

## Developing Skills to Standardise your Practices

With over five years of CTPM experience under their belts, New Zealand Sugar – Chelsea Refinery has certainly achieved some fantastic improvements over the years. Beginning their TPM<sup>3</sup> journey in 2008, the Auckland based site has conducted over 200 Improvement Teams and is currently completing Cycle 18 of improvement activity.

At this year's TPM & Lean Annual Forum, TPM Co-ordinator Aaron Jacobs was invited to share some of their wisdom on the topic of developing shopfloor skills while standardising work practices.

**Figure 1 – Aaron presenting at the Forum**



Throughout the presentation, Aaron provided an insight into the three separate teams that they used to address issues on the shop floor and trial solutions in order to standardise work practices. Over the years, Aaron noted that they achieved a number of both intangible and tangible results, including a complete culture change in which communication has improved and operators are more engaged.

Although they have already achieved great results, Aaron admitted they still have a long way to go.

***“Every time you scratch the surface, you discover more areas for improvement,”*** explained Aaron.

***“The more you know, the more you don’t know.”***

At this point, Aaron asked the audience whether they had ever thought or said the following:

- Our operators don’t understand their equipment;
- Our operators weren’t trained well enough; and
- Our operators aren’t smart enough.

Almost everyone raised their hand, except for the last question which Aaron acknowledged that no one would dare to in a room full of operators.

To address all of these issues, the site introduced the Micro Education & Training Base Skills improvement activity. This process is the foundation for creating a Learning Organisation where all leaders develop all their people to capture and share knowledge continuously through formal continuous or on-going improvement activities. The foundations of the Micro Education & Training Base Skills activity can be seen in Figure 2 below.

**Figure 2 – The 10 Education & Training Foundations**

### Education & Training Foundations for Creating a Learning Organisation

1. Focus on Developing the Team Leader
2. Focus on Self Learning
3. Ensure Competency of Required Skill
4. Focus on Practical Training
5. Use a Systematic Approach
6. Promote Team Discussion & Reflection
7. Use Real Examples
8. Focus on Standardising the Work
9. Use Training Within Industry (TWI) Methods
10. Use the Toyota Training Model for Delivery

*How well does your current training delivery models support the development of a learning organisation?*

Using this approach the site established a team focused on the Matrix Machine, known as “First Rate”. Due to a growing perception that the Overall Equipment Effectiveness (OEE) had reduced over time due to a loss of knowledge, the

aim was to improve the packing rates on the Matrix Machine Packing Line.

*“It felt like the skill level wasn’t as high as what it was meant to be and it looked like the rates of the machines had reduced over time,”* detailed Aaron.

Whilst addressing this problem, the team’s observations and surveys located three major issues:

1. Each operator had a different understanding of how the machine worked and there was no consistent procedure for how to use each piece of equipment;
2. Each operator had different settings written down for how they would operate the machine, changing the settings to suit their preferences each shift; and
3. As a result of these two factors, they also discovered that the machines were not working the way they should. “The machine itself wasn’t following the steps it was supposed to be taking, and the operators had to adjust settings to compensate for things that weren’t working the way they should,” said Aaron.

**Figure 3 – Matrix Machine at the Chelsea Refinery**



The Matrix Machine team developed three different strategies to address each of these problems. They first identified the correct settings by using the manuals and seeking suggestions from outside experts. This allowed the Matrix Machine team to identify which settings needed to be adjusted. The team then completed a number of trials to determine how to get the equipment to work as efficiently as possible, before holding talks with the operators and publishing the settings.

Discussing these steps with the operators was particularly important to teach them not just the

art, but the science behind the equipment. The final step of the process was to train the operators in the new standardised settings and explaining not just what they had to do, but why. This ensured that the operators had a comprehensive understanding of the equipment, and by the conclusion of the project, the team realised their mandate and **achieved a 5% improvement in OEE**.

