

Woodlands Media Realizes Early Benefits from Getting "Lean"

More Discs Per Day Without Additional Headcount

Link to Success:
Seagate's Supply Chain

A PREVIOUS BUSINESS MONDAY article (November 23, 1998) introduced the fundamental concepts of Lean Manufacturing—the systematic study and elimination of production process “waste”. The Woodlands Media plant in Singapore has started applying Lean concepts and is seeing significant benefits already.

In the second financial quarter of 1999, a team was formed in Woodlands to study potential areas to eliminate “waste” in that facility’s current processes. The team, led by Phil Maher, the plant manager, includes several individuals from various plant departments and **external lean** experts. The first study indicated large improvement opportunities in preventative maintenance (PM) and conversions (the process to change production equipment over from making one type of disk to another).

Improvements in these areas are predicted to create the ability to produce 6,900 more discs per day, without adding any labour or equipment. This means that many of the costs of the factory could be spread over a greater number of discs, lowering the *per disc* cost.

The first phase of the Lean project in Media involves a series of eight individual five-day improvement activities, each looking at one of the major process steps at the Woodlands and Tuas facilities. The structure of each improvement activity includes:

P An in-depth introduction to Lean Manufacturing conversion and downtime reduction tools and techniques. This is followed by an introduction to Media plant PMs and conversions to ensure all team members have the same base level of knowledge on the processes that are studied.

P Measurement and analysis of the current state, including actually video taping the work processes so that every activity and movement, machine or human, can be studied.

P Brainstorming and selection of improvement ideas, including new processes that can be implemented now compared to those that are a longer-term activity

P Trial run of immediate new work processes ideas.

P Documentation and standardization of new methods and processes chosen.

One of these improvement activities involved analyses of PM activity on the Woodlands Sputtering machines, which place the magnetic coating on discs and are generally considered a “bottle neck” (high cycle time) in the overall media production process. Each Sputtering machine was subject to a full weekly PM process. The weekly non-production or *downtime* caused by this PM was about 7.85 hours, resulting in a capacity loss of over 3,700 discs. Taking that loss number across the twelve Sputtering machines in the plant, Woodlands was losing capacity to manufacture about 45,000 discs every week due to PMs.

Using the techniques highlighted above, the team analysed and improved the weekly PM time, saving about 2.8 hours per machine per week, resulting in the ability to manufacture over 16,000 more discs per week to date within the existing Sputtering process.

Other PM processes within Woodlands have also been studied, with similar levels of improvements.

Additionally, conversion times on some machines have been reduced by up to fifty per cent. Other facility projects have been identified for further investigation and potential implementation in the longer-term, all bringing Woodlands to its overall improvement goal.

These early Lean activities in Woodlands have two additional outcomes besides the immediate process improvements. First **the external consulting resources hired by Seagate** are teaching employees the techniques on how to

Look for “waste” and develop/implement solutions to reduce or eliminate it. This will allow Seagate the ability to continuously monitor and improve internal processes as product and manufacturing technologies change. Also, the work done in Woodlands is applicable to other Media sites, allowing for quick transference of relevant improvement ideas. Studies at Tuas have begun, and preliminary communication has started with the Limavady and Milpitas Media sites.

An unplanned, but real benefit of this process, has also been the high level of teamwork and creativity demonstrated by the Woodlands site Lean Team. Employees who haven’t traditionally worked with each other on an everyday basis have come together and been highly successful in solving complex problems. Like many other elements of the Supply Chain, cross-functional teamwork and collaboration is desirable and even necessary, to get the best solution to the business problems that are addressed.

An efficient, flexible manufacturing process, whether in the drive or internal component plants, is a key element of a successful Supply Chain. It will allow Seagate the ability to rapidly react to changing customer needs and market conditions, while efficiently using cash, capital and human resources. The Lean Manufacturing work underway in the media, head and drive plants will be an important enabler to reaching this desired state.