

**Abstract #: 06041613039**

**Title:** A Case Study for Improved Robot Teaching Methodology on 300mm Endura

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**Fits to topic(s):**

### **1. Equipment Productivity**

**Preferred presentation:** oral

#### **1. Motivation**

As the semiconductor industry strives to improve fab and equipment productivity, the margin for error gets smaller even as the opportunity for significant error grows. Clearly, changes in semiconductor manufacturing to smaller nano-scale dimensions needs to be accompanied by more stringent calibration and monitoring of the manufacturing equipment. Innovative new tools, such as those which make it possible to control equipment and measure processes to tighter parameters, can help fabs achieve greater manufacturing consistency, reduce bottlenecks, improve productivity, reduce wafer scrap and ultimately maximize the return on investment.

This case study in a 300mm wafer fab (Fab A) is one that demonstrates the gains that can be achieved in overall equipment productivity by employing new and novel methods for alignment of transfer robots in an Endura platform, saving over 20 hours of equipment time and eliminating the need and expense of wet cleans during the procedure resulting in over 600% improvement in production to production time (MTBP). This procedure was adopted fab wide for this tool set after this result.

#### **2. Description of the approach**

Fab A used the CyberOptics Semiconductor (CSI) Automated Teaching System, an automated, wafer-like, wireless vision based target acquisition technology to teach robot handoff positions in the Endura cluster tool. Because this system data is available in real time, is vacuum compatible, and temperature stabilized, fab personnel can take immediate corrective action to align the robot without venting or cooling the process chambers. This shortened the time it takes for fab engineers to set up the equipment while significantly reducing the need for human interference and the opportunity for contamination. Their ability to quickly teach robots precisely correct wafer handoff techniques ensure the greater manufacturing consistency that today's processes require and in much less time and with less expense.

#### **3. Evaluation of results**

The results are astounding, improved teaching times to upwards of 600% in the Endura cluster tools, and ability to monitor the health and consistency of tools wirelessly and at will. Specific results to be presented.