

calorex

VARIHEAT SYSTEMS



a low-cost energy reclaim
system for all indoor pools

calorex[®]

HEAT PUMPS & DEHUMIDIFIERS

calorex

The Indoor Pool Environment ~ don't waste it, save it

STRUCTURAL DAMAGE BY



CONDENSATION

An indoor swimming pool produces large quantities of water vapour which, unless removed, forms damaging condensation, putting your decor and structure at risk.

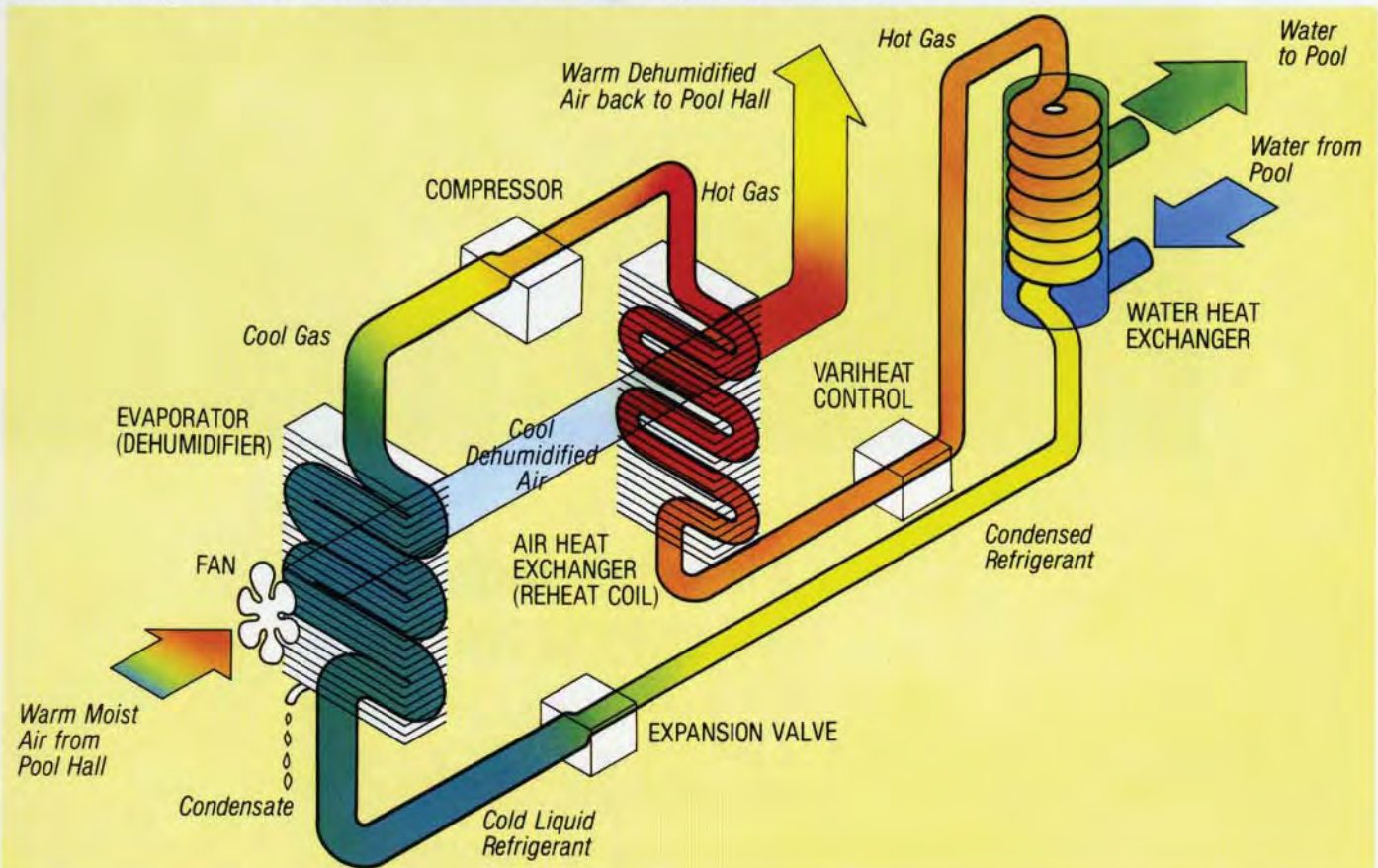
HIGH ENERGY COSTS

Conventional systems rely on ventilating an otherwise energy efficient building to remove this water vapour which is wasteful and uneconomic. Exhausting the warmth already inside the building means costly heating of the incoming air to the comfortable levels you require.

The Calorex Variheat System controls the humidity, reducing the need for high ventilation by removing the water vapour from the pool hall air, extracting the latent heat and recycling it to the pool water and air. It is a heat recovery system designed to save and re-use energy.

