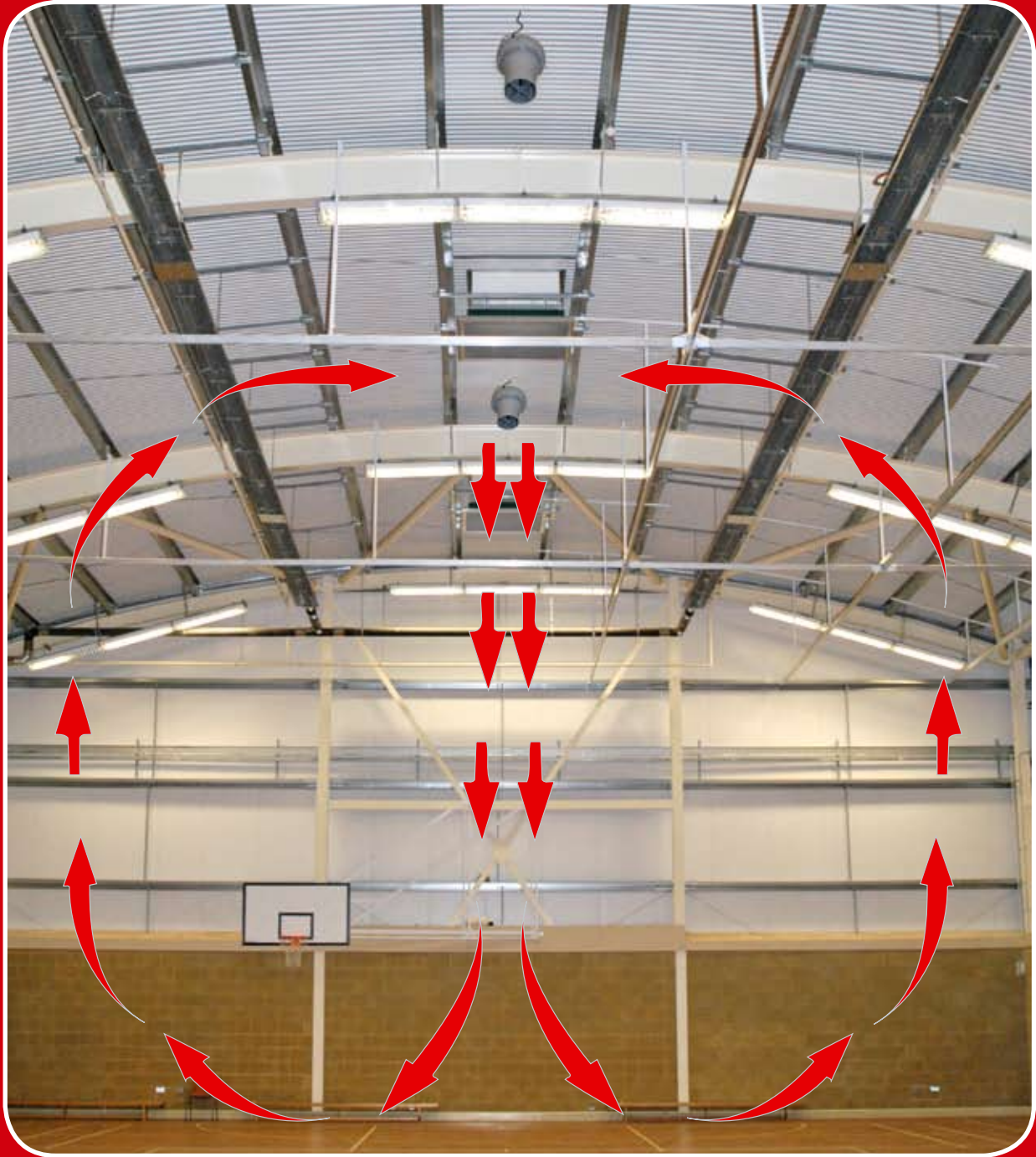


and now from Monodraught!the Heat-Harvester™



In winter months, much of the heat generated at occupier level rises inexorably to the underside of roof level. This is all wasted heat but the Heat-Harvester™ captures this waste heat and thrusts it down to floor level for the benefit of the occupiers. This can drastically reduce heating bills by between 30% and 50%.

