

Design and Development of New Advanced US Government Military Masks and Filters

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During the past six years Avon has undertaken the development of two military respirators for the US department of defence. This presentation describes the major design and manufacturing challenges that Avon overcame in order to produce masks that met the demanding US government performance specifications. The principle features of the Joint Service General Purpose Respirator (JSGPM), designated XM51, are: 1) a large flexible wrap-around visor to meet the requirement for unrestricted forward vision, with particular emphasis on peripheral field of view, 2) conformal twin filters, to meet the requirement of high protection in a compact mask with very low physiological burden, 3) add-on Secondary Filters to meet the requirement of broad spectrum protection against TICs when dictated by the operational scenario and 4) low maintenance and through-life cost to meet the requirement of best value for taxpayers dollars.

The principle features of the Improved Protective Mask, designated M53, are: 1) leverage JSGPM technology to meet the requirement for best value in reducing development time and cost, 2) provide a conformal single sided filter to meet the requirement for close cheek contact with specialist weaponry, 3) provide a variable resistance exhalation valve system to meet the requirement for immediate change from negative pressure Air Purifying Respirator mode to positive pressure Self Contained Breathing Apparatus mode 4) provide internal electronic communication facilities to meet the requirement for integrated voice amplification as well as integrated electronic communications interfaces and 5) provide a light weight, detachable NBC hood to meet the requirement for full head and neck protection integrated with full body protection.