FREQUENTLY ASKED QUESTIONS

ZEC 1200: Emergency shower

Powered by: FastCool™ Passive Cooling Technology

Question: At what temperature will the water be maintained in the shower?

Answer: The FastCool™ system cools the tank water during nighttime. It will maintain the water close to the average night temperature. Our units installed in the Middle-East maintain water temperature in the range of 28-34˚C during summer. These temperatures are well within the safe limit for safety shower use as per the international standards (ANSI Z358.1).

Question: How long does it take to cool the water after it has been used?

Answer: One of the major advantages of FastCool™ technology is short commissioning time. FastCool™ shower is usually ready for use within the same or next shift. Commissioning time, however, depends upon incoming water temperature and the ambient temperature variation.

Question: What are the advantages of the FastCool™ shower system?

Answer: First and foremost, the advantage of a FastCool™ shower system is that it is a green solution and reduces the carbon footprint of your plant. Following are the key benefits:

- No power requirement and hence zero operating cost
- Cooling as fast as an electric chiller, despite being a passive cooler
- A highly reliable system as there are no moving parts
- No operator supervision needed
- Plug and play installation ensures minimal installation cost
- Built to last
- Suitable for both hazardous and safe area locations

Question: What is the cooling capacity of the system? What cooling capacity is needed to maintain the water temperature within safe limits?

Answer: There are two cooling stages for the shower: 1) Cooling hot incoming water during the commissioning to bring down the temperature within safe limits as soon as possible, and 2) To maintain the water temperature within safe limits when it is already cool. We need about 2-3 kW of cooling capacity for the initial cooling of water. Since the system is highly insulated, heat gain during the day-time is minimal and hence the cooling capacity to maintain the water at that temperature is much lower.

The cooling capacity of the passive cooling system is higher when the temperature difference, DT, between the water and ambient is higher. This fact works to our cooler's advantage. Initially, when the incoming water is hot, this DT and hence the cooling capacity is very high. As the water cools down, the DT and hence the capacity also reduces. The typical initial cooling capacity of the FastCool™ system is about 4 kW.

Question: When do we need an electric chiller?

Answer: FastCool™ passive cooler can meet the cooling requirements of the safety shower without the need for any electric chiller. The main advantage of an electric chiller is that water temperature can be set to a much lower temperature. However, a much lower temperature water does not make the emergency shower any safer if you are already within safe temperature limits. passive cooler alone can maintain the water temperature well within this safe use limits.

Question: What is the safe water temperature limit for safety showers?

Answer: American National Standards Institute standard (ANSI/ISEA Z358.1) considers any temperature between 60F (16˚C) and 100F (38˚C) to be safe.

Question: Will there be any bacterial growth in the stagnant water tank?

Answer: The FastCool™ uses non-hazardous legionella kits to comply with the water quality.

Question: Does the FastCool™ cooler affect the water quality?

Answer: The FastCool™ technology uses materials which are safe for the shower and even drinking purposes. Thus, it does not affect water quality.

Question: What is FastCool™ technology?

Answer: The FastCool™ passive cooling technology uses a combination of heat transfer augmentation techniques to ensure that the natural convection delivers fast cooling.

Question: Does the shower cooler require any regular maintenance?

Answer: No. The FastCool™ cooling technology does not have any moving components and does not require any periodic maintenance.

Question: What is the design life of the cooling system?

Answer: The design life of the system is more than 25 years.

Question: The daytime temperature in our region gets hotter than 50 ˚C. Is the FastCool™ cooling system applicable to such an environment?

Answer: The FastCool™ system is tested to work with 55˚C ambient temperature.