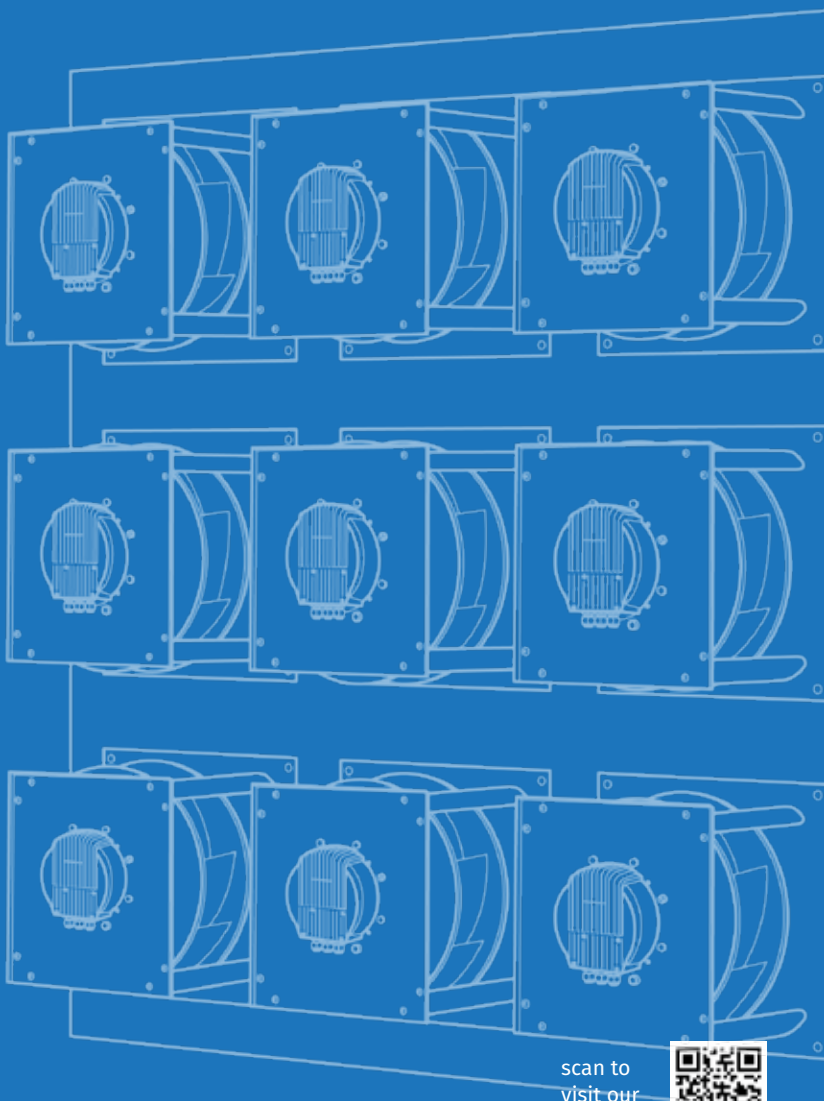
EC FanGrid
RETROFIT SOLUTIONS

Learn more about the energy-saving benefits of multiple fan arrays and how they can help universities to reduce their scope 2 carbon emissions and gain contributory credits towards improved BREEAM ratings.



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Minimising Environmental Impacts

Outdated building ventilation systems consume electrical energy at an alarming rate. BREEAM compliant air handling units make a significant contribution to healthy, efficient, carbon and cost-saving green buildings. BREEAM compliance is a UK recognised symbol of sustainability achievement, and is backed by an entire industry of committed organisations and individuals paving the way for market transformation.

Sustainable Buildings

BREEAM which stands for "Building Research Establishment Environmental Assessment Method" is a voluntary building certification scheme that many UK local authorities and universities have incorporated into their planning process as a mandatory requirement for sustainable building management. It is used to measure the environmental performance of new and existing buildings, and is now considered best practice in acheiving sustainability.

BREEAM awards credits for different environmental features which are combined to achieve an overall score. BREEAM compliant buildings are certified on a five-point scale of pass, good, very good, excellent and outstanding.

