



Trifecta® *The Perfecta*

Thirty years ago, in 1992 as Mall of America®, the largest shopping mall in the US was opening its doors in Bloomington, MN, just a few miles south in New Prague, a star was born to the metal fabrication industry. Minnesota Valley Engineering (MVE) or what is today known as Chart Industries, introduced the very first version of the Trifecta® Gas Supply System.

As laser metal cutting was evolving, the industry was in search of better options to supply nitrogen (N₂) as the assist gas. High pressure and high flow are needed, and conventional methods of supply included high pressure pumps, compressors, cylinder cradles and surge tanks. A high pressure (450 psi) and high flow gas stream is required to blow the slag away from the surface of the cut. And N₂ is the preferred assist gas because of its inert properties to ensure a clean cut and eliminate oxidation along the edges of the cut. The Trifecta solution draws liquid from a standard bulk tank, boosts the liquid pressure by alternatively feeding two liquid cylinders equipped with innovative multi-function pressure building vaporizers. With no downtime and minimal losses, a much improved and superior option for laser cutting assist gas supply.

While N₂ assist gas drove development of the Trifecta unit, other gas use applications have come along since. An example of another application in the metals industry can be found in a heat treat vacuum furnace where high flow N₂ at high pressures are used to backfill the furnace with inert atmosphere to prevent oxidation after a high temperature cycle. Ironically oxygen (O₂) is also used as an assist gas for thicker materials in laser cutting due to its exothermic reactive properties. And the Trifecta technology has now found a place with carbon dioxide (CO₂) used in the cannabis industry and supercritical extraction process.

Many iterations removed from the original X5 through the other X-Series up to the current Pro series and 30K, Chart continues to innovate and advance the technology to meet progressive advancements in laser cutting machinery which is often the largest single investment in a metal fabrication shop. And as autonomous manufacturing and Industry 4.0 are becoming the norm, advancements in Trifecta offerings are following the trends of evolving PLC's with the Allen Bradley PLC available in our Pro series as the supreme option for remote monitoring (IoT).

Happy 30th Trifecta, the perfecta in laser cutting assist gas from the innovators of "Cooler by Design".

TRIFECTA



1992



2022