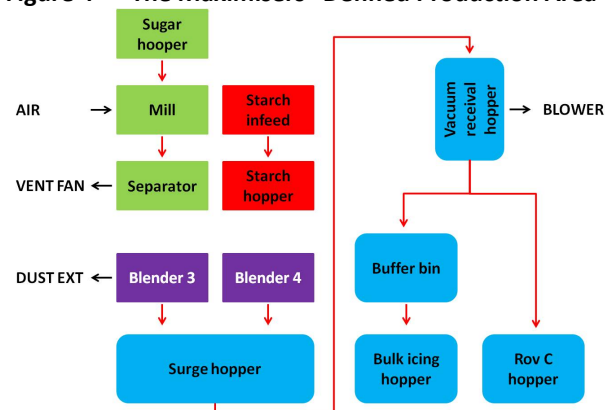
Aaron then moved on to discuss the second team, known as “The Maximisers”. This team dealt with the icing sugar system and aimed to reduce losses caused by blending. Unfortunately, this was quite a complicated issue, for which a blockage in the machine would take 4-8 hours to clear. This resulted in both significant downtime and injuries amongst the personnel as they were required to move heavy boxes and machinery.

*“What we thought must be happening was ‘you guys don’t know what you’re doing’,”* Aaron said with a grin.

But after a closer inspection, the team were able to identify once again three major issues:

1. Each operator had a different understanding of how the system worked. “No one person knew the whole process and that included people who had been involved in the design,” admitted Aaron. “The manual was 140 pages long and we were wondering why people couldn’t figure it out.”
2. Each operator had a different way of doing things and the computer program would only allow them to view one setting per page, causing the settings to go “all over the place.”
3. As a result things were not working as they should, with fans not working at the correct speed and being too slow to do the job correctly.

**Figure 4 – “The Maximisers” Defined Production Area**



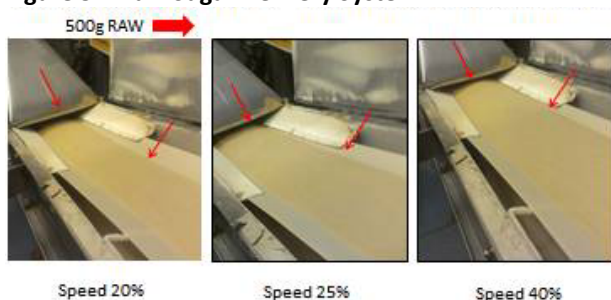
Similar to the previous team, “The Maximisers” then divided their strategy into three different tasks. These steps included identifying the correct settings, standardising these settings and training the operators to ensure that everyone had a common understanding of not just what they had to do, but why. Not only did the team **reduce their downtime**, but they also **increased their OEE by 100%**.

The final case study Aaron discussed was the “Raw My Boat” team. This team dealt with the raw sugar delivery system and their mandate was to ensure the system was understood and standardised settings were established.

Similar to the previous teams, the “Raw My Boat” team began their process by identifying all of the key issues:

1. Each operator had an inconsistent understanding of how the equipment worked. “I had been involved in this team and the design of the equipment and the system had been changed a lot since it was first implemented. So I got an offer to explain it to the managers and I was wrong. I had no idea what I was talking about,” admitted Aaron.
2. Each operator was using different settings; and
3. As a result the equipment was not working as well as it should.

**Figure 5 – Raw Sugar Delivery System**



**Note:** The red arrows in each photo indicate where the variance occurs when the raw sugar runs along the conveyor at different speeds.

To overcome each of these problems, the team divided their tasks into three concise steps. They began by completing a number of trials to determine the correct way to use the machines. They then standardised the settings and trained the operators to, once again, not only learn how to use the equipment, but why.

The site learned a number of things from each of these improvement teams, and after review they realised that they had used the exact same process for each one. They now understood the importance of identifying problems, standardising practices and training the operators not only how to use their equipment, but the background behind why, in order to provide them with a clearer understanding.

Aaron also confessed that most sites are too quick to blame their operators rather than analysing the system.

***“Operators aren’t stupid; they just often have to put up with stupid systems,”*** he said, wisely.

Aaron then left us with one final piece of food for thought in the form of a Nelson Mandela quote:

***“Education is the most powerful weapon which you can use to change the world.”***

***“If you believe in that, just imagine what education could do within your factory,”*** finished Aaron.

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