HVAC Energy Consumption

Typically 40% of a buildings energy use comes from heating, ventilation and cooling, with 50% of the HVAC consumption coming from fans. Continuous and consistent airflow is essential in most facilities making under performing, or unreliable fans simply unacceptable.

With the largest proportion of credits in the BREEAM assessment belonging to the energy category, assessing outdated ventilation systems is a great start in earning credits.

Retrofitting AHU's

The number of air handling units in a university can vary widely depending on the size and complexity of the campus, as well as the types and ages of buildings, and the spaces that need to be served. Some universities may have a few AHUs, while others may have dozens or even hundreds.

Older buildings often have fewer, more centralised AHUs that are powered by old, inefficient belt driven fans. The building may have grown around them making it difficult to remove or maintain. Retrofitting existing and inefficient air handling units within universities can significantly improve BREEAM certification ratings. With contributions to 5 of the 10 categories it's often the first place facilities and estates managers assess for improvements.

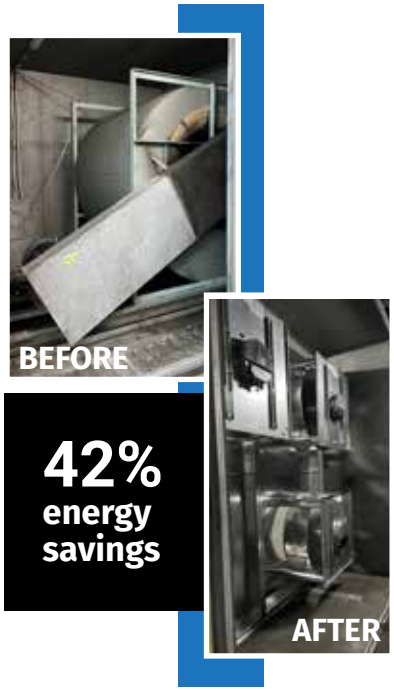
Buildings that have undergone major retrofits may have more AHUs across multiple areas to accommodate changes in HVAC requirements. However, these types of buildings may still have little scope to increase air distribution capacity as the building has continued to grow but the air handling unit performance cannot be increased due to a lack of functional adaptability. The image on the right shows a retrofitted belt drive project that returned 42% energy savings on short payback periods.

BREEAM Categories

A BREEAM assessment uses recognised measures of performance, which are set against established benchmarks for different building types, to evaluate a building's specification, design, construction and use.

This process comprises several categories that address vital sustainability factors, including carbon emission reduction, low-impact design, design durability and adaptation to climate change.

Each category is then further divided into different credited assessment areas with their own aims and benchmarks. The coloured blocks indicate, on average, how many credits are available in each category.



Potential BREEAM Credits

34 — **Energy**
The specification & design of energy efficient building solutions.

21 — **Management**
Focuses on the adoption of sustainable management practices.

22 — **Health & Wellbeing**
Buildings that encourage healthy & safe internal & external environments.

13 — **Materials**
Are materials used for construction, sustainably sourced.

12 — **Transport**
Better access to sustainable means of transport for building users.

09 — **Water**
Sustainable water use in the operation of the building & its site.

12 — **Waste**
Sustainable management of construction & operational waste.

13 — **Pollution**
Prevention & control of pollution associated with the buildings location & use.

05 — **Land Use & Ecology**
Habitat protection and creation, & improvement of long term diodiversity.

AHU Retrofit Credit Contributions

Building a sustainable air handling unit that is designed for a greener future is unique to each customer we work with. Our customer centric approach is solution led to ensure we specify, design and deliver the best air handling unit to help you to acheive your target BREEAM rating by contributing to credits in the following categories:

This page gives an example of how credit contributions can come from AHU refurbishment.

Our multiple fan array solutions for new or existing air handling units contribute to:

5/10

BREEAM CATEGORIES

Energy

The specification & design of energy efficient building solutions.

Credits are earned in this category through measuring, and seeking solutions that improve a building's operational energy. We'll work with university building managers to deliver air handling units that meet their objectives, whether reducing energy consumption and carbon emissions, reducing noise or improving performance.

