



The Hidden Cost of Inventory: Logistics & Support Improvement at Tenon Rainbow Mountain

Tenon is the name of the new company following the sale of Fletcher Challenge Forests Forestry assets. The main product lines at Tenon Rainbow Mountain include framing and outdoor structural products. The site consists of 24 acres and processes 56 T&T (Truck and Trailer loads) of logs per day. The dispatch averages 20 T&T and 64 T&T is moved around the site each day, so logistics is an important feature. Rainbow Mountain have implemented 6 of the 10 TPM³ pillars and are strongly committed to the process.



Bryant Gray has 19 years experience with Tenon and gained an MBA from Waikato University in 2000. In 2001 as the Site Manager for the Kawerau Re-manufacturing plant Bryant was the first Fletcher Challenge site manager to introduce TPM³. Bryant is now Site Manager at Rainbow Mountain.

During the TPM³ Networking Forum in Rotorua in May 2004, Bryant Gray gave the audience a background to Logistics & Support Improvement, as many had not implemented the pillar, and shared Rainbow Mountain's discoveries and benefits.

Logistics & Support Improvement is Pillar #6 and one of the key measures is lead-time. Companies usually discover that Logistics and Support is a key part of the TPM³ journey when they realise:

- the supply chain (sales, distribution, etc) has to be capable of handling a 50% - 100% OEE improvement (increased throughput)
- production planning & scheduling have a major impact on equipment performance and materials flow
- complexity needs to be reduced (product rationalisation, process simplification etc)
- ownership has to be reinforced throughout the organisation structure
- they need to understand internal customer's changing needs
- there are opportunities to introduce Work Area Management in the support areas

The mandate set for the Rainbow Mountain team included an understanding of the stockholding levels and lead-times on site, and their effect on the business as well as reduce lead-times on average by 25% plus determine the most effective stock holding based on a "minimal holdings" approach.

Their supply chain looked like this

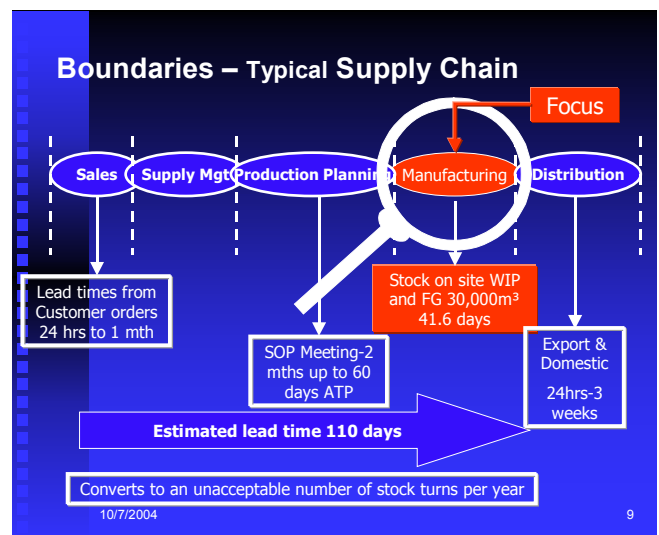


Figure 1

So what did they do? Well they graphed sales stocks and production trends, mapped the process flow for 5 main product lines, mapped stock age for turnover, processed walked their most complicated manufactured product, then conducted surveys and talked to people. During this they recognised the need for some measuring tools to map success.

What did they find? A lot of non-value adding steps in their process flow and the realisation that a large amount of money and cost was tied up with high level of inventory (the Iceberg in Figure 2). Fifty percent of stock was in a finished goods condition. Poor layout resulting in wasted time digging out product with forklifts (Figure 3), which also meant a lot of dissatisfaction amongst forklift drivers. There were big opportunities to reduce lead-time in two key processes on site (Figure 4) and they could reduce inventory without impacting customer service.

