

The logo for AEHR Test Systems is centered in the image. It features the letters 'AEHR' in a large, bold, black sans-serif font. Below 'AEHR' is the text 'TEST SYSTEMS' in a smaller, bold, black sans-serif font. To the right of the text is a graphic element consisting of five horizontal orange bars of equal length.

# **AEHR** **TEST SYSTEMS**

**Setting the Test Standard for  
Tomorrow**

August 2022

*Nasdaq: AEHR*

# Forward Looking Statements

---

*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 new customers of the FOX™ wafer level burn-in and test system, world economic conditions, the timing of COVID-19 related business impacts, 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 2023. 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.*

# Presenting Today

---



**Gayn Erickson**

**CEO, AeHR Test Systems**

# Company Overview

---

- Worldwide supplier of burn-in test equipment and pioneer of wafer level burn-in (“WLBI”) platform
- Leader in WLBI, stabilization, and infant mortality test which is being commercially adopted across multiple high-growth market segments
- Aehr’s FOX wafer level and singulated die/module systems and consumables have been validated and adopted by Tier 1 customers for rapidly growing applications including Silicon Photonics, Silicon Carbide, and 2D & 3D Sensing
- Developing next generation packaged part burn-in (“PPBI”) platform for high voltage, high power automotive and industrial applications
- High margin proprietary WaferPak and DiePak consumables are a significant percentage of revenues
- Ability to rapidly scale production in existing manufacturing footprint
- In discussions with Memory Suppliers regarding next generation WLBI system for wafer level test during burn-in for Flash/DRAM (an upside opportunity not included in forecast)

## Production Semiconductor Test & Burn-In for over 40 Years



### *Multiple Wafer / Die Level Test & Burn-In Solutions*



### *Single Wafer Test & Burn-In Solutions*



### *Packaged Part Test & Burn-In Solutions*

# Worldwide Customer Base



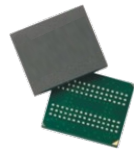
**Aehr has been a leader in burn-in test solutions for over 40 years  
with thousands of systems shipped worldwide**

*(Partial Customer List)*



# Wafer Level vs Package Part Burn-in

## Packaged Part Burn-In Test Flow



Die Test 1

Die Test 2

Packaging

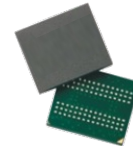
Pkg Test 1

PPBI

Pkg Test 2



Aehr Test FOX-XP



Die Test 1 with Burn-In

Die Test 2

Packaging

Pkg Test 1

Pkg Test 2

## Wafer Level Burn-In Test Flow

# Wafer Level Enabling Technology

- Aehr's FOX-XP is capable of both functional burn-in and test solutions by leveraging 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

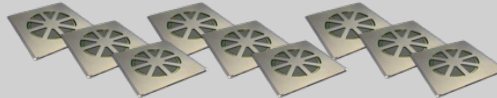
## MULTI-WAFER TESTER



**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

# FOX Family of Test & Burn-In Systems

Wafer Level & Singulated Die Solutions for Engineering through Production



**FOX<sup>TM</sup> XP**

**Multi-Wafer & Singulated Die  
Test & Burn-In Systems**



**FOX<sup>TM</sup> CP**

**Single Wafer  
Test & Burn-In Systems**



**FOX<sup>TM</sup> NP**

**Engineering & NPI  
Test & Burn-In Systems**



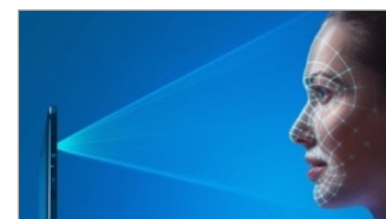
**FOX-P WaferPak & DiePak  
Contactors**



# Market Drivers

Need for cost-efficient wafer level and singulated die burn-in & testing as well as new requirements in package part burn-in are creating significant revenue opportunities in the following key markets

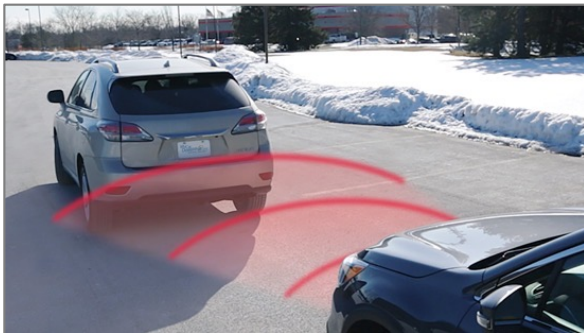
- **Automotive IC growth** in motor control and charging infrastructure using **Silicon Carbide devices**, as well as sensors, safety, information, and entertainment
- **Data Center Infrastructure** and unstoppable growth in **Data Storage**
- **Worldwide 5G Infrastructure** build out using **Silicon Photonics** fiber optic transceivers
- **3D and 2D Sensors** including facial recognition in smartphones, tablets, and other applications
- **Heterogeneous Integration of semiconductors** and **3D fabrication and stacking** driving technology and cost roadmaps pushing known good die with test and burn-in of device in wafer form prior to packaging



# Automotive & EV Semiconductor Device Market

- Automotive IC growth in sensors, control, information, and entertainment has substantially higher requirements for initial quality and long-term reliability
- New high bandgap / high voltage semiconductors (Silicon Carbide and Gallium Nitride) create new opportunities in test and burn-in.

