

## Fire Hose Coil “Bundle” Technology - Garden Hose Simplicity

Many believe it's impossible to deploy an attack line within feet of a fire engine in a matter of seconds. However, until a few critical laws of physics are fully understood and therefore respected it would only be assumed to be impossible. HFT Fire/Rescue is dedicated to the education and proper application of a few simple techniques to enhance fire ground safety.

Every day fire fighter “Truckies” (Fire fighters assigned rescue operations) enter dangerous live fires during rescue operations without the protection or ability to deploy a fire attack/protection hose line during these operations. Every day we read about firefighter near miss, close calls, injuries and even deaths as a result of these aggressive and yet necessary measures. Not to point a finger at over a century of tradition, but it's time to shatter the mold in regards to this firefighter personnel safety.

Lets begin with the understanding that fire hose, though flat when empty, is no different then a garden hose when fully charged. As you recall, we were mere children when we filled our puppies water bowl at full nozzle pressure, from a 75' garden hose, coiled adjacent to the water faucet. But unlike a hard round garden hose, fire hose is stored, often flat folded, on our apparatus in compartments designed for extremely fast deployment but rarely provide this as the hose must be untangled and untangled again to get the first high pressure drop to the nozzle. The problem with flat folding fire hose is that each fold in the hose bundle creates a pre-engineered, water restricted kink exactly in the same manner as folding your garden hose does.

The question I ask every firefighter, unfamiliar with the coil configuration is , “Would you ever fold you're garden hose? ...and if not, why not?” The answer is simple and always consistent, and therefore, any folds that are per-engineered into the method of storing hose on our fire apparatus, is extremely counter productive. Not only does it take an incredible amount of area to unfold each fold to its Minimum Critical Radius to allow water to flow to the next fold before finally reaching the nozzle, it is also extremely labor intensive and essentially a total waste of time and vital energy. Most importantly however, it unnecessarily consumes life saving seconds we can never get back.

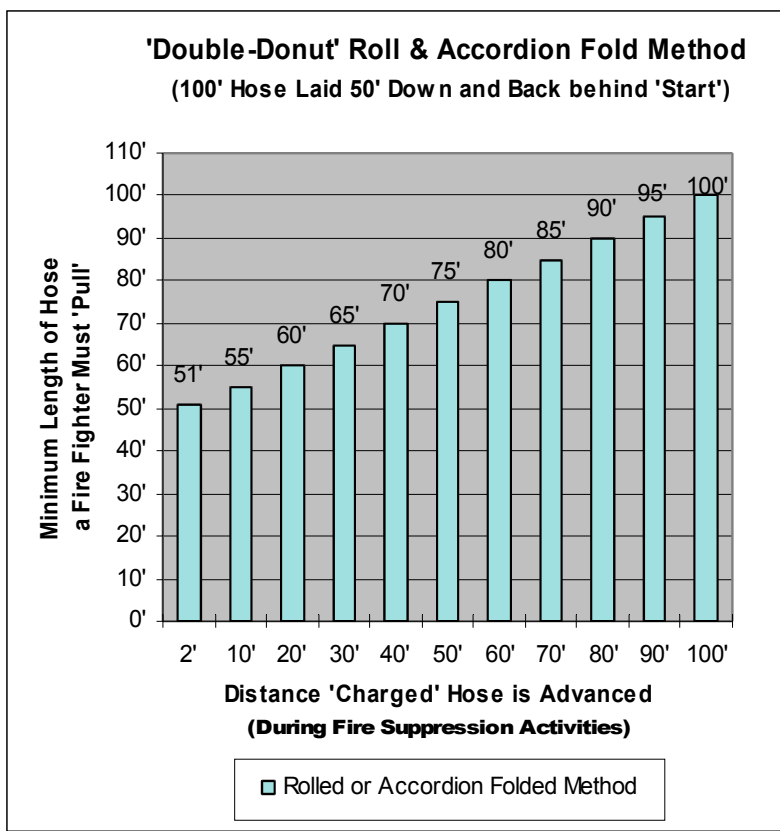
As a result, water distribution on the fire ground has been solely assigned to engine company personnel. Since publishing my first demonstration video on the internet, that was taped in 1999 (which have received over 65,000 combined confirmed hits), Texas A & M University, among many other fire training facilities, have requested the full copyright to this instructional material to demonstrate and teach these concepts and procedures to every fire safety students who walks thru their doors. For the first time in history, as seen in the video at [www.HFTFire.com](http://www.HFTFire.com) a bundle of uncharged coiled hose, threaded onto and not over the shoulder of a fire fighter, “Truckies” can now enter the near zero visibility of a smoke filled burning building with the protection of a fully operational attack line.

