

Flexible | Compact | Efficient

## The ECFanGrid

Continuous and consistent airflow is essential to virtually every facility, making under-performing or unreliable fans simply unacceptable. In addition to reliability concerns, inefficient fans can be a building's biggest energy consumer. Given today's economy and the increasing cause for environmental concern, designers should look to select EC plug fans which will not only provide the necessary reliability, but also provide optimum efficiency and environmental benefits. In most fan systems a single fan is selected for the required system and various methods of control are also installed to meet other operating points defined by the system duty such as dampers or variable pitch blades.

In some instances, it is advantageous to use more than one fan in a system, for example when it is necessary for the required operating range of the system to include multiple plug fans running closer to their peak efficiencies, instead of one large fan controlled over a wide operating range. Multiple fans for capacity control may be more economical if the cost of operation is critical. By running fans in parallel, when one motor fails, only a portion of the airflow is lost, unlike single fan air handlers.

Working with supply partner Rosenberg, we have developed an energy efficient solution to refurbishing old and outdated ventilation systems such as air handling units with an ECFanGrid.

An ECFanGrid consists of several modular backward curved centrifugal fans or plug fans arranged in a grid construction offering numerous advantages over conventional technology and is equally suitable for new and existing ventilation systems. In addition to being compact and flexible, the ECFanGrid is easy to clean, replace and maintain while expelling low noise and delivering uniform air stream. A uniform air stream improves the efficiency of other downstream components, for example, a thermal wheel.

**A MULTIPLE FAN ARRAY  
DESIGNED TO IMPROVE  
RELIABILITY, FLEXIBILITY  
AND EFFICIENCY IN  
EXISTING OR NEW  
VENTILATION SYSTEMS**



## Why choose the ECFanGrid?

Some of the challenges presented by old Air Handling Units are listed below alongside the solution provided by the ECFanGrid.

### PROBLEM

Turbulent air flow path

### SOLUTION

More even distribution of air velocity over the entire duct significantly increases efficiency of whole system

### PROBLEM

Inflexible and bulky system

### SOLUTION

Greater control due to adaptable design

### PROBLEM

No redundancy

### SOLUTION

Protection against total system failure due to inherent system redundancy

### PROBLEM

System failures costing time and money

### SOLUTION

Auto response of ECFanGrid to individual fan failure

### PROBLEM

Damage to building fabric due to minor works during installation

### SOLUTION

Smaller component parts that are easily portable through pedestrian doors

### PROBLEM

Noise pollution / energy loss through noise

### SOLUTION

Noise attenuation by design / reduction of sound transmission

### PROBLEM

Concerns over delivering the highest air quality to building occupants

### SOLUTION

Hygienic, easy-to-clean design, free of the floor

### PROBLEM

Complex installation of entire AHU

### SOLUTION

Simple, fast assembly that requires fewer installers

### PROBLEM

Costly maintenance downtime

### SOLUTION

Redundancy in system allows for efficient works planning

## Key ECFanGrid Benefits

### EFFICIENCY

Typically 40% of a commercial buildings energy use comes from heating, ventilating and cooling with 50% of the HVAC energy consumption coming from fans. The move from AC to EC fans in newer projects, has been significant due to their numerous advantages over their AC comparisons. EC fans can operate outside of their preferred operating range and still maintain a high efficiency, have reduced noise operation when speed controlled and the integrated motor and electronic makes for a compact design. Rosenberg EC fans also have built in controls and monitoring capabilities, enabling users to interrogate alarm outputs for fan faults, allowing individual problems to be addressed before total failure of the AHU. Savings as a result of moving from AC to EC occur from both improved motor efficiency and optimising system design.

### REDUNDANCY

ECFanGrids provide superior reliability as a result of their inherent redundancy. If one fan fails, only that portion of the airflow is lost, unlike single fan systems where the entire air handler goes offline. Moreover, the loss of airflow from one plug fan can be offset by increasing the speed of the remaining fans, this can be achieved automatically in conjunction with the building's BMS system. It allows for the facilities management team to plan for the downtime to suit the need of the building, for example, when the demands on the AHU are lowest.

### FLEXIBILITY

The number of plug fans in each ECFanGrid system can vary according to the airflow requirements. For example, in a wall of 9 fans in a 3x3 configuration where only 7 fans may be required for normal operations to deliver the designed duty, the 8th and 9th space can be blanked off with a plate. If the demands on the AHU increase through building expansion for example, the blanking plates can be removed and 1 or 2 fans added to the grid to meet the new requirements.





