

December 3, 2012

## **Hitachi High-Technologies Launches Sales of New Silicon Etch System**

—System ready for hard mask etching for the 20nm generation memory devices,  
double patterning-compatible mask etching, and other applications—

Hitachi High-Technologies Corporation (TOKYO: 8036, Hitachi High-Tech) today announced the development of M-8170XT Sebit, a new type of silicon etch system for the most advanced miniaturization processes for semiconductor memory devices. The new system will be officially unveiled at SEMICON Japan 2012 (December 5 to 7, 2012 at the Makuhari Messe International Convention Complex), which will mark the start of sales.

Ongoing miniaturization of semiconductor memory is driving the practical application of argon fluoride (ArF) immersion lithography, as well as double patterning and other multi-pattern technologies that utilize this technique. A major challenge, therefore, has been to achieve superior dimension control, wafer CD uniformity, and high edge exclusion performance in the etching process for hard masks used for these generations of ultra-micro lithography, as well as masks compatible with double patterning.

In the field of high vacuum process pressure under 0.1 pascal (Pa), Hitachi High-Tech's mainstay silicon etch systems employ a microwave ECR<sup>1</sup> approach that enables the formation of stable, high-density plasma. The microwave ECR approach allows for a wide process window as the coil magnetic field-enables plasma distribution control, position control and many other parameters. These advantages have allowed Hitachi High-Tech to meet diverse needs from the device development stage.

The recently developed M-8170XT Sebit is the upgraded version of the M-8170 that was launched in 2007. In addition to the microwave ECR approach, the new model introduces high-speed wafer temperature control, high vacuum exhaust control technology, and a symmetrical chamber structure. The new system achieves superior profile controllability, CD uniformity, and edge exclusion performance for hard mask etching and double patterning-compatible mask etching. The system also handles high-k dielectric gate insulation film, metal gates and a variety of other new materials. Major semiconductor memory manufacturers have already completed their evaluation for the 20nm generation of the system, and are looking to incorporate it into their mass production lines going forward.

Hitachi High-Tech is seeking to take its already strong reputation in hard mask etch and double patterning-compatible mask etch technology a step further. The Company aims to contribute to ongoing semiconductor memory miniaturization, and to help reduce manufacturing costs through simplified processing and other innovations.

<sup>1</sup> ECR: Electron Cyclotron Resonance



The New M-8170XT Sebit Silicon Etch System

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