Not only can this length of hose be immediately charged to flow water to protect each firefighter, but it also provides an obvious indicator for safe, efficient egress all the way back out doors to the fire engine regardless if the line is charged or not. A small thin rescue rope is instead the present method utilized by fire fighters across the globe to effectuate this process. I ask every fire fighter, which do you feel would be easier to follow to safety? A thin rope or an easily identified fire hose? An important added benefit, if trouble should arise and the need for water be immediate, the line can be charged without hesitation regardless if the call for water has yet been confirmed. Rescue rope provides absolutely no protection whatsoever!

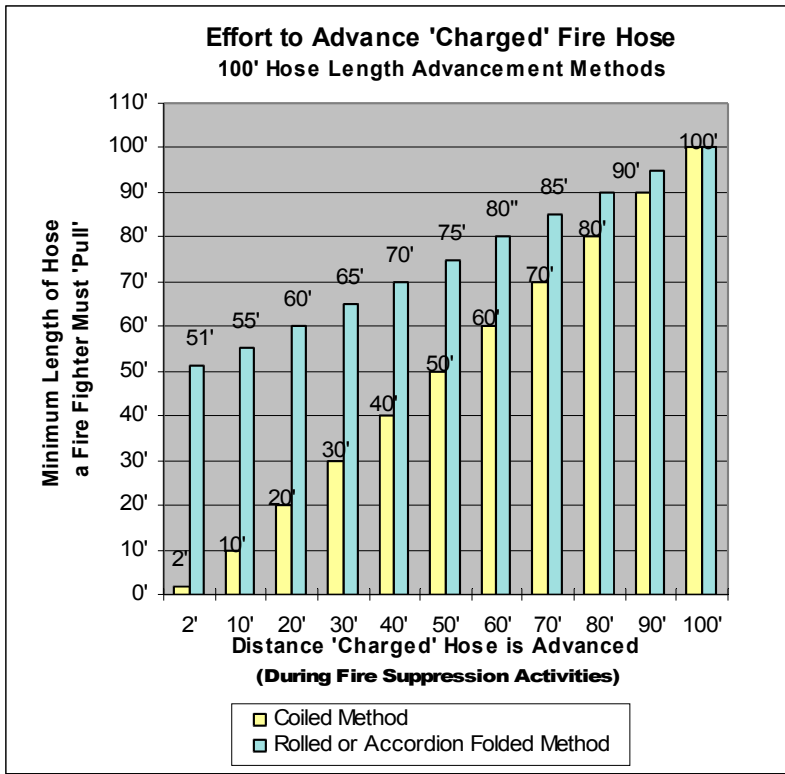
Presently, you can find dozens of videos on the internet referencing the “bundles” coil configuration fire hose deployment and how each respective fire department is beginning to modify their standard

operating procedures to incorporate these techniques. Or better stated, the fire service is learning and applying a few 'new' critical laws of physics. Most notably is the Corona Fire Department, Corona CA. I admit I am not the first to invent the method that I learned in 1981, in Butte Co. CA., (which has been executed by the US Forest Service at Jarbo Gap FFS since 1975) but I was one of the first pioneers to introduce this methodology to structural firefighting applications and tactics. My formal debut was in 1991 when I taught the pupils of my Fire Instructor 1A course these concepts and procedures. At mid week my Master Instructor threatened to fail me if I didn't change my subject matter to methodology that was not only ever used, but could actually be demonstrated. I reciprocated the bet with an "A" grade regardless of my written test score results. I've been a certified fire instructor ever since.

