

# Lean TPM – a blueprint for change



Dennis McCarthy

*Delivering long-term performance improvement is as two part process beginning with....*

## Creating a sense of purpose



Nick Rich

This article, written by **Dennis McCarthy** of DAK Consulting and **Dr Nick Rich** of the University of Wales, Swansea, is based on research into why some organisations are able to deliver year on year improvement whereas others, using the same Lean and TPM toolbox, have less success.

## Understanding reality

In the USA a lottery winner invested in another lottery ticket and guess what, that ticket won the second lottery. What are the chances of that? Well, as it turns out, with so many lotteries around the world the most unlikely results, like winning two lotteries in succession, happen at a very predictable rate.

If you found the above paragraph surprising it illustrates how perspective can change depending on your frame of reference. If your frame of reference is 'will I win two lottery prizes with the next 2 tickets I buy?' your interpretation will differ from that of someone whose frame of reference is 'what are the chances that a serial lottery win will occur somewhere in the world?'

Known to behaviourists as 'framing' this is one of the patterns of behaviour which afflicts us all. Framing can be useful when it helps us to make sense of complex situations. When listening to traffic reports we concentrate on the delays on our route ignoring others - that helps us to avoid information overload.

Framing can also be limiting. As an example, I remember as a young industrial engineer being given advice from a sage old supervisor that an hour of production lost is an hour lost forever. The supervisor lived by this 'golden rule', as he called it, and made sure that his shift got more out than any other. Since then, I have seen how output per hour can be increased significantly by taking the time out to improve equipment condition and working methods. To Patrick (the supervisor) his 'golden rule' defined a frame of reference which limited rather than delivered the full potential of each output hour.

In the above organisation Patrick was well respected by the management team and was held up as a role model for others to follow. Due to this the collective management outlook every day was a white knuckle ride, problems were 'solved' as they occurred only to resurface again later.

Framing can create an expectation of certainty even after the world has moved on. Amongst other things new ISO standards are being introduced this year that will necessitate a new world view – one that is open to innovation and a view that is much more comfortable with the need to stabilise

and optimise processes. In the midst of these new chaotic conditions is the need for a clarity of vision – not precise detailing but certainly the deployment of a common view of the future. Things will get tougher, quality levels will be expected to improve, stocks will be reduced, and delivery lead times will be shortened. Those who cannot adjust will, in a Darwinian fashion, fail to evolve – but the world will continue to turn without them. Constant change may seem chaotic but the general direction of what we have described is actually very predictable.

Organisations that achieve industry leading levels of performance take this into account by investing resources in managing change. Their outlook incorporates the delivery of business growth and employee engagement so that they are well placed to adapt to the future, whatever it brings. These are organisations that have learned how to align two improvement agendas – see Figure 1.



Figure 1: Top down and bottom up improvement agendas

- A top down, growth led, pressure for change
- Bottom up workforce engagement with delivering that growth.

It can be no surprise that Toyota – the benchmark of all lean businesses – continues to promote 'good products and good people' as the basis for its almost 60 years of success.

Lean TPM combines the strengths of Lean with its focus on growing customer value and TPM with its focus on total employee engagement to provide a practical toolbox for those that want to replicate the journey of these best in class performers.

## The lean TPM leadership challenge

The senior management challenge at the start of the improvement journey is to establish a common frame of reference within the management team. A common frame of reference is critical to aligning support and marshalling resources – especially human ones, so that there is a direct and unequivocal line from the boardroom strategy and direction of change to the team leader operating today's shift and the improvements they are undertaking today. This is the power of a great frame of reference – the positive challenge that we

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need to close a gap between where we are now and where we need to be in the future.

This challenge translated through the policy deployment process is the fundamental lever needed to raise performance through the engagement of all personnel with the task driving out waste and improving flow and flexibility.

