

## Retrofit with higher efficiency

Energy efficiency means lower operating costs. Our centrifugal fans with GreenTech EC technology are much more advanced than normal fans. So much so, in fact, that even the task of retrofitting existing units quickly pays for itself.

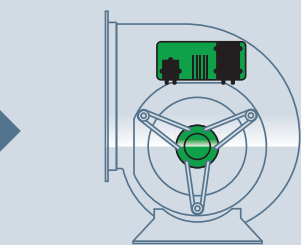
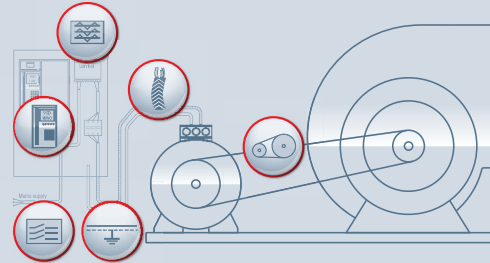
What's more, our new range has a particularly long service life with no maintenance needed at all. Which means further cuts to operating and lifecycle costs. We even deliver the fans complete with housing and

installed controlled electronics (VSD) to minimise your installation costs.

The benefits over an obsolete belt drive and flange-mounted motor are obvious. Instead of having to connect multiple components to each other at great effort and expense, RadiFit and RadiPac deliver instant integration, minimal size and maximum energy efficiency.

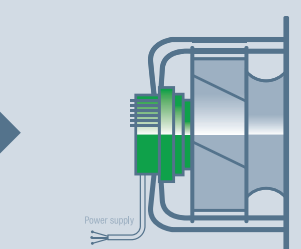
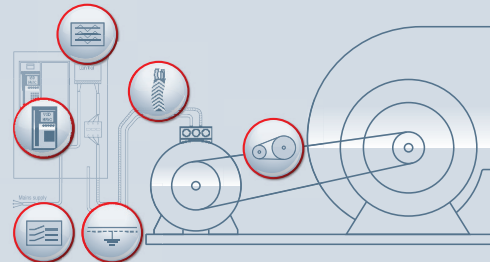
### Centrifugal fans with belt drive

Centrifugal fans with belt drive and external control electronics need a lot of space and have high maintenance costs related to wear-and-tear parts. Often, cheap and inefficient forward curved blowers are used.



### RadiPac GreenTech EC centrifugal fan

Again, the comparison is striking. RadiPac comes cleverly condensed in a plug and play, space-saving cube with impeller, motor and electronics all optimally adjusted to each other. This delivers overall efficiency of well above 60%.



**ebm-papst UK Ltd**  
Chelmsford Business Park  
Chelmsford Essex  
CM2 5EZ  
Phone +44 (0)1245 468555  
Fax +44 (0)1245 466336  
sales@uk.ebmpapst.com  
www.ebmpapst.co.uk



**ebm-papst**  
The engineer's choice

### EC upgrade services

Reducing the energy consumption of your buildings

**ebm-papst**  
The engineer's choice

ebm-papst is a worldwide innovation leader in fan, motor and control technology. Our industry-leading EC (electronically commutated) fans have for years led the way in meeting demand for improved energy efficiency. Our GreenTech philosophy ensures that each of our products is more economically and ecologically superior to its predecessor.

### Why consider upgrading to EC?

So what exactly is an EC motor and what are its benefits? Simply, it is a mains fed, brushless, permanent magnet motor with electronic commutation. The benefits, however, are outstanding.

From leadership comes responsibility. This has informed a corporate philosophy of providing benefits to customers that are guided by environmental compatibility and sustainability. For decades, we've followed the lead of our co-founder Gerhard Sturm: "Every new product we develop has to be economically and ecologically superior to its predecessor."

The EC microprocessor-based commutation provides further features:

- Alarm outputs/speed monitoring
- Simple speed control (no inverter required)
- Closed loop sensor control (demand ventilation)
- Reduced starting current with soft starting

## Upgrade to the higher efficiency of EC

- ✓ We're committed to more sustainable energy efficiency
- ✓ We'll work alongside you to improve efficiency and cut cost
- ✓ And we'll deliver the quickest payback periods possible

EC motors are more than 90% efficient in converting electrical input into air power. As a result, they consume up to 70% less energy, compared to AC technology. And it has been shown that EC cost savings can mean payback periods as good as 12 months.

