NEWS RELEASE

SCREEN
DAINIPPON SCREEN MFG. CO.,LTD.

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Dainippon Screen Develops Long Pulsed Flash Lamp Anneal Technology; Enabling Next Generation Semiconductor Manufacturing and Alternatives for Ultra-Shallow Junction Processing

Dainippon Screen Mfg. Co., Ltd's Semiconductor Equipment Company (President: Takashige Suetake, Headquarters: Kyoto, Japan) has succeeded in developing "Long Pulsed Technology" for its Flash Lamp Anneal tool, the LA-3000-F. The "Long Pulsed Technology" complements its current (shorter pulse) offering and provides Ultra Shallow Junction (USJ) processing options for next generation device manufacturers.

Device fabrication at the 65nm node and beyond places significant demands on anneal processes. High dopant activation must be achieved with extremely low time constants to control and minimize dopant diffusion.

To address USJ requirements, Dainippon Screen introduced the LA-3000-F in the 2003. The LA-3000-F has been adopted as the tool of choice by major device manufacturers. The system utilizes xenon flash lamp technology to spontaneously heat wafers in excess of 1000 degrees centigrade to activate dopants in the silicon. Temperature rise/fall is accomplished in the millisecond regime. This rapid heating and cooling cycle is especially effective to activate dopants in source-drain extensions near the surface of the silicon. While very effective for this application, longer pulse durations can be more desirable for deep junction activation.

In response to this need, Dainippon Screen has developed the Long Pulsed Technology in cooperation with its FLA technology partners Toshiba Corp. (President: Atsutoshi Nishida, headquartered in Minato-ku, Tokyo) and USHIO Inc. (President: Shiro Sugata, headquartered in Chiyoda-ku, Tokyo). Long Pulsed Technology will be offered as a new option on the LA-3000-F.

Longer flash durations are achieved by increasing power supply source capacitance. Enhancements to the wafer handling system and control software were also required. Extended and more gradual irradiation enables high temperature implant activation for both shallow and deep junction layers while minimizing dopant diffusion in both areas. Simultaneous USJ anneal for multiple junction layers is now possible.

In addition to providing more gradual thermal processing than conventional flash lamp anneal equipment, the Long Pulsed Technology reduces wafer damage thanks to its newly designed wafer handling unit.

Dainippon Screen is currently conducting marathon testing of its Long Pulsed Technology and targets commercialization of this technology by April 2006.

* This technology will be introduced at Semicon West which will be held in San Francisco from 12th July to 14th July.