



PROJECT OUTCOME

UNILEVER

Unilever, Tatura plant has taken an innovative approach to total systems management with the implementation of the Total Productive Manufacturing (TPM) system on site. Applying this system has meant potential cost savings in excess of \$550,000 in the areas of prescribed industrial waste, energy and water.

BACKGROUND (2003)

Unilever is a large international company employing 270,000 people worldwide and specialises in the manufacture of foods, personal care and household products. The Tatura plant focuses on wet food lines, such as cook sauces, tomato paste, sauce and soup, and offers brand names such as Five Brothers, Bertolli, Rageletto, Chicken Tonight and Continental.

The plant employs around 150 people, with seasonal fluctuations. In 2000 the plant began the implementation of the TPM system. It uses basic management principles such as hazard and problem identification to highlight areas for improvement at shop floor level. With a 'fishbone analysis tool', TPM is used to characterise a problem and identify the core elements of why it is occurring. These include the size of the problem, where and when it occurs and how it can be prevented. Each problem is then assigned a priority ranking which determines when remedial work will begin (for example, problems with highest rankings would be tackled first).

THE PROCESS

Production of wet food of the variety made at the Tatura plant requires significant quantities of fruit and vegetables (often fresh) and considerable quantities of other ingredients and utilities alike. Water features largely as both an ingredient and a cleaning agent for most production on site. Due to the extremely high quality standards involved in food manufacturing, rigorous systems are in place to ensure the standards are met. For example, each time a new line is produced, all lines must be thoroughly cleaned before the production can commence. This is an energy and water intensive process that results in substantial product losses as well.

Using the TPM system, the Tatura plant was able to identify and priority rank many environment related problems on site. This ranking was based on cost and estimated urgency of the problem. One of the high priority problems identified was the loss of product to trade waste, caused as a result of flushing out a product from a line when a new product was going to be run. This generated problems including increasing the biological and chemical oxygen demand (BOD and COD, respectively), associated increase in charges for

these parameters from the water authority, and the loss of valuable product and the potential sales from that product.

THE INITIATIVE

According to the TPM system, once a significant problem had been identified (in this case organic solids entering the trade waste stream), a goal and process to improve the issue needed to be defined. In this case, the target was a reduction in the BOD by 3kg/tonne product by the following year. An action plan was then developed aimed at achieving this goal.

Firstly the entire process on site was outlined, and the situation before improvement was investigated (all parts of the process that contributed to product entering the trade waste stream were highlighted). This investigation narrowed in on the specific product lines involved and the actual products contributing most to the problem. The total cost of emitting product to trade waste was assessed for each line, and then each line was ranked in order of this cost, so that the lines contributing most to the problem could be highlighted for improvement.

With the focus now on a particular line, solutions could be developed to alleviate the problem. After research was completed, the most beneficial and cost effective solution was the innovative cleaning system known as 'pigging' of the lines. This would minimise not only the amount of product wasted, but also the amount of water required to clean the lines and the quantity of product entering the trade waste stream.

Pigging involved designing specific silicon bullets or 'pigs', which were the exact size of the product line. When they are discharged, they push the extra product down the line and into the processing equipment. For most lines, this negated the need to use high pressure water to clean the lines, hence massive water savings, while also maximising the amount of product packed off as finished stock.

Once the solution had been developed and commissioned in accordance with the TPM system, a 'one point lesson' was written to briefly explain the problem and the solution. This meant that all employees had the opportunity to access the learning associated with working through the problem. Finally a monitoring program was designed to ensure the



pigging system continued to work properly and the problem did not recur.

BARRIERS

There were few barriers experienced while working through the problem, and this is assumed to be a result of the thorough nature of the TPM system, which ensures every aspect of the problem is considered and factored into the solution. However, the direct cost of undertaking such an investigation and indeed the cost of designing the pigs themselves and the resultant payback becomes a limiting factor in undertaking further investigations for other less critical lines around the plant.

ACHIEVEMENTS AND SAVINGS

Factoring in the price of trade waste, the cost of water and utilities, and the cost of lost product, savings in the order of \$565,000/year are estimated to be the result of the pigging described above. Dropping the BOD by approximately 56,000kg/year would save approximately \$5000. Added to this direct saving is the price of lost product (which includes items such as labour, raw materials and utilities), estimated to be at least \$360,000/year, and the huge reduction in downtime for scheduled cleaning which is around \$200,000/year.

CLEANER PRODUCTION INITIATIVE SAVINGS PER YEAR

	Approximate Savings (per year)
Cost of biological oxygen demand (BOD) in trade waste	\$5,000
Total cost of product losses	\$360,000
Total cost of downtime	\$200,000
Combined Total	\$565,000
Total cost of implementing	\$1,100,000
Payback Period	2 years

LESSONS

As highlighted in this case study, a comprehensive management system which looks at all aspects of a business and uses innovative approaches like TPM to highlight areas for resource efficiency improvements can have real savings for business. Taking a structured and systematic approach to problem identification, investigation and solution finding can have enormous savings for the environmental, social and economic aspects of the business.

CONTACT DETAILS

For further information, contact:

Unilever, Tatura
Telephone: 1800 888 449

Business Sustainability Unit
EPA Victoria
Email: business.programs@epa.vic.gov.au
Telephone: (03) 9695 2722

