

 **Therm-Omega-Tech, Inc.**

***Environmental &
Safety Products***



**The Most Advanced, Reliable and Compact Self Contained
Valves Available for Temperature Control, Freeze Protection,
Steam Tracing and Conservation of Energy**

www.ThermOmegaTech.com



Protecting the Safety of Employees

Safety Showers

The Occupational Safety & Health Administration (OSHA) issues many Regulations (standards) for providing a safe work environment in the industrial setting. One of those regulations is 29 CFR 1910.151(c) which states:

Where eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

Therm-Omega-Tech has made available to its customers the Speakman Safety Shower, Eye/face wash and combination Shower & Eye/face wash. The shower is provided with painted galvanized steel stanchion, vertical overhead supply, Impeller Action deluge stainless steel showerhead with a 1" stay-open ball valve operated by a stainless steel pull rod.

Eye/face wash features a stainless steel bowl, dual spray heads with automatic flow controls and flip top dust covers.

All safety showers are provided with Therm-Omega-Tech Freeze and Scald valves (see below). For colder environments, combination safety shower and eye/face wash units are available with electric heat trace cable completely insulated and jacketed. Electrical classification of these units is Class 1, Division 2.



Optimum Performance

Keeping your safety shower working at optimum performance is important. Cold winter temperatures can make this especially difficult. Water can freeze in supply lines, clogging the system and shutting off flow. Because water expands as it freezes, internal pressure in the line can increase enough to break steel pipes and their associated valves and fittings. The result can be costly replacement parts, increased labor costs, and a shower that's out of commission while it's being repaired.

There are a number of steps you can take to prevent cold weather from interfering with safety shower performance. Many are relatively simple to implement and can be readily put in place before cold weather begins.

Keeping Your Safety Shower Safe

Two basic techniques are used to keep safety showers from freezing: tracing (electric or steam) and bleed/drain. In electrical tracing, an electrical heating cable is fastened to the underside of the pipe, beneath the insulation.

The heat generated by the cable offsets the heat loss of the pipe so the pipe and water it contains are kept above freezing. Steam tracing replaces the electric cable with small-diameter tubing connected to a steam supply. Both electric and steam supply can be interrupted, leaving your shower unprotected.



The second method, the bleed/drain technique, relies on self-actuated valves installed just prior to the shut-off valve for the safety shower and eye/face wash. These valves operate by draining or bleeding water as the temperature approaches freezing, allowing the warmer supply water to take its place.

The Therm-Omega-Tech **HAT/FP** and **IC/FP** valves utilize a thermal material that expands and contracts with temperature changes. When this thermal material is exposed to water below 40°F it begins to contract and gradually opens the valve. At 35°F the valve is fully opened. As the cold water is replaced with the warmer supply water, the valve starts to close. At 40°F the valve is once again fully closed. Only the amount of water needed to maintain temperatures above 40°F will be drained.

Therm-Omega-Tech's freeze valves are a very economical solution in that they are inexpensive, easy to install and require no outside source of power to operate. They can also be used as an economical backup to tracing systems.

Protecting Personnel From Scalding

There are several factors that might cause the water in a safety shower and/or eye/face wash to exceed the allowable safe limit of 100°F. Solar radiation can elevate the water temperature in outdoor units to where it is high enough to cause third degree burns. If steam or electric tracing is installed, excessive heat output can also heat water in the pipe to dangerously high temperature conditions from process, steam or condensate lines.

Here, again the installation of self-actuated valves can prevent problems from occurring. Therm-Omega-Tech's **HAT/SP & IC/SP** self actuated valves can prevent problems from occurring. Scald protection valves operate like valves used for freeze prevention. Instead of draining the system of cold water when the temperature nears freezing, however, these valves open gradually as water temperature rises above 95°F, reaching full flow at 105°F or above. As a result, hot water is purged from the system and replaced by cooler water in the supply line.



Safe and Comfortable Water Temperature Every Time

It is not enough to insure that the water in a safety shower and/or eye/face wash doesn't freeze or get too hot. A continuous supply of safe and comfortable temperature water need be provided. ANSI Standard Z358.1 (ANSI standard for Eyewash and Shower Equipment) requires that TEPID FLUSHING FLUID be delivered to the safety shower. They define tepid as moderately warm; lukewarm. In appendix B6 of the 2004 update of this standard ANSI states:

Recent information indicates that a temperature of 60°F is suitable for the lower parameter for tepid flushing fluid without causing hypothermia to the equipment user.



