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Selecting the Right Washer-Extractor for Turnout Gear Care

Although it's critical to properly clean soiled turnout gear to prevent the transfer of carcinogens, particulates and biohazards to firefighters, and those they serve, it isn't easy to determine which washers are most appropriate to do the job. Turnout gear demands specific cleaning care to remove contaminants and prevent fabric damage. Through the use of the right washer-extractor, turnout gear can be properly cleaned – preserving the gear's protective integrity without damage.

Firefighters know dirty gear is dangerous. As more and more particles attach to protective gear and chemicals remain on clothing, that gear gradually loses its effectiveness – putting firefighters at increased risk. The apparel that's designed to protect, may then facilitate a dangerous event because it reflects less radiant heat, becomes more flammable and can even conduct electricity (Stull and Stull).

But, how should a fire department go about choosing the right washer-extractor to properly clean gear?

Using evidence, National Fire Protection Association (NFPA) 1851 guidelines, and expert advice, this paper serves to clearly define which washer-extractor features are required to properly clean turnout gear, and which features best fit the needs and installation requirements of most firehouses. In the end, a highly programmable, front-load washer-extractor with automatic chemical injection is critical. Depending on the application, many firehouses will also require high-efficiency, soft-mount (freestanding) washer-extractors, which are simpler to install and allow for installation flexibility that hard- or rigid-mount washers do not.

How Programmable is Highly Programmable? Why Programmability is Critical

When cleaning turnout gear, fire departments should follow manufacturers' recommendations and NFPA 1851 guidelines for the care and maintenance of protective apparel (NFPA, Stull and Stull). NFPA 1851 guidelines indicate that soiled protective gear be washed in a highly programmable, front-load washer-extractor. Front-load washers eliminate the possibility of damage from agitation, while a highly programmable washer allows fire departments to easily alter how they wash gear based on changing recommendations and fabric innovations (Jorgensen, Stull and Stull). That means the washer is programmable enough to handle the washing specifications of today's protective gear and emerging protective fabrics still on the horizon.

A highly programmable machine allows the user to program every variable of the wash process, including extract speed in G-Force, number of baths, water temperatures, water levels, cylinder rotation options, mechanical action, wash time and automatic chemical injection. By investing in a highly programmable washer, fire departments can properly clean virtually any

fabric type. Once the machine is programmed, the user just enters a code and presses start. The gear is cleaned automatically and properly every time – with the right mix of chemicals, water temperature, water levels and extract speed. So no matter who is doing the wash, the load results are perfectly consistent every time (Jorgensen).

The highly programmable Continental Girbau E-Series Washer-Extractor is a good pick for any fire department. It allows the user to program every variable of the wash process, including extract speed (from 2 up to 387 G-force), multiple baths, water temperatures, water levels, cylinder rotation options, mechanical action, wash time and automatic chemical injection. Making things simpler, the Continental E-Series Washer-Extractor can be programmed upon installation by chemical representative to clean turnout gear liners and shells according to NFPA guidelines, which suggest that the liners and shells be washed separately; water temperatures do not exceed 105 F; extract speeds do not exceed 100 G-Force; and a mild detergent is used with a Ph level between 10.5 and six (Jorgensen and NFPA).

Fire departments should seek out a reputable chemical supply company with a representative accustomed to programming washers for cleaning protective apparel. That representative should know to follow NFPA and manufacturers' guidelines.

Why Automatic Chemical Injection is Important

A washer-extractor with automatic chemical injection has the capability to automatically inject exact amounts of cleaning chemicals at exactly the right time in the wash process and at the right water temperature. It is very important that fire departments choose a washer-extractor with this feature, like the Continental E-Series Washer, because it prevents chemical overuse and damage to fabric (Jorgensen). When chemical overuse occurs, sensitive protective fabrics can be damaged, bleached, or made useless. Many fire departments have multiple people doing the wash, which can contribute to accidents and chemical overuse. But, with automatic chemical injection, no one adds detergents manually, ensuring the correct quantity every time. Protective firefighting gear is costly. A highly programmable washer with automatic chemical injection can be programmed to clean correctly simply by entering a program number and pressing start.

