

# AEHR TEST SYSTEMS



Setting the Test Standard for  
Tomorrow

*Nasdaq: AEHR*

# Forward Looking Statements

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This presentation contains forward-looking statements that involve risks and uncertainties relating to projections regarding industry growth and customer demand for the Company's products. Actual results may vary from projected results. These risks and uncertainties include without limitation, acceptance by customers of the ABTS™ and FOX™ technologies, the Company's development and manufacture of a commercially successful wafer level burn-in and test system, world economic conditions, the timing of the recovery of the semiconductor equipment market, the Company's ability to maintain sufficient cash to support operations, and the potential emergence of alternative technologies, which could adversely affect demand for the Company's products in fiscal year 2017. See the Company's recent 10-K and 10-Q reports filed with the SEC for a more detailed description of the risks facing the Company's business. The Company disclaims any obligation to update information contained in any forward-looking statement to reflect events or circumstances occurring after the date of this presentation.

# Investment Highlights

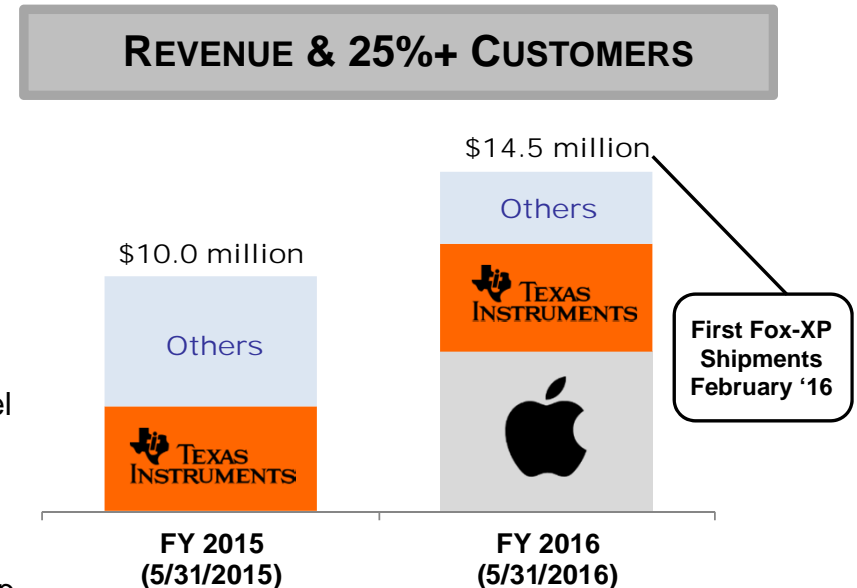
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- **Relentless proliferation of the number of chips in mobile devices and automobiles**
- **Increasing complexity of devices increases risk of failure**
- **Current testing equipment and processes can't economically support the proliferation of chips and complexity**
- **Tier 1 customers actively seeking next generation testing solutions**
- **Wafer level testing enables order-of-magnitude:**
  - decrease in cost to test
  - increased throughput of tested chips
  - improvement in component level reliability
  - higher yield
- **Aehr is the leader in wafer level burn-in testing solutions**
- **Tier 1 customers have already bought and validated Aehr's next generation multi-wafer testing solution**
- **Significant opportunities for large scale customer ramp-up**
- **Aehr is well positioned to be able to scale to meet customer demand**



# Company Overview

- **Aehr is a leading designer and manufacturer of burn-in test equipment for the semiconductor industry**
  - Package level and wafer level systems
- **Aehr pioneered wafer level testing and recently introduced a number of innovative products:**
  - Aehr's proprietary contactor technology makes wafer level and singulated die testing technologically feasible and cost-effective
  - Aehr's contactors contain up to tens of thousands of probes to contact all devices on wafers and substrates (up to 300 mm) simultaneously in a multi-wafer environment
- **Convergence of factors driving massive need for cost-effective burn-in & testing equipment at the wafer level**
- **Aehr wafer level technology validated and adopted by Tier 1 customers**
- **Anticipating strong customer ramp for new wafer level products – \$10 million of backlog in current fiscal quarter**
- **Ability to rapidly scale production in existing manufacturing footprint**



