

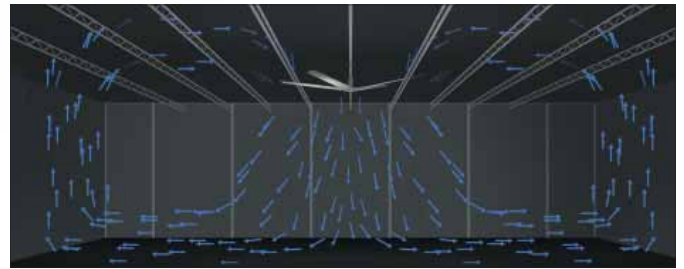
CASE STUDY



REVOLUTION FAN™ — UBBINK, NETHERLANDS



Just 8 months after installation, Ubbink are well-pleased with the Revolution Fan™ which circulates heat evenly in an area of some 6000 m³. The gentle air movement is experienced as a 100% improvement by employees who no longer complain about draughts or hot and humid working conditions. There are significant increases in comfort and substantial cuts in energy costs.



INCREASED COMFORT, SIGNIFICANT REDUCTION IN ENERGY COSTS

Traditional high-speed fans were not the answer

In order to process orders quickly, a stock of skylights and roof windows are stored at Ubbink's warehouse facilities in Doesburg, Netherlands. To optimise the use of space, goods are stored in racks some 8 or 9 metres high. With 10 metres from floor to ceiling, maintaining a comfortable working temperature at floor level is something of a challenge. Although the warehouse was heated during the winter months, the warm air rose up to the ceiling 10 metres above floor level. This obviously resulted in a huge energy bill each winter. Conversely, during the summer months the air did not move at all and the warm air in the building was trapped at floor level because of warmer air above it.

To counteract these problems Ubbink initially installed three high-speed ceiling fans. The results were very disappointing.

In the summer there was little, if any, cooling benefit. In the winter, heat was not distributed around the facility and unacceptable draughts were created. Added to which, the high-speed industrial fans proved expensive to operate and many were required for effective cooling. The marginal effect — which was apparent only if you stood directly beneath them — didn't equate with the high energy consumption.

Unique design gives optimal results

On Friday 30 June 2008 a Revolution Fan™ was installed by Caljan Rite-Hite service engineers. This is firmly fixed in place with beam clamp and four stabilizing cables from the motor housing to the ceiling to limit vibration and provide added safety. The hub and blades were "rotationally-balanced" before being shipped to Ubbink, to ensure that they are ideally suited for the application. They will never need readjusting.

The advanced design of the Revolution Fan™ features four aluminum Propell-Aire™ blades, which vary in width and pitch angle along their entire length. The unique design moves air more consistently across the whole blade, creating an industry-high airflow of approx. 8.5 m³ per minute. The shape is impossible to produce with extruded blades used on other HV/LS fans.

Draughts are avoided as the air is de-stratified to keep temperatures consistent from floor to ceiling. With a single Revolution Fan™, with a diameter of 4.8 m, an area of approx. 30 x 20 metres is kept at a consistent, comfortable temperature, even in the corners.

Ubbink agree that this technical innovation is truly a revolution and they see more locations within their production where the Revolution Fan™ could be used.

CASE STUDY



Marcel Dibbes, Warehouse Manager, Ubbink

»We had tried several different solutions, but none of these met our requirements.« Says Marcel Dibbes. The indoor climate has been vastly improved since installing the Revolution Fan™ in June 2008.

Marcel Dibbes is amazed by the results »In the warmer months a much better temperature level is apparant in the whole of the work area. This is achieved with just one fan«. He continues »The fan really proved itself, moving volumes of air at low speeds; there was no sensation of draft at all.

Now that the winter has set in we can begin to see the true value. Our employees say that their working area has never been as comfortable at it is now. The Revolution Fan™ draws the warm air from the ceiling, recirculating it to where it should be at working level. Previously, many of the employees wore body warmers, which are cumbersome to work in. These simply aren't necessary any more.«

The comfort factor is not the only issue. Marcel Dibbes adds »Our heaters do not have to run as much as they did before. The investment in the Revolution Fan™ has proved to be really worthwhile. We expect a ROI time of just 2 or 3 years.«

UBBINK

Ubbink develop, produce and sell innovative skylight and roof windows for both industrial applications and private homes. Their focus is on low-energy, durable products that contribute to a better environment.

Obviously given the nature of their business, Ubbink are very aware of using energy optimally. The windows they produce are designed to very high standards in particular with regards to heat insulation. A minimum of 10 years guarantee on materials and installation is standard.

Established in 1896, Ubbink has production facilities in the Netherlands and sales offices in Belgium, United Kingdom and France. Export sales are steadily increasing as Ubbink establishes itself as a strong player in Western Europe.



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