

AIR APPROVED



AFCT, Inc.

Leaders in Pulse Delivery® & QuadAgent® Technology

Next Generation Fire Suppression Technology

Effective Delivery of Multiple Agents -- Safely



Pulse Delivery® & QuadAgent® Technology Applications

RIV's

Multi-Purpose

- Suppresses all types of fire
- Works with all dry chemical powders (up to 8#'/sec DRY to over 90+')
- Works with all clean agents (up to 11lb/sec independently or entrained within dry chemical stream @ 1/3 lb/sec)

Works with all foam concentrates

- Class A
- Class AFFF
- Decontamination foams
- Other concentrates

On-board CAF

Multi-Functional

- RIV
- Quick Attack
- EMS/ Light rescue module
- Decontamination unit
- Command module
- Nozzle agent selection

Crash Trucks

- QuadAgent® hand lines
- Quick Attack all classes of fires
- CAF system
- Nozzle agent selection
- Bumper turret application

QuadAgent® Re-Servicing

Dry Chemical

- Fill from ground level.
- Unique vacuum system technology
- Load 500# <20 minutes.

Clean Agent

- Fill from ground level.
- Load 120#'s <10 minutes.

Structural/parking garage apparatus

- Low profile (7 feet)
- QuadAgent® hand lines
- Quick Attack all class of fires
- CAF system
- Nozzle agent selection
- Bumper turret application

Water

- Fill from ground level.
- Load 100-300 gallons <5 minutes.
- All pneumatic or with 250 gpm pump module

Foam Concentrate

- Fill from ground level.
- Load 10 gallons <5 minutes.

Compressed Air

- Fill from dry breathing air compressor and/or cascade.

**Contact your favorite OEM
and ask to have the QuadAgent® & Pulse Delivery® technology
included in your next Fire Apparatus or to have your existing apparatus upgraded.
Your firefighters deserve no less than the best!**

OR

Contact AFCT, Inc. for more information

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QuadAgent® & Pulse Delivery® Technology

Anyone can carry 4 or more agents to the fire scene --BUT only one technology can perform once there!
The Phoenix® Pulse Delivery® & QuadAgent® Technology gives you large CRASH TRUCK fire suppression capability on a small, agile MULTI-PURPOSE/FUNCTIONAL VEHICLE.

Why it works!

Dry Chemical powder (14 micron or smaller) has 800 times more heat absorption capability than water if **effectively deployed** into the heart of the fire - **DRY**.

What is “effectively deployed”?

Effective deployment means the ability to both **suspend and disperse DRY** 14 micron dry chemical particles within the fire envelope and/or heart of the fire.

Why 14 micron dust?

Exposed agent surface area matters in dry chemical technology as it does in water fog technology systems. The more surface area exposed to the heat the faster the heat can be absorbed and the faster suppression is accomplished. For example, in typical water fire solutions only 10% of the water introduced into the fire envelope is absorbing heat, the balance is going to ground. This is true except when using water fog technology, where maximum water surface area is being exposed to the heat of the fire for absorption (steam creation), causing immediate fire suppression while using relatively small amounts of water. Water fog technology, though, is limited by its ability to penetrate the fire wall and get inside the fire envelope except in low heat intensity or “cold” fire situations. This is the same problem with existing commercial dry chemical twin agent systems. It is difficult to penetrate the fire wall (with a throw distance of <30 feet) and get inside the fire envelope without putting the firefighters at extreme risk.

Why DRY?

