



THE SMART SOLUTION FOR ENERGY EFFICIENCY  
FOR SCHOOLS

  
**CLIMATEMASTER**<sup>®</sup>  
WATER-SOURCE HEAT PUMP SYSTEMS

# THE CLIMATEMASTER ADVANTAGE – FOR SCHOOLS

## THE IDEAL SOLUTIONS FOR EDUCATIONAL FACILITIES

Geothermal heating and cooling systems, and the more traditional water loop heat pump systems that use a cooling tower and boiler, are intelligent choices for today's schools. They lower operating costs, and in many cases installation costs, while creating a quiet, comfortable learning environment. In addition, you get reliable, safe operation with the added benefit of individual room control.

## THE GEOTHERMAL ADVANTAGE

Geothermal systems take special advantage of the consistent underground temperature of 50°F to 70°F. Using a vertical or horizontal underground loop system, they exchange energy between the school and the earth as needed for heating, cooling, and hot water heating. They require no chiller or boiler – and less ductwork and complicated controls than a VAV system. The result of this streamlined, proven design is greater cost efficiencies on four vital levels:

- Lower installation, retrofitting and expansion costs.
- Superior energy efficiency for lower operating costs.
- Lower maintenance costs.
- Longer system and component life for the lowest life cycle costs.

## THE KEY TO LOWERING MAINTENANCE COSTS

Both ClimateMaster geothermal and water loop heat pump systems are designed to be easy and affordable to maintain. Should a unit need to be shut down for service, only that classroom is affected – not the entire school, as with other systems. For routine maintenance, individual heat pump units are easy to access without disrupting classes at all.

- No single point of failure of central equipment that can shut down the entire system if it stops operating.
- No chemical or other costs associated with the prevention of scaling and bacterial growth.
- No year-round tower operation (geothermal systems only).
- No boiler to maintain (geothermal systems only).
- Convenient standard parts availability.

## INTELLIGENT EFFICIENCY FOR GREATER SAVINGS

**WATER LOOP HEAT PUMPS »»** With no costly chiller equipment to maintain, ClimateMaster water loop heat pump systems reduce maintenance and personnel costs significantly. Year after year, season after season, they offer superior efficiency for less.

**GEOTHERMAL HEAT PUMP SYSTEMS »»** The U.S. Environmental Protection Agency ranks geothermal systems as the most cost-effective space conditioning systems available. Lower operating and maintenance costs together with the systems' long life give geothermal systems the lowest life cycle cost on the market.

## AFFORDABLE INSTALLATION AND RETROFITTING

ClimateMaster geothermal systems are the affordable choice for retrofitting because of the reduced space and duct work requirements. Geothermal system installations simply eliminate these costly needs:

- Large-scale complex duct work.
- Chillers.
- Boilers.
- Operating engineers.
- Complicated controls.
- Holes in exterior walls.
- Large mechanical rooms.

TRADITIONAL SYSTEM COMPARISONS	ANNUAL MAINTENANCE EXPENSE	ANNUAL OPERATING EXPENSE	TOTAL ANNUAL COST	INSTALLATION COST
FAN COIL, CHILLER/BOILER 4-PIPE	.14	1.40	1.54	\$12.00
VARIABLE AIR VOLUME	.14	.94	1.08	\$9.00
GEOTHERMAL HEAT PUMP	.07	.62	.69	\$10.00
WATER LOOP HEAT PUMP	.10	.94	1.04	\$8.00

PER SQUARE FOOT OF BUILDING SPACE

CLIMATEMASTER MEETS THE UNIQUE NEEDS OF TODAY'S SCHOOLS AND EDUCATIONAL FACILITIES – AND THEIR STUDENTS. PERFECT FOR MULTI- OR SINGLE STORY SCHOOL BUILDINGS WITH LARGE COMMON AREAS AND/OR HALLWAYS, AND BUILDINGS WITH REPEATING FLOOR PLANS.



#### SAFE AND ENVIRONMENTALLY FRIENDLY

ClimateMaster water loop heat pump systems operate without flames or combustible gas (geothermal only) which can release carbon dioxide or other gasses into the building's central duct system. This is particularly important in earthquake-prone regions. They also use no ammonia or ozone-damaging CFC refrigerants. For this reason – and because of their superior energy efficiency – geothermal systems are endorsed by the U.S. Department of Energy and the Environmental Protection Agency.

Schools are also faced with the issue of indoor air quality standards that require fresh air to be introduced into classrooms at a substantial rate. ClimateMaster systems offer solutions that economically condition 100% of the fresh air as a part of the heating and cooling system.

(After year 2010 heating and air-conditioning equipment manufacturers will no longer have the option of producing equipment without the new EarthPure™ refrigerant. At this moment, ClimateMaster offers products designed specifically for optimized performance using R410A EarthPure™ refrigerant.)

#### QUIET COMFORT - INDIVIDUAL CONTROL

ClimateMaster systems are unsurpassed in fostering a quiet, comfortable learning environment. Simply put, they are among the quietest systems ever designed, operating smoothly and efficiently. In addition, the systems offer the ultimate in individual control with the ability to heat and cool separate classrooms simultaneously upon demand. This unique feature gives teachers the freedom to meet the comfort needs of their own classrooms. The units also provide superior dehumidification as they cool for added comfort – especially beneficial in southern states.

#### LONGEST LIFE ON THE MARKET

Because ClimateMaster geothermal heat pump units are installed indoors and the loop systems are installed underground, they are not exposed to theft, vandalism or environmental conditions that can shorten the life of other systems. In addition, the heat-fused, high-density polyethylene pipe used underground is warranted for 50 years. No other heating and cooling system provides a more attractive life cycle cost.

#### TRUST THE EXPERTS AT CLIMATEMASTER

Lower start-up and operating costs. Quiet comfort and control. One smart solution does it all. ClimateMaster. The intelligent choice for energy efficiency in schools.

## LEADING THE WAY IN STATE-OF-THE-ART SYSTEMS

- GEOTHERMAL SYSTEMS ABSORB HEAT FROM THE EARTH IN WINTER AND EXPEL HEAT TO THE EARTH IN SUMMER FOR HEATING AND COOLING, AND CAN EVEN BE SET UP TO PROVIDE HOT WATER. WEATHER EXTREMES DO NOT AFFECT THESE SYSTEMS.
- WATER LOOP SYSTEMS USE A SINGLE- OR DOUBLE-PIPE LOOP AND CONTROL TEMPERATURE DURING WEATHER EXTREMES WITH COOLING TOWERS AND BOILERS.



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