

Tools News Techniques

Equipment | How To | Training | People | **Gear Test** | Web & Media | Events

Aqua Vest Active Firefighter Rehab System

Pros

- + Easy to use;
- + Rapid cooling; and
- + Cools up to 6 firefighters at once.

Cons

- None.

Cool Down—Quickly

The Cool Shirt Aqua Vest Active Firefighter Rehab System cools up to 6 firefighters at once

By Josh Krimston

Scientists and physicians have tracked the perils of heat-related illnesses during military operations for hundreds of years. Although they may not have completely understood the science behind heatstroke (19th-century practices sometimes called for wearing orange underwear and cork helmets to block the sun's rays from the spinal cord and the brain), it was clearly recognized that soldiers going into battle wearing heavy armor could become overheated and die. Even the Bible has multiple passages related to sunstroke and the effects of heat on military procedures.

These findings can clearly be translated to modern-day firefighting operations, and have been instrumental in recent changes about how we take care of our personnel during fire suppression and training. Can you say “rehab”?



The cooling unit looks like a typical ice chest, but contains an internal pump that keeps the water flowing through a series of hoses that connect to up to six vests.

I recently had the opportunity to test Shafer Enterprises' Cool Shirt Aqua Vest Active Firefighter Rehab System, an efficient tool for any rehab scene. The system can quickly and effectively cool up to six firefighters at once, and it meets NFPA 1584 standards for active cooling and rehab.

The Aqua Vest covers 30 to 40 percent of the skin's surface with temperature-controlled water being pumped through more than 50 feet of tubing integrated into the vest.

PHOTOS COURTESY SHAFER ENTERPRISES



The late Rich Shafer, inventor of the system, first started working with elevated temperatures and occupational environments in the late 1980s. At that time, orthopedic surgeons began wearing Tyvek medical gowns, and discovered that they didn't breathe well and became unbearably hot. With this in mind, Shafer developed a cooling vest, the Aqua Vest prototype, which surgeons could wear under their gowns to keep themselves comfortable. Shafer also developed a number of cooling systems for race car drivers. To date, more than 1,000 hospitals and more than 25,000 racers use the Cool Shirt technology.

Utilizing information gleaned from their hospital and racing experience, Shafer and his partners developed a product with the ability to meet the specific needs of the fire service. The system operates on the premise that when the temperature around you is greater than 95 degrees F (this includes inside the turnout gear), the human body loses the ability to shed heat through radiation, convection and conduction. Thus, the only means the body has to effectively cool itself is through evaporation.

Enter the Cool Shirt Aqua Vest Active Firefighter Rehab System. The Aqua Vest covers 30 to 40 percent of the skin's surface with temperature-controlled water (between 45 and 60 degrees F) being pumped through more than 50 feet of tubing integrated into the vest. This process, with the help of an evaporative material that wicks moisture from the vest away from the skin, assists in cooling the wearer's blood through evaporation. According to Shafer Enterprises, studies have proven that cool water will transfer body heat up to 28 times faster than cool air. The result is a quicker return to normal core body temperature, improving vitals and decreasing rehab time.

The system is ideal for preplanned training exercises but can be set up in less than 5 minutes for any emergency situation, as long as there's a power source and available ice and water. Other great uses for the product include cooling down patients in aid stations at large gatherings where heat may be a factor (e.g., Lollapalooza in August) or physical agility tests.

The cooling unit looks like a typical ice chest, but contains an internal pump that keeps the water flowing through a series of hoses that connect to up to six vests. The vests are easy to don, and they come in five sizes (M-XXXL). Cooling takes place rather quickly once the water begins circulating through the device, but it's not an uncomfortable process like, for example, dunking your head into a bucket of ice water. And, unlike wetting down a shirt or towel, the vests don't dry out or warm up over time; they stay consistently cool for hours. The vests are also easy to remove and can be switched from person to person quickly and efficiently. Another nice feature: The vest's configuration allows full access to the wearer's arms for blood pressure monitoring or IV access.

The Aqua Vest Active Firefighter Rehab System comes in two versions, the Four-Person Rehab Station (\$2,295) and the Six-Person Rehab Station (\$2,895). Some folks may balk at the initial price tag, but administrators with experience in injury prevention know that just one trip to the hospital for an overheated firefighter could cost a department five times as much. So in my opinion, this is a good investment.

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