

# Is that water you are using?

Investing the time and money to add CAFS to your initial attack arsenal could significantly change your “luck”, writes foam and CAFS expert Dominic Colletti.

**R**onald Admundsen, the first explorer to reach the South Pole, on December 14, 1911, said: “Victory awaits those that have everything in order – people call that luck. Defeat awaits those that don’t – this they call bad luck.”

Virtually every fire brigade faces the challenge of increasing firefighter safety and the service delivery levels provided to their local community. One tool being adopted at an increased rate today that can assist in this mission is Class A foam and Compressed Air Foam Systems (CAFS). This technology continues to play an ever increasing role in modern fireground operations.

“Is that water you are using? Why not use foam?” Fire officers considering implementing a Class A foam and CAFS program need to formulate a technology integration strategy and action plan. Without a plan that covers the end-result – the desired return the department wants to see from their investment in foam technology – a lot of time and money could be wasted. So what results can be expected from successfully deploying this technology? At the top: increased firefighter safety due to reduced fire scene cycle times. With flames extinguished in less time than using water, overall firefighter exposure to heat and toxic products of combustion is reduced thereby lessening stress.

The next benefit, while indirect, is a major firefighter safety advantage – with fires extinguished in less time, suppression resources are deployed for less time. This means that the number of second and third alarm assignments required to travel at emergency speed on roadways is reduced. With fewer apparatus traveling to and returning from the fire scene, apparatus crashes, a major factor in firefighter fatality according to fire



industry statistics, can be reduced. Last but not least, for the home or business owner there are the benefits of reduced fire and water damage to building and contents.

## Rural CAFS applications

All fire brigades that cover rural areas should investigate adding Class A foam and CAFS to their firefighting arsenal, since delivering adequate water supply in a rural fire environment can be a real challenge. In some remote communities, geographic and environmental limitations make water supplies for drinking and fire suppression a precious commodity. Whether a fire district covers a remote area or is in a suburban location with only partial water supply infrastructure and areas of no pressurized hydrants, Class A Foam and CAFS technology will fit in well as a method to increase firefighting capability.

In some areas of the world, adding to the need for CAFS in rural and suburban locations that have limited water supplies is the proliferation of new homes dubbed “McMansions.” The low-interest mortgages and escalating property values of the mid 1990s made it possible for many families to live large in their own McMansion, a home typically sized from 3,000 to 6,000 square feet.

When these large structures burn, the rapidly spreading fire can involve multiple compartments and cause a high-challenge firefight. This easily overwhelms initial-arriving fire resources, including available water supply. Even when using a “tanker task force” – a multiple-tanker response with an engine positioned at the water supply – it is sometimes difficult to get enough water on scene to combat a fire in a well-involved 6,000-square-foot home in a timely manner. Using CAFS on initial-attack fire apparatus can help under these circumstances.

In rural fire environments, implementing CAFS needs to be a priority since a given water supply can accomplish more effective fire suppression when turned into compressed air foam. Simply stated, what CAFS apparatus do is take water supplies and create finished-foam streams that are much more effective than water alone at stopping structure and other types of ordinary combustible fires. This is important especially when a brigade’s

Top: CAFS in action during Fire Expo in the UK. Below: firefighting with CAFS.





CAFS truck operated by Buckinghamshire Fire and Rescue.

strategy uses the first-arriving apparatus' booster tank water for initial fire attack. This holds true not only in rural areas, but in suburban and urban environments as well.

When planning specifications for new rural fire apparatus equipped with CAFS, there are a number of issues facing the truck committee and purchasing authority. The question usually surfaces: "Can the size of the booster tank – the total gallon capacity – on the apparatus be reduced since CAFS increase water's firefighting capability?" The quick answer is yes. Keep in mind, however, that no hard-and-fast math formula exists to intelligently plan to what extent a given-size tank can be reduced and still provide the fire-stopping capability you require.

Based on real-world experience and empirical testing, we know that the total water supply (total gallons) required to combat a structure fire can be reduced by up to as much as two-thirds when compressed air foam is applied correctly. However, there is not enough existing scientific data to provide an exact math formula

with a high confidence level to show by how much an apparatus booster tank can be routinely reduced to compensate for CAFS capability to increase the efficiency of water to suppress fire.

For fire officers designing new fire apparatus, what this issue comes down to is reducing booster tank size as a trade-off in order to obtain other items such as a shorter apparatus wheelbase, more tool compartment space, or lighter front and rear axle weight ratings. Trade-offs involving reduced booster tank size need to be based on a host of local factors and circumstances affecting the specific fire brigade. Every situation will be different. This is a personal choice.

When planning water supply requirements for initial attack, prepare for the worst and hope for the best. The best defence is a hard-hitting offence.

CAFS are a valuable tool to leverage initial attack water supplies and add significant fire suppression performance. If you are involved in specifying a new engine, invest the time to give Class A foam and CAFS a close look – it can change your luck and you will be glad you did.

### ABOUT THE AUTHOR

Dominic Colletti is the author of two books: "The Compressed Air Foam Systems Handbook" and "Class A Foam – Best Practice For Structure Firefighters." Colletti is a former assistant fire chief and serves on the technical committee of the National Fire Protection Association (NFPA) 1500 Fire Department Occupation Safety and Health Program. He is a fire instructor with over 20 years of CAFS tactical firefighting experience. Dominic can be reached at dcolletti@idexcorp.com.



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