

**W**hat can the technique achieve? Total productive maintenance reduces manufacturing costs by increasing the efficiency of equipment.

**How does it do this?**

TPM focuses on measuring the availability, performance and quality of equipment, and uses loss analysis to identify problem areas. Once losses such as minor stops, changeover time or quality defects have been identified, specific tools are used to tackle these.

Up to 70 per cent of availability and performance issues are due to deterioration which occurs because basic maintenance routines are not adhered to. One key TPM technique is autonomous maintenance – using operator teams to restore and maintain equipment in the proper condition.

**Do any other tools work well with it?**

TPM can build on 5S, which looks at workplace organisation around the equipment. We sometimes refer to autonomous maintenance as 5S with the guards off. SMED (single minute exchange of die) is used to tackle changeover losses. TPM uses focused improvement techniques, called Kobetsu Kaizen in Japan.

TPM is part of a trilogy of total quality (today often branded as Six Sigma), JIT (often branded as Lean manufacturing) and TPM. TQ largely focuses on quality, JIT on delivery and TPM on cost, although there are obviously very significant interactions between these. A World Class Manufacturing approach should include elements of all three, although it may be only branded as one: some companies have Six Sigma TPM champions for instance.

**Where did it originate, and where has it been used to best effect?**

TPM originated in the Toyota supplier base in the 1960s as an outgrowth of 5S and Kaizen activities. It was further developed by the Japan Institute of Plant Maintenance which developed five (later eight) pillars of TPM activity.

TPM was originally used in automotive and electronics industries to support Lean manufacturing. In the 1990s it was rapidly taken up in processing and packaging, led in Europe by Unilever who use the JIPM TPM prize process.

**How is it introduced into a company?**

Once management has bought into the concept and established OEE (overall equipment effectiveness) as a key metric, TPM is usually introduced through pilot projects. These should be meaningful in terms of business results, but man-

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ageable in terms of resources required; they tend to be workteam based, so that TPM gradually spreads through the site.

Pilot project activities should be based on OEE and loss analysis – identifying performance constraints and then using the appropriate tool to tackle them. The key to successful implementation is to develop shopfloor ownership of the process: internal and external consultants should act as facilitators, not project managers.

**How can the 'pain' of implementation be minimised?**

Be realistic about the resources and timescales. The biggest problem with TPM is raising expectations but then not having the resources to deal with the initial restoration work required. Start small and learn how much resource is necessary to develop pilots over the initial stages. Don't blow your credibility by over-promising.

**What are the pitfalls to watch out for?**

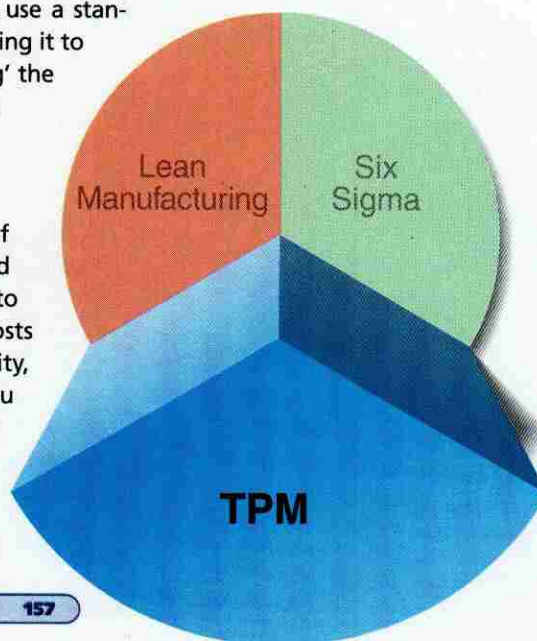
Extensive communication is needed to ensure that both production and maintenance teams understand their role in TPM and that maintenance do not feel threatened by it.

TPM is a long-term process; although some results can be very quick, it requires patience and focus to sustain. The OEE metric helps maintain focus, but use a standard way of calculating it to stop people 'gaming' the metric to look good.

**Why should I implement TPM?**

If you have a lot of equipment-based processes and need to cut production costs and raise flexibility, TPM will help. If you have multi-skilled shopfloor teams and 5S in place, you have a very good foundation. ■

*Malcolm Jones, a director of Productivity Europe, explains how and why to launch TPM on your site*



More details

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