

CASE STUDY

FOOD & BEVERAGE



Quantima system compresses carbon footprint by 35% at Murray Goulburn's Leongatha Plant

Just five months after installing the Quantima air compressor from CompAir, Australia's largest milk processor, Murray Goulburn (MGC) is on track to save £70,560 in annual energy and maintenance costs and reduce CO₂ by more than 1,908 tonnes over 12 months.

In addition, when further factory improvements are implemented fully, the company anticipates an additional £19,200 in power savings and 677 tonnes of CO₂ savings per annum.

Overview

- ▶ **Client**
Murray Goulburn
- ▶ **Location**
Leongatha Plant, Victoria, Australia
- ▶ **Application**
Milk and dairy processing
- ▶ **Products**
Quantima compressor and Q-Life predictive maintenance package
- ▶ **Customer Benefit**
Energy savings/CO₂ reduction

Application Details

Murray Goulburn process 37% of Australia's milk supply and is the nation's biggest exporter of processed food. It is committed to the environmental sustainability of its business and has a continuous development program in place to reduce its carbon footprint.

Specifying the System

With the Australian government set to introduce carbon trading in 2010 and the availability of State funding towards the purchase of new, energy-efficient technologies, Group Maintenance Manager for MGC, Mark Gurney was considering replacement options for the existing compressed air system at the Leongatha plant.

The company decided to implement a complete new system to supply all of the factory's air requirements used for both plant and packaging processes, to include new compressor units, air supply pipes and dryers. CompAir Australasia put forward a convincing proposal, based on replacing the four existing units with just one, 300kW Quantima compressor and leaving two units for standby air and in November 2007, the new system was commissioned successfully.

Energy Savings

Detailed audit results taken before and after the installation have now been submitted to the Victoria State Government and prove that MGC has met its power reduction target, achieving overall energy savings of more than 35%, as Mark

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Gurney explains. "We needed to commission a completely new compressed air system that would optimise energy efficiency at every stage and CompAir Australasia has proved that it could engineer such a solution. By combining the innovative Quantima compressor with all downstream equipment, including desiccant dryers and new air distribution pipes, we have been able to reduce pressure drops and air leaks dramatically.

"Prior to the installation, our compressed air system was using 9.1 kW to generate each cubic metre of air per minute. Now, with Quantima, this specific power consumption has reduced significantly to just 6.12 kW/Nm³/min. In simple terms, we are now producing compressed air at best practice levels and with much better efficiency - to the effect it is now taking 33% less power for us to generate a higher air output." The new Quantima compressor was engineered to save energy, thanks to its Q-drive, centrifugal compression assembly that consumes significantly less power than conventional technologies. Q-drive has only one moving part, the rotor shaft, so there is no friction contact that can result in energy losses and performance degradation over time. In addition, the compressor also has a variable-speed drive that matches airflow to plant demand for further energy efficiency.

Cutting Carbon

It is anticipated that by 2010, under the Government's proposed National Emissions Trading Scheme (NETS), businesses that exceed their CO₂ emission limits will either have to purchase additional credits or contribute to approved carbon-offsetting schemes. For Australian industry, equally mindful of the escalating cost of production, it is now imperative to reduce polluting greenhouse gas emissions and MGC is keen to reduce its carbon footprint across all of its sites. MGC has already realised annualised CO₂ savings of 1,908 tonnes, equivalent to the effect of planting over 2,805 trees or taking 440 cars off the road. Current expectations are that carbon offset costs will be around £17 a tonne when the NETS commences in 2010, equating to an estimated saving for MGC of at least £32,016.

Remote Monitoring

Every Quantima compressor installed is supplied with Q-life, a predictive maintenance solution that enables CompAir to monitor the performance of the compressor, 24 hours a day. When necessary, CompAir engineers can moderate the machine's performance remotely to prevent a fault occurring or send a local engineer to site to carry out remedial repairs.

With its previous compressed air system, MGC was already benefiting from regular, scheduled servicing from locally-based CompAir engineers. Now however, with the new, risk-free, fixed price Q-life agreement in place, the company has

Benefits at a glance

- ▶ **CompAir compressors are well proven in similar applications, including the English Channel Tunnel - reducing the risk to the contractor**
- ▶ **Local service support - ensures reliable compressor operation, round-the-clock**
- ▶ **High performance assured at all times - ensuring that the inner tunnel wall is formed properly and reducing health and safety risks**
- ▶ **Proven Quality - Minimising downtime during critical operations**

already made service cost savings of 64% and, because Quantima is totally oil less, it does not have to deal with the disposal and treatment costs of waste oil and condensate either. CompAir also interfaced the Quantima compressor into the company's internal network so that MGC engineers can view the status of the machine locally and make minor adjustments to keep the compressor running at peak performance.

Further Improvements

To further reduce energy consumption and its reliance on the chilled water supply, the Leongatha site is currently installing new water-cooling towers. These will enable water to be taken straight into the process, which can be up to 8% more energy efficient than using a separate factory chiller to cool the mains water. CompAir is currently working with MGC to enable the feed from the new water supply to the compressor, a project that will be completed in the next few months. This project is likely to save another 71 kW of installed power, yielding an additional £19,200 in power savings and 677 tonnes of CO₂ savings per annum.

MGC anticipates that as Australian food industry legislation becomes more stringent, it will become a requirement to use contaminant-free air. With no gearbox and therefore no need for oil lubrication, the new compressor is also completely oil free, to guarantee air purity and eliminate the need for additional compressed air filtration. Mark Gurney concludes, "Instead of simply replacing one or two of our existing compressors, we choose to install a complete new system that would deliver a low cost of ownership, with the maximum energy savings possible. We are very pleased with the results. After only five months, the Quantima compressor has already delivered the energy-saving and carbon footprint reductions that we expected. Overall the project will pay back, pre tax, in 22 months."

