



## Lean Changeover Newsletter

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### Lean Changeover Newsletter

The Lean Changeover Newsletter is a free monthly newsletter from Changeover.com consisting of an essay on a changeover related topic and a practical "Tip of the Month". Scroll down for the current issue.

#### SOME THOUGHTS ON...

#### TOTAL PRODUCTIVE MAINTENANCE (TPM)

This month we are privileged to have a guest essay by Kevin Lenko of Lenko & Associates <http://www.lenko-associates.com>. Lenko & Associates provides assistance with Lean, TPM, and CMMS to achieve lasting and substantial improvement. Mr. Lenko has over 25 years of continuous improvement engineering experience. He can be contacted at: [info@lenko-associates.com](mailto:info@lenko-associates.com)

Total Productive Maintenance (TPM) is a management philosophy that places the focus on the maintenance of equipment as the responsibility of ALL employees. This is in contrast to the traditional view that maintenance work should be performed by a tradesperson who will return a machine to a working state when it is broken. The philosophy of TPM is that the maintenance function is shared by many to continually improve the machine's performance, and continually increase the value-add time provided by the machine.

What to implement for a successful TPM program:

- \* Implement autonomous maintenance. That is, involve the employees that operate the equipment to maintain the equipment to the degree that they are qualified. As the TPM program develops, train the employees to do more. A good start for this is simply inspection by means of cleaning. Warning: safety training, and proper cleaning technique training is required. A lot of quick damage can be caused by cleaning with the incorrect cleaning agent, or allowing the cleaning agent to penetrate into the machine where it should not.
- \* Implement a planned maintenance schedule. Incorporate the maintenance schedule directly into the production schedule. It may seem like lost time initially, especially to the production manager, but in the long run, it will result in more production time available. Include the maintenance time on the production schedule as soon as the scheduling window opens up, even if it is months in advance.
- \* Use a Computerized Maintenance Management System (CMMS). There are hundreds of CMMS's available, and typically include many more functions than required. The function to generate work orders is the most important. It will ensure by means of work orders remaining 'open', that any incomplete maintenance activity stays "on the radar screen". The work orders can also provide the autonomous program with clear instructions, a checklist of the work to be completed, a means to record observations, and an opportunity to add a sign-off.
- \* Implement a team approach. Create small teams consisting of the machine operators, set-up personnel, maintenance personnel, supervision, etc. Allow the teams to meet on a regular basis to review reasons for unscheduled downtime and develop solutions. Ensure that notes and action plans from the meetings are visible in the workplace.
- \* Implement a 5S program. 5S is a Japanese philosophy to maintain an organized and clean workplace. Take the 5S program beyond the machine work centres, and implement the program for the maintenance shop, spare parts storage and maintenance office.

\* Measure the results. A common indicator to measure the performance of a TPM program is Overall Equipment Effectiveness (OEE). OEE is a measurement comprised of Availability, Performance and Quality. Some companies find that using other measurements related to the productivity of the machine are easier and simpler to implement, as well as better understood by employees. (i.e. unscheduled down time per week, number of breakdowns per month).

Benefits of a successful TPM program:

There are obvious benefits of an effective TPM program such as: reduced unscheduled downtime, lower maintenance labour costs, lower maintenance parts costs, increased production speeds and improved product quality (from well maintained equipment providing less variance in processing).

There are other benefits which may be less obvious, and here are a few:

- \* More management, supervision and staff time to work on important work such as continuous improvement because less time is required fighting urgent breakdown 'fires'.
- \* Improved delivery performance to customers. Equipment that is reliable is able to perform to schedule.
- \* Scheduling with confidence. The production control staff will spend less time revising the production schedule due to unscheduled machine stoppages.
- \* The sales force will be confident that customers will receive orders on time. They will have more time to sell, because less time will be required to deal with customers from orders being late.
- \* Reduced inventory. With dependable production equipment, the need for safety stock in case of machine failure is removed.

Finally, a good TPM program will be dramatically effective to improve machine performance, and typically provide significant and lasting improvement in the morale of the employees. Employees will replace aggravation and frustration with welcomed progress and satisfaction.

A few TPM tips with Changeover parts in mind:

- \* As part of the TPM scheduled maintenance, ensure movable change parts are able to freely move to the minimum and maximum ranges of the movement required. We don't want to discover during the changeover that unscheduled maintenance is required to enable this movement.
- \* Include in the TPM program to clean and inspect interchangeable parts immediately after the equipment is up and running for the next production run. Incorporate a requirement to do this into the CMMS. Store change parts properly to prevent off-line damage from dirt and dust.
- \* Include auxiliary equipment used for changeovers in the TPM program, such as tools and lifting devices.