NEWS RELEASE

SCREEN
DAINIPPON SCREEN MFG. CO., LTD.

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Dainippon Screen Announces Polymer Removal System for 300mm Wafers

Dainippon Screen Mfg. Co., Ltd. (head office in Kamigyo-Ku, Kyoto; Akira Ishida, President; hereinafter referred to as Dainippon Screen) has developed the SR-3000 polymer removal system for 300mm wafers, which thoroughly removes any type of polymer using the single wafer processing method.

The semiconductor industry started the transition to fabrication using 300mm silicon wafer substrates in order to boost production efficiencies. Consequently, equipment suppliers have begun providing the industry with 300mm compatible process equipment for the new generation fabs. Compared with 200mm wafers, roughly 2.3 times as many IC chips can be processed on a 300mm wafer. Select semiconductor manufacturers in the U.S. and Taiwan have already started using 300mm wafers, and the ratio of their use relative to 200mm will only continue to grow with time. The SR-3000 is Dainippon Screen's polymer removal system ready to meet the needs of the advanced 300mm wafer fab.

The semiconductor industry is also meeting the challenge of the reduction in circuit design rule sizes to provide higher performance for leading edge applications. The typical circuit geometries of semiconductor devices, now 180nm to 130nm, are expected to evolve toward less than 100nm. With this progression, lower resistance interconnect structures become essential, and new materials for interconnect are starting to be used -- copper with lower resistivity compared to aluminum, and low-k dielectric films to minimize inter-layer capacitive coupling. Interconnect strategies using damascene processes make extensive use of highly selective, photoresist masked oxide etches. The byproducts from these etches are often polymer residues that form on sidewalls of via and trench features, which if not removed will lead to a loss in device yield or other failures.

The SR-3000 is a flexible system compatible with the use of a large selection of chemicals such as fluoric ammonium, and amine based chemistries -- chemicals suitable for advanced interconnect materials including aluminum, copper, and low-k dielectric films. In addition, the tools unique features, combining chemical and physical cleaning, provides for a greatly enhanced polymer removal capability. Metal corrosion and oxide etching, both undesirable in the presence of advanced interconnect structures, are suppressed.

Moreover, rapid switching from chemical processing to DI water rinsing can be much more easily done compared with batch cleaning system. The single wafer process also provides superior within wafer and wafer to wafer uniformity. The SR-3000 also supports the reduction of waste in polymer removal with the a double layer processing cup design used to facilitate separation and collection of chemicals, and a filtering system to recycle collected process chemicals.