

FOGGING AND RESPIRATORY SIMULATION SYSTEM

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The UK is currently undertaking research into the development of aircrew protection equipment for in-service aircraft under the Aircrew Protective Equipment and Detection (APED) Programme. It is envisaged that these respiratory solutions will replace the current aircrew respirator (i.e. AR5). A critical factor in the development of aircrew respirator solutions is the airflow management within the mask, in particular the ability of the visor to remain clear (fog free) under all climatic conditions.

The Dstl Fogging and Respiratory Simulation System (FARSS) facility has been designed, in collaboration with Crawley Creatures Ltd., as a test platform for evaluating the formation and propagation of mist in respirators, goggles and other headwear. The FARSS can be used to assess the time taken for a visor system to mist, and to quantify the extent of misting under various climatic conditions (-40°C to +50°C, RH up to 100%). Crucially, this unique facility is designed to accurately simulate realistic human effects that impact on lens fogging. To fulfil this challenge, the heated head-form is capable of mimicking breathing and perspiration across the full human range and includes a facility to humidify exhaled breath. Furthermore, the climatic chamber is capable of being run over a wide range of temperature and humidity settings to represent environments that may be encountered in all theatres of operation.

FARSS will be used to identify the conditions which cause significant misting within current respirator systems, and assess potential solutions against these conditions. This paper describes the work undertaken by Dstl to commission the system. In addition, alternative uses for the FARSS equipment, including valve testing, will be described.