Delivering the challenge requires a lot of middle management engagement too. These are the only guys who change the shop floor reality and provide the new frame of reference for their teams to follow. Expressing the challenge is just one element of this – delivering operational effectiveness is the next. Just as quality was the focus in the 1980s and personalisation and eco-sustainability are now the key themes in today's markets, we need to change. Few staff will sit like King Canute and try to resist the tide of change. When your feet are getting wet it is a bit too late and naturally you enter chaotic mode. Alignment and future thinking are key to expressing the challenge and the spoils of improving in a proactive way. Companies that remain in problem-solving mode will inevitably become bored and disillusioned so it is now time to change.

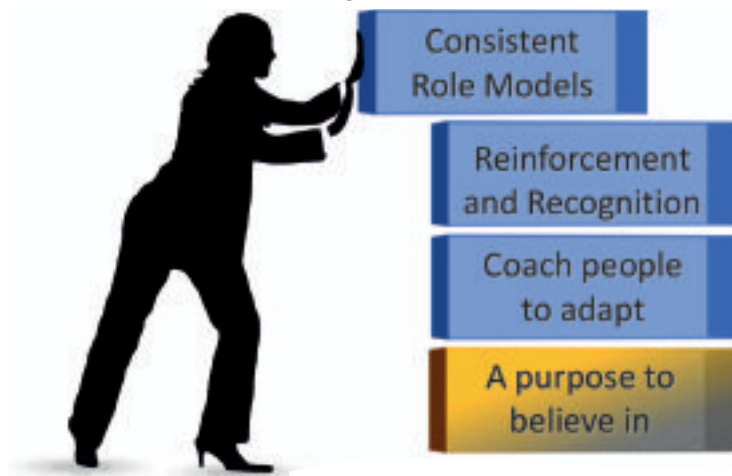


Figure 2: Creating the conditions for engagement

any investment companies can expect a return in terms of increased capacity, flexibility and reduced costs – an hour of improved production is a gain made forever.

The Lean TPM toolbox helps to formalise and refine standards and working practices until they are robust and easy to sustain using a process that creates the four fundamental conditions for engagement – see Figure 2.

These improvement activities progressively improve collaboration across functions, and develop front line team ability to manage all routine activities. This development in capability is the key to delivering zero accidents, zero breakdowns and provides the entry ticket to the second half of the Lean TPM journey to industry leading performance (optimisation).

Just as teams that successfully progress to the higher divisions of their sport raise their game, management needs to adopt a different outlook to breakthrough to the next level of performance.

The gains from the two to three year stabilisation journey include improved effectiveness of around 50%, total inventory cost reduced by up to 75% and a reduction in quality defects to around 20% of the starting benchmark performance. This gain in performance is equivalent to the differences between average and best industry performers. As important is the release of specialist and management time from day-to-day crisis management so that they can focus on more strategically important issues. Organisations that take this gain as labour savings at this stage will not be able to sustain the level of engagement that powered the progress to industry leading performance.

*Sustaining the performance improvement after breaking out of firefighting is achieved by.....*

## Optimising operations

The transformation which delivers lasting gains involves redirecting the released expertise to deliver the second part of the Lean TPM master plan. A journey characterised by the use

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### Where to start?

The lean TPM master plan sets out the milestones for the two stages of the journey and the management outlook needed for each stage.

Stabilisation is the first stage. The outlook here is clearing the technology landscape of the debris of poorly defined standards and working practices. This requires a level of detail which can only be dealt with by front line personnel. The task will require an investment in foundation training and an ongoing commitment of around five per cent of front line team time for focussed improvement activities. Like

