

# WHITE PAPER

## *“Why Retrofit with Original DRYVac™ Technologies”*

### **Executive Summary**

There are over 600 vapor recovery systems in the world today. Most are operating with 20<sup>th</sup> century logic and controls ... some now 35 years old. A client recently made a salient comparison. He said, “Comparing today’s vapor recovery technology with that of the 1970s is like comparing the dumb bombs used in WWII with the smart bombs used today in Iraq. Today, the smartest vapor recovery technology is DRYVac™ Technology. It was developed and perfected in 2003 after nearly ten years of field trial and error. During those earliest development years various components were tried. Various software and operating schemes were tried too, and numerous brands of instrumentation were evaluated. The result of this exhaustive work is the culmination of the real-world experience; the weeding out of lesser components and ineffective concepts, and the application of the best of the best. DRYVac™ technologies are tested, proven, and second to none. When asked the question, “Why retrofit an old VR System with proven DRYVac™ technologies?” the answer is, “When you buy the best, you get what you pay for!”

### **Introduction**

Older VR Systems are often poorly instrumented and energy inefficient. Yet, the root technology is sound. The pressure swing, carbon adsorption-absorption concept first patented by McGill Environmental (1974 - Tulsa, Oklahoma, USA) is as sound today as it was then. However, the method of controlling a VR System has matured to levels never dreamed of in the earliest days when mechanical relays and mechanical timers controlled every cycle. As designers, we simply didn’t have the tools then we have today. So, those older system are horribly energy inefficient. Worse, many are maintenance nightmares for their owners, requiring constant and inordinate effort to keep them running. But “running” is not enough, as we have learned in recent years. That is, we have learned that just because a VR System runs does not mean it is meeting the emission control standards for which it is permitted.

Now that the EPA is requiring the monitoring of operating conditions, more and more old VR Systems are being retrofit with better and more complete instrumentation to assure the results the EPA demands today. However, there are retrofits, and then there are retrofits. Not unlike too many other facets of business, the retrofit business

has become a “buyer beware” environment where the low bidder may not be the best choice for the next retrofit effort.

This is where SYMEX Americas DRYVac™ Retrofits can play an important role. DRYVac™ technology is the smartest in the market. It is universally applicable to VR Systems manufactured originally by any firm. It converts the dumb old machine that barely works to the smartest, self-managed, most efficient VR System money can buy! This marvelous technology converts unreliable old VR Systems into fine-tuned, totally reliable systems which run and run ... and run. Each one is guaranteed to meet today's stringent EPA requirements, and then some!

### **Real DRYVac™ Technologies**

As with all good things, someone always makes a cheap copy of the original, and offers it for sale at a discount. Today there is only one original and “real” DRYVac™ technology. There are, however, many copies! So, don't get caught short (buyer beware)! If you want real DRYVac™ technology, simply contact SYMEX Americas through any of its domestic or international offices, and ask for the real thing! We'll come to your aid immediately, and work closely with you so you get exactly the retrofit solutions you want and need.

### **What DRYVac™ Technologies Really Do?**

The challenge the military faced in converting from dumb bombs to smart bombs must have been daunting. It took decades! And, it couldn't have happened without the space program and everything that program brought with it. Without today's computers, a figment of the imagination in the 1960s, today's technology advancements would have never been possible. The DRYVac™ technology would never have been considered, much less perfected.

But computers were developed. As they advanced in power, affordability, and availability, industry began to take advantage of the many possibilities. Such was the case for SYMEX Americas when it set out to develop the smartest VR System using the best technology tools available. Computing power was ideal for this development. And from this opportunity SYMEX Americas ESP™ software platform was born. This, and the availability of affordable smart instrumentation, is the keys to today's DRYVac™ technologies.

DRYVac's™ Very Smart ESP™ Software Technology

ESP™ software is very unique. It was developed with three distinct and different layers of ladder logic.

- Level 1: This is the most basic operating logic, allowing the DRYVac™ system to run and operate whenever a truck is carded in at the loading rack. This is the way the first generation vapor recovery systems operated, so it is completely familiar to anyone who has prior knowledge of the root technology. Additionally, it uses input from all instruments, valves, and controls to maintain the safety and integrity of the system.
- Level 2: This level represents a more intelligent, energy efficient approach to normal VR system operations. Rather than assuming the entire system needs to run whenever there is a truck in the rack, as is the case in Level 1, Level 2 software counts the trucks as they come and go through the loading terminal. The software is programmed to calculate the mass of hydrocarbons entering each carbon bed based on the fixed volume and concentration constants for the vapors coming from each truck. The software is pre-programmed with the maximum mass of carbon adsorption allowable during each regeneration cycle. When the calculated mass of hydrocarbons is adsorbed the software triggers a bed change and regenerates the carbon. This allows the DRYVac™ to operate with more energy efficiency than in Level 1. The DRYVac™ regen system will remain off until the process demands it run, reducing operating costs, minimizing wear and tear, and adding to system longevity and reliability.
- Level 3: This level is the most intelligent, most sophisticated, and the most energy efficient. In this level the instruments feed the PLC and its software with the precise information it needs to calculate the actual mass of hydrocarbons being loaded onto the activated carbon. There are no assumptions in this software level. The computer calculates the real inlet hydrocarbon mass in real time, several hundred times each second. The accuracy of the data is unparalleled. Now, when trucks are loaded with low RVP diesel, for instance, the low vapor phase hydrocarbon concentration adds very little to the adsorption capacity of the carbon and each regeneration sequence is delayed accordingly. Likewise, when a truck returns to the terminal with a low concentration of gasoline vapors, the same scenario takes place. The software accumulates ONLY the REAL total mass of hydrocarbons. This results in a concrete and dramatic reduction in energy costs, delaying energy intensive regenerations as long as possible, and makes DRYVac™ the most energy efficient vapor recovery system available.

There are many other software, electronic, and hardware features and follow-up that separate the original SYMEX Americas DRYVac™ technology package from all others, and the list continues to grow.

Here are some of the more important and impressive features of the one and only ORIGINAL DRYVac™ Vapor Recovery System:

- DRYVac™ is ONLY designed and manufactured by SYMEX Americas. Any others using this name, or claiming to be offer these system, are misleading you and only offering their attempt to copy or clone the DRYVac™ System. Those are not DRYVac™, and none can prove performance even close to the original DRYVac™.
- DRYVac™ has a 99.6% uptime record. This exceeds the best alternate technology by 500%! DRYVac™ never shuts you down!
- DRYVac™ was the very first fully automated, self-managed, completely dry vapor recovery system in the world.
- DRYVac™ has the lowest maintenance requirement of any VR System ever built.
- The FlowMax™ carbon used in every DRYVac™ System lasts the life of the system. No client has EVER had to replace FlowMax™ carbon!
- SYMEX Americas monitors every DRYVac™ System every week for the life of the system at no additional cost to the owner. This keeps expert eyes on every system every week, keeping each one running as it should.
- SYMEX Americas builds DRYVac™ Systems and nothing else. We do not dilute our staff with other ventures. We focus 100% of our time and attention on DRYVac™, upgrading it constantly, keeping it the very best VR System in the world.

## Conclusion

When you buy today's DRYVac™ Retrofit Technology you're buying the best the industry has to offer ... and you're getting what you pay for!

## For More Information

To find out more about what DRYVac™ Technology can do for you, please call our headquarters office at 317-872-4321, or visit [www.symexamericas.com](http://www.symexamericas.com) and click on "Contact US" to find the SYMEX Americas office nearest you.