

Smart Combat Uniform to IDF Special Units

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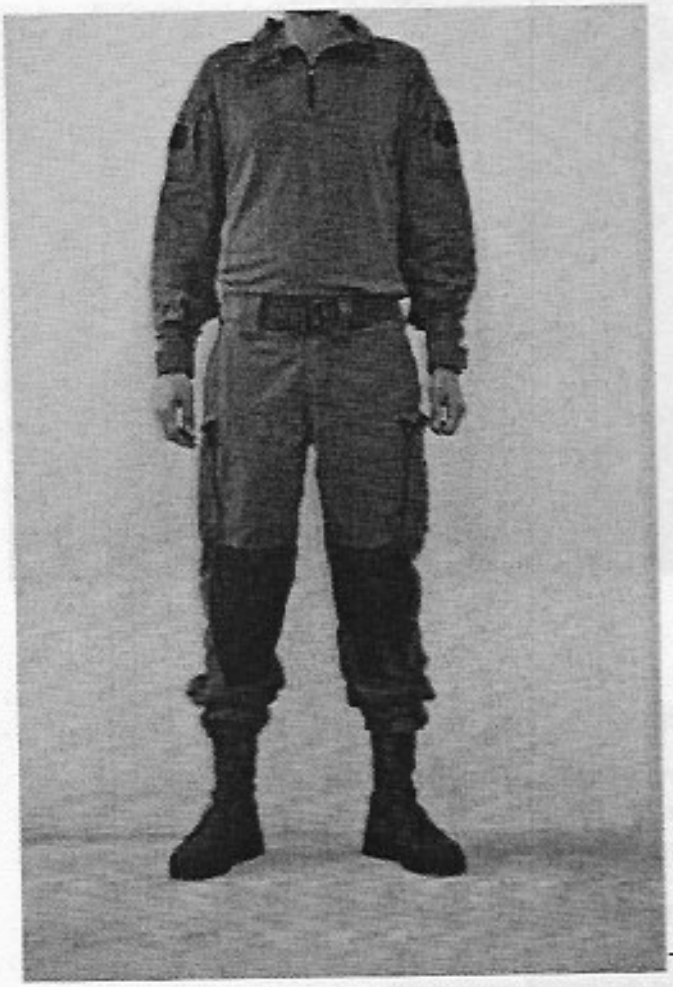
More innovation has been recently reported in the smart uniform field. New combat uniform made of advanced materials that will be supplied soon to the IDF special units will improve the operational effectivity and the combat performance for long terms and enhance the survivability of the forces.

As part of a broad process designed for the improvement of the ground leading units, the IDF special units will be equipped with combat uniforms with special features adapted to the warfare characteristics, the required capabilities and the dedicated equipment.

to accelerate the delivery of lifesaving medical care, including during prolonged field care and autonomous evacuation.

When medical evacuation is not readily available, the Army aims to rely on autonomous ground or air platforms in conjunction with autonomous life support equipment. These autonomous solutions could also be used for resupplying medical personnel during sustained operations.

The researchers expect that the Army's capabilities in advancing information technology and physical and cognitive augmentation technologies "will start to bear fruit" in three to 10 years, while it will take longer, "10 years or beyond," for biomaterial and artificial intelligence technologies.



The uniforms will be fitted to the combat equipment and will be made of a strong, fire resistant and sweat evaporating material. It will include a built-in knee defense layer, ergonomics which prevent pressure points on the body, pants with built-in elastic bands and dedicated secure pockets, according to idf.il.

The US Navy will also supply its sailors and their commands with new and improved uniform. The Improved Flame Resistant Variant (IFRV) coverall that will replace the legacy Flame Resistant Variant (FRV) coverall are made of a tri-fiber blend. The new material will help to offer arc flash protection and provide improved moisture management by allowing the fiber to breathe more efficiently. The IFRV coverall is also designed for sustained durability lasting nearly twice as long as the current one, according to wtkr.com..

Scientists from the Lawrence Livermore National Laboratory in California claim that the material they developed is the first key component of futuristic smart uniforms that will respond to and protect from environmental chemical hazards. They have invented a fabric that is highly breathable and can protect military personnel from biological and chemical threats. The researchers created a flexible polymeric membrane which integrated tiny carbon tubes (CNT) as moisture conducting pores. According to dailymail.co.uk, the CNT pores were shown to increase the breathability of the material by more than ten times.

However, increasing a soldier's protection and improving equipment "boils down to a weight race," the report stated. "The Army adds equipment to the soldier kit faster than it can reduce weight through materials research, miniaturizing components and integrating capabilities into ergonomically designed systems and components."

Examination of lower-weight protection options will include efforts to reduce battery-related loads, such as research on power harvesting, battery chemistries and energy management. The goal here, the researchers said, is to be able to extend dismounted soldier operations for a 72-hour mission using adaptive systems that supply continuous power generation for up to six days.

Another research area is development of mechanisms to understand the human response and injury from blasts, ballistic weapons and directed-energy trauma. The Army S&T researchers will also create injury-based performance criteria to support readiness determinations and product design.

Regarding situational awareness, Army researchers will develop strategic technologies to improve soldiers' abilities to outthink and outmaneuver in battle using soldier-wearable technologies. This includes investments in three areas: advanced sensors and displays for dismounts; soldier system interfaces and integration; and soldier data management.

"These tactical system interfaces and decision aids reduce the cognitive overload caused by too much visual information, and support the 3-D visualization of mission command and sensor data to enhance tactical decision-making during dismounted operations," the researchers explained. "We are developing soldier-borne data management and distribution technologies whereby soldiers can assess and maintain situational awareness and understanding, to enable real-time decision-making during dismounted operations."

For now, the Army's research focus is on low-cost soldier-borne sensors, combat optical weapon sights, and imaging and non-imaging sensors for individual and crew-served applications. They are looking for the sensors to provide capabilities that enable precision targeting and pointing, target marking and designation, and obtain accurate target locations at extended ranges.

"Small units must have situational understanding and a common operating picture to operate in close contact with the enemy and to conduct continuous security operations," the researchers stressed. "Emerging wearable technologies provide an unprecedented ability to collect high-resolution data continuously over significantly longer periods compared to the handheld and head-borne display systems in use today."

Also, the Army's research will look for state-of-the-art methodologies and tools to support the development of diverse warfighter skills. Here, investments in simulation and synthetic training environments will aim to increase retention, enhance situational awareness for cognitive overmatch, and improve warfighter and team performance while reducing training time and costs.

Additionally, the Army's research addresses physical and cognitive performance through the service's medical and human system integration communities. The research focuses on predicting the range of a soldier's comprehension given varying quantities of information and tasks, in varying environments. Moreover, research on optimizing warfighter performance will look at the impacts of individualized regimens of nutrition, so-called "nutraceuticals," pharmaceuticals and synthetic biology to prevent disease, speed recovery and augment human performance. The research will examine how warfighters can manage fatigue effectively, optimize nutrition and maximize physical and cognitive performance. In addition, to improve soldiers' survivability, Army S&T is reviewing how