**Collision Detection**



**EV Power Management**

**Autonomous / Driver Assistance**



# Silicon Carbide and EV/HEV Module Market

- High Voltage / Power Electric Automobile powertrains driving high bandgap Silicon Carbide semiconductors with substantially higher initial quality and long-term reliability than current processes support drives burn-in
- Silicon Carbide is known in the industry to have very high defect density and high infant mortality related to high voltage break down failure – defect density drives up to 50% initial yield loss and up to 5% yield loss during BI



***Plug in Automotive  
Power Conversion***



***Electric Vehicle  
Powertrains***



***Tesla Model 3 Inverter with  
ST SiC Power Modules***

# Silicon Carbide Infant Mortality Market

## Silicon Carbide Market Opportunity

- Silicon carbide wafers have very high defect density with low initial yield and high infant mortality (recognized industry wide)
- Devices must be burned in at high temperatures to remove infant mortality for up to 96 hours
- Wafer Level Burn-in allows removal of bad die PRIOR to packaging in the module with other die
- Wafer Level Burn-in allows key parameters such as threshold voltage and on resistance to be stabilized of good die PRIOR to packaging in the module with other die
- Two types of stress / BI tests drive different configurations. AeHR has introduced a solution for one of the two stress conditions with its FOX systems, which works for its current customers, and is in the process of prototyping the other with customer feedback.

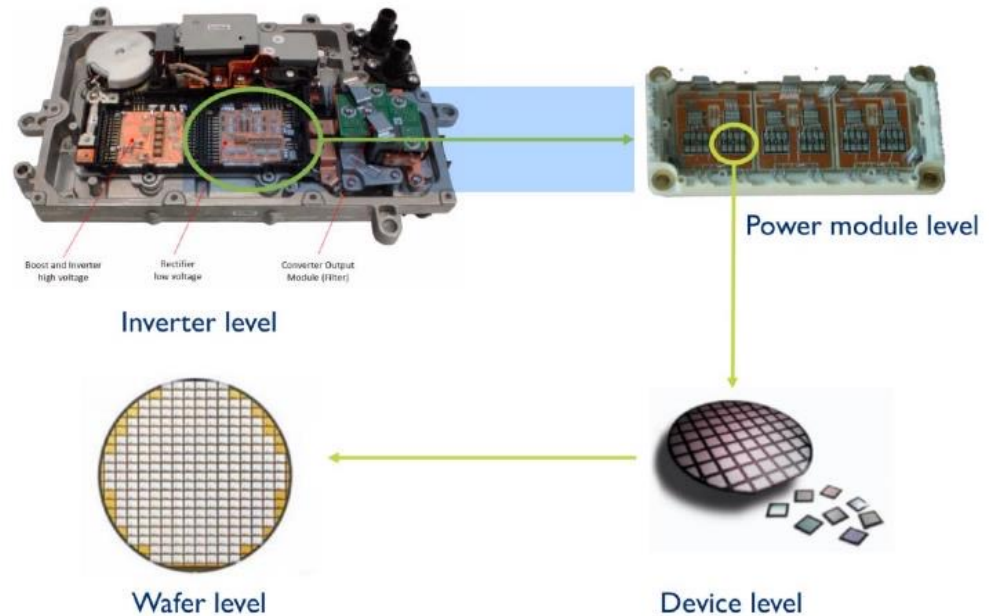


**Silicon Carbide Die Packaging**

# Burn-in at Module is Very Expensive on Yield



Silicon Carbide Module with 10 Die



Customers driving to move Silicon Carbide burn-in to Wafer Level



# An EV World





# Silicon Carbide Market Opportunity for AEHR

---

- Wafer level test and burn-in will become the industry standard for Silicon Carbide devices aimed at electric vehicles
- AeHR has the most cost-effective solution on the market today and expects to gain significant market share
- Electric vehicles will grow to over 30 million units by 2030 (over 30% of total market)
- Silicon carbide capacity will explode to try to catch up with demand growing by 25x from 150,000 wafers in 2021 to over 4,000,000 wafers in 2030 just for Electric Vehicles
- Burn-in test and consumables market > \$1B annual total available market BEFORE silicon carbide market opportunity

Packaged Part Burn in TAM source: VLSI Research May 2020

Wafer Level Burn-In Equipment TAMs based on VLSI Research, Yole Development, and AeHR actual customer data models

Source for EV units: Deloitte

Source for Wafer starts: Exawatt



# Key Takeaways

---

- Pioneer of next generation technology platform for wafer level testing
- Significant need for lower cost wafer level test / burn-in
- Wafer level and singulated die test / burn-in being adopted by across multiple high-growth markets including Silicon Photonics and Silicon Carbide
- Over a dozen new customer engagements for wafer level test / burn-in including multiple large silicon carbide suppliers
- Growing, high margin consumables revenue
- \$1B+ annual market opportunity in burn-in alone before Silicon Carbide wave

The logo for AEHR Test Systems, featuring the letters 'AEHR' in a large, bold, black sans-serif font, with 'TEST SYSTEMS' in a smaller, bold, black sans-serif font directly below it. To the right of the text is a graphic element consisting of five horizontal orange bars of equal length.

**AEHR**  
**TEST SYSTEMS**

**Setting the Test Standard for  
Tomorrow**

*Nasdaq: AEHR*