Our AHU's are designed for energy efficiency and carbon reduction, and incorporate features such as high efficiency fans and motors, variable speed drives, and controls can help buildings meet BREEAM's energy performance targets. EC plug fans are the biggest contributor to reducing energy use.

Credit Contributions*
Ene.01 Reduction of energy use and carbon emissions.

Health & Wellbeing

Buildings that encourage healthy & safe internal & external environments.

Our AHU's are manufactured to meet sustainability criteria and can contribute to a building's overall BREEAM rating. For example, AHUs that are designed for good indoor air quality and are able to provide appropriate ventilation rates can help buildings to meet BREEAM's criteria for indoor air quality. Laboratory ventilation with a focus on safe and healthy surroundings and safe containment add credits to this category.

Credit Contributions*
Hea.02 Indoor Air Quality, Hea.05: Accoustic Performance.

Pollution

Prevention & control of pollution associated with the building.

Our air handling units are attenuated for low noise output wherever they are situated. This reduces the buildings impact on surrounding communities and environments. Accurate noise levels from the plant can be modelled using datasheets provided and during the site measurements taken at design stage.

Credit Contributions* Pol.05: Reduction of Noise

Management

Focuses on the adoption of sustainable management practices.

You'll work on adoptable sustainable management practices throughout a building's life cycle, including its initial brief, design, construction and aftercare stages. To assist with this, from the early stages of design, we'll calculate AHU payback periods and life cycle costs to help you to plan sustainable future maintenance. We'll show performance charts and tabled data for you to analyse, report on and refer to.

Credit Contributions*
Man.01: Project Brief & Design,
Man.02: Life Cycle Cost & Service Life Planning
Man.04: Commissioning & Handover

Waste

Sustainable management of construction & operational waste.

Our air handling unit solutions enables building specific functional adaptation to incorporate additional fans or fabrication work easily if performance or capacity needs to be scaled up.

Credit Contributions*
Wst.06: Functional Adaptability

Key AHU Factors

While air handling unit manufacturers cannot themselves be BREEAM complaint, AHU units are designed to help a building meet BREEAM criteria and contribute to the sustainability of the building seeking certification. AHUs are evaluated against a number of criteria related to their design, installation, and operation.

Energy Efficiency:
AHUs are evaluated based on their energy efficiency and whether they meet specified energy performance targets. This may include criteria related to the use of high-efficiency fans and motors, variable speed drives, and controls that allow for efficient operation and maintenance.

Ventilation Rates:
The AHU's ability to provide appropriate ventilation rates is evaluated to ensure that indoor air quality is maintained at a high level. This may include criteria related to air change rates, the provision of outdoor air, and the abilkity to scale up or down capacity as needed.

Noise Levels:
The AHU's noise emissions are evaluated to ensure that they are within acceptable levels and do not negatively impact occupants' health and well-being.

Maintenance:
The AHU's maintenance requirements are evaluated to ensure that the unit is properly maintained and operating at peak efficiency. This also includes instructions for troubleshooting and maintenance.

Reducing Scope 2 Emissions

Air handling units typically fall under scope 2 carbon reduction. Scope 2 emissions refer to the indirect GHG emissions associated with the production of purchased electricity, heat, or steam that a company or organisation consumes. AHUs consume electricity to power fans and motors, which result in indirect carbon emissions associated with the electricity used.

