



# ***Organisation Structure & Shift Rosters for Operations Excellence – What have we learnt?***

## **Executive Summary**

Organisation structure and shift rosters are two areas that many companies struggle to get right in their quest to improve their business. Too often companies are locked into arrangements that significantly hinder their ability to engage all their people in on-going improvement activities resulting in a lack of sustainability of the improvements that are made.

Having a clear Operations Vision of what is required to achieve Operations Excellence is the obvious starting point, however many sites don't see or understand the importance of having the right organisation structure and shift rosters, let alone an Operations Vision, and then wonder why their improvement activities struggle to sustain.

Organisation Structure and Shift Rosters should be a key ingredient for any Operations Vision, recognising the vision may take several years to achieve.

This article aims to provide insights and direction regarding the two critical and interlinked areas of organisation structure and shift rosters. These insights have been gathered over many years of research and, when implemented, have allowed sites to rapidly improve their improvement journeys and hence performance.

## **Background**

Niccolo Machiavelli (1469–1527), the founder of modern political science, in his book *The Prince* published some 5 years after his death in 1532, made the profound comment: ***'Small problems are difficult to see but easy to fix, however, when you let these problems develop, they are easy to see but difficult to fix'***.

Steven Spears in his famous article (written with H. Kent Bowen) *Decoding the DNA of the Toyota Production System* published in the Harvard Business Review in Sept-Oct 1999 highlighted how Toyota had embraced this thinking when they created their Toyota Production System. In the article he identified 4 rules that underpin the success of the Toyota Production System which all focus on getting the problems identified at the earliest possible time and addressed by the people at the lowest level in the organisation as demonstrated in Rule 4: ***'Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level in the organisation'***.

This thinking was further expanded in Spears books *Chasing the Rabbit* and *High Velocity Edge* published in 2009 which emphasised and demonstrated through case studies from the most successful operations in the world from a range of industries, the critical importance of finding problems at the earliest possible time recognising that small problems may be difficult to find such as an incorrect label on a pallet of output, however they are much easier and cheaper to fix than big problems that are easy to see, such as a customer complaint when they receive the incorrectly labelled pallet.



So what sort of problems do we want the 'lowest level of the organisation' to find at the earliest possible time?

Our learning is that they should at least include Safety & Environment, Quality and equipment problems or defects. As such, we define the role of an Operator in the context of being responsible for:

- Frontline Safety & Environment;
- Frontline Quality (input, process, output);
- Frontline Equipment Care;
- Frontline Energy Management;
- Achieve the Production Plan; and
- Formal On-going Improvement.

If these are the skills we want to develop in our Operators so they can find and rectify problems at the earliest possible time, we need to have the right structure and roster system not just for the operators but also for the safety, quality and maintenance support people so they can assist in developing these skills in our Operators – the frontline.

It is also worth noting that Stephen Covey in his book *The Eighth Habit* published in 2004, makes the very profound observation that ***'it is the frontline that creates the bottom-line for a business'***.

Our research has shown that if your Operations involves a strong dependency on equipment performance, having Operators capable of finding equipment problems at the earliest possible time will significantly cut your maintenance spend while increasing capacity of the plant. For example what would be the impact on your maintenance spend and capacity of your plant if an operator found a broken grease line to a bearing and had it corrected by the maintenance people immediately, compared to not finding the problem and having the bearing fail causing significant plant downtime and the costly replacement of the bearing assembly?

The key to developing the skills of Operators to find the problems at the earliest possible time is for them to have access to support people to help them develop their skills. Toyota took this learning one step further, which is highlighted by Spears & Bowen in their Article mentioned above, in Rule 2: ***'Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses'***.

They recognised the need for relationships to be built up between the operators and their support people whether it be the fitter, electrician or quality person so that if they have a problem it will be responded to by their dedicated support person promoting a good relationship to be built up where there is free sharing of information.

## Impact for Rosters

To allow Rule 2 above to be applied, production and maintenance rosters need to be aligned or supportive. By this we mean having the production and maintenance people on the same roster pattern or having production on a rotating roster system so they have regular access to maintenance people who are on regular dayshift.

This thinking can appear quite foreign for some organisations who have established their rosters around traditional thinking of Operators role is just to operate the plant and Maintenance role is just to fix the plant. Hence they establish elaborate roster systems such that Maintenance is available when the plant is down and



the Operators are rostered off. We find at some plants where they have several Production Lines, a line may be taken down once a week or fortnight for an 8 hour or 12 hour regular maintenance period, and to save cost the Operators are rostered off. Hence there is no opportunity to learn how to find equipment problems or defects at the earliest possible time, and most sadly no opportunity to build learning relationships with their maintenance colleagues.

The Operations Excellence reliability thinking or vision is how we can do our regular maintenance in weekly chunks of say 2 hours per shift, with any tasks requiring greater than 2 hours being planned for special 6 monthly down periods. In some situations, improvement methodologies such as Set-up Time Reduction or SMED (Single Minute Exchange Dies) need to be applied to maintenance and / or production downtime activities so that the 2 hour target can be achieved.

At one site we worked with, their challenge was the hygiene cleaning of their feed conveyor system which traditionally took a person 8 hours to complete. By streamlining isolation procedures, installing quick release latches for conveyor covers and installing service stations along the conveyor, they were able to reduce the time to 2 hours.

