

ENERGAIR CASE STUDY



WALKERS
SNACK FOODS

SNACK FOODS GIANT TARGETS COMPRESSED AIR GENERATION FOR ENERGY SAVINGS

The Facilities Team at the Leicester site is responsible for the largest snack food plant in the world, using an EnerAir Compressed Air Management system in adjacent manufacturing sites Laycroft Road and Bursome Road the team has reduced energy bills at the plant by £27,000 per annum. Helping the team towards achieving their target of a 10% reduction in overall energy usage has included combining the compressed air supply for both sites, integrating two retrofit variable speed drives,



reducing system pressure and fine tuning compressor usage.

The energy savings have been achieved by applying a combination of system pressure optimisation principles, matching air generation closely to demand, ensuring compressors are working at their optimum speed / efficiency, and operating compressors only when they are needed. The central element of control included in both sites is an EnerAir Enercon SX control unit, a specialised supervisory and control module designed to

provide optimised pressure and sequence management of all the air compressors on each site.

EnerAir Regional Manager Nigel Clark comments, "The project began with an audit carried out on both sites, the two Leicester sites are actually next door to each other, but have until recently had completely separate compressor houses and air ring mains. EnerAir carried out a comprehensive audit that measured system pressure, air usage and benchmarked a series of key performance indicators before the change and upgrade including; accurate metering of power consumption in kW/hours, air production volume in m³ and efficiency in kW/m³."

Analysis of the data led to a set of estimated results that predicted the energy savings achievable by fitting an EnerAir management control system and retrofit VSDs at each site. There are seven compressors in total, three 160kW units and four 200kW units - production runs 24hrs. Based on the overall cost of installing the system balanced against the reduction in energy that could be achieved, the payback period was estimated at 18 months for the entire project. Based on these predictions, an order was placed for the EnerAir system and retrofit VSDs.

Facilities Manager at Leicester comments, "After seeing the potential this system had for achieving energy savings the facilities team were definitely keen to install it and get the best results from it. We could see that plants with similar generating capacity such as Peugeot, Unilever and others had seen substantial savings and the project was quickly signed off. As predicted, the system has paid for itself after just eighteen months which is very satisfying."

"We are firmly committed to reducing energy usage and it is a responsibility carried

by all members of our Facilities Team, the plant however is continually changing and expanding, and the level of visibility and fine control we get from the EnerAir software has enabled us to continue making savings and improvements. For example, we have now connected the main air supply between both sites and use the EnerAir system to optimise overall system pressure and air generation in both compressor houses, but controlled and working as one."

"The savings are so pronounced, that we have been able to add another complete production line since the initial EnerAir install, without having to upgrade the compressed air generation facilities and have maintained the increased efficiency levels - generating efficiency is now at 97.18%. The compressors are also being used to generate hot water for the site, something that we use a lot of on the production line, and we are looking at possibly using hot air vented from the compressors through a heat exchange process for heating the building during the winter months."

Pressure sensors are fitted throughout the system and used to feed live data into EnerAir's EnerSoft - Analysis data management software that is hosted on an onsite PC, this collates and records all the data and makes it available to the EnerAir EnerSoft - Visual PC visualisation package. The complete compressed air system, from compressor, through to the dryers and out across the plant is represented visually on screen in a Windows XP environment, with key indicators such as system pressure and efficiency displayed clearly on screen as analogue style dials.

Through a series of SCADA style screens, the operators can drill down and check on the performance of individual compressors, set

threshold alarms for performance variables, schedule servicing and maintenance tasks and crucially see the effect any changes made have on the system immediately. Using EnerSoft - Analysis data manager any of the Key Performance Indicators (KPIs) can be tracked over time and reported on at fixed intervals.

Because the data is updated every few seconds and the information the site managers see on the screen is virtually live, they have been far better able to accommodate changes to the plant and make positive changes themselves to keep efficiency maximised, every time a change is made, the results are displayed instantly. Prior to having the EnerAir system they had to collate data over a period of time using much cruder indicators such as energy bills and it was a minimum of ten days before they could see the results, in that time other factors could have cancelled out the improvement made and they would never be completely sure how effective it had been.

"One thing in particular that has shown great savings and we have been able to tweak is the overall system pressure, there are certain limits to how low we can take the pressure based on manufacturers recommended minimum operating pressures for machinery on the production line, some of which were set quite high. After consulting the machinery manufacturers we discovered there was a large overestimate made in some cases to offset the effects of the machinery being used in plants with little or no accurate secondary pressure sensing facilities. We have been able to safely reduce the overall system pressure by over half a bar in increments. The savings we have achieved by that half a bar reduction are substantial bearing in mind the massive volume we generate with over a Megawatt of generating capacity."





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