1. IT’S ALWAYS OPEN SO IT MUST WASTE STEAM.

This simply is not true. The Venturi Nozzles are individually designed to continuously and completely remove condensate at each drainage location. There is a minor bleed of steam through each nozzle. This steam bleed is less than the steam waste through a properly functioning mechanical steam trap. The steam bleed is so small because we advantageously use the condensate flowing to each drainage location to “choke” the throat of the nozzle. The slight steam bleed is necessary because we design each Nozzle System to completely remove condensate at saturation temperature to prevent condensate back-up and sub-cooling.

2. THE NOZZLE WILL WEAR AND ENLARGE OVER A SHORT TIME.

This again is not true. We readily admit that there is some minor wear in our nozzles. Wear is impossible to prevent but it is quite controllable. We choose a Venturi nozzle design as opposed to a less expensive orifice design to take advantage of the most wear resistant geometry available. The Venturi nozzle is the most wear resistant device of the generic orifice family. This is of particular importance in the environment of flashing and cavitation involving steam and condensate at saturation temperatures. The Venturi Nozzles will far outlive an orifice or orifice/valve combination of any mechanical steam trap. The Venturi nozzle is simply a far superior flow channel for the steam/condensate environment.

3. THE SMALL NOZZLES WILL PLUG UP.

This is a most obvious and legitimate concern. We directly address this through the inclusion of two of the parts of the Venturi Nozzle System, the Y -Strainer with Stainless Steel Mesh Screen and the Y -Strainer Blow-Down Valve. Most of our work involves retrofitting mechanical steam traps on dirty steam systems. We must prevent dirt and scale from reaching the nozzle. We utilize a stainless steel screen of proper mesh size directly upstream of the nozzle to collect such solids before they reach the nozzle. The blow-down valve facilitates a quick periodic purging of any collected solids before they create a problem. After a conversion, periodic strainer blow-downs will gradually clean the steam system of accumulated solids and scale build-up. The steam system will gradually clean itself as the main cause of the dirt and scale problems, faulty steam traps, is eliminated.

4. YOUR NOZZLE CANNOT VENT AIR AND NON-CONDENSIBLE GASES FROM THE STEAM SYSTEM LIKE A THERMOSTATIC AIR VENT.

Air is heavier than steam under the same conditions of temperature and pressure. As steam enters a pipe, it pressurizes the air and displaces it at the top of the pipe or coil. Given that Venturi nozzles meter the flow at a more controlled rate than an open thermostatic steam trap, steam forces the air down and through the nozzles at a moderate rate which prevents turbulent mixing of the two. A major benefit of such a metered air venting on start-up is a more gradual controlled warm-up of the steam mains. Heavier air readily travels to the nozzle located at low drainage points. Most of the major steam trap manufacturers recommend the installation of balanced pressure thermostatic steam traps as air vents at high points on steam coils. The laws of physics indicate an air bleed at a low drainage point as a better location. The nozzle performs a dual function as an air vent and a steam trap. Again, we offer a simple solution to a widely encountered problem.

5. YOUR NOZZLE CANNOT WORK ON A VARYING CONDENSATE LOAD APPLICATION.

Refer to table I for the Venturi Nozzle System an varying load/modulating valve. The varying load/modulating valve is an excellent application for the Nozzle System. How does this work? First, the heating equipment fed by the modulating valve has a design load based on the heat transfer surface area, the volume and temperature of the heated medium (usually air or water), and the steam supply pressure. The Venturi Nozzle System is sized for this design load condition and thus by definition, is efficient. Under this design condition, the control valve is fully open. The steam coil is at a pressure equal to the valve inlet pressure less the pressure drop through the modulating valve, making the nozzle efficient because this is its design condition. As heat demand falls, the modulating valve pinches down. There is a greater pressure drop through the partially closed modulating valve allowing less steam to pass into the coil, but the heat transfer surface area does not change. Steam condenses at a greater rate than it is replaced. The steam pressure in the coil drops as the steam expands. The nozzle actually becomes more efficient because of this pressure drop in the coil. When the modulating valve pinches down far enough, all the steam in the coil condenses and a low vacuum state occurs in the coil. The coil’s vacuum breaker opens allowing air to fill the void. The light condensate load drains by gravity through the nozzle.