

A Potential Approach for Monitoring Fab Cycle Time Performance through Dynamic X-Factor Control Charts By: Jennifer Robinson

In this presentation, we discuss a fab performance measure called Dynamic X-Factor. Dynamic X-Factor was introduced by researchers at Yasu Semiconductor in Japan in an ISSM 2002 paper. It measures the speed of the production line on a short-term basis, and gives an early indication of future cycle time problems. Dynamic X-Factor is a point estimate that looks at the total wafers present in the fab, divided by the non-rework wafers that are currently being processed on tools. It can be shown to be equivalent to the traditional cycle time X-Factor (actual cycle time divided by theoretical cycle time) over time. When measured frequently, Dynamic X-Factor can give useful information about short-term, periodic behavior in the fab, such as shift change effects. The purposes of this talk are to first introduce Dynamic X-Factor, and then to solicit audience feedback regarding whether or not it is appropriate to treat fab-level Dynamic X-Factor as a control chart. Our goal is to establish procedures for the automatic identification of control limits. Fabs would then be able to flag observations falling outside of the control limits as early indicators of future degradation in shipped lot cycle time performance.

Keywords: Cycle Time, Performance Improvement, Metrics, Control Charts