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SMALL PACK OF GAS

WITH THE INTRODUCTION OF 300MM TECHNOLOGY SIZE AND SPACE ARE NOW VITAL ISSUES FOR MANUFACTURERS. EVERY ASPECT OF THE PROCESSING CHAIN IS LOOKING TO REDUCE FOOTPRINT SIZE WITHIN THE FAB. DAVID RIDSDALE LOOKS AT HOW KINETICS IS SHRINKING MODULAR GAS STICKS

Space availability is crucial in 300mm fabs with engineers from all areas looking at ways to reduce footprint size and utilise available space. There are many differing ways to achieve these goals and OEM manufacturers have been pushed to develop innovative methods to achieve these goals. This carries on to 2nd tier equipment suppliers, as they need to support OEM's and manufacturers in freeing up fab floor space.

Kinetics launched a new 11/8-inch compact and modular surface-mount gas system at the recent Semicon Europa. The modular technology delivers weight and size reduction compared with both conventional welded gas sticks and the previous generation of 11/2-inch modular

systems. The main purpose of such a reduction is to provide device manufacturers and wafer fabrication tool OEMs the technology to meet aggressive footprint and pricing targets required for 300mm semiconductor fabrication equipment.

The 11/8-inch component interface K1S system uses the C-seal specifications of SEMI PR 3.1, and builds on several previous generations of modular technology to deliver new levels of performance. Based on a 10 stick gas system, a K1S gas system would weigh 36.8kg (81 pounds), compared with 45.9kg (101 pounds) for a conventional welded stick, and around 57.2kg (126 pounds) for a previous generation 11/2-inch system.

The 11/8-inch footprint allows space savings of 30-50% from previous generation modular systems, and 50-75% from conventional welded gas systems. K1S is based on substrate modules that connect via a 'tongue and groove' configuration, and bolt together to connect flow components without special tooling. This allows semiconductor tool OEMs and semiconductor manufacturers to build custom gas sticks extremely rapidly, and to break them down for process upgrades or maintenance with equal ease. Early indicators suggest a

competitive cost comparison with welded gas systems.

The elimination of welds and ease of reconfiguration to handle last-minute changes, lead-times are typically reduced by over 50%, to 3-4 weeks, compared with 10-12 weeks for conventional gas systems. The substrate modules feature dowel pins for self-alignment, graphics to help users visualise the gas flow path, and industry-standard seals - for open compatibility with valves, regulators, filters, transducers and mass flow controllers (MFCs) from all major manufacturers.

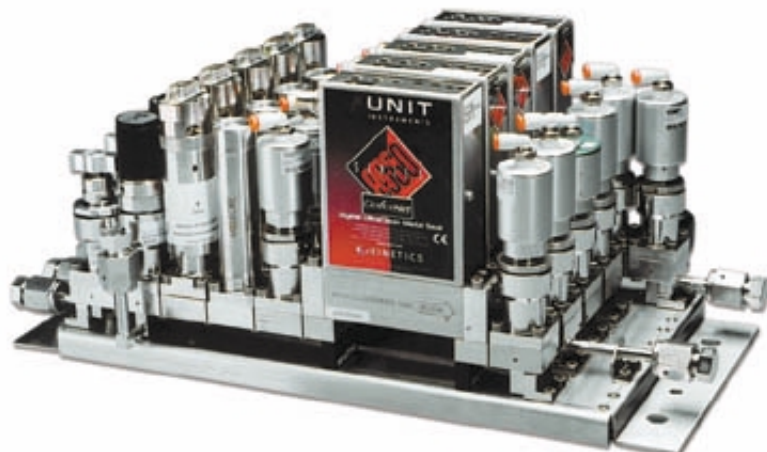
Standard size

As well as introducing the new gas system design, Kinetics is actively promoting standardisation efforts by providing the industry with royalty-free licenses for K1S design specifications. Kinetics hopes this will help speed the adoption of surface mount, gas systems technology by tool OEMs.

"With the advent of the 11/8-inch substrate platform, the advantages of compact modular technology are now compelling" said Peter English, director for Kinetics Fluid Systems Europe. "Since semiconductor manufacturers and equipment OEMs are reluctant to choose products available from a single-source, we believe open principles and standardization will drive adoption of the technology - benefiting the industry as a whole."

Kinetics is supporting European demand for the new modular technology from its regional headquarters in Ireland, where it has both gas system manufacturing and MFC support facilities. The first K1S system destined for use in Europe was shipped from this facility just prior to Semicon Europa.

"Modular technology is now progressing rapidly from evaluation and qualification phases into production," adds Peter English. "OEMs are now beginning to standardise on the approach, and we expect the technology to make the break into volume production this year."



New levels of performance: K1S builds on several previous generations of modular technology