

## **West Point Cadets, MIT students solve challenges at Soldier Design Competition**

Alexandra Foran, NSRDEC Public Affairs

CAMBRIDGE, Mass. (April 9, 2013) -- Undergraduate students from the U.S. Military Academy at West Point and the Massachusetts Institute of Technology participated in the 10th annual Soldier Design Competition held at MIT, here, April 4.

Eleven finalist teams presented their design and prototype solutions for specific Soldier challenges to a board of judges at the event that included representatives from U.S. Army Research, Development and Engineering Command, the U.S. Army Natick Soldier Research, Development and Engineering Center, known as NSRDEC, MIT, USMA, and private industry.

Each year the Soldier Design Competition, or SDC, offers participants a variety of specific design challenges based on the needs of real Soldiers, as well as an open design category for creative new ideas. Most of the teams pursued answering the Open Design Challenge for equipment that can be used in various missions, including humanitarian aid and peace-keeping operations.



"These students have a fresh perspective on these important problems facing our Soldiers," said Jack Obusek, Ph.D., director of the NSRDEC. "They're taking what we

do at the [Research, Development and Engineering Center] and compressing it. While they're not able to go through an entire test process, they have all come up with innovative ideas that may lead to new solutions in the future."

Designs for radiological detection, head and neck injury protection, non-lethal obscurants, deployable living structures, and environmentally friendly disinfectants are just a few of the prototypes that made it to the finals.

Understanding the customer -- the Soldier -- is the most important part of the challenge. For Cadet Ben Clemente and his fellow West Point Cadets, that meant understanding the design of the current hatch system in the Stryker Infantry Carrier Vehicle. The team improved and redesigned the rear air guard hatch system in order to improve Soldier protection and increase the field of fire to counter enemy threats.

"In high school you're getting problems from an instructor," Clemente said. "Here, we're getting problems that are real life and we can actually implement. It's just amazing to see that something we think of is being introduced to the project manager of General Dynamics."

Mentors from both industry and the military assisted students throughout the design process by offering insight on field conditions, performance requirements, and the needs of the Soldier. Each team owns the intellectual property rights to their inventions, and several teams often form companies and improve their prototypes. Some have worked directly with the Army.

"Because of my background as an infantry officer making combat deployments overseas, I see how this product can help people in situations that I was in and definitely save lives," said David Young, co-founder of Bounce Imaging and SDC mentor, as he spoke about the baseball-sized, throw-able device that can wirelessly communicate with mobile devices to share video and other data. "We're motivated by impacting first responders on the front lines that face dangerous situations."

The SDC is akin to "insurgent mentality," according to Dale Ormond, director of RDECOM in Aberdeen, Md.

"Very simple ideas come from that 'insurgent mentality,'" Ormond explained. "If I've got a problem, how am I going to solve it? They don't have any money. They don't have any big lab facilities. They have a problem, and they think about it differently because they aren't really encumbered by all the technology, all the laboratories, all the facilities that we have and all the things they've done in the past."

This mentality is what the grand-prize-winning team, "Team Green Clean," from the U.S. Military Academy, relied on. Through the use of butanoic acid, a common carboxyl acid used in most labs, the team created an environmentally friendly disinfectant that neutralizes a variety of contaminants, requires minimal training, can be easily transported and is safe for people and for the environment.

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"The prototype is basically ready tomorrow," said Cadet Kiley Hunkler, who explained that the research and testing the group has worked on began a couple years ago. "We were looking at the effects of different carboxyl acids on stopping E. coli. After that, we pinpointed butanoic acid, and then we started applying it to the spores, stinkbugs, and to various other applications."

The winning team was made up of women studying for a variety of degrees, including environmental engineering, industrial engineering, life sciences and pre-med, life sciences and Arabic, and human factors engineering.

This one team highlights what the SDC is all about -- utilizing a variety of skills and ideas to come up with solutions for important warfighter problems. A total of \$20,000 in prizes was shared between the five teams that won awards from sponsors, including Lockheed Martin, Raytheon, QinetiQ and W.L Gore and Associates.

The SDC is directly sponsored by the Institute for Soldier Nanotechnologies. No Army funding was used for the competition. The ISN is an interdepartmental research hub at MIT whose mission is to use nanotechnology to advance both the protection and survivability of Soldiers.

See original post here:

[http://www.army.mil/article/100501/West\\_Point\\_Cadets\\_\\_MIT\\_students\\_solve\\_challenges\\_at\\_Soldier\\_Design\\_Competition/](http://www.army.mil/article/100501/West_Point_Cadets__MIT_students_solve_challenges_at_Soldier_Design_Competition/) [1]

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