

Data Centre retrofit delivers
energy savings of more than £500,000



Data Centres benefit from energy savings by improved application of fans in CRAC units

One of Europe's largest telecoms providers has achieved dramatic reductions in energy consumption and carbon emissions thanks to EC technology from ebm-papst. Simply by upgrading their computer room air conditioning (CRAC) units to use EC fans, and harnessing this technology's built in variable speed control, the telecoms giant is projected to achieve savings in excess of half a million pounds each year and dramatically cut carbon emissions.

Key facts – main site:

- *78% - the total reduction in CRAC unit energy consumption*
- *2.32 GWh – total power saved*
- *1.3 tonnes – CO₂ saved*
- *344 tonnes – Carbon savings*
- *£185,000 – savings achieved on energy bill*
- *£15,000 – CRC EES savings*
- *10 months – payback on installation period*



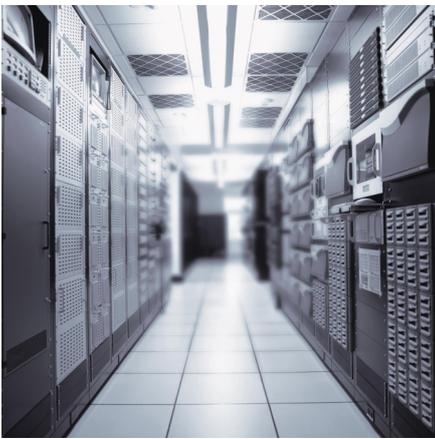
Data centres are under increasing pressure to reduce their energy consumption and carbon emissions. Power demand in this sector already accounts for as much as 2% of the annual national consumption and is set to grow in the coming years, reflecting the UK's growing affinity for technology and gadgets. In an average data centre, cooling accounts for as much as 50% of total power consumed; in recognition of this, a major telecoms provider approached both ebm-papst, the world's leading manufacturer of high efficiency fan and motor technology, and Emerson Network Power (ENP), to identify what savings could be achieved by upgrading its existing equipment.

Initially, ebm-papst and ENP measured the power input and air flow of the existing CRAC units, which were originally installed in 2002 and supply cooled air via a raised floor. A trial installation on a single CRAC unit was undertaken to demonstrate the energy saving potential of EC technology in comparison to the original AC equipment. The three existing fixed speed backward curved AC fans in a single CRAC unit were replaced with three EC backward curved fans with integrated variable speed control. This activity required minimal modification and took around two hours to carry out the installation.



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The power input of the trial unit was then re-measured over a period of 7 days, during which measurements were taken every 10 minutes. When compared to the original measured data it confirmed that upgrading to EC technology could deliver energy savings of 58%, a figure which impressed the telecoms client. However, ebm-papst and ENP felt this could be improved upon. Having run the new EC fans at the same performance as the original AC fans during the trial, it was identified that the airflow could be reduced while still maintaining the required level of cooling. The speed of the fans was subsequently reduced, optimising airflow, and further measurements were taken, demonstrating a total energy saving of 78%.

As a direct result of the savings achieved by ebm-papst and ENP during the trial, the telecoms client not only decided go ahead with a complete upgrade of all CRAC units at the trial site, but also put in place plans to roll this out to all the company's data centres in the UK, delivering projected energy savings in excess of half a million pounds each year and almost 3.3kT of CO₂.

Helen McHugh, Head of Sustainability at ebm-papst, said: "This project highlights the dramatic savings that can be achieved if data centre operators upgrade their legacy equipment to EC technology. We recognise that some may be nervous about making the initial investment or 'rocking the boat' when it comes to their cooling solution, but we hope that this example provides a tangible demonstration that upgrading is not only relatively simple, but it also delivers solid savings that will benefit the bottom line."

David Williamson, Senior Project Manager, Emerson Network Power comments: "During on site discussions through a recent EC Fan replacement project our client commented that not only were the energy savings exactly as predicted, there was almost no need to perform any significant analysis as the monthly energy reports from the site leapt off the page as being significantly lower."



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