

Case Study – Sidoli & Sons Ltd

Sidoli & Sons is a manufacturer of traditional dairy ice cream and confectionary. In 2005 they increased production and found a lack of pressure during peak production periods. This resulted in an IntelliSurvey being carried out by UK distributor A & B Air Systems.

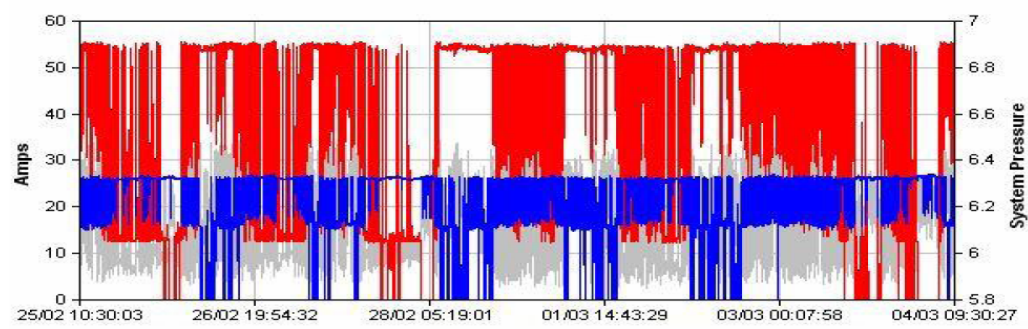
By attaching a current transducer to each compressor and pressure transducer to a common system pressure point up to 604,800 data points were collected and analysed over a 7 day period.

Sidoli operated a 10 bar and 13 bar air system. The 13 bar was needed for a specific process.

Compressors: High Pressure 1 x EcoAir A40VFD & 1 x Fiac V20-13
Low Pressure 1 x Ecoair A20 & 1 x Fluidair Rotopak 185

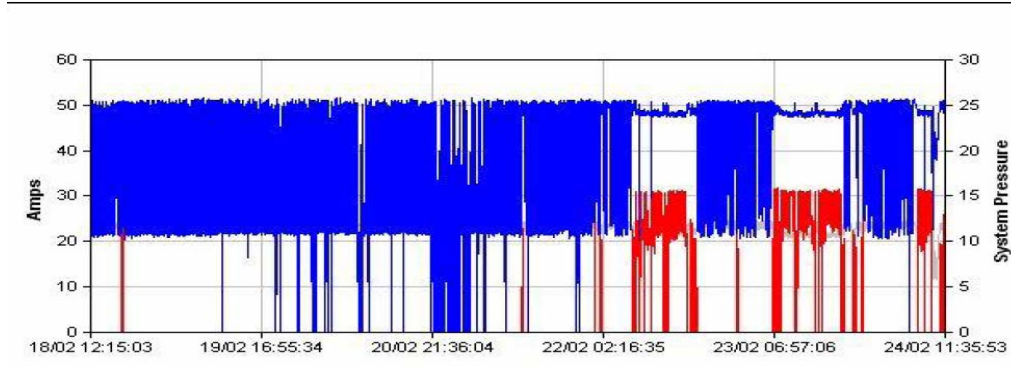
Equipment data: A40VFD 2.8 m³/min / 99 cfm @ 14 bar / 203 psi
Fiac V20-13 1.5 m³/min / 53 cfm @ 13 bar / 189 psi
A20 2.2 m³/min / 77 cfm @ 7.5 bar / 109 psi
185 4.3 m³/min / 152 cfm @ 7.5 bar / 109 psi

During the week of the test the low pressure system was shown to have enough capacity, but without 100% standby although it was obvious, the compressor control was extremely inadequate with both machines cycling unnecessarily. The system pressure averaged 6.1 bar with a maximum of 6.5 and a minimum of 5.8. It was expected by Sidoli that no problems were caused in the factory at the lower pressures and there was a definite case to run the system at a constant 6 bar. This would lead to a saving of around €676 annually on the reduction in pressure alone. Increased savings could be made by either better controlling the existing machines, or replacing the existing machines with a more efficient compressor.