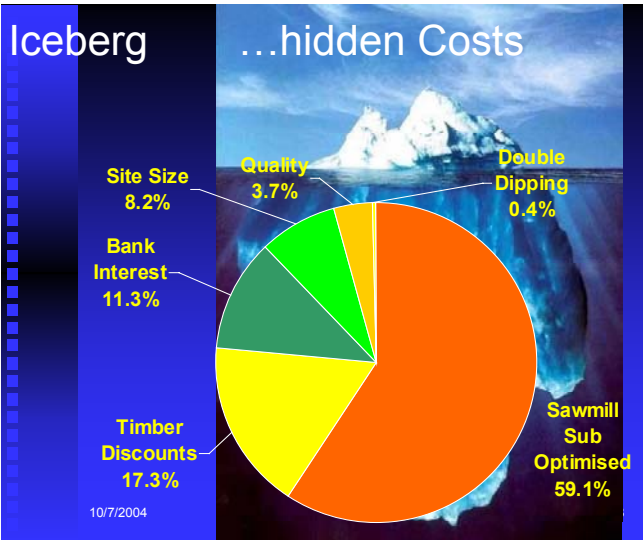


Figure 2

The improvements they made speak for themselves:

- 12% unit cost saving per m³ on forklifts
- Close to dropping a second forklift from site (\$100K)
- Lead-time reduction (15%) in past 5 months.
- Boric FPI Team = 50% Reduction of Work In Progress
- They now have Sales & Supply Chain buy-in

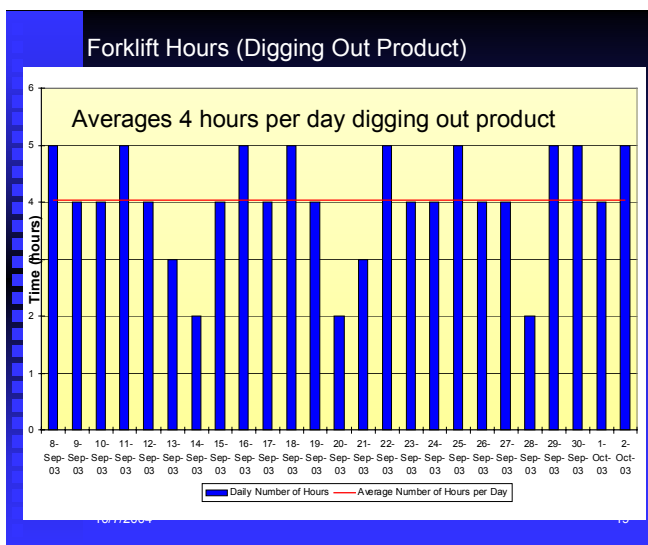


Figure 3

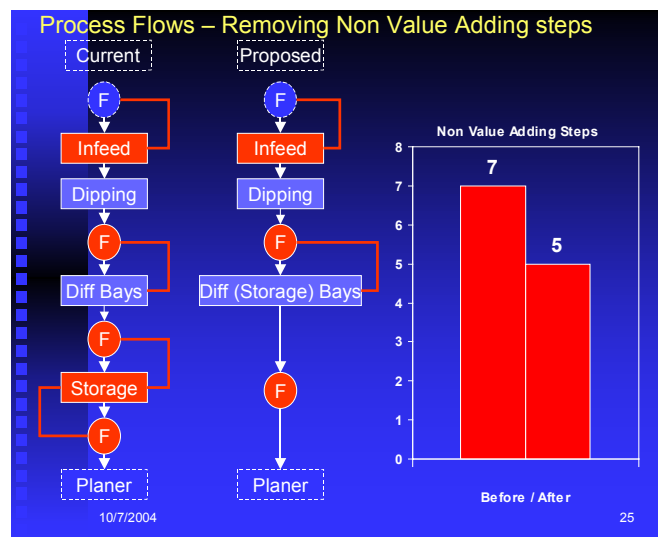


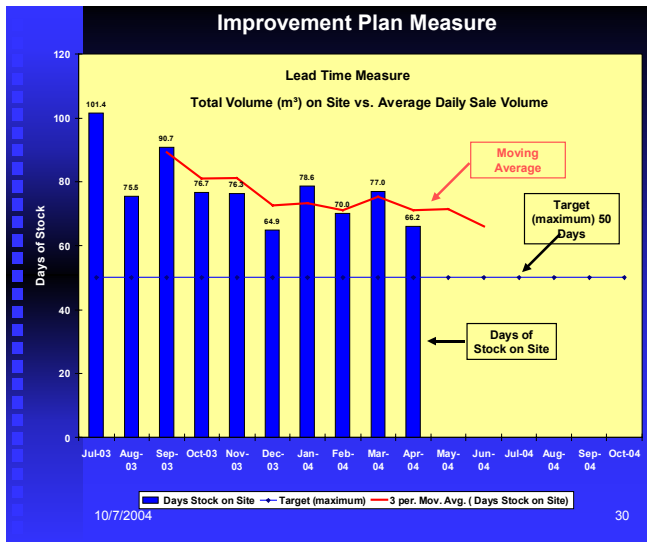
Process Matrix – Best vs Worst Case Days Though Process