There are several factors that combine to deliver this efficiency, cost-effectiveness, and operational superiority:

- No need to induce current in the rotor
- Simpler winding means reduced copper losses
- Lower running temperature leading to increased life expectancy
- Quiet operation even at low rotational speed





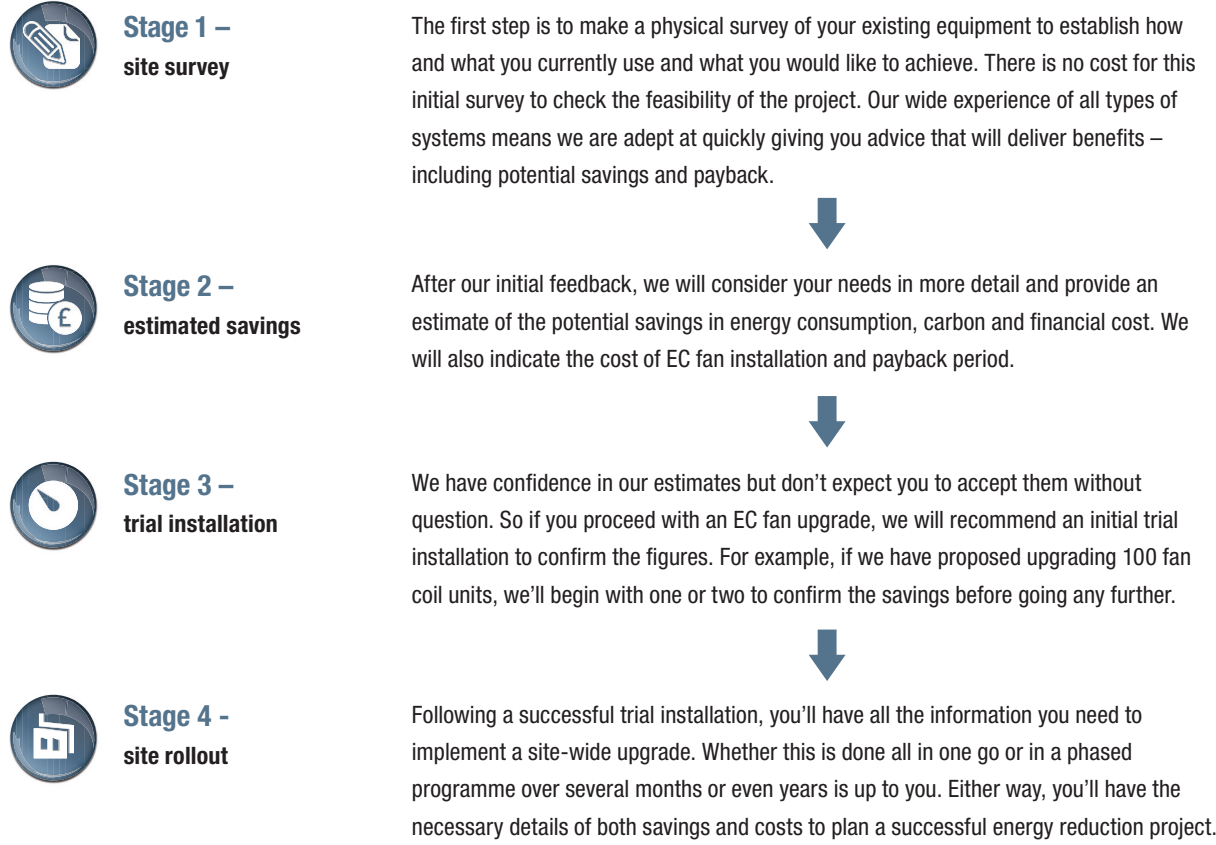
Simple steps to EC upgrade – alongside you all the way

£500,000 savings at Marks and Spencer

Dramatic reduction in energy use at Diamond Light



Halving power consumption at the Scottish Parliament

**HVAC equipment accounts for 40 per cent of the energy consumption in a commercial building.**  
But you don't need a complete retrofit or replacement of a system to maximise performance and reduce energy consumption and maintenance costs. Simply switching to variable EC fans in chillers, air handling units (AHUs) and fan coils will improve efficiencies and cut costs.



Case study 1

Condensers and Chillers



Sustainability

Financial savings



£500,000 savings at Marks and Spencer

**Overview**  
We partnered with AB Group to roll-out 1,404 fans and 258 condensers in 152 Marks and Spencer stores across the UK and Ireland. The new technology will substantially improve the energy performance of the refrigeration systems in the stores with total annual financial savings estimated to be over half a million pounds.

Total project hours of just 4,150 underline the ease of installation.

The project took only three months to complete.