The test on the high pressure system proved that most of the time the 30kW compressor adequately coped with the loading on it. There were occasions later in the week when the 15kW compressor was required but the pressure continued to fall then hold at about 10.5 bar (normal system pressure having been around 12.2 bar). Apart from the ice cream freezers no problems were seen in the main production and with better control a saving of around €1460 could be

made by simply lowering the pressure to 10.2 bar. The high pressure side had no standby facility and the two compressors currently on site did not appear to be able to cope with current air demand at all times.



A & B's proposal based upon this data was to install one variable speed drive machine to run the whole factory. This would be set at 10 bar in order to run the machines that require the higher pressure, with an I/R 2" PACE control valve to regulate the pressure to 6 bar required for the low pressure system. A booster for the ice cream freezers would be installed in order to reach the 13 bar required at this point (but in a very small quantity of around 1.41 l/s).

Installing one machine to run the whole plant would make the current machines redundant, therefore creating 100 % standby on both the low and high pressure systems.

Savings would be made on maintenance with only one machine running, as well as significant savings in energy could be achieved by lowering the pressure to the correct levels required for production, without compressing to unnecessarily high pressures where it is not required. Savings on power would also be made by eliminating all off load running due to poor control.

The Nirvana 75 was supplied & installed within one month from placement of order. 50mm 'Simclair' was used (due to its very low weight & high flow rate @ 10 bar) allowing easy connection to the existing system.





The 'PACE 2' pressure controller was installed into the line feeding the low pressure side of the system.

Using the wet receivers from the old system A & B were able to alter the pipe work to utilise the 1750 litres of storage available as dry capacitance to protect system integrity from any sudden increases in air use on the low pressure side down stream of the 'PACE' controller.

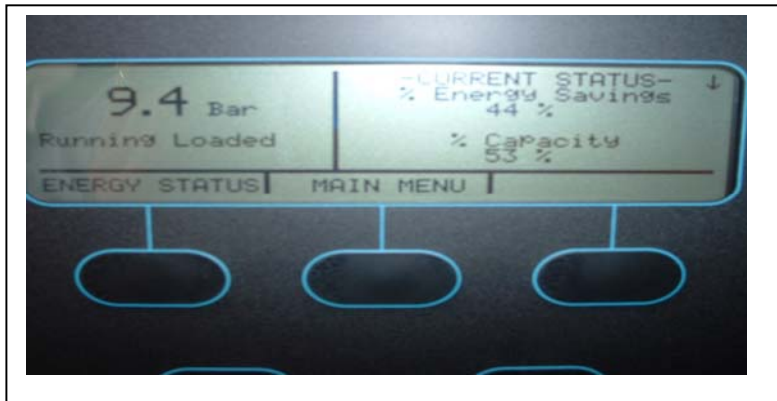


Finally the high pressure intensifier was installed branching off from the 10 bar supplied by the Nirvana and feeding directly to the machines requiring 13 bar.

Based upon the original 'Intelisurvey' report running costs for the low pressure side were €19,345 a year with a cost of €10,509 for the high pressure side, the total electrical costs for one year were €29,854 a year.

Projected running costs for the 'Nirvana' were €15,626 (at an average use of around 60% of capacity), a saving of €14,228 a year (all these figures were based upon the national average at that time of €0.067 kW/hr).

The total cost of the installation came to €37,230 giving a payback of just over 2 and a half years on energy savings alone, not including savings on maintenance due to ease of access and only one machine requiring regular servicing.



Pressure can easily be set on the 'Nirvana' touch panel, and the customer has since lowered the pressure to 9.4 bar to further optimise savings with the unit averaging around 53%, and with electrical costs rising by more than 50% in 12 months payback in reality will be much sooner.

The 'PACE' controller (as can be seen on the gauges) has successfully regulated system pressure down to just over 6 bar on the low pressure side with no detriment to system integrity.



Sidoli & Sons have also created extra capacity for further expected expansions in production, without paying the penalty in increased power costs by running a compressor that is larger than currently required.

Now this customer is smiling like a cat that got the cream!

A & B Air Systems has provided a good example of Solutionising and has met 3 core customer values:

Improved reliability, productivity & lower energy.