WaferMasters Incorporated

News Release

2003 August 11

WaferMasters' RTP equipment improves SOG annealing process at STMicroelectronics' AG-1 wafer fabrication facility in Italy.

SAN JOSE, California — WaferMasters, Inc. today announced that STMicroelectronics is using its SAO-150AP Stacked Annealing Oven at their AG-1 wafer fab in Agrate, Italy to realize record gains in productivity for the volume spin on glass (SOG) process.

Luciano Gandolfi, vice-president of front-end manufacturing at ST, says, "Limiting particulate contamination has always been a challenge of SOG annealing. We previously monitored for particles and SOG shrinkage on a daily basis, but now we do it only once a week. High equipment utilization is also a positive factor." Gandolfi concludes: "We are achieving 99.8% uptime with the SAO-150, and this represents a significant cost saving both in consumable parts and in maintenance."

The SAO-150AP system is a resistance heated, stacked hotplate oven for low temperature baking, curing, and annealing of semiconductor materials at atmospheric pressure and temperatures up to 500ºC. The system can process 5 wafers simultaneously and provides excellent process repeatability and stability for a minimal cost. Throughput is 40 wafers per hour for a 5-minute process.

Dr. Woo Sik Yoo, WaferMasters' president and chief technology officer, points out that SOG annealing must be done gradually and uniformly, or the surface will polymerize and restrict evaporation of solvents from the SOG layer on silicon — the primary cause of surface cracks and particle formation. "To achieve a high degree of film uniformity and eliminate surface polymerization, we designed the SAO to incorporate a nearly isothermal process chamber and heater capable of soft temperature ramping," he says. "We also wanted a highly reliable machine that was economical to operate. The SAO does not use any process gas, compressed air, or cooling water, and average power consumption is 3kW at 400°C. There are no o-rings to replace, no pneumatic valves, and nothing to clean in the process chamber."

WaferMasters, Inc. has been installing SAO systems worldwide for nearly three years into 150mm, 200mm and 300mm volume production fabs. Equipment utilization has been outstanding, with uptimes of >99% and MTBF of >2,500 hours. Therefore, maintenance is minimal. In addition to SOG annealing, these versatile machines are being used for low-k dielectric annealing, polyamide bake, SiLK annealing, Cu annealing, NiSi annealing, Al sintering and photoresist bake and reflow.

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.