**The project**  
The project, which encompassed large high street stores and Simply Food stores, was part of an energy saving exercise to reduce the carbon footprint across the Marks and Spencer estate. Before roll-out, an upgrade trial was carried out in a Rotherham store to establish the energy saving benefits.

Despite the logistical challenge of delivering and installing 1,400 new EC fans (and collecting old AC fans) across the UK and Ireland, the project took only three months to complete between February and May 2015. Total project hours of just 4,150 underline the ease of installation.

In addition to the upgrade, AB Group changed the controls for the fridge plant to enable a variable 10v output to operate the new EC fans where necessary.



Following the upgrade, there is estimated to be an annual energy reduction of 3,265.3 kWh per fan, across the 152 stores, with an estimated cost saving per fan of £375.51. This represents an annual saving of £527,223, with payback in less than five years.



The upgrade project also allowed the refrigeration systems to maintain operation during high ambient temperatures. This is a big advantage as it retains sales and operation in the stores during exceptional weather. Other benefits include a noise reduction per store of up to 7 dB(A).

Case study 2

CRAC Units and AHUs



Noise

Financial savings



Dramatic reduction in energy use for Diamond Light

**Overview**  
We worked together with Cinque Energy Solutions and Stulz to provide energy saving solutions for Diamond Light Source, one of the UK's leading scientific organisations.

**The fans**  
Existing air-conditioning equipment was upgraded with ebm-papst EC fans, which dramatically reduced cooling energy consumption.

What the client said: “As a scientific organisation the project appealed to us on several levels. Obviously the financial savings from reduced energy consumption and increased reliability were of great importance. Other key benefits are reduced noise and vibration. One operator says he now has to give a unit the ‘cuddle test’ to confirm it is running after the significant reduction in noise and vibration!”

**The project**  
Stulz asked ebm-papst to carry out a site survey for upgrading some of its computer room air conditioners. Normally used for datacentre cooling, the unit was being used to cool electronic equipment rooms around the perimeter of the Diamond Light Source synchrotron.

Phase one of the project was to upgrade 27 CCD900CW Stulz downflow CRAC units from their traditional AC forward curved centrifugal blowers to EC backward curved impellers.

An initial site survey identified what the current solution delivered in terms of power draw and performance. Suitability for upgrade also had to be considered. The blowers would be replaced by EC backward curved impellers, but due to space limitations resulting



from the use of a scoop directing air into the room, the EC solution had to be mounted within the CRAC unit enclosures rather than below.

The proposed solution was to utilise the excellent energy efficiency of the latest RadiCal 560mm impeller from ebm-papst. The fans were mounted into bespoke metalwork frames to angle the airflow to assist with the air delivery into the room. Metalwork and assembly was all carried at ebm-papst's dedicated production area devoted to custom solutions.

Case study 3

CRAC Units and AHUs



Sustainability

Power Density

Financial savings



Halving power consumption at the Scottish Parliament

**Overview**  
We worked with Airedale International on a fan upgrade project at the Scottish Parliament building in Edinburgh.

**The fans**  
ebm-papst EC fans were used to upgrade Airedale aircon units in the building's computer room, leading to a reduction in power consumption of approximately 50%.

Further savings are expected when a second phase is implemented.

**The project**  
The Scottish Parliament is dedicated to reducing both carbon footprint and energy bills. Environmental Performance Manager David Fairhurst had already made significant improvements to the building, including a reduction in carbon emissions of 25%. After we presented him with details of the possible energy savings of upgrading HVAC equipment to EC fans, he asked us to carry out a survey. It identified the HVAC equipment that would offer the greatest potential for energy savings. We then worked alongside equipment manufacturer Airedale to provide the optimum solution.

Computer room cooling offered the best potential for energy savings, so an initial trial was carried out on one computer room air conditioning (CRAC) unit. After excellent results, further installations were carried out on both CRAC and air handling units (AHUs).

What David Fairhurst said: “The Scottish Parliament is committed to reducing its carbon emissions by more than 40% by 2020. To achieve this we need to reduce electricity use by at least 40%. ebm-papst UK claimed that its fans would deliver at least this level of reduction and that was proved to be true. EC fans are a step change technology, much like LED lighting, which has been a very welcome addition to our carbon management plan.”

As well as halving power consumption, the project resulted in initial savings of 11.5 tonnes of carbon per year and a payback period of 21 months. Further savings are expected when a second phase is implemented. Overall financial savings of £13,500 per year are expected, with a reduction in carbon emissions of 20 tonnes per year.

