

Winner of:



THE CIBSE LOW CARBON
PERFORMANCE AWARDS | 2010



TurbomiserTM

TURBOMISER CHILLER

Winner of CIBSE's Low Carbon Technology Award 2010

How to halve your air conditioning running costs

The multi-award winning Turbomiser chiller is available in three versions: Turbomiser 1, 2 and 3 – each more efficient than the last.

IDEAL APPLICATIONS:

- retail stores
- offices
- hospitals
- hotels
- data centres
- universities



THE MULTI AWARD-WINNING CHILLER

Partners



Why Turbomiser?

Energy prices are rising. Running air conditioning in buildings will become increasingly expensive. For businesses that depend on cooling, this is a major financial exposure.

The Turbomiser chiller is a new type of high efficiency chiller that can cut your cooling energy bill in half.

The savings start on day one. And keep going, year after year, throughout the life of the plant.

Award-winning technology

The Turbomiser is based on award-winning technology that dramatically cuts energy use.

It is the winner of CIBSE's most prestigious technology award, for Low Carbon Innovation 2010.

It is based on the ground-breaking Danfoss Turbocor compressor, a compact centrifugal compressor based on virtually frictionless magnetic bearings.

As well as its ultra efficient performance, due to its advanced design and stepless control the Turbomiser improves comfort levels and productivity in buildings.

And, with its oil-less magnetic bearings, service and maintenance costs are dramatically reduced.

Turbomiser gives you:

- Lower running costs
- Lower servicing costs
- Improved comfort and reliability

Major companies use Turbomiser

Leading companies and organisations use Turbomiser to cut their building running costs and improve comfort conditions.

These include Hilton Hotels, Lloyds Bank, Ladbrokes, the MoD and Skandia, to name a few.

Their experience has proven that Turbomiser delivers serious and sustained savings in running costs, and provides a high quality environment for customers and staff.

Turbomiser options

There are three Turbomiser options to choose from, all available in capacities up to 1.5MW.

Each delivers increasing levels of efficiency compared with traditional reciprocating and screw-based chillers:

Turbomiser 1: around 30 per cent more efficient

Turbomiser 2: around 40 per cent more efficient

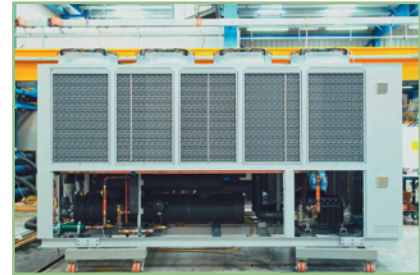
Turbomiser 3: around 50 per cent more efficient

Turbomiser

SAVES UP TO 30 PER C

The original Turbomiser buildings across the UK

Based on the pioneering friction-free magnetic bearing technology forward by combining



Turbomiser

WITH LPA ADVANTAGE SAVES UP TO 40 PER C

The Turbomiser 2 takes the design a stage further with system.

The low power (1kW) pumps lower ambient conditions, deliver free cooling.

Additional benefits

In addition to the benefits

- Efficiency improved by 40 per cent;
- Extended working life
- Reduced service and
- Payback time further

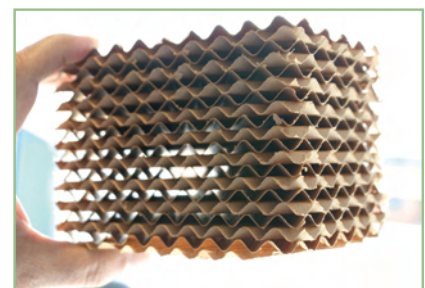
Turbomiser

WITH ADIABATIC ADVANTAGE SAVES UP TO 50 PER C

The Turbomiser 3 takes the innovative actively-managed unmatched "adiabatic ad

How it works

The evaporative system is



1

BENEFITS OF ENERGY COSTS

This design is proven and in use in hundred's of

g Danfoss Turbocor compressor, with virtually bearings, it takes the technology a major step

- Inverter-controlled Turbocor compressors;
- Micro-channel aluminium condensers;
- Total immersion evaporators;
- High efficiency EC fans;
- Integrated control system.