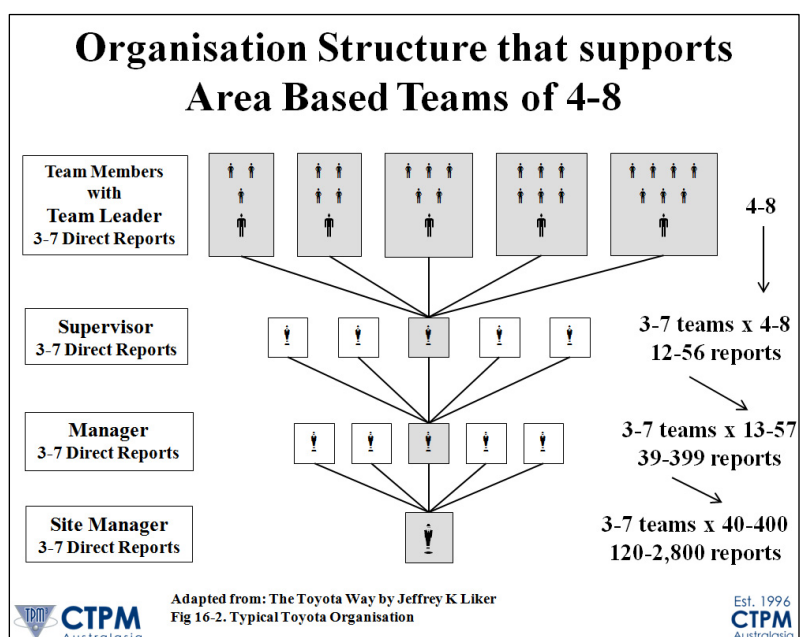
## Impact on Structure

The other part of the equation is having an effective problem solving teacher for your Operators. The best person for this role is the Team Leader of the Operators. Hence the structure in the organisation becomes critical to support the teaching of problem solving to your people. Toyota found that the best people to teach problem solving to Operators is their designated Team Leader, and the best people to teach problem solving to Team Leaders is their designated Supervisor, and the best people to teach problem solving to Supervisors is their designated Manager, and the best people to teach problem solving to Managers is their designated Site Manager.

They have also learnt that for a Team Leader to have the time and be effective as a teacher of problem solving they should have no more than 7 direct reports. For Supervisors to have the time and be effective as a teacher of problem solving they should have no more than 7 direct reports. This thinking about structure can, and should be applied across the whole business if you want all your people to be good at identifying and solving problems at the earliest possible time.

From a Production perspective we have found Area Based Teams of 4-8 including a working Team Leader is the most effective structure to allow ownership of clearly defined areas of responsibility to promote the development of **Base Skills** (ability for everyone in the team to operate all equipment / work stations within the team's area of responsibility) and **Mastery Skills** (ability to understand functioning of their equipment and be able to diagnose at the earliest possible time equipment and quality problems at the source).

We have found once you get above 7 direct reports the Team Leader is too





busy allocating tasks and has no, or very little, time to develop the problem solving skills of their people. This is often reflected in poor performance of the plant.

To further understand the role of Operators, Team Leaders and Supervisors in an Operations Excellence environment we have created a booklet titled ***'Developing competent and engaged Production Team Leaders'*** which is available from our web page at [www.ctpm.org.au](http://www.ctpm.org.au) under Products / Downloads.

At one site we worked with that involved a number of manufacturing departments, they had created an Enterprise Agreement where their Operators were rewarded by working in all departments. This meant their Operators demanded to be moved from department to department at least every 6 months so they could 'tick the box' as having achieved skills from that department. The impact the site achieved was a plant of very average performance, where a workforce of average operators could operate the plant at a base level and very few had what would be termed very good or world class skills.

We have found it can take a properly formed Area Based Team of Production Operators with a designated capable Team Leader at least 2-3 years to achieve the Mastery Skills to get world class performance from their plant and equipment, hence the importance of having the correct structure.

## Benefits of taking on this Learning

We have found the most effective way of commencing your Operations Excellence journey is to create several Cross-functional Teams focused each on a Defined Production Area with the mandate to spend 1.5hrs a week over 12 weeks to understand all the losses, develop a vision of ideal performance, divide the gap into technical opportunities or people development opportunities, then work on some of the technical opportunities to increase line performance by 25%.

The ideal make up of such a team would be Supervisor for the area to lead, Team Leader, Operator, Fitter, Electrician, 1-2 support people from say quality, planning, reliability, technical etc, and a manager. For this to be effective you want all team members to be available during their normal work time so their rosters need to be aligned or supportive as mentioned above. A key purpose of the team, other than improving plant performance, is to build relationships between the different groups of Production and Maintenance, and Management and Shopfloor. We find this a critical starting point before we start the process of training Area Based Teams to learn about finding problems / defects at the earliest possible time.

Without the correct roster and structure this process is not possible.

Sites that take on this challenge and progressively implement such thinking to their structure and rosters typically increase capacity of their plant significantly while reducing their maintenance cost by some 50% because they are finding and fixing the little problems or defects at the earliest possible time. Once the plant reliability is stabilised, the positive impact on quality performance and safety performance becomes a significant saving also.

***For more information about CTPM's approach to Structure and Rosters or Frontline Problem Solving please contact Ross Kennedy at CTPM's Head Office on +61 2 4226 6184 or email: [ross.kennedy@ctpm.org.au](mailto:ross.kennedy@ctpm.org.au) or visit CTPM's web page at [www.ctpm.org.au](http://www.ctpm.org.au)***