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**WaferMasters' chip manufacturing equipment leads to record productivity for NEC Hiroshima Ltd, a leading Japanese producer of advanced memory products.**

Thermal production tool delivers unparalleled process uniformity and 99.5% up time in production of advanced DDRII memory for next generation Intel processors.

San Jose, California — WaferMasters, Inc. said that NEC, a leading Japanese producer of advanced memory products, is using the company's SRTF-200 Fast Thermal Processing tool for critical steps in production of the advanced DDRII, 512 Megabit SDRAM. The new memory which is capable of data transfer rates up to 667 Megabits per second (Mbps) will meet the low power demands of next-generation PCs, mobile cellular phones, workstations, and servers.

SRTF-200 aims to meet the future demands and challenges of the DRAM chip market. According to Jiro Yamamoto, associate senior vice president at NEC Hiroshima, Ltd., "The SRTF-200 is enabling NEC to achieve tighter specifications for our advanced memory devices, and in particular for minimizing Vt shift, a parameter that directly affects device speed, and therefore the yield of high performance chips. In addition, recent process results show remarkable improvement in shallow trench isolation (STI) for CMOS technology."

The SRTF-200 single wafer RTP system is a new breed of resistance heated production tools offered by WaferMasters, Inc. The equipment uses simple yet sophisticated mechanisms with few moving parts or complex temperature controls to deliver superior process results, phenomenal uptime and low operating cost. Initial system cost is one-half that of equipment utilizing lamp-based technology, it requires one-tenth the power, and delivers comparable throughput rates. NEC is currently using the SRTF-200 for source-drain (S/D) ion implant annealing, dry oxidation for shallow trench isolation (STI), and rapid thermal nitridation (RTN) for gate poly.

The SRTF is a plug and play production tool. Hidekazu Miyoshi, NEC Hiroshima, Ltd., senior manager of equipment engineering was amazed when the first SRTF arrived two years ago at his facility in Hiroshima, Japan. "We had the system uncrated and running process within 12 hours," said Miyoshi. "SRTF production tools are among our most productive." System availability has been better than 99.5%, and that includes all of our process setup time. There are no lamps to replace and few consumable parts, so maintenance is negligible. "Down time for the past several months has been only 0.18%,

with 'ZERO' maintenance. We have never seen anything like this before," Miyoshi concluded.

Next-generation memory chips can incorporate more than 1-billion transistor gates (1Gbit DRAM). Global variations can occur between chips fabricated on different wafers and to some extent different areas on the same chip. With feature sizes of 0.10 micron or less, even the slightest variation in process uniformity between two adjacent transistors on a chip can create voltage offsets that adversely effect memory speed. In a perfect world, the electrical characteristics of all transistors in a chip and from chip to chip would be identical.

"Delivering uniform and repeatable process results is where the SRTF excels," said Joseph A. Nava, vice president of worldwide marketing and sales for WaferMasters. "By virtue of its single-wafer isothermal process chamber, temperature uniformity is better than  $\pm 1^{\circ}\text{C}$  within-a-wafer and from wafer-to-wafer. Constant, uniform pressure within the reaction chamber facilitates process stability and virtually eliminates yield loss resulting from particulate contamination."

In closing, Nava said, "It is rewarding to know WaferMasters is providing a means whereby our customer can be more productive. We are pleased that NEC has afforded us the opportunity to help them bring important new technology to market."

#### About WaferMasters, Inc.

WaferMasters, Inc., founded in 1999, is a privately held manufacturer of thermal production tools used to fabricate advanced semiconductor devices. The company's core philosophy is to produce elegantly simple equipment engineered to give customers stable and reproducible process results in a high production environment. Reduced process monitoring and high equipment utilization, combined with minimum consumables usage and low maintenance contribute to the lowest CoO in the industry for RTP and other thermal processing equipment. WaferMasters, Inc. maintains headquarters at 246 East Gish Road, San Jose, California 95112. Visit WaferMasters on the web at [www.wafermasters.com](http://www.wafermasters.com).