

CASE STUDY MANUFACTURING



CompAir provides missing link at Astrum foundry

Two regulated-speed compressors from CompAir have helped Astrum, a steel components manufacturer, to cut its compressed air energy costs by more than a half and increase productivity at its foundry in County Durham.

Astrum was able to benefit from an interest-free loan from the Carbon Trust to fund the installation, thanks to the high energy efficiency of its new compressed air system.

Overview

▶ Client

Astrum

▶ Location

Stanhope County Durham, UK

▶ Application

Steel foundry

▶ Products

L75 RS/L160 RS regulated-speed compressors

▶ Customer Benefits

50% energy savings/high production reliability

Application Details

Based in Stanhope, County Durham, Astrum is a specialist steel foundry making components and assemblies for military fighting vehicles, ground engaging tools for the construction industry and wear parts for the mining industry. In 2008, due to rising energy prices, Astrum embarked on a programme of improving the energy efficiency of its processes.

Mike Hutchinson, operations director at Astrum explains, "One of our key areas of spend is our compressed air system, which is critical to the performance of our plant and is fundamental

to our processes for moving sand around the foundry and for operating industrial equipment. As part of our programme of improving the energy efficiency of our processes, we looked to replace existing compressors and approached CompAir distributor, Air Energy Management to assess our air requirements."

"Air Energy Management was able to demonstrate that by looking at the overall efficiency of the existing system, and making sure it is designed specifically for our needs, we could save a significant amount of money."

CASE STUDY MANUFACTURING

Carbon Trust

To accelerate its investment plans, Astrum approached the Carbon Trust and was awarded an interest free loan through its Big Business Refit scheme, which aims to provide businesses with zero-cost capital to invest in new high performance, energy efficient equipment. Hutchinson comments, "The Carbon Trust loan enabled us to install a system that will not only cut power consumption, but will also improve the efficiency of our business. The loan will pay for itself within four years through energy savings alone, and has provided a cost effective way for us to upgrade crucial equipment."

Bespoke system

Working alongside Astrum and CompAir, Air Energy Management developed a bespoke system to reduce the demand on compressed air at the foundry, and replaced old, large compressors with two more efficient, smaller CompAir compressors. The CompAir L75 RS and L160 RS compressors both feature regulated-speed technology and are protected and monitored by a Delcos 3100 electronic control system.

Both compressors are linked to a flow measuring system, allowing operators to check airflow, allocate costs to different departments and pinpoint any leakage. In addition to compressors, CompAir also supplied energy efficient thermal mass refrigerant and desiccant dryers. The new system will reduce Astrum's compressed air energy demand by 1,255,000 kWh and save it over £80,000 per annum.

Additional information

A CompAir L75 RS regulated-speed compressor is located in a small compressor house at the foundry and provides air at 7.5 bar to a bore blast machine for optimum surface quality. The L75 RS's regulated-speed drive technology matches compressor flow to plant demand with great efficiency. This means that the unit produces the correct volume of air required by the application at all times. The unit is suitably sized to serve a second bore blast machine, should it be needed.

Benefits at a glance

- ▶ 50% reduction in compressed air energy costs - saving over £80,000 per annum
- ▶ High quality, extra dry air
- ▶ Increased productivity
- ▶ Backup compressor for increased production reliability
- ▶ Hot air ducting - saving £10,000 per year in heating costs
- ▶ Number of air receivers reduced from 16 to 3

CompAir overhauled an existing compressor to provide system redundancy. Previously, Astrum did not have any backup, meaning that if a compressor stopped working, production would be brought to a halt. Hot air venting from the small compressor house ensures that 80% of the energy lost in the compression process is reclaimed. The hot air is ducted into the foundry during winter and out into the atmosphere in the summer, allowing Astrum to turn off heaters, saving £10,000 per year in diesel costs.

The second CompAir compressor, an L160 RS regulated-speed unit with Delcos 3100 controller, is located in one of the main compressor houses. Working alongside overhauled existing compressors, the unit provides air for the 5,000-litre main foundry receiver. Hot air from this compressor room, and exhaust air from the receiver is again ducted into the foundry. A control valve ensures that the receiver can be shut off from the compressor house to eliminate leakage.

The number of air receivers at the Astrum site has been reduced from sixteen to just three, thanks to a more efficient use in the new system. In addition to the two compressors, CompAir has also supplied a desiccant dryer, providing the extra dry air required by a molding machine. The new system also includes low-pressure drop piping, and a leak detection programme. A flow measuring system brings information from all meters into one control panel, allowing operators to check airflow, allocate costs to different departments and pinpoint any leakage.