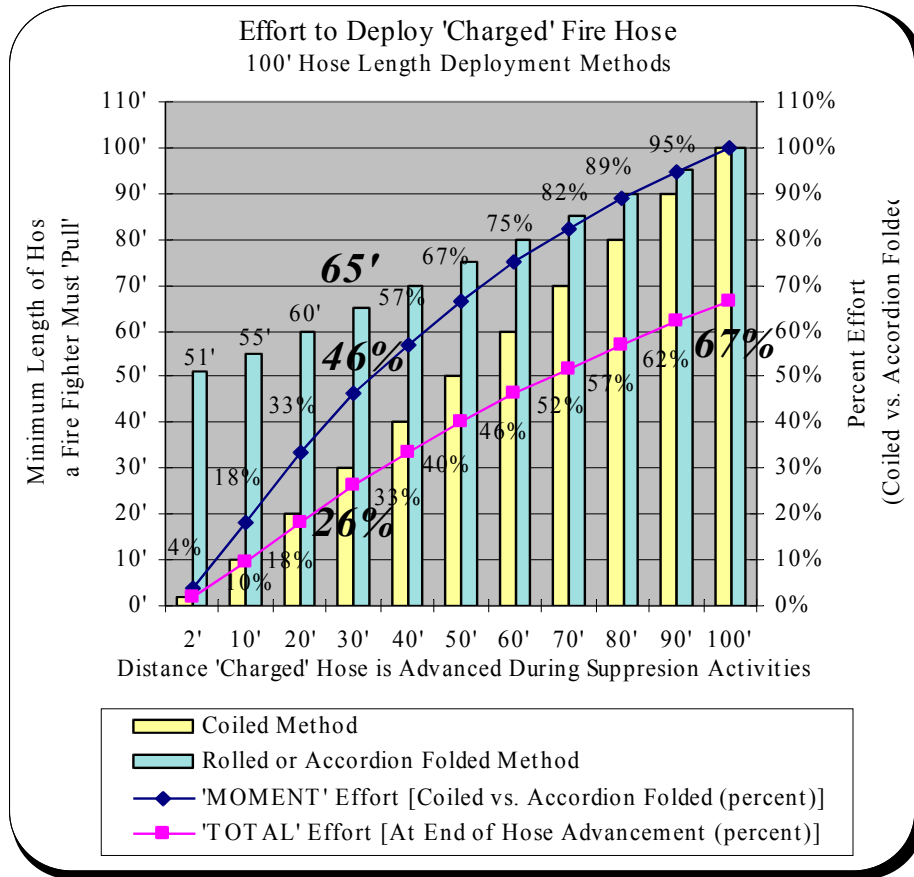
The coil "bundles" configuration is virtually unlimited in any fire hose deployment application. Please see the following graphs. The BLUE BAR represents a 100' double donut roll of wildland fire hose rolled out 50 feet down and back behind the start line (tail) or similar hose load such as a triple fold or other configuration with an equally long tail section that must be dragged after it is fully charged.



In the next graph, the YELLOW BAR represents a coiled length of hose ready for immediate deployment in which every inch of hose is ready and waiting AT the start line. Please note, if the hose has been pre-coiled in its entirety to it's Minimum Inside Critical Diameter (MICD), the distance behind the start line is always zero. [MICD is relative to the hose size diameter (i.e. 1.75") to effectively flow water unrestricted the entire length of the hose all the way to the nozzle under normal operating pressure.] Therefore, a typical 150' 1 3/4" Attack Line can be fully charged in about a 4.5 foot to 5 foot circle and as much a 200' or more of 2 1/2" hose can be hand coiled in eight (8') foot diameter coils (the width of a fire engine) and fully charged in a matter of moments as well.