# Market Drivers

**Need for cost-efficient burn-in & testing is growing rapidly due to increasing IC complexity, costs, miniaturization, and mission-critical functionality**

- **Mobility smartphone and tablets** drive increased test, quality, reliability, and environmental demands
  - The Apple A7 processor chip in the iPhone 5s had 1 billion transistors versus the A10 in the iPhone 7 now has 3.3 billion <sup>(1)</sup>
- **Automotive IC growth** in sensors, control, information, and entertainment has substantially higher requirements for initial quality and long term reliability
  - Estimated there will be 200 sensors per car by 2020 (22 billion sensors worldwide), up from only 8 in 2009, representing a 34% CAGR <sup>(2)</sup>
- The **NAND flash market** requires wafer level testing to improve yields of increasingly complex systems as demand for greater density, capacity, performance, and reliability continues
  - Shipments of NAND-based SSDs have increased 32.7% year-over-year to 31 million devices in Q1 2016 <sup>(3)</sup>
- **Shrinking process nodes** of advanced ICs driving more leakage and power variance impacting reliability and test technology
  - Process nodes have shrunk from 22nm in 2012 with 7nm technologies in development
- Ever increasing **pressure on cost of test** driving massive parallelism and design for test requirements at wafer level and packaged part test



(1) Source: AnandTech; Macworld IDG

(2) Source: MEMS Journal