Inside the Therm-O-Mix® Station

The **Therm-O-Mix® Station** and **Therm-O-Mix® Station/WWM** tempered water supply work simply, economically and reliably. The **Therm-O-Mix® Station** uses a facility's own supply of steam to indirectly heat incoming cold water via a plate-type heat exchanger. The heated water is then mixed with the requisite amount of cold water until it reaches a temperature of 85°F (29°C) -not warm enough to open skin pores and not cold enough to deter usage.

No other source of energy is required to either heat the water or operate the unit. Steam is only used when the shower/eyewash is activated making it an on demand system. They can be easily installed on existing showers where steam is available.

Where steam is not available but a source of hot water is, the **Therm-O-Mix® Station/WWM**, will safely and effectively blend the appropriate amount of hot and cold water to provide 85°F water to the shower.

With its triple redundant safety controls it insures that the user will not be exposed to excessive temperatures and should the hot water source be lost, the valve automatically opens up the cold side to provide continual flow to the shower.

For additional information on these tempered water systems please refer to the **Therm-O-Mix® Station** brochure and data sheet.



PAC Tubing: Personal Air-Conditioner



Coanda Fans are the heart of the **Personal Air Condition (P.A.C.) Tubing**. This Coanda tubing can be used in any number of ways where increased air flow or cooling is needed. When worn on the body, they form a unique cooling system.

In operation, clean dry compressed air is expelled through hundreds of tiny pressure drop points along the **P.A.C. Tubing**, which acts as a self-balancing distribution system. The Coanda Effect causes an air flow amplification, resulting in increased air movement. The result is a small drop in temperature, and the evaporation and purging of hot, sweaty vapors from the user's garment. Body cooling is achieved as perspiration evaporates. If worn under a shirt or jacket, moist air leaves through the sleeves and neck, preventing the garment from ballooning. When worn under a chemical suit, purge valves allow the moist air to escape.

A miniature pressure regulating valve supplied with the **P.A.C. Tubing** is used to easily adjust the comfort level to suit individual needs. Lightweight air feed lines, connections and controls allow freedom of movement without dragging or tugging at the user.

Point of use regulating valve, balanced distribution and built-in flow control ensure that a minimum of air is needed and that multiple users can be supplied from a single source.

Safety Advantages

- **Keeps User Cool, Dry and Comfortable:** Excessive heat drains energy from the body causing impaired judgement, sluggish reflexes and sometimes blurred vision
- **Easy To Use:** Put the **P.A.C. Tubing** on, snap in the air supply quick-connect and turn on the air supply. Adjust the control valve to achieve the comfort level you desire and go to work. Cooling begins immediately.
- **Virtually Silent Operation:** Unlike noisy vortex coolers, **P.A.C. Tubing** uses low pressure air to generate cooling air flow, for quiet operation.
- **No Moving Parts To Fail:** The Coanda system is an air operated flow multiplication device that has no moving parts.
- **Quick Connect/Disconnect:** Users can quickly connect or disconnect at any time through the use convenient, quick coupling connectors.
- **Safe:** Lightweight air feed lines, connections and controls allow freedom of movement around the operating room without dragging or tugging at the user. Also workers can quickly disconnect at any time through use of convenient connectors.



Belt Mounted Regulator

DRAIN TEMPERING and PLUMBING

Many, if not all, municipalities have specified maximum temperature limits at which waste water can be sent to drain. Somewhere between 120°F to 140°F or usual maximum temperatures allowed. Please consult your local authority. Some of the applications where one might need to temper water are listed below.

BOILER BLOWDOWN

It is necessary to drain water on a regular basis from a point in the boiler where solids might collect to protect the boilers from scaling or corrosion as a result of these solids. This drain water will need to be tempered, by adding cold water, prior to sending to drain.