When we look at the next graph below, please see in one example that the BLUE BAR represents a nozzle that is advanced only 10 feet from its start point requires a firefighter to drag a 55' long and heavy cumbersome fully charged length of hose from a double donut/triple fold configuration verses only a short 10' section of fully charged hose from a coil configuration. This, according to the BLUE LINE graph, when both configurations are compared side by side, is only a mere 18% of the “Moment” effort specifically at the 10' mark. In another example, a typical 30' deployment requires 65' of fully charged hose to be dragged from a double donut/triple fold configuration verses only 30' from the coiled configuration. The end result energy required at the 30' mark is **LESS THAN HALF** at only 46% of the “Moment” effort.



However, what is most important is to accurately calculate the total effort to accomplish this one task of deploying fire hose from its start point to its final destination. Please read the RED LINE graph as follows: Because the coil configuration yields 18% of the Moment effort at 10', 33% of the Moment effort at 20', and 46% of the Moment effort at 30' mark, therefore the TOTAL effort, from start to finish, can be calculated by comparing the surface area of the YELLOW BAR vs. the BLUE BAR graphs. In other words, it is mathematically proven that the total effort of a 30' hose deployment using the coil method is a mere 26% of the TOTAL EFFORT of a double donut or triple fold or similar configuration with its inherent 50' tail of hose behind the start line. Hence, one firefighter can do the work of four (4), in about one-quarter of the time!

In layman's terms, firefighters essentially never get tired by comparison as a result of expending far less wasted effort that provides far more time and energy to execute other priorities, such as rescue operations. ***Truly consider, wildland hose lays of several thousands of feet can be established at a mere two-thirds (2/3 's) the TOTAL EFFORT... or better put... 50% MORE EFFICIENTLY to do the exact same task!*** On a standard Type III wildland fire engine, 1,200 feet of 1 1/2" fire hose deployed only requires 1,200 feet of effort... not 1,800 feet of effort by utilizing the double donut configuration as so many departments do... especially those dedicated more towards wildland fire fighting. Its time we come out of the dark ages! Again, please watch the video in its entirety to fully understand why Texas A & M University and others fire training facilities are doing their part on a global scale to train these methods to every firefighter to be more fire safe through adequate water supply and resulting fire protection and conservation of fire fighter's precious and limited vital energy.

Other advantages of pre-coiling fire hose provide other breakthrough techniques never exercised in the

history of the fire service. One method I am referring to is a manner of EFFORTLESSLY deploying **FULLY CHARGED** fire hose located at its start point (as far 'back' as it's water source) and advanced up to any distance up to the length of the hose, but even around right angle turns. PLUS, regardless of the length of the hose, 100' to 200' plus, a firefighter will never have to drag a section of hose longer than the last 20' or so from behind the nozzle at any time! ...Ever! Though this too may sound impossible, again, watch the video at [www.HFTFire.com](http://www.HFTFire.com) in which a firefighter demonstrates righting the top coil from a stack of coils from the horizontal plane to the vertical plane and then hand rolling a hoop of fully charged hose all the way up to the nozzle... first around a parked rescue van... then between the van and a water tender... and then finally around the back and the side of the water tender and out the front door of an apparatus room without ever interrupting the flow of water to the nozzle at any time. All of this accomplished around any obstruction(s) effortlessly around right angle turns!

An excellent example of this method is a method of deploying uncharged line to the doorway of a burning home. The attack line is charged in a matter of seconds with absolutely no water restrictive kinks and NO trip hazards are created as the entire length of hose is contained within the small area of a straight shot to the door. Entry is made, and then the charged line hose is advanced down the hallway to an involved room pulling only the hose that is needed. After initial knockdown and when the nozzle needs to be advanced to complete extinguishment and overhaul operations, a second firefighter can go outside, right the top coil to the vertical plane, and then hand roll 15' of 'slack' of 1 ¾" hose all the way to the ankles of the nozzle firefighter. The nozzle firefighter then effortlessly steps forward 15'. The process can then be repeated as many times as necessary until the full length of the hose is utilized.

