

# CO<sub>2</sub> REDUCTION

## THE AARHUS CONCERT HALL REDUCES CO<sub>2</sub> EMISSION ON THE ENVIRONMENT BY MORE THAN 170 TONS EACH YEAR



### HISTORY

The Aarhus Concert Hall was opened in August 1982, and in 2007 the building was extended by 17,000 m<sup>2</sup>. The completed building occupies more than 33,000 m<sup>2</sup> and has 500 rooms. It is visited annually by 700,000 people and provides a venue for more than 1,000 events a year.

### THE ENERGY CONSUMPTION MUST BE REDUCED

The Aarhus Concert Hall saves more than 67,000 EUR in energy expenses and 170 ton CO<sub>2</sub> annually with Climaster ZerAx®.

Novenco Building & Industry has delivered more than 12 air handling units for The Aarhus Concert Hall during the summer of 2011.

The delivery was part of a comprehensive energy retrofit of the concert hall,

and for this project Novenco Building & Industry designed the Climaster ZerAx®.



The ZerAx® fan is an important cornerstone in considerably reducing the energy consumption compared to similar products.

### MINIMUM ENERGY CONSUMPTION AND INDOOR CLIMATE

The energy improvement on a grand scale happens with the replacement of

the ventilation unit, or rather 12 ventilation systems - in the original building. Since its inauguration in 1982, the ventilation system ran at full capacity each time an event took place on stage. When the ventilation was used in the halls in the original building, it renewed 150,000 cubic metres of air per hour. In the Grand Hall this meant that the air was renewed six times per hour. The old units had two settings - on or off. That meant that they used the same amount of power, regardless of whether there were 400 or nearly 1,600 people in the hall.

Through the years this has cost a lot of energy - to pump fresh and unused air in and out of the hall. With the new ventilation system the energy wastage has come to an end, since it has speed regulators for the motors, an air quality gauge and a rotor transmission.

## CO<sub>2</sub> REDUCTION THE AARHUS CONCERT HALL REDUCES CO<sub>2</sub> EMISSION ON THE EN- VIRONMENT BY MORE THAN 170 TONS EACH YEAR

### THERE ARE SEVERAL ADVANTAGES

The new ventilation equipment in the original part of the Concert Hall is capable of circulating and renewing just as many cubic metres of air as the old equipment.

In some areas there will be significant improvements, both on the audience experience and on the Concert Hall's climate account.

The system is equipped with a sensor and frequency control, based on Climaster ZerAx®, containing the Novenco Building & Industry highly effective fan with a rate exceeding 90%.

### FACTS:

- 50% LOWER ENERGY CONSUMPTION PER FAN
- 50% REDUCED ENERGY CONSUMPTION ON ALL UNITS COMBINED
- 170 TONS REDUCED CO<sub>2</sub> EMISSION PER YEAR
- SIGNIFICANTLY REDUCED SOUND LEVEL

The air quality in the hall is checked constantly so the unit can replace the air as necessary. Therefore it provides for optimum air quality, regardless if the hall is full or half full.

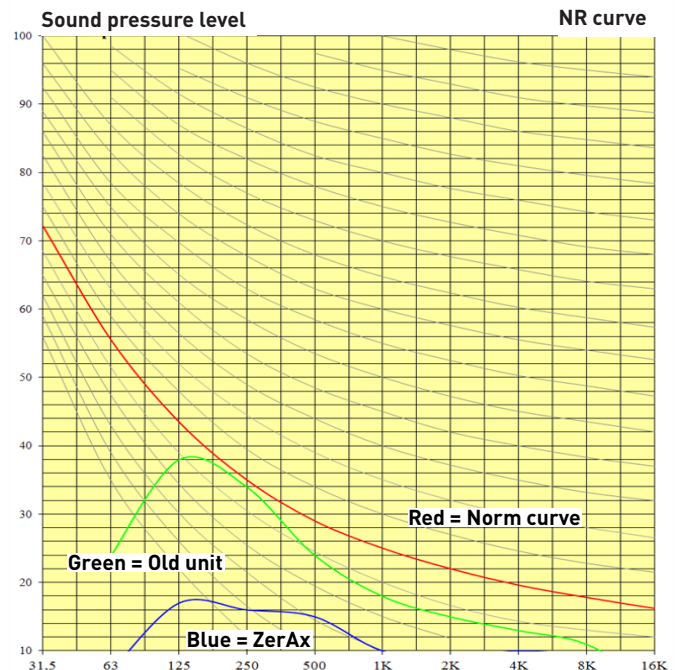
At the same time, the air measurements ensure that fresh, unused air and expensive energy is not squandered.



"It is with sound we move you, it is with sound we capture your emotions" said Giancarlo Andretta, the Italian Chief Conductor of Aarhus Symphony Orchestra in a press meeting.



Air handling unit Climaster ZerAx®  
installed in Aarhus Concert Hall



The ZerAx® ventilator's low sound level ensures that any diverted sound from the unit is reduced considerably, and is now far below the general requirements for buildings of the Concert Hall's kind.