

value through innovation

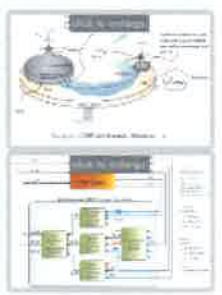


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Chemical Mechanical Planarization (CMP) Controllers

In-situ Real-time CMP Control

Chemical Mechanical Planarization (CMP) is used in semiconductor fabrication to remove material from an uneven wafer surface. SC Solutions is one of the early pioneers of real-time feedback control for CMP using in-situ sensors. (See publication "Model-based control for chemical mechanical planarization (CMP)" which can be found [HERE](#).)



Our patented real-time CMP controller consists of several modules:

- multi-zone Pressure Profile Control,
- platen & wafer Motor Velocity Control,
- Slurry Flow Control,
- full wafer Temperature Control.

These modules are all parameterized and can therefore easily be customized for a wide range of CMP tools and processes. Customization and tuning is performed using our model-based (feedback) control design technology and the implementation using our SCue™ Real-Time Controller Software Framework. We can customize our controller based on DOE experiments from your system, or we can assist you in developing custom models for your system, and base the controller customization off of those models.

If ex-situ process sensors are available, our real-time CMP controller can be complemented with our run-to-run controller software, in order to correct critical process variables, such as within wafer non-uniformity (WVNU), from one run to the next.

Next Generation CMP / ECMP

SC Solutions is currently developing tools for next generation CMP control, including ECMP feedback control. We are developing new and enhanced CMP models and controllers, as well as detailed physics-based models for ECMP. Please [contact us](#) for more information.

Services and Products

SC Solutions provides the following services for CMP: detailed finite element contact mechanical modeling for prediction and control of the within wafer non-uniformity (WVNU) of removal rate across the wafer, customizing and tuning our real-time feedback controller for your system, development of run-to-run control algorithms for controlling uniformity and removal rate, and implementation of the sensing/control algorithms on CMP equipment using embedded control.

SC Solutions provides the following products for CMP: physical modeling software for CMP, integrated model-based run-to-run control software for CMP, and embedded real-time feedback controllers for uniformity and removal rate control in CMP.

The SC Solutions CMP technology is protected by United States Patents 7,050,880 B2 and 7,437,206 B2.

SC Solutions has contributed to advancing science, knowledge and technology in these industries:

- Advanced materials
 - Aerospace
 - Electronics
 - Medical
 - Semiconductor

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