

Green Cooling Solutions for Your Showers and Instruments



**FastCoolTM Passive Cooling
Technology**



FASSTCOOL™

PASSIVE COOLED
EMERGENCY TANK
SHOWERS



Patented

Shower

Suitable Installation Area	Both Hazardous and Non-Hazardous areas
Water storage capacity	1500 liters
Dimensions	1320(Width) x 1320 (Depth) x 4100 (Height)
Material of construction	Tank: Stainless steel/GRP insulated Fittings: Stainless steel Support Frame: Galvanized Steel/ Stainless Steel
Insulation	50 mm insulation to provide high thermal insulation
Supply pressure	0.5-10 bar
Flow rate	Shower: minimum 76 liter/min Eye/facewash unit: 12 liter/min
Electrical supply	Not applicable

Passive cooler

Ambient temperature	60°C (maximum)
Water temperature	Within ANSI Z358.1 limits
Cooling system	Equipped with FastCool™ passive cooling technology. Internal and external heat exchangers are built with corrosion resistant materials to provide long term durability. Fully sealed and leak tight loop.
Material of construction	External Heat Exchanger: Copper tubes/ Aluminum fins Plumbing: Copper/Stainless Steel



Zero

Power Use

Completely green. Does not require any power to operate



Zero

Maintenance

No moving parts and robust design makes it maintenance free.



Zero

Operation Cost

Unlike chillers, this standalone system does not require any operator intervention.

We believe in

NO CO2

Electric chillers require energy to offset the heat gain through your plant's large piping network. However, cooling is absolutely free, and with our green FastCool™ system. With the help of this technology, you can reduce the carbon footprint of your plant and maintain a safe workplace for your employees. Also, the system has no moving parts and hence is truly maintenance-free. The self-cleaning design of the external heat exchanger fins facilitates the deflection of sand and dirt particles.



Hot Water in Emergency Showers

The first few seconds after corrosive chemical exposure are critical and a slight delay in decontamination may cause serious injury. Emergency showers provide immediate decontamination and act as the first line of defense and are critical in saving lives. They must be located within 10 seconds reach.

Showers are unusable due to high water temperatures

Shower water temperature in the Middle-East can reach as high as 55C to 60C during peak summer. These high temperatures cause scalding and aggravate the chemical reactions. Thus, the emergency showers become unusable during the 4 to 6 months of the year, causing a grave safety concern. ANSI Z358.1 recommends a safe water temperature limit between 16C and 38C.

Our Solution

Smith Applied Solutions has embraced sustainable innovation and design in creating energy-efficient cooling showers that offer savings on energy bills without compromising on performance and safety.

We offer a variety of active, passive and hybrid cooling safety showers for hazardous and non-hazardous areas.

Our Emergency Response Equipment

1. Passive Cooled Emergency Tank Showers
2. Emergency Safety Showers With Chiller
3. Emergency Safety Showers With Atex Certified Chillers
4. Temperature Controlled Emergency Safety Showers
5. Emergency Eye/Face Wash Equipment
6. Mobile Emergency Safety Showers

FastCool™ Emergency Tank Shower

" FastCool™ system uses a combination of heat transfer augmentation techniques to enhance this heat transfer and achieve very fast cooling."

FastCool™ passive cooling solution developed by Smith Applied Solutions eliminates the use of expensive chillers for emergency showers. It provides a green, maintenance-free, and cost-effective solution to keep the water in the shower water temperature within ANSI limits.

FastCool™ technology uses a patent-pending passive cooling technology powered by diurnal temperature variation to cool the water in the tank.

No form of power is needed for the cooling. The device utilizes a combination of heat transfer augmentation techniques to achieve very fast cooling effects. Thus, FastCool™ system achieves a higher cooling capacity than that of a 3 kW electric chiller typically used in tank showers. Commissioning time of the shower after each use is thus extremely short and the shower will be ready for use within the same shift of the next shift. A regular passive cooling system will take a few days for such recommissioning.

We subjected the system to extensive testing for two years in the UAE to ensure that the results are consistent. (See the test report)

Working Principle

FastCool™ system utilizes the diurnal temperature difference to cool the water in the tank. Although daytime temperature in the hot climates may reach as high as 55C, the nighttime temperature is usually between 28-34C. The safe water temperature in the shower is anything below 38C. Thus an efficient cooling system is required to keep the water within this limit.

Working Principle and System Details

FastCool™ system consists of a well-insulated tank to store the water. An internal heat exchanger located inside the water is connected to an external heat exchanger using a diode system. This connection only allows the heat to flow from the internal heat exchanger to the external heat exchanger and not the vice versa. As soon as the ambient temperature drops below the tank water temperature, cooling process starts automatically. The internal tank absorbs the heat from water and expels it to the ambient via the external heat exchanger.

When the ambient temperature rises above the water temperature during the daytime, the heat transfer stops due to diode nature of the system. Thermal insulation ensures that heat gain through the tank walls is negligible. Thus, the system can work in the highest recorded temperature environments.

Unique Enhancement Techniques

This heat exchange system is completely sealed and stand alone. The system uses natural convection to dispel heat from the system. However, usually such natural convection is extremely slow process and it takes a few days before the hot incoming water cools to a safe temperature limit. FastCool™ system uses a combination of heat transfer augmentation techniques to enhance this heat transfer and achieve very fast cooling. The cooling capacity surpasses that of a traditional 3 kW electric chiller especially during the commissioning time. Thus, FastCool™ system can achieve similar commissioning time as that of electric chillers and becomes ready for reuse within the same or the next shift.



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