| Product | Sawmill | Kilns | Planer | Steamers | Boric | CCA | Pkg | Despatch | Total | Best | Worst |
|-----------|---------|-------|--------|----------|-------|-----|-----|----------|-------|------|-------|
| Product 1 | 1 | 80 | 0.2 | | | 52 | 0.5 | 24 | 105.7 | 4.4 | 240 |
| Product 2 | 1 | 57 | 0.2 | 74 | | 3.5 | 0.5 | 24 | 134.7 | 5.6 | 299 |
| Product 3 | 1 | | 0.2 | 74 | | 3.5 | 0.5 | 24 | 103.2 | 4.3 | 162 |
| Product 4 | 1 | | | | | | | 24 | 102.5 | 4.3 | 109 |
| Product 5 | 1 | | | | | | 0.5 | 24 | 933.5 | 38.9 | 145 |
| Product 6 | 1 | | | | 908 | | 0.5 | 24 | 933.7 | 38.9 | 206 |
| Product 7 | 1 | | 0.2 | | 908 | | | 24 | 933.2 | 38.9 | 146 |
| Product 8 | 1 | | 0.2 | | 908 | | | 24 | 25 | 1.0 | 62 |

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Figure 4





Learnings (if only we could try it again!)

1. Starting a new Pillar is like starting again, so team members need to find direction and purpose
2. Need to have the right skills and team make up. The Sales/Supply Chain need to be involved with the team
3. Support areas will need to get involved at some point to maintain site improvement momentum (Use Macro L&SI for buy in)

4. Collected a lot of data but struggled to align it to the project
5. Process flow from walk-around exposed more opportunities for improvement than expected.
6. Bottom of the iceberg is bigger than you think (a significant amount of opportunities identified).
7. Lead-time is a good driver measure
8. Make extensive use of process mapping and measurement

The final word from Bryant on Logistics & Support Improvements was

- Macro Logistics & Support Improvement provides a good support platform for further improvements.
- Getting increased buy in from Supply Chain and Sales will improve the process.
- Having stock in finished goods achieves more sales and will reduce stock.
- Big financial benefits are possible with little capital required.

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CALENDAR OF EVENTS

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| <p style="text-align: center;">TPM³ PILLARS</p> <p style="text-align: center;">SERIES OF THREE, 1 DAY WORKSHOPS</p> <p>Auckland 4, 5 & 6 May 2005 Melbourne 11, 12 & 13 May 2005 Sydney 18, 19 & 20 May 2005</p> <p>Day 1 - Cross-Functional Core TPM³ Pillar (FE&PI) Day 2 - Area-Based Core TPM³ Pillars (WAM / OEM) Day 3 - Support TPM³ Pillars (MEM / L&SI / NE/PM)</p> <hr style="width: 30%; margin: 10px auto;"/> <p style="text-align: center;">TPM³ INSTRUCTOR'S / LEADERSHIP COURSE</p> <p style="text-align: center;">5 DAY LIVE-IN WORKSHOP</p> <p>Wollongong Quality Hotel City Pacific 20 - 24 June 2005</p> | <p style="text-align: center;">INTRODUCTION TO TPM³</p> <p style="text-align: center;">(AUSTRALASIAN 3RD GENERATION TPM)</p> <p style="text-align: center;">2 DAY INTERACTIVE WORKSHOP</p> <p>Adelaide 2 & 3 March 2005 Brisbane 9 & 10 March 2005 Melbourne 17 & 18 March 2005 Sydney 31 March & 1 April 2005 Auckland 6 & 7 April 2005 Uliverstone 13 & 14 April 2005</p> <hr style="width: 30%; margin: 10px auto;"/> <p style="text-align: center;">TPM³ ACTION 2005</p> <p style="text-align: center;">ANNUAL NETWORKING FORUM</p> <p>NZ Networking Forum 26 & 27 May 2005 AUSNetworkingForum 8 & 9 Sept 2005</p> |
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