



Advanced Micro-Fabrication Equipment Inc.

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**AMEC ENTERS SEMICONDUCTOR CAPITAL EQUIPMENT MARKET WITH  
PORTFOLIO OF ADVANCED PROCESS TOOLS**

***Asia-Based Company's Proprietary Technologies Deliver Superior On-Wafer  
Performance, Higher Productivity and Cost-of-Ownership Benefits***

**TOKYO, Japan, Dec. 4, 2007**—Advanced Micro-Fabrication Equipment Inc. (AMEC) today launched its official entry into the global semiconductor capital equipment market with a portfolio of leading-edge process tools for the 65-45nm nodes and beyond. The Asia-based provider of proprietary technology solutions unveiled the Primo D-RIE™ (decoupled reactive ion etch) system for critical and other dielectric etch applications and the Primo HPCVD™ (high-pressure chemical vapor deposition) system for shallow trench isolation (STI) and pre-metal dielectric deposition.

The Primo systems feature advanced technology innovations and a unique chamber design that delivers high on-wafer performance, very low defects, and high throughput. At the heart of each tool is a novel mini-batch cluster architecture that improves productivity by more than 35 percent over comparative systems, while offering a 35 percent lower cost-of-ownership (CoO) benefit. Two systems have already been shipped. They were installed and fully operational in a record 7 days, far outmatching the industry average. Several more systems are ready to ship to leading-edge semiconductor fabs in Asia.

AMEC's official debut reflects a growing trend of new, Asia-based capital equipment companies poised to serve a semiconductor manufacturing industry that has increasingly shifted to Asia. For these new suppliers, an Asia-based location not only affords closer geographic and cultural proximity to customers, it also provides access to skilled technical talent and experienced semiconductor executives across the



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region. Moreover, it places these critical vendors in the hub of a thriving local supply chain. These advantages enable them to deliver advanced systems with leading price/performance characteristics to customers that demand more value vs. their spending on advanced process technology.

AMEC is among the first to leverage these advantages to innovate a portfolio of high-value IP that forms the core of the Primo HPCVD and Primo D-RIE systems. The tools were developed in two-and-a-half years—the result of significant effort and innovation by distinguished semiconductor process technology and engineering experts who form the technical backbone of AMEC's global team. With a network of R&D, manufacturing, applications, business and support centers located worldwide, including China, Japan, Korea, Singapore and Taiwan, the company is well positioned from the outset to serve the advanced processing needs of a global customer base.

According to Dean Freeman, research vice president with market research firm, Gartner, Inc., "66 percent of all semiconductor device revenue is consumed in Asia, making the Asia-Pacific region (including Japan) the epicenter of semiconductor manufacturing.<sup>1</sup> Our data also shows that 75 percent of all capital expenditures for semiconductor manufacturing take place in Asia, thus making it the hotbed for semiconductor equipment manufacturers as well."<sup>2</sup>

"Achieving superior on-wafer performance and reducing our manufacturing costs are key success factors for us," said Dr. Steve Tso, senior vice president of Taiwan Semiconductor Manufacturing Company (TSMC). "It's essential, therefore, for us to forge close partnerships with process tool companies that are committed to providing advanced systems that meet or even exceed our technology and economic requirements."

"With the semiconductor industry increasingly being driven by price-sensitive consumers, cost of ownership is integral to chipmaker success," said AMEC chairman and chief executive officer, Gerald Z. Yin. "At the same time, manufacturers require ever-more advanced process technologies and high-performing tools to keep pace



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with Moore's Law and deliver the chips that enable the next generation of more powerful electronic devices. AMEC's technology solutions with economic innovation are designed to meet these requirements. And, our Asia business model also allows us to partner more closely with customers while leveraging the cost advantages of the region. We're very proud to bring our products to the global market."

AMEC's progress was enabled by a syndicate of high-profile global investors. These elite firms, which include Walden International, Lightspeed Venture Partners, and Goldman Sachs, among others, have funded the company's technology development and now, the commercialization of its innovative products. According to Chris Schaepe, General Partner of Lightspeed Venture Partners, "AMEC typifies the new breed of Asia-based technology innovators that are poised to serve a global market. Their expert team has a deep understanding of the technical challenges facing chipmakers, together with the business experience and technology capabilities to empower customers with solutions that enable the production of advanced IC devices at the lowest possible cost."