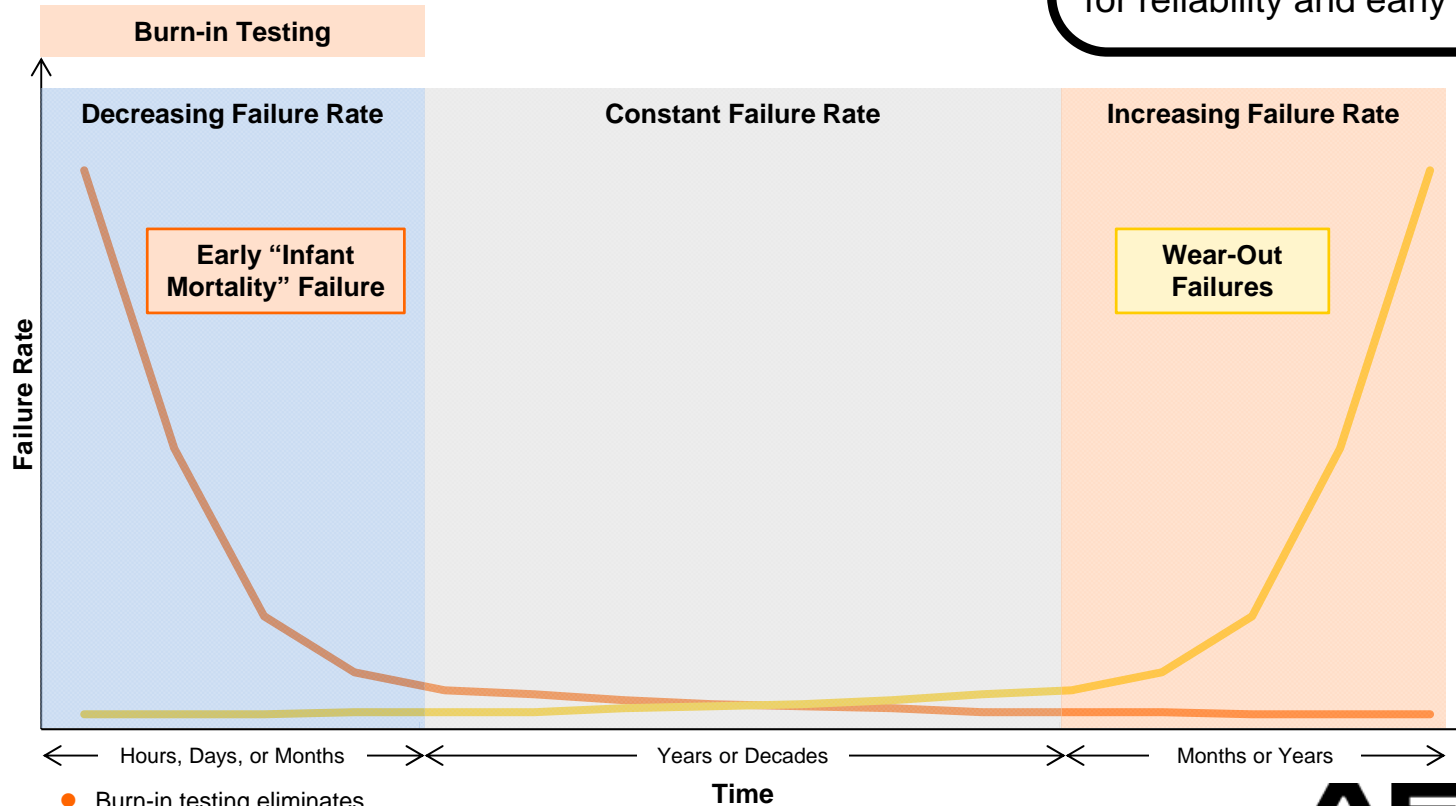
(3) Source: TrendFocus; AnandTech

# Burn-in Testing – The Bathtub Curve

- Aehr seeks to virtually eliminate “Infant Mortality” failure in electronic components
- Burning-in components exposes them to a high-stress level and screens out infant failures prior to the components making it into a module

## Burn-in:

A functional test in which electronic components are subject to elevated voltages and/or temperatures for a duration of time (2 – 48 hours) to screen for reliability and early failure



- Burn-in testing eliminates early "infant mortality" failure

# Wafer Level Burn-in Testing

- Package level burn-in is the current standard in the semi industry
- Wafer level and singulated die testing offers a superior value proposition, but historically has not been technologically feasible or cost-effective
- Next-generation ICs driving major need for AeHR's new wafer level testing equipment

## WAFER LEVEL VALUE PROPOSITION



**Significant Improvement in Yield and throughput**



**Dramatic reduction in costs and component loss**



**Improved Component Reliability & Device Safety**

## AEHR TECHNOLOGY ADVANTAGE



**Economic Price Point**



**Multi-Wafer Capabilities**



**Burn-in Test Technology**



**First-Mover Position**



**Formidable IP Barrier to Entry**

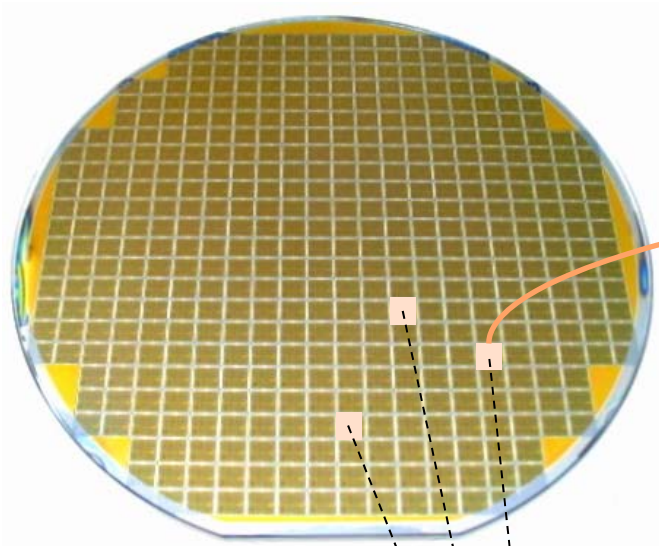
**AeHR's new wafer level systems have been validated & purchased by major Tier 1 customers**