It delivers energy savings of around 30 per cent compared with conventional reciprocating and screw chillers.



In summary, Turbomiser 1 offers:

- Energy savings up to 30 per cent;
- Reduced maintenance costs;
- Rapid payback – often in less than a year;
- Improved comfort and productivity for your building;
- Low start-up current – just 5 Amps;
- Exceptionally quiet operation;
- Reduced refrigerant leakage, due to few joints.

2

BENEFITS OF ENERGY COSTS

Already highly efficient Turbomiser 1 with the addition of a Liquid Pump Amplification (LPA)

enables the compressor to be switched off in circulating liquid refrigerant around the system to

This shaves a further 10 per cent off energy consumption.

It can achieve EERs of 10 and above without the need for additional free-cooling circuits and associated glycol, which can be expensive and difficult to handle. This saves on initial cost and ongoing pump energy.

The LPA system significantly increases thermodynamic efficiency across the chiller's operating range.



Benefits of Turbomiser 1, Turbomiser 2 offers: by a further 10 per cent to approximately

due to reduced compressor run-time; maintenance, due to reduced run time; reduced

Floating head pressure

The system operates with a floating head pressure, providing opportunities for savings not available to conventional designs.

Unlike standard chillers whose head pressure is fixed, the Turbomiser II constantly self-regulates and optimises its performance in response to ambient conditions and load.



3

ADVANTAGE

BENEFITS OF ENERGY COSTS

Take Turbomiser 2 to the next level, by adding an adiabatic evaporative system, giving the chiller an "adiabatic advantage".

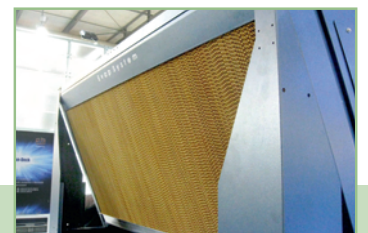
mounted on the face of condensers coils and fed by nebulised and UV-sanitised water, overcoming risks of Legionnaires' disease. This is absorbed by a porous natural-fibre honeycomb array in the direct air path of the coils.

The adiabatic cooling effectively reduces ambient temperatures in the immediate vicinity of coils by up to 8deg C, lowering condensing temperatures and significantly improving energy performance. The adiabatic advantage also increases chiller

capacity at peak load conditions, enabling it to cope with high ambients that might otherwise overwhelm a standard chiller.

Combining the LPA and Adiabatic Advantage technology improves the efficiency of the chiller at both low and high ambients, ensuring class-leading performance in all conditions and seasons throughout the year.

Water consumption is low. In UK conditions, £600 worth of water a year results in energy savings worth some £8000.



Additional benefits

In addition to the full benefits of Turbomiser 1 and 2, Turbomiser 3 offers:

- Efficiency improved by a further 10 per cent to approximately 50 per cent;
- Extended chiller capacity at peak load, enabling it to cope with extreme ambients that would defeat other chillers

What the three Turbomiser options offer

Technical features

Inverter-controlled Turboacor compressors
 Micro-channel aluminium condensers
 Total immersion evaporators
 High efficiency EC fans
 Integrated control system
 LPA Pump
 Adiabatic evaporative system

Benefits

Energy savings
 Reduced maintenance costs
 Rapid payback – often in less than a year
 Improved comfort and productivity for your building
 Low start-up current – just 5 Amps
 Exceptionally quiet operation
 Reduced refrigerant leakage, due to few joints
 Extended working life due to reduced compressor run-time
 Payback time further reduced

Turbomiser 1

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Up to 30%

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Turbomiser 2

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Up to 40%

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Turbomiser 3

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Up to 50%

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Turbomiser is the result of a five year collaboration programme between UK chiller specialists Cool-Therm and Klima-Therm.

They have harnessed their collective expertise and knowledge to produce this award-winning technology, that is proven to deliver.



The Dorchester: saving £10K a month



Skandia: Turbomisers at work at company's hq

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