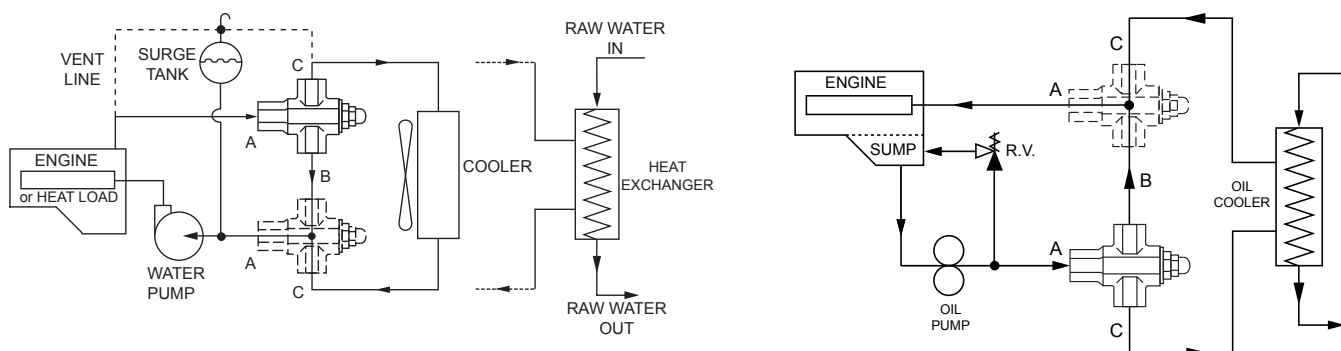
STEAM CONDENSATE

Though condensate is often recycled, there are many times it is sent directly to drain. Most times it will be necessary to temper this water. Steam is one of the most widely used sources of energy for heating, running turbines, etc. Wherever there is steam there is condensate.

HOT WATER

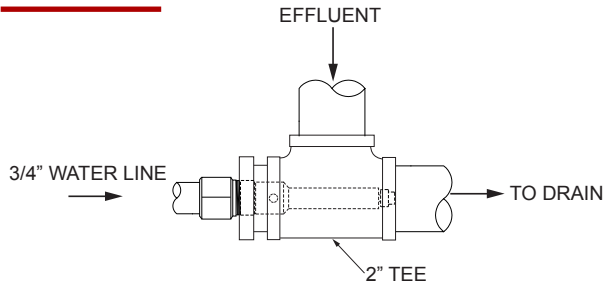
Water at elevated temperatures is used for numerous purposes. Some obvious uses are dishwashing, laundry, showers, etc. This water generally goes directly to drain or to a sump to then be pumped to drain. Hospitals, hotels or any commercial building with a kitchen or laundry are facilities that are most likely to need control of draining fluids. As with all Therm-Omega-Tech valves, the drain tempering valves are self operating. These valves utilize our Thermoloid actuators. Compared to other solutions on the market the Therm-Omega-Tech valves are extremely inexpensive solutions.

SAMPLE MIXING/DIVERTING APPLICATIONS

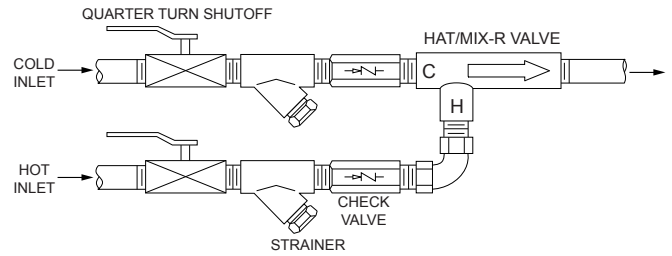


SAMPLE APPLICATIONS

DTV



HAT/MIX-R



The **DTV** valve provides a convenient, economical, and easy to use method of tempering hot effluent flows. Since the **DTV** is open only when the effluent exceeds the specified setpoint temperature, it also conserves water by automatically turning off cold water when not needed. The hot effluent to be tempered is connected to the drain/sewer line using a suitably sized tee fitting and piping sized to handle the effluent flow rates. The hot effluent passes over the thermal actuator of the **DTV** valve and this actuator controls the cold water inlet port. If the hot effluent is above the specified setpoint, the **DTV** opens the cold water inlet port to allow injection of cold water. As the hot effluent cools, the **DTV** valve automatically modulates to reduce the cold water inlet flow.

On the **HAT/MIX-R** valve, the hot fluid connects to the pass through connection on the side. This connection is never regulated so it always remains open regardless of temperature or valve position.



The hot fluid flow then passes over the thermal actuator which controls the cold fluid inlet port for tempering. If the hot liquid temperature is above the valve setpoint, the cold fluid port is open. As the hot liquid cools, the valve automatically modulates to reduce the cold fluid inlet flow. If the hot fluid is below the specified temperature, the cold fluid inlet port is closed, since no additional cooling is required. The **HAT/MIX-R** is most often used to control condensate discharge from steam traps, condensate return headers, boiler blowdown drain lines and for process discharge tempering.

The **M/D** (Mixing/Diverting) valve can also be used for higher flow drain tempering applications. These valves are available in sizes up to 2" with C_v ratings up to 18. When ordering M/D valves for drain tempering, this must be clearly specified.



Therm-Omega-Tech, Inc. is an Industry Expert and Leading Manufacturer of Custom Thermostatic Valves, Actuators and Controls serving domestic and international markets for over 25 years.



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Your local representative

