

Crossing Automation Takes Modular Tack

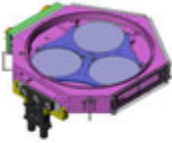

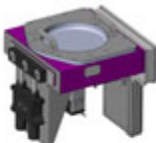


Crossing Automation Inc. said its building-block approach to wafer handling is in final testing at a leading etch vendor. The startup's five modular wafer handling subsystems can be configured with process chambers into cluster tools, allowing equipment vendors to concentrate on their core competencies in etch, CVD, cleaning and RTP, said co-founder Larry Dulmage.

By David Lammers, News Editor -- Semiconductor International, January 21, 2009

After six years of market research and prototype development, **Crossing Automation Inc.** (Mountain View, Calif.) said it is nearly ready to offer its standardized approach to integrated vacuum wafer handling systems.

The company's building-block approach keeps wafer handling costs down, while allowing equipment vendors to concentrate on adding value in their process modules, said Larry Dulmage, a co-founder and vice president of sales and marketing. The modular approach provides the flexibility needed to serve markets ranging from high-throughput to critical-dimension tools. The startup will focus on customers in etch, chemical vapor deposition (CVD), cleaning and rapid thermal processing (RTP), a \$750M annual automation market.

Crossing Automation's building blocks allow equipment vendors to create variously configured cluster tools, using a family of automation components called ExpressConnect. The components include a six- to nine-wafer loadlock called TransCenter, a four-wafer buffer, a dual-wafer loadlock, a shuttle lock with two robotic arms that manages all wafer transfers, and an SEC-1000 controller. ([View a video of the systems in action.](#))

Trans-Center™	Multi-Wafer Buffer	Dual Wafer Load-Lock	Shuttle-Lock™	SEC-1000
				
A six to nine wafer load-lock which is the backbone of a conventional cluster tools	Is a compact four (4) wafer transfer module which is the branch point in a linear system configuration	Is the entrance and exit point for a most vacuum based systems	The common component in all system designs; it manages all wafer transfers	Is a common controller which is capable of driving all sub-system in the Express Connect™ product line

The five building blocks can be used to configure a wide variety of system designs.

The five building blocks have been used to create working systems at a tier-one etch supplier, according to Dulmage. "The value proposition with our solution is that it allows customers to drive costs down, including the costs for spares and field repairs," he said. Many equipment vendors use a variety of vacuum automation vendors for various markets, which "means that they have no scale, because they all use different parts," he said. "How can they get lower costs? With our building blocks approach, we use common parts."

Several of the Crossing Automation founders came together in 2003, after PRI Automation Inc. (Billerica, Mass.) was sold to Brooks Automation Inc. (Chelmsford, Mass.). The founders include CEO Jed Keller, R&D Vice President J.B. Price and Director of Operations Eric Newton. Larry Wise, vice president of engineering, earlier worked at Advanced Micro Devices Inc. (AMD, Sunnyvale, Calif.). AMD is pushing the 300 mm Prime effort at an automation test bed being developed in Austin, Texas.

Crossing Automation received \$15M in funding in 2006 from Tallwood Venture Capital and Intel Capital. The company expects it will go back to the capital markets in mid-2010 for a second funding round.



Larry Dulmage,
co-founder,
Crossing
Automation



A four-chambered cluster tool can be created using two of the Crossing Automation loadlocks.

During the current downturn, equipment vendors are rethinking their wafer-handling approaches, according to Dulmage. Some customers need very high throughputs for etch steps with looser critical dimensions (CDs), while other tools are targeted at the most critical etch steps. By applying a modular set of wafer handling components, Crossing Automation's building blocks can be configured into cluster tools to meet various end-use needs, he said.

Also, equipment companies are assessing the viability of their automation supply chains. "When we come out of this downturn, the supply chain will be decimated," Dulmage predicted, saying that equipment vendors want to concentrate on their core competencies. Vendors especially want to reduce the cost of spare parts, he added.

Crossing Automation's approach is similar to one developed by [Blue Shift Technologies Inc.](#) (Andover, Mass.). Crossing Automation and Blue Shift have been developing similar strategies over the past five years, Dulmage said, adding, "Both companies have room to find their ways in, because no customer wants to be sole-sourced."

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