

Impact of Production issues on Design and Construction of 300mm Semiconductor Facilities

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ABSTRACT

The primary driver for producing chips on 300mm wafers is reducing cost by producing more chips per wafer. Historic data shows that the cost of process tools for the 300mm fabs will run into hundreds of millions of dollars. Therefore, fab owners need to maximize tool utilization to maximize the return on their investment and to receive greater profits.

Unfortunately, according to a SEMATECH report, fab equipment processes produce wafers only 30% of the time. The remaining 70% non-productive time includes running test wafers and scheduled and unscheduled downtimes. Therefore, one of the major issues that the 300mm fabs needs to address is that of improving productivity. This paper reviews the major changes likely to occur in 300mm wafer process and tools to address the productivity challenge in the context of the impact on design and construction of the 300mm semiconductor facilities.

Keywords: cleanroom class; improving productivity in semiconductor facilities; semiconductor facilities construction; 300mm wafer production