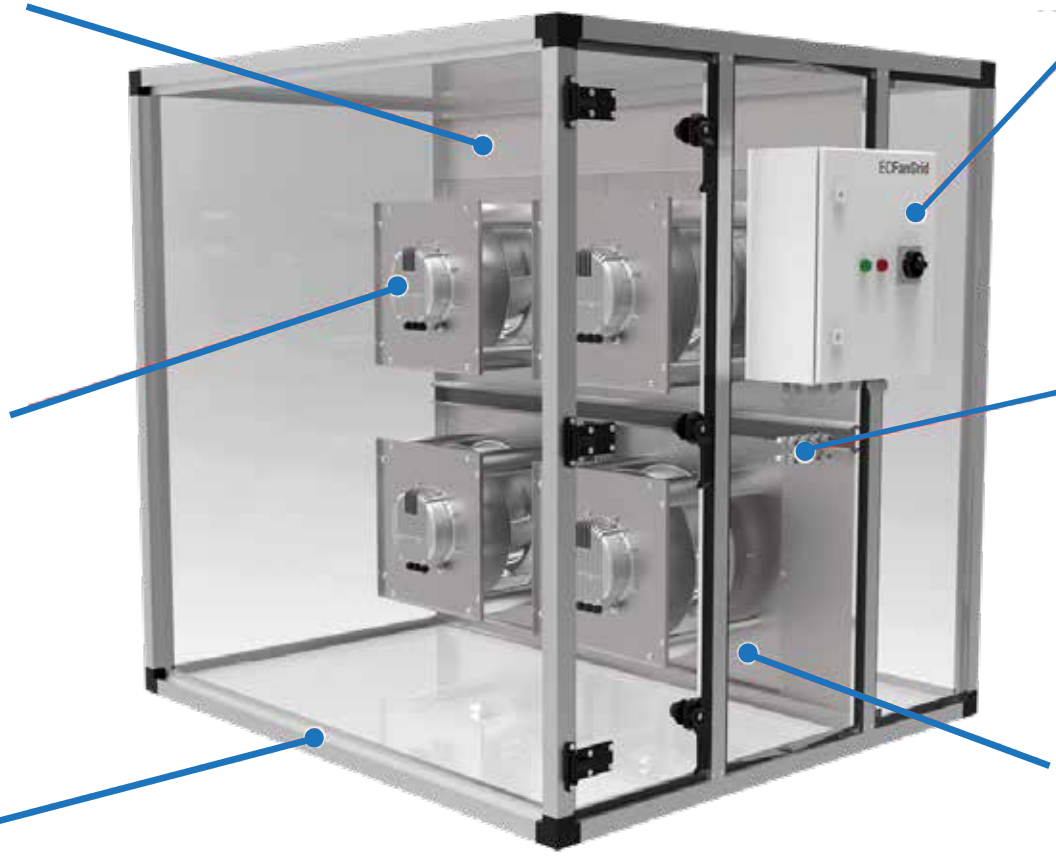
To reduce scope 2 emissions associated with AHUs, we focus on increasing the energy efficiency, and reducing carbon output of the unit. This is especially true if we're replacing large centralised single systems with old and inefficient belt driven fans. In the case of new systems, new multiple fan array air handling units, are designed to ensure fans and motors run closer to their peak efficiencies, thus contributing to a lower energy consumption and carbon emission output.

For example, EC plug fans used in our ECFanGrid retrofit projects in 2019, reduced CO2 by 2980t in one year, with over 5987MW energy savings per year. The average payback period following the initial investment was on average between 2-5 years.

Built in Redundancy: If One Fan Fails the Remaining Fans Pick up The Duty to Ensure no Loss in Performance.

EC Plug Fans Running Close to Peak Efficiencies for Reduced Energy Consumption & Carbon Emission Output.

Completely Free of The Floor for Easy & Convenient Hygiene Cleans & Maintenance.



Easy Control and Integration with Existing Building Management Systems.

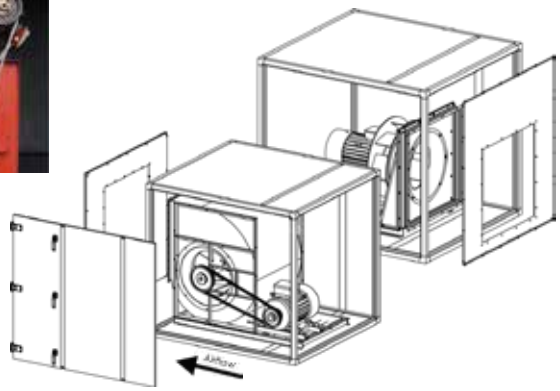
Functional, Adaptable and Scalable in line with Future Demand.

Simple Installation Completed Using Flat Pack, Easy to Carry Components.