Calorex Variheat Solves The Condensation Problem

The major function of the Calorex Variheat equipment is to dehumidify the pool hall air. It does this by means of a vapour compression cycle similar to that employed in a conventional refrigerator. Warm, humid air evaporating from the pool surface is drawn across the EVAPORATOR which extracts the latent heat, and at the same time dehumidifies the air by cooling it below its dewpoint temperature. The extracted heat is then upgraded to a much higher temperature by the COMPRESSOR. A part of this reclaimed energy is transferred to restore the now cool dry air slightly above it's original temperature, before returning it to the pool hall. The majority of the reclaimed energy then passes through the VARIHEAT CONTROL, which automatically distributes the heat to the pool water, or to the pool hall air if the water temperature is satisfied.



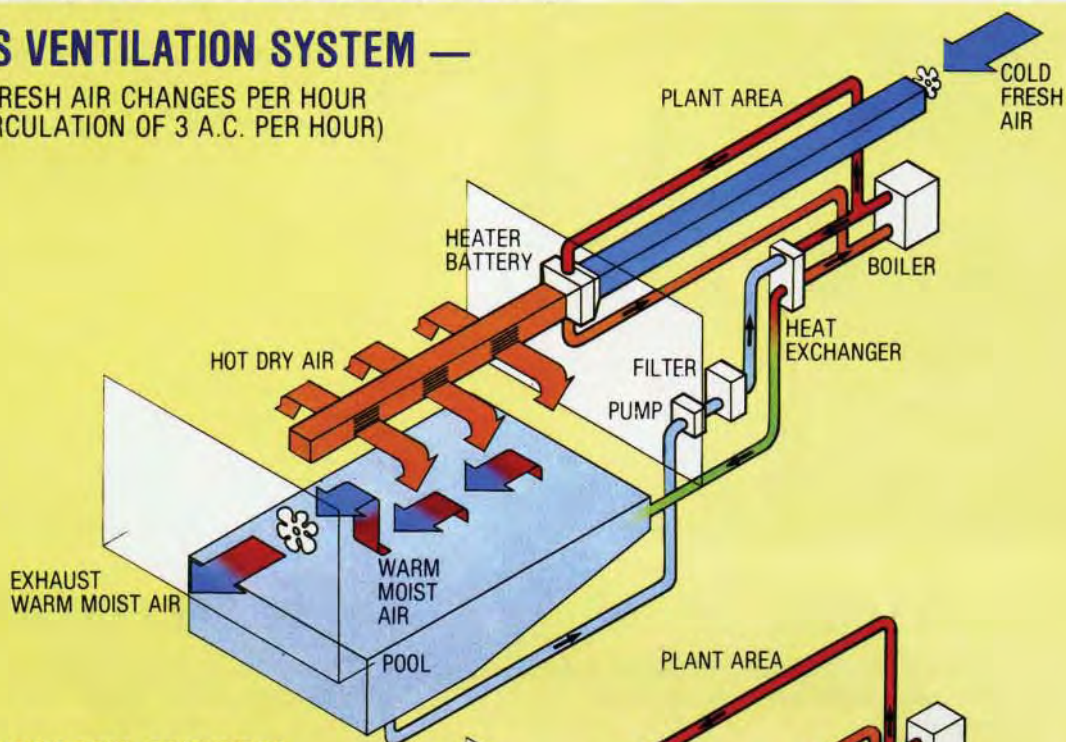
Here's How Calorex Saves Energy

Considerable energy savings are achieved using the Calorex Variheat System by:

1. Removing the need for large quantities of fresh air usually required to maintain air movement in the pool hall.
2. Minimising or eliminating fresh air input required to dehumidify the pool hall.
3. Providing the majority of water heating more efficiently than prime fuels.
4. Providing a valuable contribution to the space heating.

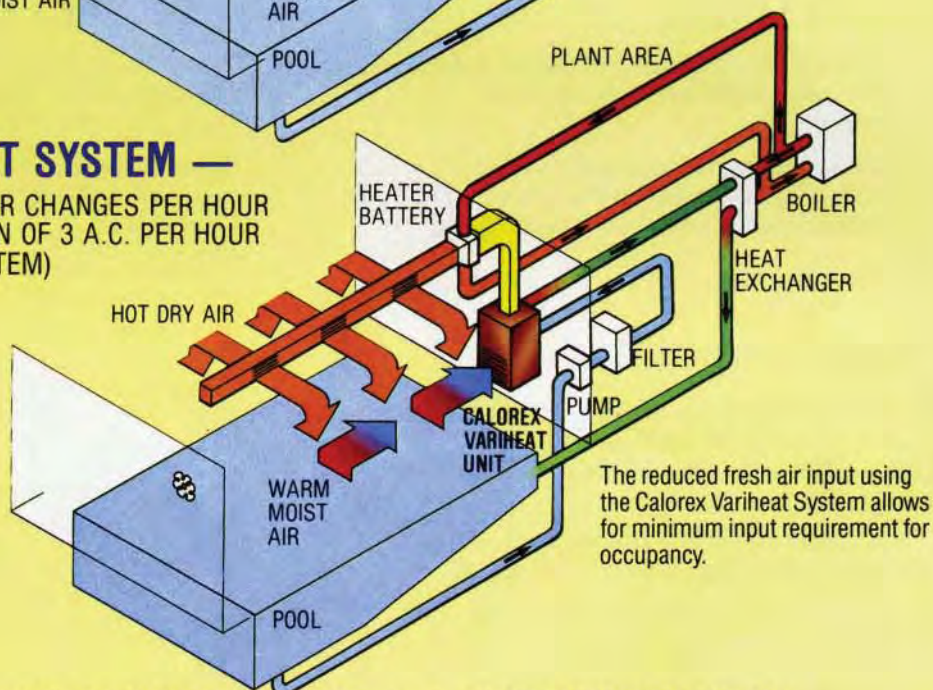
TOTAL LOSS VENTILATION SYSTEM —

MINIMUM OF 3 FRESH AIR CHANGES PER HOUR
(INTERNAL RECIRCULATION OF 3 A.C. PER HOUR)



CALOREX VARIHEAT SYSTEM —

AVERAGE OF 0.4 FRESH AIR CHANGES PER HOUR
(INTERNAL RECIRCULATION OF 3 A.C. PER HOUR
BY CALOREX VARIHEAT SYSTEM)



The reduced fresh air input using the Calorex Variheat System allows for minimum input requirement for occupancy.

TYPICAL PRIME ENERGY SAVINGS using the CALOREX VARIHEAT SYSTEM

Pool Size: 100m²

Pool Water: 26°C

Pool Air: 28°C and 60% RH

AIR HEATING — reduced air changes	= 200,000 kW hrs p.a.
AIR HEATING — nett heat input	= 20,000 kW hrs p.a.
WATER HEATING — nett heat input	= 60,000 kW hrs p.a.
TOTAL SAVINGS	= 280,000 kW hrs p.a.