## Key ECFanGrid Benefits Continued

### EASE OF INSTALLATION

ECFanGrids are ideally suited for retrofit AHU projects, particularly where a single large radial fan is being replaced. It is often the case that buildings have expanded around an AHU over its years of operation. This can make the extraction of the old fan problematic but the install of the new fan impossible without minor works to the fabric of the building. The ECFanGrid, due to its smaller component size, can be walked through standard pedestrian doorways by no more than two operatives: a significant factor in maintaining a tight replacement schedule and reducing costs when compared to alternatives. The use of plug fans, where time and space is an issue, risks the least downtime and offers the best opportunity for a rapid return to normal system operation.

### EASE OF MAINTENANCE

Unlike a traditional belt drive unit which covers a large floor space, the ECFanGrid is completely free of the floor. This means that maintaining the hygiene of the AHU is quicker, simpler and more effective. No dust is released into the supply air as there are no belt drives to degenerate over time. Furthermore, component failure is quickly dealt with due to the modular nature of the ECFanGrid. For example, a single fan module could be replaced and the AHU back online within an hour of being shut down.

### NOISE ATTENUATION

Case studies show that sound is not an issue when using an ECFanGrid, on the contrary there will be more possibilities to significantly lower noise. When using an ECFanGrid there are two major advantages to attenuate noise. First, the noise spectrum of smaller impellers contains higher frequencies, thus the wave lengths are shorter, allowing for the use of shorter attenuators. Second, the required length of the fan section in a typical air handling unit, using a single large radial fan can be reduced dramatically – in some cases up to 50%.



## What to expect from us

### SPECIFICATION

We will work with you to develop a specification that suits your project requirements. A FanGrid specification form can be found on our website.



### QUOTATION

Once we establish your requirements, one of our product sales engineers will prepare a quote for you based on the specification.



### INFORMATION

We provide you with all the technical data, step-by-step assembly instructions and wiring information needed for installation.



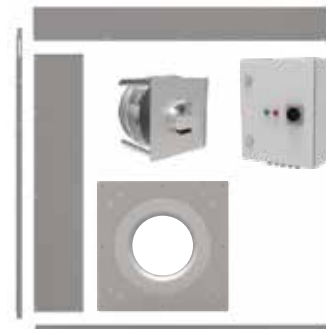
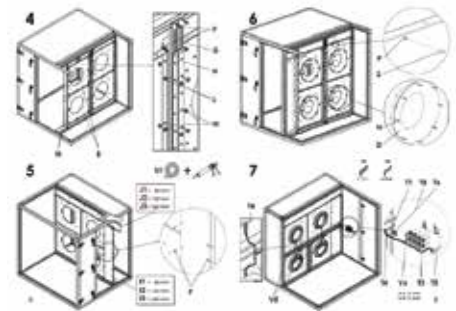
### DELIVERY

The ECFanGrid kit includes all mechanical parts: fans, cabinet, grid and screws. We hold stock of all components to ensure short lead times. On request, we will also supply the control cable, pressure hose, connectors and other ancillaries.



### TECHNICAL SUPPORT

Our team of product engineers are available to answer any questions you may have and provide technical support when needed.





## Retrofit Case Studies

**APPLICATION** Airport entrance hall supply air

**SPECIFICATION** 3x3 ECFanGrid with centralised controlling through a standardised wiring cabinet with integrated air flow measurement

**INPUT POWER**

ECFanGrid	27kW	41A
Forward curved impeller	35kW	67A

**CO<sub>2</sub> REDUCTION** 20 tonnes per year

**PAYBACK PERIOD** 2 years, 3 months



**BEFORE**



**AFTER**

**APPLICATION** Banknote printing

**SPECIFICATION** two 3x3 ECFanGrids, one supply, one exhaust with centralised controlling through a standardised wiring cabinet

**INPUT POWER**

2 x ECFanGrids	46kW	70A
2 x forward curved impellers	67kW	105A

**CO<sub>2</sub> REDUCTION** 100 tonnes per year

**PAYBACK PERIOD** 1 year, 6 months



**BEFORE**



**AFTER**

**APPLICATION** Supply for air drying in wood

**SPECIFICATION** 3x4 ECFanGrid with centralised controlling through a standardised wiring cabinet with integrated air flow measurement

**INPUT POWER**

ECFanGrid	23kW	34A
Axial fan	27kW	40A

**CO<sub>2</sub> REDUCTION** 12 tonnes per year

**PAYBACK PERIOD** 3 years, 4 months



**BEFORE**



**AFTER**