>2016</td>
<td>0.87</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>2017</td>
<td>2.32</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td>91</td>
</tr>
</tbody>
</table>

- 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

August 2019
Dividend Yield vs. Peers*

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

Source: Morningstar
Besi Shareholder Information

Market Profile

Symbol/Index
- BESI
- Euronext Midcap AMX

Market Cap*
- € 2.0 billion ($1.2 billion)

Dividend Policy
- Pay out 40-100% of net income per annum

Share Ownership

Top 10 Shareholders** (% of shares outstanding)

By Geography

* As of July 31, 2019  ** Besi estimates