Case Study
Datacentre

Aegean Air Coolers bring significant benefits to Datacentre including a 20% reduction in running costs

The Client

The client is a contractor who was working on behalf of a Datacentre. The project the Contractor was undertaking was the refurbishment of an existing Datacentre. Datacentres are buildings dedicated to house computer systems and their associated components. As IT operations are crucial for business continuity, Datacentres generally include redundant or backup components and infrastructure for power supply, data communications connections, environmental controls (e.g. air conditioning, fire suppression) and various security devices.

The Challenge

The challenge was to replace the existing Air Coolers in 3 halls. There were 196 Air Coolers (98 up flow & 98 down flow) in each hall. Due to the nature of the application for this project it was vital that the performance and quality of the product met the highest standards defined by the client. The project required some critical objectives to be achieved with regard to the performance of the product.

Another challenge was to engineer a product that was suitable to fit the current building without too much modification. The fabric of the building and its associated pipework and ducting was to be left largely unchanged. Part of these requirements included ensuring that the fixing points on the new products were exactly the same as the old products. Additional labour and fixing costs were to be avoided. A further requirement was to use the existing pipe terminations so that the new pipework connections had to be compatible with the old connections. The new flying leads and busbar connections had to fit into the existing electrical infrastructure. A request was also made to Smith's by the client to make the replacement product operator interface as close to the original as possible to reduce operator error. The timescales were very tight too.

Whilst a Datacentre isn't necessarily the quietest environment it was important to develop a product that did not add to the noise levels when it was functioning. Of greater importance was the performance of the product meeting minimum requirements in terms of air volume throughput, cooling capacity and energy consumption (running costs).

Key to the success to this project for Smith's and its client was that the product supplied achieved minimum performance standards, which were measured and certified by an internationally recognised independent test house.

The Solution

Smith's developed a process to completely engineer a product to meet the requirements of the client from scratch. With management systems developed to meet and exceed ISO 9001 (2015) (and latterly ISO 14001) Smith's used processes to ensure that customer needs in terms of quality were met.

Using modern techniques for design and manufacturing Smith's were able to develop a better performing product with more control and with significantly lower running costs. The latter feature is very important because the Air Cooler products run 24/7 365 days per year.

Smith's identified that by using EC motors to replace AC motors a much higher degree of resolution of control can be achieved. The new fans also produced a higher volume of airflow compared to the fans in the models being replaced. The use of EC motors for the fans also enabled lower running costs.

To aid this process modelling for Computational Fluid Dynamics testing was used to design the fans and housings for to optimise performance.

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The Products

The product developed to meet these stringent parameters was the Aegean Air Cooler. It was developed in 2 versions, down airflow and up airflow. Aegean Air Cooler meets all of the performance requirements of the clients (performance, acoustics, physical size) as well as providing a reduction of approximately 20% in running costs.

Aegean Air Cooler also meets the requirements of minimising the potential of operator error by being similar in operation to the obsolete product being replaced.

A key requirement of the client was that the performance of the product was independently assessed and certified. The performance of the Aegean Air Cooler was tested by BSRIA and they certified it that it achieved the design requirements in terms of thermal performance, acoustic performance and airflow performance.

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