



Take Retrofitting to Another Level

The durability of compressed-air foam systems allow them to be used again and again. *By Keith Klassen*

Two things are a reality in today's firefighting world. First, budgets constantly are being squeezed tighter. Second, the green movement to conserve, reuse and recycle has arrived. At the same time, many departments are being asked to do more with less. This means they must find ways to do the job more efficiently while keeping their personnel safe. To accomplish all of this, department leaders must be resourceful and think outside the box.

One method of improving efficiency and increasing personnel safety dur-

ing firefighting operations is the use of compressed-air foam. This extinguishing agent makes water more efficient by increasing the surface area available to absorb heat. Efficiency also is increased by making the extinguishing agent attracted to carbon-based Class A fuels. This results in quicker fire extinguishment without the damage caused by using excessive water volumes. Quicker knockdown means that firefighters are exposed to the fire hazard for a shorter period of time, which increases safety. A second safety benefit of using com-

pressed-air foam is the ability of firefighters to attack the fire from a greater, and therefore safer, distance due to the reach of the high-energy stream

For many departments, the purchase of new apparatus that is equipped with a compressed-air foam system (CAFS) is far outside of today's budget reality. It is, however, feasible to upgrade existing apparatus with CAFS technology. The cost of retrofitting a CAFS is dependent on several factors. These include the size and model of the system to be added, how many CAFS-capable discharges are desired, and whether the apparatus already has a usable foam proportioner. These factors often can be adjusted to fit the fire department's budget. The cost

of the system should be considered an investment that can increase the capability and longevity of the apparatus. (For more depth on retrofitting an apparatus with CAFS, see the article in the January 2011 issue of *FIRE CHIEF*.)

Another benefit of a CAFS is that it easily can outlive the apparatus on which it is mounted. The heart of the system, and the most costly component, is the air compressor. These are industrial-grade compressors that are designed to provide 10,000 hours or more of service, far more than they will see even on the busiest engine companies.

Recently, the Fountain Hills (Ariz.) Fire Department needed to replace an apparatus. The truck was a 1989 Ford C8000 FMC pumper. In 1997 it had been retrofitted with CAFS by Pneumax, a local CAFS manufacturer. Though the apparatus was being retired, the department realized that there was still much life left in the CAFS. It also wanted the technology on the replacement pumper, a 2008 Crimson pumper on a Spartan chassis. To be both green and cost effective, the department had the CAFS from the old pumper removed and installed on the new truck, making it the first of its kind and coining the term "CAFS Re-retrofit."

The project reused the major components, such as the air compressor and compressor cooler. These components were cleaned, serviced and repainted in preparation for installation. The air oil sump was replaced because a different-shaped unit was needed to fit on the new truck. Components such as the auto sync system, which automatically balances air and water pressure in the CAFS, were upgraded from the old manual controls to state-of-the-art electronic controls. As many components as possible were

CAFS can propel foam a distance that is 33% greater than the distance water can be propelled, which means that firefighters could initiate an interior attack from a greater standoff distance by directing a stream through a door or window.

reused. For example, a water-pressure gauge that was not needed for a discharge was reused as an air-pressure gauge for the air compressor.

New technology in the form of Elkhart Intelligent CAFS Selector (ICS) valves were installed on the two 1¾-inch cross lays. These are typically the first two lines pulled off the apparatus and the department wanted to make them as user friendly as possible. The benefit of the ICS valve is that, with the push of one button, both air and water valves to the discharge will open to a predetermined setting, providing the correct foam every time. The valve has two other presets that allow the firefighter to quickly select different foam consistencies. The valve also is fully adjustable by the operator if settings other than the presets are needed. In addition to the cross-lay discharges, the front bumper jump line was plumbed for CAFS and a new 2½-inch CAFS discharge was added on the officer pump panel.

By reusing the majority of the CAFS

components, the department was able to realize a significant cost savings. The department also was able to take advantage of a large additional savings in terms of labor costs on the installation, as it volunteered to have the retrofit completed by the Advanced Emergency Vehicle Technician class at the 2011 Class A Foam and CAFS Academy held in Glendale, Ariz., Feb 3–5. The class, which consisted of nine highly skilled students who had not met prior to the class, quickly became a team. They had a very short time frame of 2½ days to complete the project. During the lunch break on the final day, a vehicle fire was extinguished using the re-retrofitted pumper, as a demonstration for the entire academy.

As well as upgrading the Fountain Hills pumper the class provided the students with the knowledge and skills needed to perform retrofits for their fire departments or apparatus service centers. It also demonstrated that CAFS retrofits and re-retrofits are doable in a short timeframe and are user friendly for firefighters. This is just one example of how the fire service can be innovative, cost effective and green — all in one useful package.

Editor's note: *The International Class A Foam and CAFS Academy is an annual event. Information on the Academy and the retrofit class will be available at compressedairfoam.com. Student applications also will be available on the site, as well as contact information for fire departments interested in having a CAFS retrofit performed by the class.*

Keith Klassen has nearly 35 years of experience in the fire service, both as a volunteer and as a career firefighter. He is currently a captain for Summit Fire Department in Flagstaff, Ariz. Klassen also is the CAFS instruction program manager for Waterous Co.