Cannon Design Products Group 2011 GreenDot Awards Submission

eVap 1000

1. Background and contact information about your business, organization or company…

Cannon Design is an Ideas Based Practice, ranked among the leading international firms in planning and design for healthcare, research, education, corporate commercial, sports and government clients. At present, the firm employs a staff of over 1,000, delivering services in 16 offices throughout North America, as well as abroad in Shanghai, China, and Mumbai, India.

Cannon Design's Products Group develops sustainable technologies that enhance high-performance buildings. In identifying and designing devices to meet client needs, Cannon Design creates new technologies that function better, require fewer resources, use energy more efficiently, reduce liability and help clients streamline their work process to achieve their goals. Cannon Design has tested the eVap 1000 under lab conditions and the device is currently being used by premier research facilities across the country including Oak Ridge National Laboratories in Tennessee and Caltech University in California.

2. Detailed explanation of the entry to include
~ What the entry is and its intended use.
~ How the entry is manufactured and delivered to consumers.
~ How the entry exhibits excellence in sustainability and environmental responsibility.

The eVap 1000 is an environmentally sound, inexpensive, simple, safe and flexible device that has proven both to be extremely popular among research laboratories nationwide and to conserve millions of gallons of water per year. The device responds to the issue laboratories face as they need to constantly cool the condensers and other heat producing pieces of equipment they house. The previous conventional approach to cooling had been the direction of a steady flow of cold tap water from the laboratory faucet to the object to be cooled using simple rubber tubing, and the subsequent discharge of the used fluid down the drain.

This method (used by universities, R&D organizations and government research agencies worldwide) has two major drawbacks. First, the system wastes a massive amount of potable fresh water. If an experiment draws one gallon of water every two minutes, that same experiment will consume 720 gallons over the course of a day or 262,800 gallons per year – enough to fill an entire city water tower. Multiplying this sum by the number of experiments conducted in laboratories worldwide yields a truly staggering water-consumption figure. A second problem associated with this cooling method is the substantial property damage that results from flooding if fluctuations in water pressure cause the rubber tubing to detach from the faucet when unsupervised during off hours.

The eVap 1000 offers a solution that eliminates these problems as it serves as an interface between the high pressure cooling system and the lower-pressure water required for laboratory applications. Cold water from the building's chilled-water system enters the unit through high-pressure hoses of sufficient strength to contain the pressurized water. In a separate closed loop, about three liters of water at a much lower pressure circulate continuously from the heat-exchanging unit through rubber tubing into the laboratory for use in experiment or equipment cooling. The unit's "plate and frame" design uses metal plates to cool the laboratory water, transferring heat from this water via the plates into the building's chilled-water supply. The two volumes of water remain completely separate.

It's also a simple solution in that most research buildings are already cooled by a system of pipes filled with chilled water supplied by a centralized chiller system. Standard laboratory rubber tubing cannot handle this highly pressurized water source, but the eVap 1000 unit safely harnesses the cooling power of the highly efficient building system for laboratory use in a different way.

The eVap 1000 displays excellence in environmental sustainability on a number of levels. First, it is proven to conserve millions of gallons of water per year while preventing costly flooding of laboratories, damage to critical equipment and experiments. The device consumes as little as 1/10 of the total system electricity required by similarly-packaged chiller units. The device is also portable and thus one unit can service multiple lab stations, eliminating the need to purchase multiple devices. Equally important to a sustainable future, eVap 1000 diverts laboratory waste from municipal waste water treatment facilities, reducing energy demand and improving the environment.

eVap1000

CANNON DESIGN'S SUSTAINABLE LABORATORY HEAT EXCHANGER

eVap 1000/1100

In addition to creating high-performance buildings, Cannon Design's Products Group also develops sustainable technologies that enhance high-performance buildings. In identifying and designing devices to meet client needs, Cannon Design creates new technologies that function better, require fewer resources, use energy more efficiently, reduce liability, and help clients streamline their work process to achieve their goals.

Cannon Design's revolutionary eVap 1000* is a prime example of this commitment to meeting client needs through innovative sustainable technologies.

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eVap1000

ONE UNIT

Provides up to 3 tons of cooling (36,000 btu/hr).

Saves over 250,000 gallons of fresh water every year as compared to once through water cooling.

Uses less than 1/10th the electrical power of standard compressorized cooling units.

Is small, portable, quiet, light-weight and can mount inside the fume hood, on a benchtop or below a counter.

Is less expensive than compressorized chiller units.

Does not add heat, noises or vibration to the laboratory environment.

Prevents flooding of laboratories, lab loop uses less than one liter of water.

Uses standard 110V power and can mount to lab rack, wall or benchtop.

Requires no special tools for installation and can be set up in minutes.

Eliminates hoses or tubing running to equipment from sinks across counter tops, or from pumps in buckets of ice.

SPECIFICATIONS

eVap 1000 and eVap 1100 Coolant: Building Chilled Water or Process Water
Operating Temperature Range: 50° to 180° F (10° to 71°C)
Dimensions: 9"w x 6"d x 9"h (23 cm x 15 cm x 23 cm)
Hose Connections: Lab Water: 3/8" (9.5 mm) and Building Water: 1/2" (12.7 mm)

	eVap 1000	eVap 1100
Nominal Pump Capacity Gpm (lpm)	0.5 (1.89)	3.0 (11.40)
Cooling Capacity at 20°F dT, btu/hr (watts)	5000 (1464)	30000 (8786)
Building Water Flow Rate at 20°F dT, gpm (Lpm)	1.0 (3.79)	6.0 (22.80)
Max. Pressure Shutoff Head, ft of H2O, (bar)	5 (0.15)	10 (0.30)
Shipping Weight, lbs (kg)	13 (5.9)	13.5 (6.1)
Speed	Infinitely Variable	Infinitely Variable
Electrical, Maximum Power Consumption	110 V/1 Ph, 12 watts	110 V/1 Ph, 26 watts
Price	$2,600	$2,750

The eVap 1100 has a larger flow and cooling capacity.

Both units are constructed from lead free and corrosion resistant materials including brass, copper and 316 Stainless Steel.

Both units are portable and come with the standard ability to be bench mounted, wall mounted, or mounted to fume hood lab racks to minimize space requirements.

Please contact Cannon Design Products Group for further information on additional products like automatic temperature control devices or current pricing for the following accessories to the eVap cooling system:

- Quick Connect Fitting
- Flow Meter
- Fill Funnel
- Stainless Steel Flexible Tubing
- Flexible Tubing

FOR CUSTOM SIZES, ORDERING, OR MORE INFORMATION

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