This method is also very effective when deploying 2 1/2" defensive protection lines as well. A 200" length can be unloaded from out of its hose bed compartment in its entirety in a pile at the rear of a fire engine. Next, the hose is then connected to an appropriate discharge in not already pre-connected, hand coiled (starting at the bitter end (female end) of the hose) into eight foot (8') diameter coils, and then finally fully charged within 10' of the rear of a fire apparatus. Not only is 100% nozzle pressure achieved in a matter of moments, but it can be placed in service by only one (1) firefighter! Unheard of in the fire service! Who by himself, can extend this fully charged line (with the nozzle shut off during moments of advancement), up to 200' away, and even around right angel turns by righting the top coil to the vertical plane, hand rolling each hoop of charged line (25' of slack) to the nozzle location, as it is walked out an additional 25' with each hoop delivered to its desired destination before being hose strapped and secured to begin defensive operations. Teams of two (2) only accomplish this faster.

In regards to the hose roller itself, it's unique patented design is in a class of its own. Not only can it roll up multiple lengths of hose simultaneously and therefor thousands of feet of hose in a matter of minutes ranging from ¾" peanut line to 5" diameter LDH, but it also has 4 removable extension arms to pre-coil hose to its minimum inside critical diameter (MICD) for hose up to 1 ¾" size. Though we have long since had fully functional prototypes, we are now on the verge of a production model that can be manufactured and distributed to literally every fire department in the world.

Another patented devise is the fire hose cabinet; retro-fit insert or stand alone system. For the first time in world history, there is a fully functional fire hose cabinet system that can be deployed by a fire victim in a matter of moments, with 100% water pressure under nearly all conditions.

The fire hose cabinet insert/stand alone system utilizes the same laws of physics and principles as listed above. As always, once the hose is pre-coiled to it's minimum inside critical diameter, that "bundle" can be configured in almost any configuration to occupy any given storage space or hose bed compartment in which it needs to be stored. Instead of building a 3' x 3' x 12" deep hole in a wall (very expensive construction), a shallow box in which its volume is equal to that of one (1) length of

hose, with appropriate dimensions (depth of box equals width of the fire hose when flat) can be utilized instead. This exponentially smaller box can be wall hung, post hung or inserted as a retro-fit into ANY current hose cabinet across the entire globe! No construction modifications required whatsoever! Please see this 'system' as illustrated and video demonstrated at the website: [www.hosecabinet.com](http://www.hosecabinet.com) .

What is so sad however, because the current methodology of folding the hose on a hose cabinet pin rack or similar DISFUNCTIONAL DEVICE (48 pre-engineered water restrictive kinks that must first be UNFOLDED), the laws that require such apparatus to be installed in fixed facilities have changed and now each hose cabinet is required to store an inefficient, very short duration fire extinguisher instead. The logic is that it is better to have something that works, even with its extreme limitations as it will last only for a very short time, is better than nothing at all. My goal is to rewrite these required mandates in a way that a fire victim will have the choice of either a short duration fire extinguisher and/or a fully functional fire hose able to flow 60 gallons per minute unrestricted, but in any case with the ability to flow water indefinitely long past the time needed to safely egress a building.

One other component of the HFT fire system is that of a hand operated rescue rope winch. This is a very simple attachment to the existing hose roller designed to pull heavy loads such as a rescuer and a victim strapped in a rescue stokes litter at a high angle and even vertically from a confined space on a tripod apparatus. Again to fully understand this demonstration, it is best to watch the second ebbed video at [www.rescuewinch.com](http://www.rescuewinch.com). In a nut shell, the bitter end of any length of rope can be threaded through an eye bolt which serves as a guide so it can be wrapped around a windless spool to transfer torque from the hand operated crank handle to the rope to lift or pull a load of several hundred pounds.

One scenario would be a victim involved in a vehicle accident over the side of a steep embankment. The hose roller is first attached to a standard 2" trailer hitch receiver found on nearly any utility vehicle. The windless spool attachment is assembled to the hose roller. A rope bag with rope of the appropriate length is thrown down to the victim. The bitter end of the rope is secured to the hose roller rescue winch as video demonstrated. Multiple rescue personnel and their equipment (i.e. Stokes litter) descend to treat and "package" the patient. Upon completion, the firefighter at the rope rescue winch hand cranks the victim and one (1) rescuer who attends the Stokes litter all the way up and out of the ravine where further advanced life support treatment and transport is rendered.

