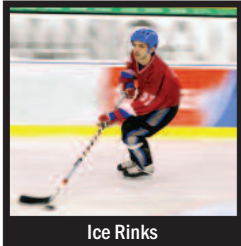


## LW SERIES

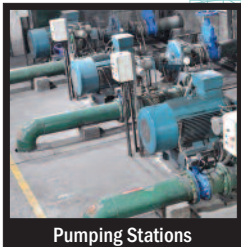
# Dehumidifiers for Wide Temperature Applications



Ice Rinks



Water Treatment Plants



Pumping Stations



Food Storage & Processing



Desert Aire's ExpertAire has product lines that are designed to operate in two different temperature ranges. The LW Series covers the widest range operating from 45 to 80°F (7 to 26°C). The LC and LV Series are for higher temperature applications such as special manufacturing facilities and pools. Please refer to the LC/LV brochure for details on these systems.

Manufacturing, storage, public works and indoor ice rinks are just a few of the many applications that our ExpertAire™ dehumidifiers effectively cover. ExpertAire™ is an enduring product line for Desert Aire that represents the culmination of our core expertise in dehumidification. The ability of these units to be applied to diverse applications combined with their flexibility to appropriately regulate the introduction of outdoor air to a facility makes them a true energy efficient workhorse that consistently performs time and again.

## FEATURES

Many applications need the removal of unwanted moisture. If unchecked, this moisture causes condensation on walls, windows and floors. This can create problems with a building's structural integrity and consequently endanger customers and employees. In manufacturing, a humid environment can also contribute to lowered productivity by damaging product or increasing cycle times.

An ExpertAire™ dehumidifier optimizes moisture removal by using a specially designed coil to maximize the system's latent capability, thus yielding 3 to 4 times the moisture removal capacity over a standard air conditioning system. Each system also includes a hot gas reheat coil that is sized for 100% rejection of the recovered energy. This coil allows the unit to continue to dehumidify without over-cooling the space.

ExpertAire™ models are fully protected with IEC starters, overloads and refrigerant switches. ExpertAire™ dehumidifiers feature scroll compressors for high efficiency and long life. Other components are also designed for longevity such as our cabinet which is manufactured from galvalume with a high impact, powder coat textured paint finish.

## DEHUMIDIFICATION DESIGN WITH DEFROST

The LW Series dehumidifiers combine numerous design features into a cost competitive system that removes the unwanted moisture problem in a wide range of entering air conditions. Desert Aire starts with an evaporator coil designed specifically for low ambient moisture removal and then adds appropriate refrigerant components to insure long operating life. Each LW System is equipped with an adjustable timer which will initiate the defrost cycle (if it is needed). The need to defrost is determined by monitoring the suction line temperature and activating the defrost when it drops below 32° F (-1° C). During the defrost cycle, the blower is disengaged and 100% of the system's heating capacity is diverted to the evaporator where it quickly thaws the coil. The defrost cycle is monitored and automatically terminates when suction line temperatures confirm that the evaporator has fully thawed. There is an additional safety timer which limits the total defrost time to 15 minutes. LW dehumidifiers generate increased air volumes to assist in a "blanketing effect" that provides the required air turns for the facility's design.

## CONTROL

When an outdoor condenser is not included, the system rejects all of the heat recovered during the dehumidification process back to the space, so the space must have the ability to handle this heat gain. A sensor is installed in the facility and utilized for control of the unit's compressor operation. As relative humidity increases past the setpoint, the dehumidifier's compressor is energized to remove unwanted moisture. Blowers run continuously (with the exception of the short defrost cycle) to eliminate false loads created by air stagnation. If the facility cannot, at times, accept the recovered heat, then an optional remote condenser must be installed outside to provide the full cooling capacity. In this mode, a thermostat is also installed in the facility. If the air temperature should exceed the desired set point, the controller will shift the dehumidifier from the reheat mode and reject all of the energy to the remote condenser, thereby providing sensible cooling to the space.

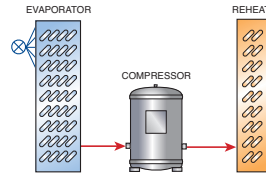
In a refrigerant based dehumidifier, the evaporator coil is cooled to below the dewpoint of the air, thereby condensing moisture on the coil. A typical dehumidifier for high ambient design utilizes a hot gas bypass feature to ensure the evaporator coil temperature never drops below 32° F (0° C), since below this point the condensing liquid will immediately freeze on the evaporator. In general, hot gas bypass is activated anytime the entering air drops below a 55° F (13° C) wet bulb temperature (e.g.: 60° F/60% RH) because at this condition the coil leaving air temperature will go below 32° F. In practical terms, as the load drops, the hot gas bypass feature increasingly reduces the performance capacity of the dehumidifier to the point where no moisture will be removed even though the compressor is running. The LW design includes a hot gas defrost system in lieu of using the typical hot gas bypass approach.

