Last Network Meeting for 2005 on changing the reactive nature of maintenance generated interest in more learning focused meetings.

After an engaging presentation from Ross Kennedy and a good discussion on what measures are required to drive maintenance culture change away from reactive work to proactive. The attendees left with a request for more learning focused meetings. The key points from the meeting were:

- *Excellent equipment reliability requires engaging the whole workforces - maintenance cannot do it on their own!*
- *Top management need to view maintenance as strategically important, not a cost to drive down.*
- *Measures of the maintenance processes, for example, reactive, planned and proactive work that maintenance complete are required to drive culture change and improvements.*
- *If you can achieve Zero Breakdowns then you don't need breakdown maintenance, eg people on night shifts.*
- *A World-class maintenance costs benchmark is around 1.5 to 2% of equipment replacement value, however proper benchmarking requires comparing a range of measures.*

The last CTPM network meeting for 2005 was held at Grosvenor Motor Inn, a return to the venue of the first inaugural New Zealand networking day in 2001. No better place to announce the restructuring of the CTPM Networking meetings next year. The plan is have learning groups with meeting focussed on key business improvement issues. The Waikato/ Bay of Plenty group is to focus on Maintenance Excellence the Auckland on World-class, or Lean, manufacturing.

As can be seen from figure 1, maintenance cannot achieve excellent equipment performance on their own. This was a key message from Ross Kennedy as he gave an interactive presentation on what it takes to have excellent maintenance using personal experiences from the Centre For TPM, as well as those from Du-pont and Toyota.

Evolution of Maintenance, Reliability & Equipment Management

Strategy	Methodology	Focus	Enablers	Driver
Reactive	Breakdown Maintenance	Fix it when it breaks supported by basic servicing eg lubricating	Quick response, good diagnostics	Maint
Planned (1950's)	Preventive Maintenance (PM)	Periodic Replacement plus Inspection / Checks leading to Corrective Replacement	Maintenance Management Systems	Maint
	Predictive Maintenance (PdM)	Condition Monitoring leading to Corrective Replacement	Monitoring Equipment with Technical Expertise	Maint
Designed (1960's)	Productive Maintenance	Reliability focus in plant design	Life Cycle Costing	Eng
Key Learning from Toyota:		**Maintenance can't do it by themselves, everyone needs to be involved in equipment reliability / equipment management**		
Pro-active (1970's)	Total Productive Maintenance (TPM)	Equipment Defect Identification, Elimination and Avoidance	Cleaning for Inspection Training for Inspection	Prod
Learning (1990's)	TPM^3	Equipment Management and Supply Chain Performance	Holistic Measurement Ownership Engagement of Employees	Prod

The attendees filled in the popular Maintenance Innocence to Excellence Matrix. The results were compared to the public workshop attendees from the paper "Review of Maintenance capability of New Zealand Industry 2003". The Network meeting scores averaged 39% with the Two Day Introduction to TPM^3 workshop scores were 34%. The results are enclosed at the end of this article.

The discussion then centred on how to measure progress towards reducing the reactive nature of maintenance. When maintenance is seen as a process then input, process and output measures can be

determined. As an example you put in money (maint costs) and parts (stores holdings). Examples of process measure, or how you do stuff; are % of hours spent on reactive, breakdown, planned maintenance, improvement activities and capital projects. Work Order backlogs and % PM completion. The output is how good your equipment performance is with measures including, Overall Equipment Effectiveness, Safety, Availability.

It was interesting to note that only one of the seven sites represented had a regularly updated scoreboard for the maintenance department.

One of the key process measures is how much reactive work is completed. Many definitions of this are used. CTPM recommend the use of % maintenance hours on reactive work per week, where reactive work is maintenance work that is not planned and scheduled the week prior. Other examples used by sites in attendance were number of call outs or breakdowns per week and % urgent work orders.

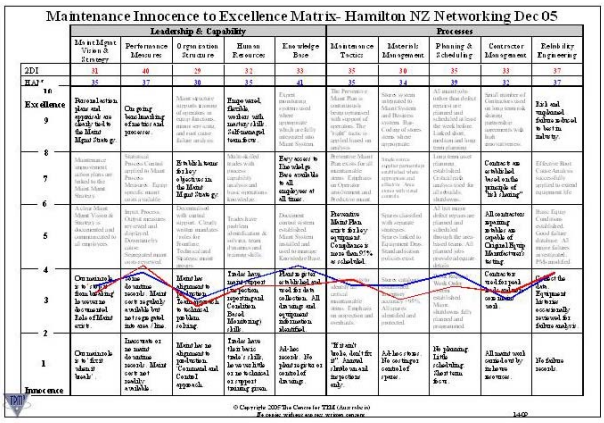
A number of key issues were discussed. For example: Typical manufacturing plants put maintenance people on shift in case of breakdowns. Although most companies find it difficult to have productive maintenance completed on nightshift. Do you have maintenance on night shift? What will they do when you have zero breakdowns?

One of the targets of TPM^3 is zero breakdowns. How good in your maintenance? Is your maintenance availability better than 98%?

How much does it cost to achieve zero breakdowns? Best practice maintenance costs run around 1.5 to 2% of equipment replacement value. A high level of reliability can be achieved in several ways. Spending large amounts of money on maintenance to keep a high level of performance or having proactive maintenance and operator engagement. Plants that spend large amounts of money tend to fluctuate between cost cutting and spending lots to catch up on deferred maintenance. Plants with world-class maintenance costs and reliability tend to have maintenance and operations employees working together in harmony.

In summary maintenance can be measured using input, process and output measures. As you can see from the above the output measures will not give a true indication of the change in maintenance culture.

Figure 2. Innocence to Excellence scores compared with Two Day Introduction to TPM^3 public workshops.



Article on measures on the website www.ctpm.org.au in the members section E Technical bulletins.

The proposed Networking/ Learning Group meetings dates for the Waikato / Bay of Plenty area are:

1. Tuesday 9 May 2006 start 2:30pm
2. Tuesday 11 July 2006 start 2:30pm
3. Tuesday 12 Sept 2006 start 2:30pm
4. Tuesday 7 Nov 2006 start 2:30pm

For further information please contact Anthony Burt +64 27 240 8509 or visit our website www.tpm.org.nz