# Wafer vs. Package Level Burn-in Testing

## WAFER LEVEL / DIE TESTING

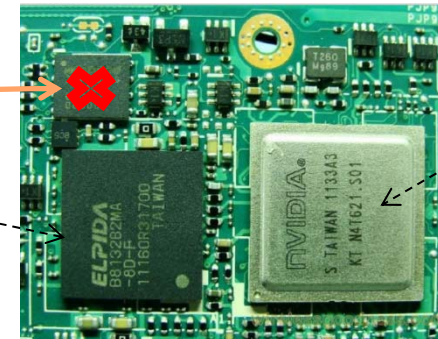
- Burn-in all individual die on the wafer
- Scrap failures prior to packaging



Scrap  
Faulty ICs

## MODULE LEVEL / PACKAGE TESTING

- Multiple ICs are tested for the first time at the package or Module level
- A single IC failure results in scrapping the entire module



Scrap Entire  
Module for One  
Faulty IC



# Demonstrated Value to Tier 1 Customers

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**Tier 1 customers are buying Aehr's FOX-XP systems to attain the following benefits:**

- **Throughput** – Exponential increase in volumes tested at substantial time reductions addresses industry demands of high volume products where production speeds/time to market are critical
  - Example: 150k devices under test per day on FOX-XP vs. 10k devices under test per day on packaged part burn-in system
  - Example: 54 hour test time of packaged parts reduced to 10 hours at wafer level burn-in
- **Yield** – Increase in production yields by identifying defects at the wafer level reduces product waste
  - Example: NAND flash multi-die stack yield improved by up to 30% for 8 and 16 die stacks
  - Example: single die failure rate cost (1x) vs. module level failure rate cost (10x – 100x)
- **Reliability** – Highest level of component reliability and device safety addressing mission-critical functionality needs of markets such as automobiles and mobile devices
  - Reliability and quality have become key differentiators for smart phones, tablets, and wearables, driving significant increase in expectations for reliability of components
  - Example: Toyota & Bosch drive for “0” defective parts per million requires elimination of “infant mortalities”
- **Cost & Cost of Ownership** – Multi-wafer FOX-XP system decreases overall equipment cost of ownership and conserves fab floor real estate
  - Example: Aehr FOX-XP cost of test (capital and operating) of less than \$10 per hour for full wafer testing vs. \$150 per hour on automated test equipment at subcontractor rates (Aehr cost of burn-in and test per device of < \$0.01 per hour)
  - Example: > 15x Reduction in expensive clean room floor space

**FOX-XP has significant potential in Tier 1 companies**



# Proprietary Wafer Level Enabling Technology

- Aehr's FOX-XP is capable of both functional burn-in and test solutions – leverages proprietary aligner and contactor technology
- Multi-wafer technology enables customers to achieve an overall decrease in test equipment cost and fab footprint – while increasing die yield and throughput

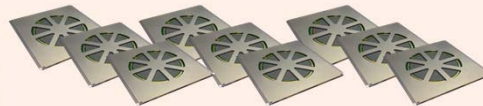
## MULTI-WAFER TESTER



**FOX-XP Multi-Wafer Test System**

- May be configured with up to 18 Blades, enabling 18 wafers to be tested in parallel – driving cost efficiency and throughput
- High performance thermal chucks allow uniform temperature control of the wafers
- Footprint similar to single wafer automated test equipment – reducing lab test space

## CONTACTOR



**FOX-XP WaferPaks**

- Houses the wafer and distributes signals and power to the wafer itself
- The WaferPak contactor is capable of over 50,000 contacts in a single touchdown on up to 300mm wafers
- Consumable input into the test system driving recurring revenue from the installed base