After the introduction of the twin agent (dry chemical and water) systems over 40 years ago it was found that even though dry chemical is a superior fire suppression agent when compared to water, the powder could not effectively be deployed into the heart of the fire without putting the firefighters at extreme risk. The reason that “cold” fires are easily extinguished with a hand held fire extinguisher using dry powder is because the firefighter can get close enough (safely) to deploy the agent inside the fire envelope. However in large fires (i.e. high heat), unless the powder was drawn into the fire by associated convective wind currents it is difficult to get enough agent into the fire to effect fire suppression. In the 90’s the entrainment nozzle was introduced. With this technology the dry chemical powder was entrained within a water envelope in an attempt to solve two problems associated with twin agent technology. First was to get the powder through the fire column and into the fire envelope (using the water stream as the carrier) and secondly, to allow this to be done safely (throws agents 80-90 feet). This nozzle entrainment technology accomplished both objectives and does deploy the powder into the fire; however, the dry chemical powder is carried into the fire inside a water stream or WET. Therefore, the water has to be vaporized before the powder can do its work. For the vast majority of the powder carried into the fire, the water stream takes it to ground before it can do its work. This entrainment technology was a major leap forward in improving the effective delivery of the dry chemical powder (estimated to be as much as 20% more effective) for all twin agent delivery systems. The Pulse Delivery® technology represents the next major evolution for the effective delivery of dry chemical powder into the fire envelope and/or heart of the fire. This Pulse Delivery® technology creates quasi-discrete slugs of the 14 micron dry chemical powder and propels them

through its nozzle at speeds near Mach 1 to over 90 feet. This action gives the 14 micron dust both mass and velocity allowing it to penetrate the fire wall from a safe distance. The act of penetrating the fire wall disperses the quasi-discrete slugs and the powder blooms within the fire envelope and/or heart of the fire, exposing the maximum amount of surface area causing immediate fire suppression. In relative terms the Pulse Delivery® technology deploys dry chemical powder as much as 10 times more effectively than the entrainment nozzle technology.

What is QuadAgent® Technology?

The Phoenix Pulse Delivery® QuadAgent® technology for the first time gives the fire fighter the ability to safely deliver dry chemical powder effectively into the heart of the fire and to select the appropriate fire solution from the working end of the fire hose or nozzle. The QuadAgent® nozzle allows for the deployment of dry chemical agent (heat absorption), clean agent (chemical interruption of fire process) and water/foam/CAF (creation of vapor barrier/cooling). The QuadAgent® technology allows for the full frontal attack of the fire tetrahedron. The firefighter selects the agent or combination of agents to affect the best fire solution. The technology can attack almost all types of fire with immediate fire suppression and kill. The QuadAgent® technology allows for deployment of all agents to distances of 90 feet giving the firefighter the advantage of distance to reduce risk of injury.

The Pulse Delivery® of the dry chemical gives the firefighter enormous heat absorption capability. Fire without heat is no longer a fire. Studies have shown that 1 pound of dry chemical powder can absorb the same amount of heat as 100 gallons of water. The Pulse Delivery® nozzle delivers up to 8 pounds of dry chemical powder per second. This heat absorption capability explains why **immediate** fire suppression does happen with the Pulse Delivery® technology. When combined with the clean agent and CAF capability of the QuadAgent® nozzle, the firefighter has the definite advantage.

Why so little water carrying capacity?

As explained above, the fire suppression process is driven by the effective deployment of the dry chemical via our Pulse Delivery® technology. The dry chemical when effectively deployed turns a large uncontrolled fire into a small controllable fire within seconds. This means that in a petroleum fuel fire the dry chemical takes the energy from the fire and only small amounts of Compressed Air Foam (CAF) are needed to lay down an effective vapor barrier. This is different from typical crash truck CAF application where large amounts of water at high pressure are used to overwhelm the fire or essentially push the fire off the fuel and put down a vapor barrier. While this technique is very effective it requires a large amount of water on board and therefore its’ resultant size and weight make it difficult to safely and rapidly respond to the fire scene. And in the ARFF environment where scenarios are usually catastrophic in nature, seconds can mean the difference in life and death. In a structural fire this means that a fire can be attacked from the outside knocking the fire down and in most cases killing the fire prior to entry creating a much safer environment to both rescue and perform final clean up with water/foam. This technology eliminates steam creation, the need to vent the structure and limits water damage to areas of fire damage, but most of all creates a safer environment for the fire fighter to do his work.