When combined, the Desert Aire evaporator coil design and hot gas defrost routine maximizes moisture removal, while protecting the system at low loads.

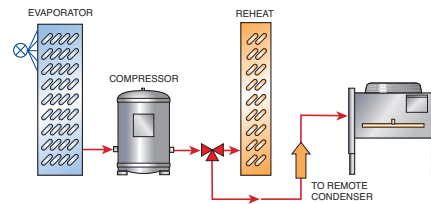
## REFRIGERATION CONFIGURATIONS

ExpertAire™ LW Series is available in one of the following two configurations.

**REHEAT ONLY**...This is the standard design that removes moisture from the air at the evaporator coil and reheats the dehumidified air before returning it to the space.



**REHEAT & REMOTE CONDENSER READY** ...This option allows the dehumidification process to continue when cooling is required in the zone being conditioned.



## SYSTEM RATINGS

To achieve proper unit selection, you must make your selection based on operating conditions and required moisture removal capacity. Consult with your Desert Aire sales representative to calculate your load and provide the performance of the appropriate size unit. If the entering air conditions require the dehumidifier to utilize the defrost cycles, the performance will reflect the lower moisture removal rate.

## Common APPLICATIONS

- **ICE RINK APPLICATIONS**

Applications such as ice arenas present unique challenges to a building's design as well as its HVAC system. These structures must maintain low ambient temperatures to insure consistent ice quality. Cold air by its nature does not hold much moisture. When a hockey game or skating event is occurring, moisture is released to the area from the participants and spectators. Problems such as fog, roof and wall condensation and unsatisfactory "soft" ice conditions are common during occupied times. The goal of the HVAC system for an ice arena is to keep the ambient air temperature low enough and maintain a dew point below that of the enclosures walls temperature. Refer to Desert Aire Application Note #13 for a detailed analysis of dehumidifier sizing.

- **WATER TREATMENT PLANT APPLICATIONS**

In the northern United States and Canada, raw water temperatures of treatment plants can approach 32° F (0° C). Therefore, the treatment facilities and pumping stations must continue to remove damaging moisture under low ambient conditions. The LW Series dehumidifier can continue to operate by using it's frost/defrost cycle to eliminate the moisture in the winter or summer. This provides an economical alternative, both from a capital cost and energy savings perspective, to chemical based dehumidifiers. Please refer to Desert Aire Application Note #12 for details on sizing the dehumidifier.

- **MANUFACTURING, FOOD STORAGE & PROCESSING**

Many food products can spoil under high humidity conditions when stored in an unconditioned space. The facilities themselves also can develop mold and mildew problems from the moisture released by the product. The LW Series dehumidifier is ideal for removing excess moisture under low temperature conditions. Refer to Desert Aire Application Note #11 for a detailed analysis of dehumidifier sizing.

## STANDARD EXPERTAIRE™ LW SERIES FEATURES

### SIZE CAPACITIES

- available in 3 to 15 tons
- single phase in 3 to 8 ton

### FILTERS

- Aluminum cleanable
- 4" MERV 8 filters

### EVAPORATION & REHEAT COILS

- R407c standard refrigerant
- efficient standard rifled tube, lanced fin coils
- die-formed, aluminum, extruded fins are damage resistant
- adequate coil separation avoids re-hydration

### DRAIN PAN

- stainless steel pan minimizes corrosion
- sloped design avoids hazardous puddling

### CABINET CONSTRUCTION

- horizontal unit panels constructed of sturdy 18-gauge galvalume steel
- removable side panels provide easy access to all serviceable elements
- panels coated with high-yield polyester, textured, fingerprint-resistant powdercoat paint
- durable paint meets:
  - 1000-hour salt spray test
  - 160 in-lb direct impact resistance
  - 1000-hour humidity resistance

### INSULATION

- closed cell foam insulation superior to fiberglass insulation – eliminates fiber release into air
- insulation meets:
  - ASTM mold, mildew, moisture resistance specifications
  - NFPA fire specifications
  - UL specifications

### CODE VENTILATION OPTIONS

- Ventilation outside air connections available
- Outside air damper option available
- Filtration of outside air available

### ADDITIONAL OPTIONS INCREASE FLEXIBILITY


- premium high-efficiency blower motors available to help achieve LEED points
- optional ElectroFin E-coating coil coating available for corrosive environments
- unit-mounted optional power disconnects (fused and non-fused)
- CM3540 microprocessor controller with building management connection options

## OPTIMIZING SOLUTIONS THROUGH SUPERIOR DEHUMIDIFICATION TECHNOLOGY

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 **WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)