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### "LET'S COMPARE APPLES TO APPLES"

**There has been some misconception when trying to compare our Respiratory Protector® Series Breathing Air Purification Systems with other "CO" removal-type systems. Let's compare apples to apples" and discuss our competitors who do produce systems that remove carbon monoxide.**

MST's systems utilize a precious metal-type "low temperature" catalyst for the conversion of carbon monoxide into carbon dioxide and the removal of other hazardous gases. Our catalyst operates under normal temperature and humidity ranges (between 10% and 90% relative humidity) and therefore does not require the desiccant drying towers for continuous operation. This allows us to produce small, portable, continuous duty systems (we also make larger fixed systems) at a cost savings of approximately 70% over our counterparts. One of the major claims in our patent is the use of this type of catalyst. Our competitors can not use a low temperature catalyst without infringing on our patent.

There are about four (4) competitors that produce systems that catalyze carbon monoxide into carbon dioxide. All of these competitors utilize a catalyst called Hopcalite, that was developed during WWII for use in gas masks, to perform the carbon monoxide removal portion of their systems. These systems usually contain all of the filtering sections used in breathing panels, with the addition of the catalyst stage. Unfortunately, Hopcalite requires air void of virtually all moisture (4% relative humidity maximum) for it to operate. To accomplish the removal of this moisture, large desiccant dryers are required before the air enters the Hopcalite stage of the system. These desiccant drying towers add cost and bulk to the system, not to mention producing extremely dry air which is not good for humans to breathe.

The competitor's systems are considered "continuous duty-type" systems due to the fact that they have twin tower-type desiccant drying towers. One of the towers is utilized for drying while the other tower is being regenerated, usually by passing "purge air" from the compressed air source (some use up to 25% of their rated capacity for purging the second tower). When the tower being utilized becomes saturated, an elaborate valving systems switches the air stream to the second tower (now dried by the purge air), and the system continues to operate.

Needless to say, these systems are not portable, and usually cost between \$4000.00 and \$60,000.00 (depending on capacity).

There are lower cost, portable-type, carbon monoxide removal systems also produced by these competitors. The portability is accomplished by taking the desiccant towers out of the systems, and using a small bed of desiccant for protecting the Hopcalite from moisture. All of these systems are termed "intermittent" or "occasional use" systems and are intended to be used in emergency-type applications usually, the filter life of these systems is eight(8) to ten (10) hours of use, and continuously using the systems results in maintenance cost approaching \$30,000.00 annually. The cost of the "intermittent-type" systems ranges between \$1800.00 and \$3500.00 with carbon monoxide monitor.

Following is a list of the CO removal type competitors:

DELTECH ENGINEERING, L.P.:

Deltech is the "grand-daddy" of the Hopcalite systems. Originally, Deltech manufactured air filtration and preparation systems for general industrial applications, including desiccant drying systems for instrument quality air systems. Naturally, since they had the desiccant drying technology, it was easy to add a canister of Hopcalite for removal of carbon monoxide. Their continuous duty systems start at around \$5000.00 and their intermittent duty systems at \$3000.00 (both with electrochemical monitors).

HANKISON:

Much like Deltech, Hankison initially began in compressed air purification systems for industrial applications utilizing desiccant drying technology to achieve instrument quality compressed air. Adding the Hopcalite for carbon monoxide removal led to their purification of compressed "breathing" air. Their continuous duty systems start at around \$4000.00 and their intermittent duty systems around \$3200.00 (again, with electrochemical-type monitors)

PIONEER ENGINEERING, INC.:

Pioneer produces a limited range of portable breathing systems, including a system called the "Piopure" that actually removes carbon monoxide. Their "Piopure" series utilized Hopcalite for the CO conversion and is intended for "occasional use" only. Their smallest version of this is their Model PR15 rated at 15 SCFM and sells for approximately \$2450.00. Their catalyst cartridge alone sells for \$150.00 and must be replaced every nine(9) to ten (10) hours of use (our replacement filter kit, which contains all elements in our system, for our standard 50SCFM Respiratory Protector<sup>®</sup> sells for \$160.00 and usually requires replacement every 1-3 months). Pioneer also makes continuous-duty type systems starting at \$4900.00 with electrochemical CO monitor.

ZEKS AIR DRIER CORPORATION:

Zeks produces their "Nomonox<sup>®</sup>" breathing air purifiers, again utilizing their desiccant drying technology and adding Hopcalite. The same story holds true for Zeks as it does for Deltech and Hankison regarding their earlier development in purifying industrial compressed air. Their continuous-duty systems start around \$4500.00, with their intermittent duty units beginning at around \$2100.00.