Pool operating costs are thus dramatically reduced and pay-back periods on many installations can be less than one year.

ADDED SYSTEM ADVANTAGES: No visible equipment in the pool hall.

1. The VARIHEAT can be installed in an adjacent plant room.
2. Supply air ducting can be connected to the VARIHEAT to recirculate the air, promote uniform conditions throughout the enclosure, and provide a warm air curtain to the glazed areas. This ductwork can be concealed in the roof void or under the floor.
3. Space heating can be carried out by installing a heater battery, fed by a primary hot water circuit from the boiler, in the supply ducting. This method of air heating promotes even air temperatures and eliminates unsightly and hazardous radiators around the pool hall.



THE CALOREX RANGE

A complete range of Calorex Variheat units is available to suit all sizes, from the small domestic to the large municipal indoor pool.

The unique modular construction enables flexibility of sizing and installation of the system for any size of indoor pool to meet optimum energy and capital expenditure requirements.

THE CALOREX PRODUCT

1. Unique Variheat Control regulates heat recovery to water and air. Essential for the indoor pool complex with additional dehumidification duty from e.g. spas, steam room, showers etc.
2. Integral Humidistat and Water Thermostat Controls for ease of installation and automatic operation.
3. Cabinets are galvanised and plastic coated for protection in the pool hall environment.
4. Water heat exchangers are cupronickel and evaporators polyester coated aluminium to minimise corrosion.
5. The Variheat design offers air outlets at the top, bottom or rear of the unit for maximum ease of ducting installation.
6. The Variheat is also available with an RCU (Remote condensing unit) which will give greater flexibility of the air temperature in relation to the pool water offering a degree of cooling.
7. Compressors are high efficiency, heat pump rated.
8. The modular system allows for simple and flexible installation in either new or existing pools.
9. All components are approved and each machine is individually tested and performance data recorded before dispatch.

THE CALOREX EXPERIENCE

1. Calorex heat pumps have won industrial design awards, both in Europe and the USA and are used in many countries throughout the world.
2. Skilled engineers have applied years of technology and experience to the precision construction of each Calorex Unit.
3. The Heat Pumps division have a consulting team to ensure your scheme is designed and installed in the correct and most efficient manner. This 'technical quotation service' details the heating and dehumidification requirements together with projected annual savings compared to conventional installations.
4. Backed by a nationwide service network, we offer a comprehensive parts and labour warranty.
5. Calorex is part of a major group of companies with interests in construction, engineering, sports surfaces, marine equipment, optics and electronics.

HEAT PUMPS & DEHUMIDIFIERS

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**AIR/WATER VARIHEAT HEAT PUMPS FOR INDOOR POOLS
DEHUMIDIFICATION WITH HEAT RECOVERY TO WATER AND
AIR (METRIC SPECIFICATIONS) (50Hz MACHINES)**

