

Calorex HRD systems

A dehumidification and ventilation system with dynamic heat pump heat recovery to swimming pool water and air.

Wolverton Swimming & Fitness Centre

The new Wolverton Swimming & Fitness Centre in Milton Keynes is the latest commercial leisure venue to benefit from energy cost savings and reduced CO₂ emissions, thanks to the installation of a bespoke Calorex heat recovery system.



Operated by Wolverton Leisure Trust, the centre opened in spring 2013 and welcomes just under half a million visitors per year. Boasting a 25m six-lane swimming pool, a learner pool with water features, a fitness suite and workout studios, the centre is a vital leisure resource for the community.

During the initial design process, Calorex Heat Pumps of Essex were approached to come up with a heat recovery solution that would not only maintain water and air conditions within the pool hall in an energy efficient manner, but run on a 'set and forget' basis.

A modified HRD30 heat pump heat recovery dehumidifier was specified by Calorex, tailored to fulfil the requirements of the brief. The unit features a bespoke PLC controller, inverter controlled fans and high tech air pollutant monitors that regulate fresh air demands.

The high-tech Calorex HRD system is designed to simultaneously monitor and control humidity, air quality and air and water temperatures, all within a self-contained packaged air handling unit.

The HRD unit at Wolverton is controlled by a bespoke building management system (BMS), that monitors and controls the comfort levels within the pool hall and environmental performance of the whole system.

Wolverton's centre manager Matt Leeder commented: "I am pleased to report that the Calorex unit has been successfully maintaining ideal conditions within the pool hall since the centre opened last year, and we have been impressed with the level of customer service we have received from the Calorex team."

He added: "The system does exactly what it says on the tin and the ease of the 'set and forget' control of the heating and dehumidification is essential for the efficient operation of the leisure centre facility."

Exmouth Leisure Centre

A Calorex combined heat recovery and dehumidifier unit is maintaining perfect conditions for swimmers at the Exmouth Leisure Centre in Devon.

The Calorex HRD30 unit was installed in the pool room at the leisure centre last month, to replace an existing Calorex dehumidifier unit that had been successfully sustaining the air and water temperature since it was installed over 15 years previously.

"East Devon District Council specified the Calorex HRD unit over other air-

handling units because of the additional heat recovery it offers, including heat recovery to water," comments Mark Skelton of Exeter-based Integral UK, contractors for the project. "They had been very impressed with the previous Calorex unit and therefore wanted a direct replacement."



Mark adds: "The installation process ran smoothly and the council and pool operators are now enjoying the benefits of the upgraded unit."

Operated by LED Leisure Management Ltd, Exmouth Leisure Centre has two heated swimming pools – a 25m main pool and a learner pool, both are heated to around 30°C. Other facilities at the centre include a gym, squash courts and fitness studios.

Kelling Heath Holiday Park

A Calorex HRD15 heat pump dehumidifier was specified for the indoor pool project by air conditioning and refrigeration specialists A&S Cooling Services Ltd. The previous Calorex HRD had been there since 2000, giving nearly 15 years of trouble free service during that time.

"A Calorex HRD15 unit was selected as a like-for-like comparison of the old unit," explains Glen Steward, director at AS Cooling Services Ltd. "Calorex's technology has moved on since the old

unit was fitted, so the new unit is an up-to-date and more durable version.”



He added: “The project involved removing an old Calorex unit and retrofitting the new system in the plant room. The complex positioning of the existing unit on a first floor gantry lead to a few challenges when removing the unit and installing the new one, but it has since been working well and doing exactly what it says on the tin.”

“We are very happy with the new Calorex HRD15 and it has made a noticeable difference to the comfort of the pool area for our guests and helps to further reduce our energy use in the leisure centre,” comments Nicola Badley, environment and procurement officer at Kelling Heath Holiday Park.

Camberwell Pool

A Calorex heat recovery dehumidifier, HRD25, is helping slash energy bills as part of a fabulous restoration of an historic pool in London.

Originally built in 1891, the Camberwell Pool building, that is now Grade II listed, provided public baths and wash houses for

the local community. In the remodeled pool hall, dehumidification and space heating is handled by a Calorex HRD25 air handling unit and is contributing up to



20% of the energy needed to heat the pool.

Finchley Lido

A replacement Calorex HRD30 is maintaining ideal conditions at the historic Finchley Lido in Barnet, London.

The Calorex HRD unit was specified by Baker Associates of Bishops Stortford as a direct replacement for a similar unit that Calorex supplied about 20 years ago.

The previous Calorex HRD had been in there since 1995, giving nearly two decades of trouble free service during all that time.

To install the new unit the contractor, AC Preou, had to remove a section of the side wall of the lido building in order to get suitable access to the plant room on a mezzanine floor.

The old unit was removed and the new unit put in place immediately. The contractors worked within a restricted timescale to minimise the impact of the refurbishment.

“With terrific energy savings and reliability so great, we had no hesitation about installing another Calorex” said Danny Haley.

As well as the significant carbon emission reduction, cost savings are estimated to be up to £6k per month – giving payback on the investment in about three years.

Unlike most swimming pool air handling units the Calorex HRD will recover both the latent heat lost by the pool due to evaporation as well as the sensible energy in the pool hall air and route all of this energy back to either the pool water or pool hall air as required. As an additional benefit the HRD is able to reverse its heat recovery process, whilst maintaining heat recovery to the pool water, and therefore provide sensible pool hall air cooling when temperature set points are exceeded.

By converting latent energy into sensible heat through its unique thermodynamic circuitry the Calorex HRD will provide efficiencies of 300-350 per cent. Compared to traditional heat and vent systems, cost savings of over 60 per cent are not unheard of and corresponding CO₂ emissions can be dramatically reduced by up to 70 per cent.

Airflow is controlled by the units purpose programmed PLC software that keeps an optimum balance between fresh and re circulated air streams to satisfy occupancy, and dilution demands. The software has also been programmed to control the fans so that the pool hall is always under a slight negative pressure that ensures moist air cannot migrate to other rooms within the building or into the fabric of the pool hall.

