THE NEXT GENERATION RESPIRATOR BATTLEFIELD EVALUATION SYSTEM

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ABSTRACT

The Respirator Battlefield Evaluation System (RBES) is a subject-mounted system used primarily to determine respirator performance under realistic use conditions. The RBES, worn as a backpack, is able to measure and record ambient and in-mask aerosol particle concentrations simultaneously to give a real-time protection factor (PF). The RBES is also capable of measuring and recording in-mask pressure data and accelerometer data, as well as audio and video via a helmet mounted camera.

First developed over ten years ago, the RBES has recently undergone a significant upgrade. Previously, each RBES was a purpose-built unit containing few commercial or user serviceable parts. Dstl has worked in conjunction with UK industry to develop a new RBES from commercial-off-the-shelf (COTS) components to enable easier through-life maintenance, increase reliability and reduce lifetime costs. The upgraded system also has the capability to run a third Portacount enabling simultaneous measurement of oronasal and eyespace PFs. In addition to on-board data logging, the RBES transmits data back to a base station in real-time so that operators can monitor performance throughout testing. Battery life is much improved (lasting up to 12 hours) and battery life readings are now included. Bespoke software has been built to allow comprehensive analysis of the collected data and easy synchronisation of data with the recorded video / audio feed.

This paper describes Dstl's upgraded RBES and includes data recorded in a laboratory trial that demonstrates the capability of the new system.