MODEL:-	Units	550	800	1200	1400	1800	4000
DEHUMIDIFICATION DUTY	litres/hr	3-8	6-1	8-3	10-0	12-4	26-8
HEAT TO AIR							
VIA HEAT PUMP (MODE A):-	kW	1-6	2-3	3-0	1-5	2-5	8-0
VIA HEAT PUMP (MODE B):-	kW	3-0	3-5	5-2	5-0	8-5	20-0
HEAT TO WATER							
VIA HEAT PUMP (MODE A):-	kW	4-0	5-5	7-0	10-0	12-0	26-0
VIA HEAT PUMP (MODE B):-	kW	2-8	3-0	3-0	4-2	5-0	12-0
Flow Rate Pool Water max	L/min	100	100	120	35	35	95
Flow Rate Pool Water min	L/min	80	80	100	30	30	90
Pressure Drop @ Rated Flow max	M/hd	1-4	1-4	1-4	2-5	2-5	3-4
Pressure Drop @ Rated Flow min	M/hd	1-2	1-2	1-2	1-8	1-8	3-1
Water connections	inches	1½ BSPF	1½ BSPF	1½ BSPF	1½ BSPM	1½ BSPM	1½ BSPM
Condensate drain connections	inches	¾ domestic waste	¾ domestic waste	¾ domestic waste	¾ BSPM	¾ BSPM	1½ BSPM
ELECTRICAL							
TOTAL POWER CONSUMED (STD FAN)	kW	1-8	2-5	3-6	4-0	5-0	10-0
TOTAL POWER CONSUMED ('F' FAN)	kW	2-2	2-9	4-0	4-2	5-2	10-4
MAX RUNNING AMPS (STD FAN) 1 ph N:-	amps	12-5	19	23-2	N/A	N/A	N/A
MAX RUNNING AMPS ('F' FAN) 1 ph N:-	amps	13-9	20	25-72	N/A	N/A	N/A
MAX RUNNING AMPS (STD FAN) 3 ph N:-	amps	5-8	8-3	9-8	8-8	10-5	27-32
MAX RUNNING AMPS ('F' FAN) 3 ph N:-	amps	7-1	9-9	11	9	10-6	27-82
MAX SUPPLY FUSE STD 1 ph N:-	amps	15	30	35	N/A	N/A	N/A
MAX SUPPLY FUSE 'F' 1 ph N:-	amps	20	30	35	N/A	N/A	N/A
MAX SUPPLY FUSE STD 3 ph N:-	amps	10	13	15	15	16	40
MAX SUPPLY FUSE 'F' 3 ph N:-	amps	15	20	20	15	16	40
STARTING CURRENT STD MODEL 1ph	amps	42	76	100	N/A	N/A	N/A
STARTING CURRENT SOFT START (S) MODEL 1ph	amps	24	31	34	N/A	N/A	N/A
STARTING CURRENT STD MODEL 3ph	amps	30	42	48	45	76	167
STARTING CURRENT SOFT START (S) MODEL 3ph	amps	14	16	17	24	31	39
FAN							
AIR FLOW (anemometer @ air on, w et evaporator)	m³/hr	1800	2500	3000	3500	4300	9000
MAX EXTERNAL STATIC PRESSURE STD	mm Wg	5	6	6	4	4	8
MAX EXTERNAL STATIC PRESSURE 'F' MODEL	mm Wg	20	20	16	16	14	16
NOISE LEVEL @ 3M	dba	58	58	60	60	60	63
GENERAL DATA							
HERMETIC SYSTEM							
GAS CHARGE R407c	kg	1-81	2-04	2-5	6-8	7-25	14-5
DIMENSIONS :-							
Width (un-packed)	mm	660	660	810	980	980	1730
Depth (un-packed)	mm	660	660	660	700	700	1250
Height (un-packed)	mm	1313	1313	1313	1490	1490	1600
WEIGHT approx' (Un-packed):-	kg	120	130	170	210	230	49

NOTES

- (1) Performance data based on pool hall air @ 28°C, 60% RH, Water @ 26°C.
- (2) Operation Mode 'A'. Pool water temperature not satisfied.
Operation Mode 'B'. Pool water temperature satisfied.
- (3) Weight and Dimensions Nett.
- (4) Allow 500mm clearance to service panels
- (5) Min. Pool Hall air temperature 20°C
- (6) Pool water to have correct balance pH 7.4 ± 0.4. Free Chlorine 1.0 - 3.0 ppm.
- (7) Calorex reserve the right to change or modify models without prior notice.
- (8) R407c Global Warming Potential (GWP) 1700.

1mm WG = 9.8 Pa
1 m hd = 1.4 psi
1 l/hr = 2.2 lbs/hr