The Heat-Harvester™ is simple in its concept, and is highly effective in operation in blasting a column of warm air from the underside of roof level down to floor level. The Heat-Harvester™ looks and operates like a mini jet engine and will grace the interior of any building, being just 305mm in diameter and 380mm in height. Each system weighs just 4.5kgs and is powered by a standard 240 Volt mains supply but typically, uses just a 35 Watt motor, which costs as little as 10p per day to run. Heat-Harvesters™ should be placed at 8m – 10m centres, depending on the configuration of the building and general layout of equipment, racking, partitions, etc. and the model size should be selected as below.

three systems:

- **Model 5/25**

Suitable for ceiling heights up to 5m in height from floor to ceiling, such as Sports Halls, Assembly Halls, and small Warehouses. Draws just 25 Watts in electric power and provides a volume flow rate of 126 l/s or 7.6m³/min. Can be suspended from any suitable point at the underside of roof level through the adjustable arm and supplied with a standard 3m lead to plug into any suitable power supply. Since the weight of the system is just 4.5kgs, no special supports are required. All Heat-Harvesters™ are supplied as standard in grey but other colours can be supplied to Special Order.



- **Model 8/35**

Suitable for large buildings with a floor to ceiling height of up to 8m in height and probably the most popular Heat-Harvester™ model. It draws just 35 Watts in mains power and provides a volume flow rate of 150 l/s or 9m³/min and is ideally suspended in the middle of each bay at approx 8m – 10m centres, depending on the building layout. For warehousing, where racking is involved, the Heat-Harvester™ should be suspended over the central walkways rather than over the racking itself, so as to benefit from the 8m column of air movement. All Heat-Harvester™ systems are almost silent in operation and are therefore ideally suited to Assembly Halls, Churches, and Community Halls, where complete silence is often required. Running costs are less than 10p per day.



- **Model 12/75**

Suitable for buildings with a floor to ceiling height of up to 12m in height, this model is fitted with a 75 Watt motor for maximum power and provides a volume flow rate of 238 l/s or 14.3m³/min. This is the largest Heat-Harvester™ model and is ideal for large Warehouses, Aircraft Hangars, and Storage Buildings, where the wasted heat must be considerable. The heat is required at the occupied level but inevitably, heat rises and therefore the temperature at the underside of roof level can easily be 4°C – 5°C higher than at floor level and this high level heat is totally wasted. By harvesting this wasted heat and forcing it back down to floor level, not only can temperature thermostat settings be reduced but the workforce will find working conditions far more pleasant and enjoy year round temperatures typically around 20°C. And yet, the cost of running the Heat-Harvester™ largest model is still less than 25p per day.



three simple steps:

Choose the spot

There are no particular design requirements for positioning the Heat-Harvester™ but clearly, the highest positions of the underside of roof should be chosen for maximum effect. Spacing should be 8m – 10m depending on bay size. Monodraught Engineers will identify the difference in temperature between floor level and the underside of roof level. This difference in temperature in most buildings is likely to be between 4°C – 5°C but this will depend on the building itself. Older buildings, by their construction, may have a higher degree of building leakage and so, will actually lose that heat to atmosphere, so the difference in temperature between floor and ceiling may not be so obvious.

Hang it up

No special fixings are required for the Heat-Harvester™ nor indeed is any special engineering required. The Heat-Harvester™ is suitable for both new and refurbished Projects, since no builders work is involved. The adjustable suspension arm can be used, so that the Heat-Harvester™ can be aimed to push hot air from the highest spot in the building down to perhaps entrance door level, so as to create a 'warm air curtain'. If the suspended ceiling Model is selected, as shown overleaf, just a 600mm x 600mm ceiling tile is removed.

Plug it in

That's all there is to it! The electrical connections are simple and it would be normal to run an electrical conduit to the connection point of the Heat-Harvester™. A normal fused spur should be provided at low level but the power consumed is so small, no particular electrical precautions are required. Once in operation, the Heat-Harvester™ can run 24/7.

now reap the benefits!

