



# Increasing Productivity and Capacity by reducing Downtimes

After entering the private label market, this highly profitable company experienced high growth rates of over 15% per year, gaining volume mainly from the highly competitive low margin private label segment. With most machines running at two to three shifts, production laid a focus on making machinery faster by exchanging bottlenecks with newer machinery. With capacity only increasing marginally, a different approach was taken to increase OEE values by reducing downtimes. Here are three examples of how we achieved this.

## Increasing Capacity by over 100%

Results: An increase of Overall Equipment Effectiveness (OEE) from below 30% to above 78% was achieved, while at the same time the amount of people on the line was reduced from three to one person. This freed up 1900 hours of capacity and saved labour and material costs of around \$AUD 500 000 per year.

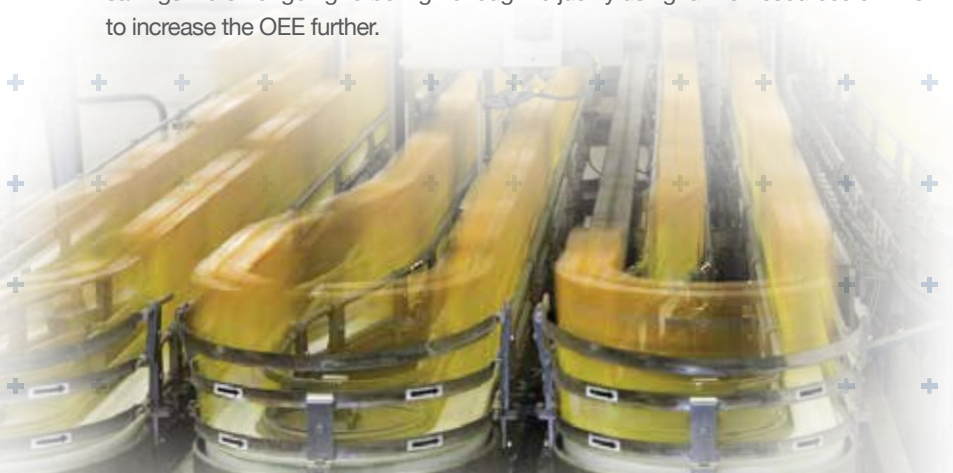
With downtimes of over 60% of the running time caused by crashes, more than the necessary amount of people were placed on the line to get the machines running again as soon as possible. After some analysis, we were able to convince the operators and supervisors that this was counterproductive, as everyone kept on changing parameters in the hope the line would run better. The alterations sometimes had effects on the subsequent processes, leading to downtimes on the next machines.

After installing gauges on all adjustable parts, the parameters were written down and only changed if the entire improvement team agreed. A root cause analysis showed a large variety of major causes: machinery which wasn't working the way it should have been, staff not trained well enough, unmotivated staff and faulty packaging material.

Our experience with suppliers show they are happy to participate in constructive improvement meetings, even if they are at fault. It is in their interest to keep their customers happy and to be able to learn from the customer in order to improve future developments of their machines.

An OEE of 78% is not great, but by increasing the OEE to these levels we had freed enough capacity to enable a 100% growth. There was only one person left on the line and the potential savings were not going to be high enough to justify using further resources on this line to attempt to increase the OEE further.

“This freed up 1900 hours of capacity and saved labour and material costs of around A\$500'000 per year.”



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## Reducing Downtimes by Improving Machinery

Results: By reducing downtimes on a bottle-filling line the hourly output for a specific bottle format was raised from 1800 cu/hour (consumer units) to 2800 cu/hour, freeing up 500 hours of capacity, saving \$60 000 in labour costs and reducing material costs by \$12 000 per year.

After filling the bottles, a reducer nozzle was pressed into the neck of the bottle to make dosing of small quantities easier.

While pressing the reducer into the neck, 1% to 2% of the bottles gave way and bent-in leaving the reducer either half way in and slanted or the reducer bounced off when not held in pace by the machine. Both cases lead to downtimes, because the lid cannot be mounted afterwards. In some cases the liquid leaked from the bottles, making staff stop the machines for cleaning.

A small process improvement team comprising of a packaging engineer, a line responsible and a mechanic, found a solution to the problem within 60 minutes (using the 8D method) and put the solution to the problem in place within three hours.

They simply changed the way the bottles were held during the time the reducer was pressed into the neck. Supporting the bottle in the neck area solved the problem and further more made it possible to reduce the weight/thickness of the bottle leading to further savings in material costs.

## Reducing Downtimes by Improving the Quality of Materials

Results: Increasing capacity on most filling lines by at least 15% by using higher quality packaging material to reduce downtimes, saved over \$AUD 750 000 per year after the extra costs of packaging material.

To save space, increase the speeds of lines and to replace old, unreliable (wrap around boxes) secondary packaging machines, new, compact, semi-automatic secondary packaging machines were installed.

These packaging machines were 40% faster but also had lots of downtimes. Up to 25% OEE was lost due to these downtimes. Various improvements by the machine supplier achieved only marginal benefits, forcing the team to look for other solutions.

Tests undertaken with improved but more expensive packaging material showed great potential. This path was followed, reducing downtimes caused by the secondary packaging units to below 3%.

Of course the procurement department was not happy that they had to pay close to \$AUD \$200 000 more per year for the boxes, but it was easily proven that more than \$AUD 50 000 in material costs was saved from packaging that did not get broken in the machines during crashes. Furthermore, an astonishing \$AUD 900 000 was saved in labour costs, due to higher productivity due to a 15% - 25% OEE increase.

“A small process improvement team found a solution to the problem within 60 minutes”



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