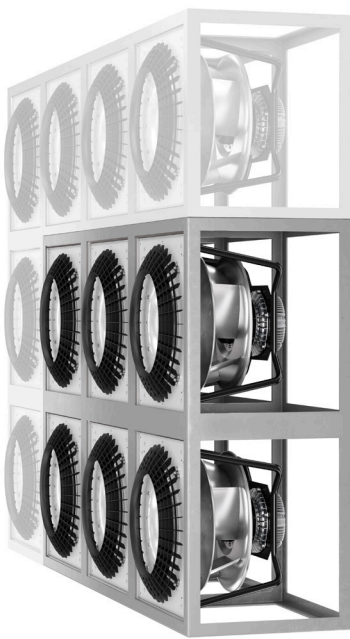




Munters upgrades save 15 GWh a year

Heathrow Airport, England



With more than 80 million passengers in 2018, Heathrow Airport serves more passengers than any other airport in Europe. Heathrow has a goal to operate as a ZERO carbon airport (you cannot remove the word “infrastructure” here. There is no chance that you can operate an airport with a “ZERO carbon” goal- but the goal can be valid for the infrastructure) by 2050. Such an ambitious goal for reducing carbon impact calls for serious energy saving initiatives.

Operating four large passenger terminals, covering almost 600,000 m², the amount of energy used for creating a comfortable indoor climate for passengers, shopkeepers and employees is massive.

Energy Project Manager, Andy Dobbs, is responsible for energy saving projects related to all HVAC installations in the terminals.

Since 2016 Andy Dobbs has been working with Munters’ climate control specialists on an extensive energy saving upgrade of terminal air-handling equipment.

Case study

Heathrow Airport AHU fan upgrade.

Advantages:

- AHU energy consumption reduced by 30-60%
- ROI (Return on Investment) in less than three years
- Improved air supply reliability and flexibility
- Less maintenance
- Reduced need of spares in stock
- Reduced noise and vibration level



In front of one of the first AHU's at Heathrow Airport that were upgraded with the Munters EC fan wall. Andy Dobbs, Energy Project Manager at Heathrow, Project Manager Chris Stead, Munters UK and David Bennett, Service Business Manager, Upgrades. Munters UK.

Fan upgrade saves 15 GWh/year

By replacing older, often belt driven, AHU exhaust and process fans with smaller, more energy efficient and maintenance-free EC fans in a fan wall configuration, Heathrow has been able to reduce energy consumption on these AHUs by 30-60%. Munters has upgraded more than 150 AHUs, resulting in the installation of approximately 500 EC fans.

Energy savings on these projects amount to an impressive total of 15 GWh which equals the annual energy consumption of 3,400 households (based on UK average).

Upgrade work done overnight

Energy Project Manager Andy Dobbs: "Thanks to Munters' experience and modular frame and fan plate system, a fan upgrade, typically consisting of a fan wall with 3-6 EC fans, can be performed in one single night shift. For Heathrow that means that the upgrade work will have no negative impact on the daily operation, just as passengers and partners in the airport will not be affected. Energy savings from a small fan upgrade like this, taking place over only one night, is equal to the savings from replacing 1,000 light bulbs with LED lights, which would take a month".

AHUs of very different sizes and age have been upgraded, the smallest with an airflow of 5,000 m³/h, the biggest being a plant consisting of four huge AHUs in Terminal 5 (T5), each supplying 230,000 m³/h.

Andy Dobbs: "The extensive documentation provided by Munters in the project phase is important when planning and budgeting for further energy saving projects. Being able to verify savings between 30-60%, the quick ROI of only 2½-3 years makes the AHU upgrades very interesting for Heathrow and helps us in reach our energy saving goals."



Typical example of smaller updated AHU.



Four huge axial fans, each providing 230,000 m³/h were upgraded in night shifts over a two months period.

Munters upgrade provides many benefits

On top of the enormous amount of energy saved, Heathrow also recognizes a number of other benefits, important for daily operations and passenger comfort.

Improved reliability: compared to a conventional AHU fan motor, a fan wall configuration provides both resilience and improved reliability. If one fan breaks down, a strong airflow will still be maintained by the other fans, avoiding emergency situations.

Less maintenance: since the EC fans are 100% maintenance-free, the fan wall solution will save maintenance costs like bearing lubrication and V-belt replacement.

Reduced need of spare parts stock: no need to stock different types of bearings and V-belts that fit the different AHUs. For Heathrow this means big savings since now they are only stocking two small EC fans compared to holding a huge stock of different V-belts, bearings etc.

Reduced noise and vibration levels: for technical staff working in the plant rooms, the reduction in noise levels are significant and even passengers in the terminal may experience both lower noise and vibration levels thanks to the smooth and silent operation of the EC fans.



Huge project with quick ROI

A bearing break-down in one of the AHU axial fans initiated the T5 upgrade project. To replace the big fan would be almost an impossible task since the AHUs are situated five stories down and are very complicated with limited access.

Munters was asked to design an upgrade solution and provided Heathrow with a quotation for a project replacing the four big axial fans with four fan walls, each consisting of 16 small EC fans.

Based on data loggings and thorough energy calculations, Munters was able to predict energy savings that would provide a return on investment (ROI) in less than 2 ½ years.

The limited and restricted access in addition to the logistic challenges from working in a plant room five stories down, implied a lot of extra work for waste removal. This changed the ROI to less than three years, which was still a great result for Heathrow.

Munters understood and met Heathrow's needs

The upgrade project was led by Munters' Project Manager Chris Stead, who had a pivotal role in the thorough planning. Heathrow's biggest concern was passenger comfort, and Chris Stead worked out a detailed plan on how to remove one fan at a time so they would maintain sufficient airflow during the upgrade process, and not impact passengers comfort.

Andy Dobbs trusted Munters to take project lead, which took place in night shifts over a two month period, thus avoiding any negative impact on airflow for the passenger terminal during daytime.

After the successful completion of the project, continuous data logging has verified the calculations, and in total the T5 project saves Heathrow no less than 1.5 GWh per year. The four impressively big fan walls provide an air flow of 920,000 m³/h, might very well be the biggest fan wall in the world.

Would you like to find out if Munters has a solution for your company too? If so, please visit our website, www.munters.com