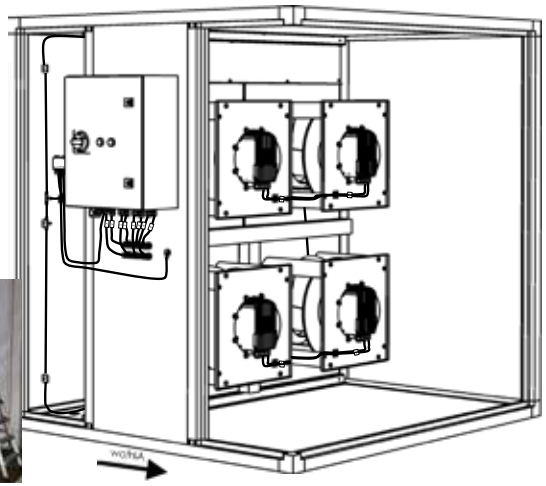
Multiple Fan Array AHU Solutions

In 2022 our ECFanGrid solution replaced 691 old belt driven air handling unit systems, resulting in 5987Mw energy savings per year, 2980t CO2 savings per year with an average payback period between 2 and 5 years. Lead the way to more energy efficient buildings by integrating an air handling unit with carbon reduction at its core.





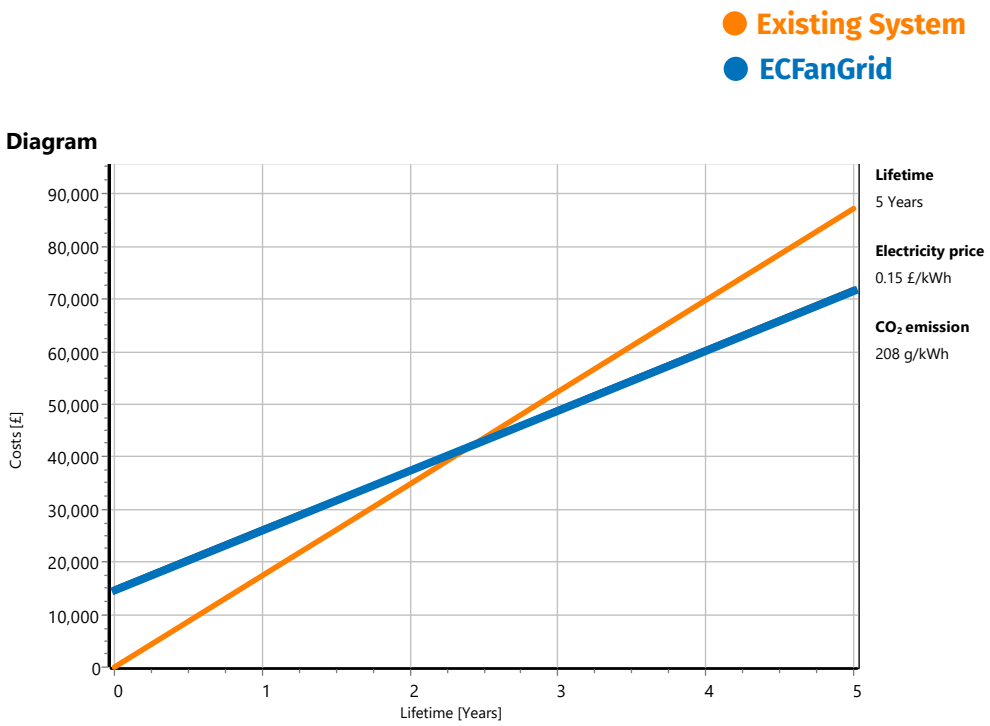


Calculating the Payback Period

To accurately calculate the payback period of an ECFanGrid, it's a simple case of comparing the absorbed power for the existing system against the absorbed power for the ECFanGrid.

To do this, a validation survey is undertaken and the volume flow rate and total static pressure of the existing fan is measured. The absorbed power of the fan system is simultaneously recorded. This data is then compared to the absorbed power figures of the ECFanGrid. The easiest way to consider this data is in graphical form.

Diagram



CO Reduction	Cost Saving	Return on Investment
6,227 kg/Year	5,991 £/Year	2.5 Years

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Contact Us

Talk to our team of specialist engineers to discuss how the ECFanGrid multiple fan array can help to improve your scope 2 emissions or contribute to improving your BREEAM rating. Chat to us using our live website chat or by using the details below:

01782 349 430

sales@axair-fans.co.uk

www.axair-fans.co.uk