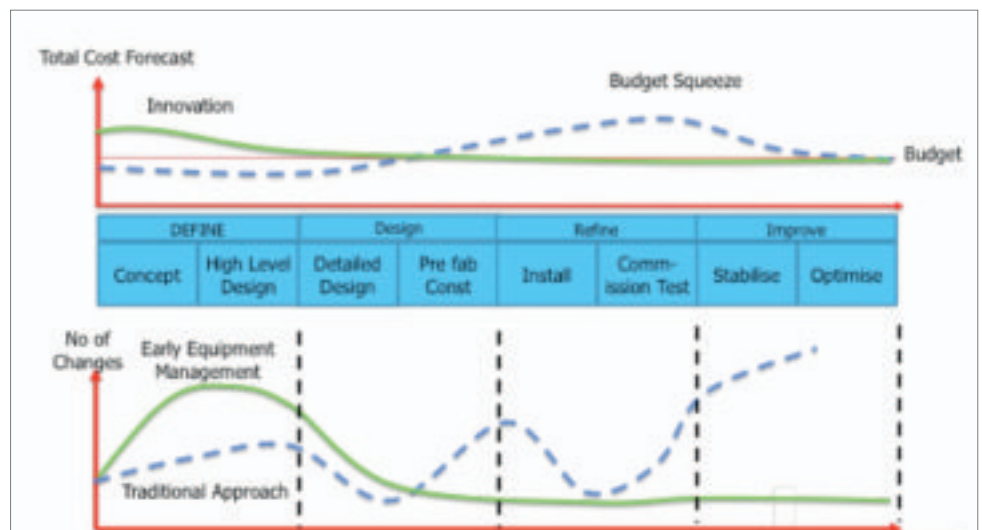


Figure 3: Early equipment management vs traditional approach

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of skills sets to deliver of new/enhanced value streams linked to the introduction of new/enhanced products and services.

For example, a manufacturer of light bulbs with a seasonal demand peak optimised their process to reduce defects and extend mean time between interventions. Through this work, they were able to run additional night shifts during peak demand months without additional labour. In addition to lower inventories, they also increased flexibility to customer demand and a faster development time for new products. Here optimisation delivered true competitive advantage because it was targeted at areas which enhanced customer service capabilities.

Such step out capability cannot be bought directly from vendors. It needs the translation of internal production knowledge into innovative front end operational design specifications. Only then can collaboration with vendors deliver unique competitive advantage using Early Product and Early Equipment Management and Early Product Management. See *Figure 3* on p14.

Unfortunately, the recipe for long-term growth is more complex than a single idea, project or customer winning deal. Winning ideas will be copied by competitors so to stay ahead requires constant evolution, which is one of the reasons why continuous improvement has to be a truly never ending process.

Throughout this journey from Good to Better to Best, the building blocks for success are aligned leadership and engagement of all organisational levels with common

systematic improvement agendas. The outcome is a common sense of purpose across the organisation. Priceless! ✨

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This article sets out the key themes from the second edition of the book **Lean TPM – a blueprint for change**, written by Dennis McCarthy and Nick Rich, and published by Butterworth Heinemann. The book is a guide to the main approaches to world-class manufacturing, lean and TPM and is illustrated by real-life case studies. It contains advice and data to help you increase manufacturing efficiency through continuous improvement.

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# Robots help Food Processors – to future proof their plants

## ROBOTICS

**P**eople need to eat, so there will always be a food industry. But people are also demanding, so price, quality and availability are the main forces that drive development in the industry.

Ten years ago UK food prices were far lower than they are today – and since the bank collapse of 2008 many people have lower incomes. Food processors are aware of this and are increasingly looking to robots and automation to address their operating efficiency.

The food processing industry thrives on innovation in both products and processes and is not shy of investing when necessary. It spends an estimated £1bn/year on research and development, producing typically 5,000–10,000 new products annually while also improving production methods, reducing carbon emissions, increasing hygiene and developing new markets. It employs 15 per cent of the working population and produces nearly £80bn annually, of which £12bn is income from exports. In short it is a big industry, and understands that automation and technology have key roles to play.

The end customers expect product quality, variety, availability and regular new offerings. The processors express this as agility with product changeovers, rapid product re-designs and extending shelf life. From the perspective of an

automation engineer, the needs are to reduce costs and increase yields, improve ingredient handling and increase utilisation of plant and machinery.

*"There is a constant drive for improvement in food processing," says John Rowley of automation and robot specialists Mitsubishi Electric. "Food manufacturers have already done wonders with automation and lean manufacturing, and increasingly they are discovering a new weapon in their armoury – robots!"*

Ten years ago there were very few robots in the food industry, and many production engineers were wary of them – they thought robots were expensive, complicated, unreliable and put people out of work. However a few crept in, often in the packaging section,



Robots can have a very delicate touch