



COMPUTER COOL

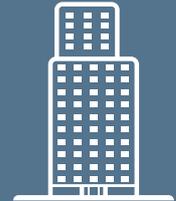
ebm-papst axial fans for condensers

GreenTech EC axial fans for data center ventilation



Data Center Retrofit

- AC to EC fan upgrade
- 85% reduction in input current
- In-built controls
- No TRIAC needed



Background



A trial conducted by contractor Computer Cool at a data center in Melbourne achieved a 85% reduction in input current. The average input current per fan decreased from 5.79A to only 0.86A.

Air-cooled condensers on data centres typically use 500mm, 4 pole axial fans. These fans usually run 24/7 and in most cases they are already speed controlled via a voltage regulator, typically a TRIAC speed controller. The fan speed changes proportional to the head pressure in the condenser. This method of speed control is not only noisy, it is also inefficient.

EC axial fans have shown to save 30% in power compared to AC equivalents at full speed. However, when EC fans are speed controlled, they closely follow fan laws, where power changes proportionally to the third power of air flow. These savings result in huge power reductions during most of the fans' operating time.

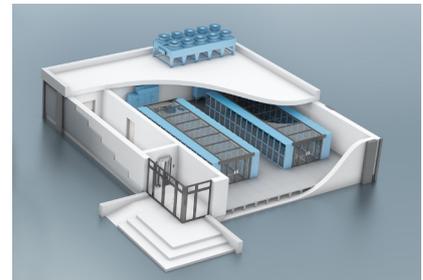
Project



13,000 data points were measured across a period of 13 days on two 3-fan condensers using 500mm AC and EC fans respectively at 1~ 50Hz and 240V. Both AC and EC fans are speed controlled on head pressure.

The head pressure was maintained at the same level before and after the upgrade. As can be seen in the graph, both the original fans as well as the EC fans are speed controlled, following a similar load profile.

Results



As a result, the company achieved a return of investment (ROI) of less than 2 years on two- and three-fan condensers used at their data centres.*

* Numbers vary dependent on the load profile and the cost per kWh or kVA.

