

## Rapid Tool Installation – A Process for all Concerned

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Semiconductor manufacturers are continuing to press for reduced process tool installation durations. In the past, jigs, templates and interface boxes have helped reduce durations, but further improvements are necessary. One way to accomplish this is to ensure completion of all pre-facility work before the tool mainframe and components arrive at the semiconductor factory.

A tool adapter plate or docking station that is an integral component of the process tool can help to accomplish this goal. It contains all tool points of connections (POCs) and can decrease installation complexity and reduce installation times for all concerned. By ensuring that all parties to the tool installation process receive a benefit, this process can reduce total time to first wafer out, the goal of all parties.

This paper will review a process to reduce the tool installation duration and cost from all points of view.

### Semiconductor manufacturer

- The adapter plate / docking station concept provides accurate facility information from process tool manufacturer
- Enables construction completion prior to tool set
- Delays capital spends based on projected tool set date

### Process tool manufacturer

- Reduces the time from tool delivery to first wafer, process qualification and final payment, by reducing the time from dock to facilities complete.
- Provides a uniform and predictable interface between the tool and the fab
- Having facilities complete prior to tool dock allows support personnel to immediately focus on hardware and process tuning

### Hook up Designer

- Fewer tool POC's simplify the design process.
- The adapter plate will likely make the tool installs of a given process tool manufacturer / model number more similar across industry factories.
- The adapter plate / docking station helps ensure that process tool equipment manufacturers will provide accurate facility POC information (less design rework / field changes).
- Hookup design can be enhanced by early issue for construction (IFC) which could enhance scheduling

### Constructor

- Reduce cost and man hour during the hookup phase
- Reduce coordination effort and placement across all facility services
- Enhances the QA/QC activities for qualifying from the facility services to the adapter plate / docking station.
- Improves resource predictability

Adapter plates are a technology that should be considered for improved tool installation and in many cases will decrease the cost for rework and man-hours spent. This paper has identified some recommendations that can enhance the hookup program for the semiconductor industry. The next step should be to develop a set of standards and definitions to support a rapid tool installation program that will benefit all segments of the industry. The key to its success will be

consistency and standardization across the industry similar to the experience of the automated material handling system in the transition to 300mm.