## ALIGNER



**FOX WaferPak Aligner**

- Integral piece of test cell as it loads the wafer in the WaferPak at immense levels of precision
- By perfectly setting the wafer in a cartridge it ensures perfect contact
- Performs wafer alignment “offline” which eliminates the need for one wafer prober per wafer during long burn-in and test times



42 active patents issued and outstanding, including:

- WaferPak temperature control methods
- Vacuum & pressure-based WaferPaks
- Maintaining probe contact over temp
- Electrical components in WaferPak
- Individual DUT power supplies
- Per die current protection
- Redundant power supplies
- Portable WaferPaks
- and more . . .

# Worldwide Customer Base

Over 2,500 Systems Shipped Worldwide



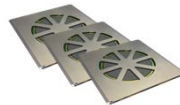
(Partial Customer List)

# Aehr Product Line Up

Customer Value Proposition

## Next Gen Multi Wafer Testing

### FOX-XP WaferPaks



ASP

\$60K - \$90K

### FOX-XP Multi Wafer Test Systems



\$1.5M - 2.5M

### FOX WaferPak Aligner



\$800K

- FOX-XP Test System Launched July 2016
- Tests all devices on up to 18 wafers simultaneously
- More extensive tests with deeper data stimulus, memory capture memory, and scan optimization

## Single Wafer Testing

### FOX-1P Single Wafer Test Systems



ASP

\$500K - \$1M

- FOX-1P Single Wafer Test Systems
- Enables high throughput, single touchdown, full wafer production testing
- Comprehensive functional and parametric test capabilities

## Package Part Testing

### ABTS-P Packaged Part Burn-in Systems



ASP

\$600K - \$800K

- ABTS-L/P cost-effective and configurable to customers' specific needs
- Test low and high-power logic and low-power memories
- High-capacity of up to 72 burn-in board slots





# Manufacturing Capabilities

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- **State of the art manufacturing facility located in Fremont, CA**
- **50,000+ sq. foot facility**
- **Ability to scale production by an order of magnitude increase in existing footprint**
- **Manufacturing capabilities and quality control procedures have passed rigorous Tier 1 customer qualification processes**



# Recent Events

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## Highlights from Recent Earnings Calls & 10-K

- First announcement of Apple as largest customer in FY16 (10-K)
- Announced ~ \$10M in orders in FQ1 – off to a strong start for FY17
- Received first FOX-XP production test cell order (\$4.5M) from Tier 1 customer that is Aehr's second lead customer on product
- Successful installation of FOX-15 multi-wafer test cell last year lead to initial FOX-XP order from same customer with system delivery and acceptance in February 2016.
- Expecting orders from lead customer for FOX-XP production tools to meet capacity need beginning in CY17 and through 2018
- Expecting significant growth in bookings, revenue, and bottom line this fiscal year (FY17)



# Significant Leverage in Business Model

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- Increasing recurring revenue component of business model
- Significant expansion opportunity in gross margins (LTM gross margin ~35%)
- Operating expenses largely in place to support significant growth
- Long-term operating margin potential of 20%+

# Investment Highlights

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- **Pioneer of enabling technology that provides wafer level testing in a multi-wafer environment with substrates up to 300 mm**
- **Value proposition addresses need for yield improvement and throughput while reducing time to test, test cost, component loss, and ultimately cost of ownership**
- **Solves the difficult testing challenges presented by the dynamic change in semiconductor miniaturization and integration**
- **Aehr wafer level technology has been validated and adopted by Tier 1 customers**
- **Wafer level burn-in and test platforms focused on large markets where mission-critical functionality is paramount such as automotive, mobility (smartphone/tablets), IoT, and 3D NAND**
- **Extensive worldwide installed base – 2,500 systems shipped to Tier 1 customers such as Apple, Texas Instruments, and Samsung**
- **Defensible IP with 42 patent portfolio protecting wafer level system innovations**

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