ACM Research Announces Global Commercial Availability of Environmentally Friendly, Cost-Effective Advanced Wafer Cleaning System

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Ultra C Tahoe delivers single wafer cleaning performance with one-tenth of the sulfuric acid consumption

FREMONT, Calif., Dec. 03, 2019 (GLOBE NEWSWIRE) -- ACM Research, Inc. (NASDAQ: ACMR), a leading supplier of wafer cleaning technologies for advanced semiconductor devices, today announced commercial production-line readiness of the world's first tool that combines bench and single wafer cleaning in an integrated system. The Ultra C Tahoe cleaning system for photoresist stripping and post-etch, post-implant and post-CMP cleans offers improved process performance, cost savings on chemicals and significantly reduced sulfuric acid waste generation.

Government restrictions on semiconductor industry waste and global awareness of environmental risks are driving increased demand for cleaning systems that can reduce consumption of process chemicals without sacrificing performance. In particular, disposal methods for sulfuric acid are suboptimal. While landfilling remains an option in countries like the United States, it does not completely remove the risk of environmental contamination. In areas such as Korea, Taiwan and Shanghai that have limited or no landfill space available, the next option is high-temperature purification, but this approach consumes a large amount of energy and contributes to additional greenhouse gas emissions.

"Sulfuric acid waste treatment is a major challenge in advanced IC manufacturing. For example, semiconductor plants account for more than half of the total sulfuric acid used in Taiwan," said David Wang, CEO of ACM Research. "Bench cleaning alone cannot achieve the required performance for 28nm nodes and beyond. While the shift to single wafer cleaning improved performance, it dramatically increased sulfuric acid consumption and now requires dangerous, energy-intensive disposal methods that are harmful to the environment. ACM Research developed the proprietary Tahoe system to deliver the high cleaning performance and process flexibility that customers expect from single wafer cleaning, but with a fraction of the chemical consumption. We consider this a winning combination that will enable the industry to maintain its technology roadmap with an environmentally friendly solution that saves significant money on disposal costs."

The Ultra C Tahoe cleaning system combines two modules into a single wet-clean system. Sulfuric acid–peroxide mixture (SPM) cleaning and quick dump rinsing (QDR) occur in the bench module, where the SPM process chemicals are recirculated as in a stand-alone bench system, decreasing sulfuric acid waste by at least 80% compared with single wafer SPM cleaning. After bench cleaning in the Tahoe, wafers are transferred to the single wafer module for advanced cleaning while still wet.

The single wafer chamber is flexible and can be configured for each customer's needs to dispense standard clean (SC1), hydrofluoric acid (HF), ozonated deionized water (DI-O3), or other process chemicals. It can accommodate up to four arms with up to three process chemicals on each. Options include an N2 spray arm or megasonic cleaning with ACM Research's Smart Megasonix arm. The system also offers an isopropyl alcohol (IPA) drying function that can be applied to patterned wafers.

The Ultra C Tahoe cleaning system has demonstrated low cross-contamination risk and excellent particle-removal performance rivaling state-of-the-art single wafer systems, all at a much lower consumption rate of SPM. When compared with a traditional SPM bench tool, data from an ACM Research customer's commercial production line demonstrated that the integrated Tahoe system can reduce particle counts from hundreds to around 10 per wafer at 30nm. A Tahoe system processing 2,000 wafers per day will consume less than 200 liters of sulfuric acid, saving more than 1,600 liters of sulfuric acid waste per day compared with single wafer high-temperature SPM cleaner.

The Ultra C Tahoe is available now in global markets including Taiwan, Korea and the United States. Please contact your ACM Research sales representative to learn how to customize the system for your fab's needs.

About ACM Research, Inc.
ACM Research develops, manufactures and sells single wafer wet cleaning equipment, which semiconductor manufacturers can use in numerous manufacturing steps to remove particles, contaminants and other random defects, and thereby improve product yield, in fabricating advanced integrated circuits.

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