



## **Crossing Automation Receives Four Key Patents for Semiconductor Manufacturing Automation**

**Fremont, Calif.—June 29, 2010**—Crossing Automation, Inc. ([www.crossinginc.com](http://www.crossinginc.com)), a leading supplier of flexible, cost-effective front-end and back-end automation solutions and engineering services to semiconductor equipment manufacturers, today announced it has received four new patents. These patents cover atmospheric loadports, robotic wafer handling, and wafer handling end-effectors, further extending Crossing’s leadership in wafer-level automation technology.

“Crossing Automation has a strong history of creative technological contributions in the areas of semiconductor manufacturing automation, environmental control, and material identification and tracking,” said Bob MacKnight, president and CEO of Crossing. “The technology covered by these patents was developed in response to new market requirements and from fresh insight into improved solutions for existing requirements. These patents highlight our continuing commitment to bring to market innovative solutions for wafer-level automation that are cost-effective and also reduce development cycle time for our OEM customers.”

These key patents add new capabilities to Crossing’s Express**Connect**™ product line and will be implemented in semiconductor manufacturing equipment, Crossing’s primary market. Moving forward, Crossing is applying these patents to other applicable manufacturing equipment including green technologies such as LED and PV, as well as applications in the life sciences market.

A brief summary of the newly granted patents highlights Crossing’s role as a strategic provider of solutions for the semiconductor and related industries:

### **Wafer Engine™, patent number 7,648,327**

This patent covers Crossing’s Wafer Engine™; an advanced solution for both high throughput substrate handling as well as its ability to service two to six or more loadports. The wafer engine incorporates a field proven folded Vertical Travel axis, which saves space and weight in conjunction with a dual-slide linear travel end effector assembly that facilitates rapid ‘dual swap’ wafer exchanges. The patent also describes the capability for a means to provide wafer alignment and environmental conditioning stations on the end-effector slidebody. The wafer engine is an important sub-system in Crossing’s Express**Connect** family of components and sub-systems and one of the primary reasons for the success of the Spartan™ EFEM and Wafer Sorter product lines currently used in a significant number of 300 mm semiconductor wafer fabs.

### **Variable Lot Size Loadport, patent numbers 7,585,144 and 7,597,523**



These patents cover a BOLTs style loadport that is equipped with a vertically indexable container support assembly as well as a position controllable environmental shield plate. These capabilities enable flexible interfacing of a process tool loadport with containers of varying capacity and/or construction. Alternative front opening unified pod (FOUP) transport and tool-loading architectures are also facilitated.

### **Ultra Low Contact Area End-Effector, patent number 7,669,903**

This patent describes a means for supporting and handling semiconductor wafers or other thin substrates in a manner that minimizes particulate generation and/or particle transfer at the critical interface between the wafer's backside surface and the end-effector's support/gripping surface. Additionally, the supports have the ability to adaptively conform to a non-planar wafer, which may be distorted due to surface stresses or gravitational sag. The wafer contact elements are also able to be exchanged/renewed without removal or adjustment of the end-effector structure.

In countries where Crossing operates, the company currently holds 124 patents and has 44 additional applications on file. Crossing directly manufactures, sells and services all of its own products and does not presently license its IP or technology to third party providers.

### **ABOUT CROSSING AUTOMATION:**

Crossing Automation is a leading supplier of flexible, cost-effective front-end and back-end automation solutions and engineering services to semiconductor equipment manufacturers. The company's unique approach to automation solutions enables its customers to shorten time to market, lower development costs and reduce total costs. Through its front-end and back-end automation solutions, Crossing achieves critical manufacturing flexibility for OEMs and IC manufacturers alike.

### **Crossing's End-to-End Automation Platforms**

Crossing Automation's ExpressConnect™ modular building block family of automation components delivers integrated atmospheric and vacuum substrate handling sub-systems with small footprints, low costs and high productivity for semiconductor manufacturing. Crossing also delivers a broad range of leading-edge, cost-effective 300 mm, 200 mm, and 150 mm component technologies to both OEMs and semiconductor manufacturers including isolation, robotics, and tracking. Crossing implements a system architecture that uses highly reliable linear transfer devices and simplified control algorithms to improve efficiencies and control reliability and is key to enabling a comprehensive, flexible, end-to-end automation solution.



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