

Future Designs for Low Burden Respiratory Protection

Suzanne Pelfrey

Defense Science and Technology Laboratory (Dstl) Porton Down, Salisbury, Wiltshire, UK

UK research into protective equipment has focussed on reducing the physiological burden imposed by wearing Individual Protective Equipment (IPE). In the field of respiratory protection, the aim at Dstl has been the development of a low burden respirator and examination of ways of integrating dual cavity technology into future respirators and helmets.

Dstl has built a concept respirator which attaches to a ballistic helmet, using the entire helmet space as the outer cavity of the respirator. This moves away from reliance on the conformity of a face seal for protection, but still provides high levels of protection. The benefit of such helmet/hood systems is the provision of a modular approach to respiratory protection as well as enabling users to have CB protection embedded into their routine equipment.

The future respirator project also incorporates research into novel manufacturing materials and how they can be used within techniques such as 3D printing. Together with the latest filtration media such as Polymers of Intrinsic Microporosity (PIMS), Metal Organic Frameworks (MOFs), hollow fibres and carbon monoliths, future respirator designs could incorporate canisters with complex shapes for filtration.

.