

***Improving Manufacturing Operations at Texas Instruments DMOS5 Wafer Fab***

**Stephen K. Walker      Kishore Potti**

The following abstract is a summary of several man years of effort that assisted in the most successful merger of two 8” DMOS4 and DMOS5 wafer fabs in Texas Instruments. In 2003, Texas Instruments embarked on a mission of merging two separate fabs that were producing different technologies (Cu and Al). The manufacturing management was charged with assimilating two fabs and cultures. In order to improve the manufacturing operations, several aspects of operations were addressed. This paper provides an overview of these activities and the resulting benefits.

The following are the several aspects that were addressed and the manufacturing effectiveness tools that were developed

- In order to be cost effective one of the primary aspects of focus was the development and use of staffing model

to understand the impact of people productivity. Even though work was started on this before the merger, this resulted in a **TI patent** for headcount analysis and this tool was used by manufacturing management to allocate resources across both ends

- One of the gaps that was identified was the lack of decision support tools for management. In order for the manufacturing manager to have a 360 degree view of the manufacturing operations, a “*manufacturing dashboard*” was created. This dashboard consists of the various reports ranging from Inventory / Moves Graphs, Daily clean room outs /Ships/Process Yield, Fab Linespeed and Cycle Time Analysis, WIP/Productivity Reports, Module Dashboards, Productivity Metrics
- The foundation for all of this information was the creation of a capacity model that involved merging the capacity models of the two factories. One of the fabs did not have a good infrastructure in the area of

capacity modeling. So throughput and utilization data had to be collected and the data and the models from both ends of the factory had to be integrated to generate a combined capacity model. This model is in heavy use to make the capacity, capital decisions of the merged factory.

- The manufacturing project that improved the utilization of one of the bottlenecks of the factory will be highlighted.
- The other tools in use such as the use of ASAP simulation, Toolsim, RTD will not be the focus of this presentation
- The final aspect of the paper would be a summary from the manufacturing manager on how these tools improved the manufacturing operations and along with a lot of other aspects, created a successful merger in the history of Texas Instruments Inc