ITRS UPW ABSTRACT

Future Fab design - Ultrapure Water System Design and Operational Challenges.

This paper will discuss the technological challenges facing Ultrapure water system design, operation and support to pursue the manufacture of integrated circuits for devices with nanometer (nm) critical dimensions. The topics for discussion will include measurable water quality. Where should this data be collected and how should it be used? How next generation analytical instrumentation could revolutionize the operation of a UPW i.e. “Real Time” system performance trending and control data. The incorporation of this technology and the impact on achieving Zero Unscheduled Downtime will also be discussed.

The energy to produce UPW and maintain water quality represents a significant portion of the total energy required to operate a semiconductor manufacturing facility. With the ever-increasing pressure to reduce device fabrication costs, the UPW system designs of the future will be scrutinized not only for their resulting water quality and uptime capability but also for their efficient use of energy. The efficient use of all energy resources will become a driving force. If we are to take a pro-active stance to meet the design requirements of nm technologies, a paradigm shift in our current design and operational methods will be required. How personnel supporting these systems are allowed to proactively control and minimize the introduction of contamination is essential. How the current design(s) might evolve in the future to support yield enhancement, reducing energy, chemical consumption, the materials of construction and the overall size of the system will be discussed.

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