

EOS: ultimate protection through technology and design

A leading designer and manufacturer of protective clothing for the emergency services, Bristol Uniforms has remained at the forefront of innovation in the sector for more than 60 years. 1 December 2020 saw the much-anticipated launch of EOS, the company's new design for structural fire fighting PPE.

EOS has been created using a combination of quality specialist fabrics and innovative design expertise to offer an even higher level of protection against the new and emerging dangers faced by modern day firefighters across the world.

Building on the success of Bristol's XFlex and UK Collaborative Framework ranges, EOS retains the popular ergonomic sports styling, but is also sleek and smooth, offering superior protection against dangerous toxins and carcinogens.

Specifically designed to avoid the build-up of toxic smoke particles in vulnerable areas, the front of the jacket and sleeves have a simpler, smoother finish, free from pockets or unnecessary features where particles can gather. Instead, pockets for gloves and accessories have been carefully positioned for ease of use and to reduce particle accumulation. Storm pockets are situated at the lower back of the jacket – an area which typically receives less smoke exposure, and additional large pockets have been integrated into the inside of the jacket.

To further reduce build-up of particles, the outer layer of both jacket and trouser has no piping and a reduced number of seams. The jacket zip and neck area, often vulnerable areas of contamination, are protected by a smooth double-flap front.

Particle-blocking

The new range also features particle-blocking wrist cuffs as standard, with optional particle-blocking wind cuffs and skirt also available. These barriers prevent dangerous smoke particles from infiltrating protective clothing, either under the jacket or via sleeves and trouser legs, and coming in contact with the skin. The skirt is connected to the inside of the jacket, creating a seal around the torso, while the wind cuffs are placed over the boots to create a seal around the ankles, and the wrist cuffs prevent exposure between the glove and the sleeve.

For the remainder of the ensemble, a combination of specialist fabrics gives optimum performance while being light in weight to minimise heat stress. Customers can choose from a selection of outer fabrics manufactured from PBI or Nomex fibres, for example the Hainsworth TITAN range, which offers excellent



Internal front pockets.



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protection against heat and flame. EOS also comes with a choice of high-quality inner moisture barrier and liner systems from WL Gore, which protect against particles and pathogens and draw sweat away from the skin, keeping the body cool and dry.

Flexibility

It is vitally important for the health and wellbeing of firefighters that they can move easily and comfortably in their protective clothing, without restriction. The role of a firefighter is strenuous and physically active, involving crawling, running, climbing and carrying heavy equipment, so PPE must be ergonomic, working with them for optimal performance and comfort.

In developing EOS, Bristol researched new techniques and technologies to create a design that is even more lightweight and ultra-flexible, enabling a superior range of motion and manoeuvrability. This has been achieved thanks to the introduction of a distinctive, supple reflective taping called HEX-TT. The precise cube-pattern of the new taping features tiny gaps, resulting in an outer layer that is significantly more supple and flexible, tear and catch resistant, and less likely to degrade after frequent washing. HEX-TT is also heat-sealed, resulting in a smooth finish, which won't trap particles. This, and the orientation-neutral design, means it is also easier to repair in the event of damage.

Other new design features, such as concave seaming at the back of the jacket sleeves, and pleats on the back of the jacket, also help to enable greater ease of movement, enhancing the superior ergonomics.

Strength

Fire fighting PPE must be able to withstand the effects of carrying out a physically demanding role in challenging environments. As a manufacturer with decades of experience providing in-house PPE cleaning and repairing services in the UK, Bristol is well placed to identify common areas of weakness that may need more regular repair and has paid particular attention to these areas in the new EOS design. For example, the internal elbow and knee padding systems not only provide superior protection but have been specifically designed to resist damage in these common wear and tear areas.

Now that the regular cleaning of kit is recommended to reduce the risks associated with smoke exposure, fire and rescue services across the world are washing their kit more frequently than ever before, and we will no doubt continue to see washing frequency increase in future. This has placed much more emphasis on the longevity of PPE, which must now withstand this additional cleaning and remain fit for purpose.

In response, Bristol Uniforms has ensured that the new EOS design is particularly hard-wearing and even longer lasting and, crucially, able to withstand frequent washing and tumble drying.

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Tailored to requirements

EOS is compatible with a wide range of accessories and equipment, including integrated safety harnesses and drag rescue devices, and customers also have the option to add bespoke radio pockets and loops to the front of the garment to accommodate specific equipment. It is also available in a wide range of colours to suit any national or regional preferences, including PBI Gold, PBI Gold and Black, Navy and Lime, Navy and Red, and Navy and Yellow.

Suitable for all international markets, EOS has been designed to meet the requirements of the CEN standard EN469 Level 2, NFPA standard NFPA 1971:2018, and the Australian standard AS 4967:2019. It is available in 28 different sizes for both male and female firefighters.

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