



GEM Venturi steam traps in Clean steam systems

The Topaz trap has been supplied to a number of pharmaceutical companies including GlaxoSmithKline for use on sterile systems. The Topaz trap is designed to be both a "clean" steam trap and to be suitable for use in a "clean" room, this is achieved by the quality of the internal finish and the radius's steps within the orifice and venturi which provides no area for "bug entrapment" (this is the potential for microscopic organisms to collect and then breed within the process pipework.)

Clean systems within the Pharmaceutical industry are controlled by the FDA (Food & Drug Administration of America) who lay down a number of regulations with regard to the clean system. The FDA do not approve any specific piece of process equipment, they provide the regulations to which the equipment must conform.

"Clean" rooms come in a number of grades, from Class 10, class 100, class 1000, class 10,000. this refers to the amount of particulate found in the air within 1 cubic metre. So the highest grade would be class 10 with only 10 parts of particulate found in 1 cubic metre. This is extremely high grade and is usually found in the semi conductor industry (Micro chip wafer deposition systems). Pharmaceutical laboratories are much more likely to be class 1000 with some possibly being Class 100.

Clean Steam traps are usually found on sterilisation equipment where a high temperature (over 136°C) is required in order to kill micro organisms which may contaminate the production process. The traps themselves are usually found at the "Sterile Barrier" which is why more traditional designs of mechanical steam trap, made from higher grade materials are typically used as there is not a need to adhere to the "Clean" room specification for equipment. This is where the GEM Topaz trap has a clear advantage as it does adhere to the "Clean" room specification, making it suitable for both use within the Clean room and on "Clean" process.

The GEM Topaz trap also benefits from being made from 316L stainless Steel, the preferred grade for "Clean" applications as well as, of course, the Orifice Venturi design which provides better control and minimises steam loss and maintenance. GEM steam traps come with a 10 year performance guarantee.

Two main applications where Clean steam traps are usually found:-

1. Being the steam trapping and venting on fermentation vessels used for growing cultures like penicillin. Steam is purged through the vessel for a given period of time to ensure the sterile temperatures are achieved. Where mechanical traps are used this often leads to blockage or failure resulting in the temperature falling outside the controlled range during the sterilisation process. Where this occurs the process must be run again, losing valuable time and creating uncertainty of reliability. The GEM Topaz has proven itself to be extremely effective in this area, maintaining constant temperatures and requiring no maintenance.
2. Being used on Heat exchangers used to feed hot water for cleaning (not sterilising) and for process hot water used to make up the broth for the culture to grow in. These process are often situated in the "clean" area and therefore require the steam trap to adhere to FDA regulations. Where the GEM Topaz trap is fitted to these heat exchangers, in the same way as a regular GEM trap would operate, it provides a constantly variable output, reducing hysteresis of the system and "hunting" of the control valve providing much more repeatable temperature control without steam loss.



GEM 'Topaz' Clean Steam trap