Furthermore, there is the design for a tripod attachment which can be used to ascend rescuers and victims vertically. Virtually any scenario in which a tripod rescue system can be utilized this rope rescue winch attachment can be quickly assembled and placed in service far quicker than any other current methods of utilizing the "Z-Rig" rope configuration to obtain a 3 to 1 or 6 to 1 mechanical advantage. The bottom line is the simplicity of the design and the speed in which the rope rescue winch (rated at a 6 to 1 mechanical advantage) can be placed into service with the ability to perform all duties presently accomplished by other current means.

Lastly, please go to my other website at [www.fireandlifesafety.org](http://www.fireandlifesafety.org) where a down loadable PDF file for immediate distribution to any classroom across the globe is available that lists both emergency and non-emergency procedures, many of which we have been familiar with for years that have been taught to people of all ages to enhance their personal safety. Most notably however, is the emphasis of teaching every family member, every business owner, and every work supervisor to communicate to the first responding units on scene at an incident that if in fact all of the victims are verified to be out of a burning building it is effectively communicated that in fact all victims are safely out of that building!

I have dedicated all of my sites to Kyle Wilson, Terry Renfro, the Charleston 9 and every fire fighter killed or injured as a result of searching for victims who had already escaped. In Kyle Wilson's case,

he was first to arrive on scene as part of a three (3) fire fighter engine company. It was a little before 6:00 am on a midweek morning, spring time, Anytown, USA. Fire and smoke was showing from the upstairs bedroom windows and attic areas. Hose was laid to the front door but never deployed indoors because of the configuration in which it was prepared... flat loaded (un-coiled). Kyle did what hundreds of fire fighters do everyday and entered the two story family dwelling with absolutely no other personal protection than the turnout gear and breathing apparatus he was issued.

Upon reaching the first unaffected bedroom, his search was futile as no one could be found in bed, under the bed, in the closet, or collapsed on the floor. The second and subsequent bedrooms yielded the same, but because of modern 2" X 4" engineered truss roof members were burning above him in the attic, the roof structure failed and trapped and pinned Kyle against the floor in and amongst the burning debris. A rescue attempt was made but to no avail as the other fire fighters who entered the structure lost an incredible amount of time and energy untangling the partially deployed fire hose line. With limited water protection (unlike the coiled pre-connect configuration I demonstrate which can be in full operation in seconds) they were quickly pushed back by the advancing flames until other fire attack lines were finally untangled and established before an upper hand on the incident was afforded.

The good side of the story is no others were killed especially since there were seven (7) occupants sleeping in those very beds that very morning. The tragedy is NO ONE KNEW to stand at the end of the driveway to let Kyle Wilson's company officer know all potential fire victims had ESCAPED. For they were all next door being comforted by their neighbors as all their treasured family heirlooms went up in smoke. The other tragedy of this story, is that in none of the generated reports as a result of Kyle Wilson's death ever articulated any responsibility taken by the fire department prevention program for their failed efforts to educate the public (each and every potential fire victim in their district), via the school system for example, the need to ensure accurate life safety risk at an incident is communicated to the first-in units regardless of the time of day or current weather conditions. Yes, it is my opinion, among other severe contributing factors listed above, Kyle Wilson is essentially dead due to the ignorance of the mentally anguished fire victims who lost all their possessions that tragic morning.

May I emphasize, I am first to admit that there were many other contributing factors in each of these tragic deaths, but the bottom line remains the same. If it were known there was no Life Rescue threat at the inception of each incident, in each and every case fire fighters would have stood at the curb side and had NEVER taken such aggressive measures as to risk their own lives to save another who had already escaped to safety! In regards to the Charleston Nine... THERE WERE NO CIVILIAN DEATHS OR INJURIES WHATSOEVER! EVERYONE HAD ALREADY ESCAPED! The end result would have been the same amount of property damage yet with NO CASUALTIES! Otherwise families, friends, and comrades would have been relieved from such incredibly severe psychological trauma and loss as each incident would never have made national headlines as they did!

Help me help us educate the world as there can never be an excuse for such continued ignorance.

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