

# FOAM TRUMPS WATER

By Dominic Colletti

## WARNING

In this feature, we'll talk about something that's politically incorrect in the fire service—using compressed air foam for structural fires.

Growing numbers of progressive departments around the country are using this technology to enhance firefighter safety and make quick fire stops. For many fire officers and firefighters, there's just no good reason not to use it.

But that's not what "they" say. You've heard that it's all hype and that it's not as effective as the proponents claim.

Read the following at your own risk: You could become part of the movement using compressed air foam systems (CAFS) to leverage firefighting forces. And if you do, "they" might be talking about "you" next.

## But you must understand how to use it to reap the benefits

### CITY OF BUTLER

The City of Butler (Pa.) Bureau of Fire is more than 125 years old, precisely the sort of department at which one might expect traditional ways of firefighting to die hard. But not so. Asked if the City of Butler has buy-in from all its firefighters in using CAFS technology, Firefighter Scott Marshall says without hesitation: "Yes."

A city of approximately 16,000 people, Butler is located north of Pittsburgh and protected by 18 career firefighters. It features a mix of light-industry structures and century-old dwellings, including apartment buildings and duplexes.

"We have successfully used compressed air foam to battle 30 structure fires over the past 3 years," Marshall says. *Example:* More than 1 year ago, a second-due pumper that was not equipped with a foam system was out running errands when dispatch hit the tones for a reported structure fire. This truck was first on scene and confirmed a working fire. Knowing that the CAFS-equipped engine was 1 minute away, the captain decided to wait for it to arrive to attack the fire, using the water-only engine for a reverse hose-lay to the hydrant for a water supply.

"Our people clearly understand the benefits," Marshall says. "If we can put the fire out in less than half the time by using CAFS, why not aggressively use it?"

"For our firefighters, we really see the benefit of CAFS as lightweight and more maneuverable hoselines that provide quick fire stops," he adds. "And for the people we protect, we see much less property damage from fire. In particular, water damage is minimized using compressed air foam compared to water application alone. When we have a second-story room-and-content job, the family living on the first floor is usually able to move back into their home immediately. It is impressive."

Marshall says that getting everyone onboard with the concept at the department was a function of the initial training they received more than 3 years ago, after delivery of their Smeal-built Hale CAFSPro-equipped pumper (see sidebar, p. 52).

Fire Chief George Ban of the Butler Bureau of Fire says that he just received funding for a new rig, and will be purchasing a second CAFS engine as soon as possible.

### NO TRAIN, NO GAIN

CAFS technology has come a long way in the last 2 decades, morphing from a wildland firefighting tool into a structure fire suppression instrument. Used actively for decades in forestry and the wildland/urban interface, CAFS has also found use at petrochemical refineries for flammable liquid suppression-applications with Class B foam concentrates.



So don't write off the use of CAFS for a wide array of fire-suppression and exposure-protection applications. It's versatile.

Without a doubt, the key to the successful use of CAFS in any fire department is training and education. Many of the problems firefighters have encountered with CAFS have been remedied as we refine our understanding. Most problems that arise today result from a lack of training and information. As with most of the finer aspects of firefighting, the devil is in the details. Following are problems most common when providing training to departments new to CAFS.

### Pump Operation

Traditional CAFS pumps add between five and eight steps to pump operation. This can



Compressed air foam does have a role to play at the structural fire scene, by allowing you to leverage your firefighting resources. Here, firefighters [Dominic: can you describe this scene briefly?]

PHOTOS DOMINIC COLLETTI

be very demanding under stressful fireground conditions; however, today some CAFS apparatus turn on automatically and operate easily with little pump operator intervention. This is the case with the City of Butler's unit. Ease of use is very important to the long-term success of any department's CAFS program: If a pump operator can't get the unit to operate effectively, immediately, every time, the CAFS controls will likely just be left in the "off" position. CAFS buyers, beware.

#### *Foam Delivery Rates*

The second issue is developing a working understanding of compressed-air foam delivery rates for structural firefighting. Too many departments erroneously believe that when applying compressed-air foam, the flow rate

(gpm) of liquid (foam solution) applied can be substantially reduced over traditional water application. Make no mistake: An inadequate compressed-air foam delivery rate will result in buildings burned to the ground, compromised firefighter safety and a greater risk of lost life.

#### *Nozzle Selection*

When a hoseline discharges compressed-air foam, the fire stream is made up of bubbles that are a mix of foam solution and compressed air. Standard water fog and automatic nozzles can be used, but these leave a lot to be desired with regard to foam quality. Fire departments considering CAFS should complete a nozzle analysis to make an educated decision on the best choice of a nozzle for their applications.

#### **HOW TO PROCEED**

If you want to learn more about CAFS but are new to the concept, consider hosting a seminar by a reputable training provider. If possible, invite apparatus vendors and area departments that have CAFS-equipped apparatus. This especially makes sense if your department is in the beginning of the apparatus specification and purchase process.

Since spare real estate inside the pump house on a new engine is typically hard to come by, it's best to do a CAFS evaluation *prior* to building a new pumper. Put simply: High-capacity CAFS are difficult to retrofit. So, if you have to spend a week of your time—or several, for that matter—researching whether CAFS is really for you, this is time well invested, whether you end up

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### The City of Butler's CAFS War Wagon—a 2005 Smeal

- Spartan Gladiator chassis
- 300-hp Cummins engine
- Hale Qmax 2,000-gpm single-stage midship fire pump
- 750-gallon water tank
- Hale CAFSPro with 210-scfm air compressor
- FoamLogix 5.0 electronic foam proportioner
- 50-gallon Class A foam concentrate reservoir
- 1,000 feet of 4" supply hose
- Four crosslay foam-capable discharges:
  - Two 1 3/4" CAFS
  - One 2 1/2" CAFS
  - One 1 3/4" foam solution
- A CAFS-capable deckgun with plain water bypass and an Akron Saber Jet nozzle
- 3" rear CAFS discharge
- Full complement of Hurst hydraulic rescue tools

deciding to implement CAFS or not. I've seen a number of departments take delivery of new apparatus, only to realize a year or two later that they want to implement CAFS. After a close look, they discover they don't have the room for CAFS installation. *Remember:* Specifying CAFS into the pump house envelope of a pumper during the apparatus design process is definitely the way to go.

The Montgomery County (Md.) Department of Fire and Rescue is a model for departments that are evaluating compressed air foam. Over the course of several years, Montgomery County evaluated the technology and its effectiveness through live-fire training evolutions in several acquired structures, including a high-rise building. After several years of work and a detailed apparatus specification process, they now have 36 CAFS-equipped pumpers on order with Crimson. This is the largest single order to date of CAFS installed on full-size structural engines in the United States.

### CONCLUSION

While not a panacea, the effective implementation of CAFS can increase structural firefighting capability and improve firefighter safety. But only you can tell if CAFS technology is the right tool for your department. Invest the time to find out, and bring back the information to your crews. You'll be glad you did!🔧

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