A Soft-Mount/Freestanding Design is Key to Easy Installation, Maintenance

While not as critical as programmability and automatic chemical injection, a washer-extractor that is freestanding is almost always better than a hard, or rigid-mount washer. Freestanding washers like the Continental E-Series model have a soft-mount design that dramatically simplifies installation, and resulting costs (Jorgensen). While a soft-mount washer does not require a reinforced concrete foundation, hard-mount washers do. Hard-mount washers must be bolted to a thick, concrete foundation; are harder to access for maintenance; and more cumbersome to relocate. Conveniently, soft-mount washers can be installed nearly anywhere there is extra

space, including truck bays with in-floor heat, utility areas and second-floor laundry rooms (Jorgensen). They are also easier to service and maintain because they are more accessible. Soft-mount washers – like the Continental E-Series Washers – are also simple to relocate if needed. If a fire department is looking for a washer that's easy to install and service, choose one that offers a soft-mount design.

Superior Efficiency Essential to Reducing Costs

Many fire departments are on the cutting edge when it comes to conserving natural resources and energy. As a result, fire departments can demonstrate they are using taxpayer money effectively. By purchasing an energy-efficient washer-extractor, fire departments can demonstrate lower natural gas, water and electricity usage and costs. This is why it is important to consider how energy-efficient a washer-extractor is before it is selected. Among the most efficient industrial washer-extractors on the market are the Continental E-Series Washer-Extractors, which come in 20-, 30-, 40-, 55- 90-, 130- and 255-pound capacities. Depending on laundry volume, most fire departments install 20-, 30-, 40- or 55-pound capacity washers to handle the proper cleaning of turnout gear (Jorgensen).

There are a couple of resources that evaluate the efficiency of 20-pound capacity washer-extractors, but none that rate the efficiency of larger models. However, some manufacturers of washers do have their washers evaluated for efficiency by independent laboratories.

First, Energy Star and the Consortium for Energy Efficiency (CEE) are both organizations that classify a washer's efficiency in the 20-pound capacity category.

Energy Star, for example, lists the Continental E-Series 20-pound capacity washer-extractor among the most energy-efficient in its class of industrial commercial washer-extractors (Energy Star).

Similarly, CEE classifies small commercial washers into tiers of efficiency, with Tier 3 being most efficient (<http://www.cee1.org/com/cwsh/cwshspec.pdf>). According to the CEE, Tier 3 washers must have an Modified Energy Factor (MEF) of 2.20 or greater. MEF is a combination of energy factor and remaining moisture content. MEF measures energy consumption of the total laundry cycle. It indicates how many cubic feet of laundry can be washed and dried with one kWh of electricity; the higher the number, the greater the efficiency (CEE).

Although the CEE doesn't classify large-capacity washers, it does give laundry equipment consumers a guideline for efficiency. For example, the Continental E-Series 55-pound capacity washer-extractor underwent testing by an independent laboratory – Intertek – for efficiency. According to Intertek test results, the 55-pound capacity E-Series Washer produced an MEF of 2.34. The MEF of the 55-pound E-Series model aligns with CEE's highest efficiency tier – Tier 3 (CEE, Continental Girbau). Additionally, the E-Series 20-pound capacity model is classified as a Tier 2 washer for efficiency by CEE.

In order for fire departments to save natural resources and costs, fire departments should select an energy-efficient washer-extractor, similar to the Continental E-Series.

Selecting A LEED-recognized Washer-Extractor

Sustainable construction is becoming a standard practice throughout most construction markets in the United States, with an increasing number of projects becoming LEED-qualified (LEED). The U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System has become the nationally accepted benchmark for qualifying, measuring and documenting "green" buildings. Sustainable construction focuses on developing buildings, including firehouses, which use less energy and water and offer a healthy working environment. In the case of new, sustainable construction, many industries are turning to LEED for guidance and certification. By selecting a washer that is LEED-recognized, like the Continental E-Series Washer-Extractor, firehouses are a step closer to attaining LEED certification (USGBC). For detailed architectural specifications of washer-extractors that meet this criterion, visit www.arcat.com.

Grant Dollars to Fund the New Washer

Because clean turnout gear is critical to firefighter safety, fire departments across the United States often seek funding for the purchase of new washer-extractors via the Federal Emergency Management Agency's Assistance to Firefighters Grant Program (AFGP). The AFGP is in place to improve firefighter safety, and each year, funds new washer-extractor purchases for fire departments across the United States. To apply for an AFGP grant, visit www.firegrantsupport.com/content/html/afg/default.aspx. After all, clean gear is critical to limiting a firefighter's exposure to life-threatening chemicals, blood, body fluids and particulate matter (Stull and Stull).

Through the careful selection of washer-extractors, fire departments can ensure gear is properly cleaned according the NFPA 1851 guidelines; that installation is simplified; that any member of the department can do the wash without damage to protective fabrics; and that the washer's energy-efficiency keeps utility costs in check. Most of all, fire departments can feel secure knowing gear is properly cleaned for firefighter protection.

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