"Asia is home to some of the world's most innovative and advanced technology companies," said Hsueh Sung, Vice Chairman of Goldman Sachs Asia. "AMEC has demonstrated its leadership position in the semiconductor equipment sector and we are excited to be partnering with the company as it continues to expand."

According to Yin, "AMEC's investors have played a significant role in our company's progress. Not only have they provided the financial resources to develop and commercialize our technology, they also serve as indispensable business advisors. We are deeply grateful for their support."

### **Advanced Technology Solutions with Economic Innovations**

AMEC's Primo products are built to meet the higher productivity and superior on-wafer-performance requirements of advanced-node semiconductor processing. The product portfolio includes:



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### **The Primo D-RIE system**

The 300-mm Primo D-RIE system leverages a twin-station mini-batch cluster system with a single-wafer environment and patented VHF decoupled RIE plasma source designed to provide fine critical dimension control, high selectivity to mask, wide process window, robust and repeatable performance for critical and other dielectric etch applications at nodes of 65-45 nm and beyond. The applications include: VHAR, hard mask open, spacer, dual damascene via and trench etches, among many others.

### **System Features & Technology Advantages**

- Decoupled, dual-frequency RIE with consistent RF path provides effective CD control knobs and enables independent ion density and energy control
- Symmetrically distributed and direct RF feed for precise process control and within-wafer etch rate uniformity
- Proprietary, dual plasma confinement for process stability with high flow conductance for wide process window
- Independent RF generator, onboard uniformity control unit and endpoint control per station enables each wafer to run in a single chamber environment
- Bottom-powered, high-frequency source enables stable, low pressure, high plasma density strip to preserve low k integrity
  - Proprietary, self-isolated RF match for quick and repeatable frequency tuning capability
- High purity, plasma-resistant chamber materials for near zero defectivity and low cost of consumables
- Direct resistive top electrode heating with close-loop control enables precise and fast temperature control for consistent wafer processing
- Mini-batch cluster with up to six single-wafer process stations delivers excellent throughput with smaller foot print
- Modular system architecture provides for easy installation and maintenance



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### **The Primo HPCVD System**

The 300- mm Primo HPCVD system combines an innovative mini-batch cluster system with a single-wafer processing environment and other novel technology features to tackle shallow trench isolation (STI) and pre-metal dielectric (PMD) applications at 65-45-nm nodes and beyond.

### **System Features & Technology Advantages**

- Patented MCD (multi-channel distribution) technology enables high deposition rate, wide void-free gap-fill window and low particle performance
- Dynamic wafer heater stage enhances within-wafer (WIW) and wafer-to-wafer (WTW) uniformity control for dopants and film thickness
- Unique injector design reduces particle generation and provides higher liquid flow rate
- Mini-batch cluster with up to 12 single-wafer process stations delivers excellent throughput with smaller foot print
- Modular system architecture provides for easy installation and maintenance

AMEC will host an **Advanced Technology Symposium** at SEMICON Japan on Wednesday, December 5<sup>th</sup> at the Hotel New Otani Makuhari, from 2:00 p.m. to 5:00 p.m. The Symposium will feature presentations by senior technical experts at several prominent Japanese chipmakers. Seats are limited. To reserve a place at this symposium, please RSVP to Sherry Zhu, [sherryzhu@amecnsh.com](mailto:sherryzhu@amecnsh.com)

### **About Advanced Micro-Fabrication Equipment Inc.**

Advanced Micro-Fabrication Equipment Inc. (AMEC) is a leading Asia-based semiconductor equipment company with a portfolio of proprietary wafer fabrication solutions designed to advance technology, increase productivity and reduce manufacturing costs for leading global semiconductor manufacturers. Strategically headquartered in the hub of the semiconductor manufacturing industry, AMEC's proprietary etch and chemical vapor deposition (CVD) systems combine unique technology solutions with economic innovations for the 65/45-nm nodes and beyond. AMEC's global infrastructure includes R&D, manufacturing, business and support operations in China, Japan, Korea, Singapore and Taiwan. To learn more about AMEC, please visit the company on the Internet at <http://www.amec-inc.com>.

The Primo HPCVD and Primo D-RIE are trademarks of Advanced Micro-Fabrication Equipment Inc.

1) Gartner, Inc., "Forecast: Semiconductor Wafer Fab Equipment, Worldwide, 4Q07 Update", by Klaus Rinnen et al, Oct. 6, 2007

2) Gartner, Inc., "Semiconductor Forecast Worldwide: Forecast Database" by Nolan Reilly et al, Aug. 29, 2007