Case Studies

The Heat-Harvester™ was originally developed in the USA and has been extremely successful in more than 2,000 installations. Below are three Case Studies that show typical applications of the Heat-Harvester™

Silver Creek High School

The School was built some five years ago with a HVAC heating and cooling system positioned at ceiling level and low level perimeter wall heating. The School won many Design Awards for its striking and pleasing exteriors and interiors but because of its design, many areas incorporated very tall ceilings. As a result, in winter months, many of the school children had to wear their coats during break time when moving around the corridors but within a matter of months after the systems were installed, not only were heating bills reduced but the children enjoyed a far more comfortable interior environment. Subsequently, units were also installed in all the Gymnasiums, Assembly Hall, and Library areas, as well as corridors.



Heli-Support at Fort Collins

Twelve units were installed to a 32,000sq.ft helicopter servicing building with a floor to roof height of 12m. The Works Manager, Jeff Peterson, reported that before the units were installed, most of the men had to wear jackets during the winter months, whereas now they just wore T-shirts! An extensive number of readings were taken and it was found that even with a 12m high ceiling, the temperature was within 1°C between floor and ceiling. The Works Manager also stated that he had turned down the heating thermostat by 10°C saving more than 30% of the winter heating costs. Inevitably, all the workforce reported how much more pleasant the working conditions were.



Western Disposal Services

Western Disposal operates 40 waste collection trucks in Boulder City, which often get caked in ice and snow by the time they return to the Depot. If any servicing is required, this always proves to be a problem working in such difficult conditions with the busy Workshops inevitably often being very cold at floor level. The units have overcome this problem by harvesting all the wasted heat that was carried up to roof level of the Workshop and so it has enabled Western Disposal not only to substantially reduce their heating bills for this unit but also to have a much happier workforce!

One of the dilemmas with any Vehicle Workshop is that the roller shutter doors inevitably have to be regularly opened, allowing cold air in. However, by forcing the hot air down from roof level, this major problem is negated. Not only is there a substantial saving in heating costs but it provides far safer and more pleasant working conditions, since the Heat-Harvester™ can be directed at their very point of work contact, to create a 'warm air curtain' into their very workstation. It is easy to see how this philosophy can be extended to other situations of creating ideal working conditions.



Suspended ceiling model

All three Models are also available for suspended ceilings, where simply, a standard ceiling tile is removed and the Heat-Harvester™ then drops into position. Electrical connections should be made in the normal way.



Running costs

The beauty with the Heat-Harvester™ is that it costs so little to run (in energy costs)! Typically, the 35 Watt motor costs just 50p per week to run, so taking into account capital costs and installation costs, the payback is normally less than three years.

Free Survey

Monodraught's Engineers or Representatives will carry out a free Survey, which simply involves using an infrared thermal temperature gun to detect the difference in temperature between floor and ceiling. This temperature differential will obviously vary according to the time of year and the construction of the building but it will give a good indication of the potential heat that can be recovered, which would otherwise remain at the underside of roof level. Older buildings, by their construction, may have a higher degree of building leakage and so, will actually lose the heat that has accumulated at the underside of roof level to atmosphere-so both new and old buildings will benefit from the Heat-Harvester™ principle.

Guarantees

Monodraught guarantee that within 7 days from installation, temperature equalisation will have been achieved with a maximum of 1°C between floor and ceiling. If the Client is not entirely satisfied with the performance of the Heat-Harvester™, a full refund will be given upon removal of the units. The Heat-Harvester™ unit itself is covered by a normal 12 month warranty.

Other Products

Monodraught have a 30 year history in developing and promoting energy saving products, the Heat-Harvester™ is just the latest in this long line of achievements. Further information can be obtained from Monodraught's website or from Monodraught's Head Office, as shown below.

 Sunpipe

Monovent
Windcatcher

 Sola-vent

 Sola-boost

 SunCatcher

 Windcatcher

Vertical Balanced-flues

Currently under development:-

- Sola-wind and Sola-cool
- Phase change material cooling
- Solar driven desiccant and evaporative cooling techniques



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