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In Any Clime and Place

Hawaii-based Marines test green waste disposal technology

By Cpl. Ben Eberle | U.S. Marine Forces, Pacific | January 28, 2013

POHAKULOA TRAINING AREA, Hawaii –

On an island world-famous for its chain of active volcanoes, Marines are harnessing extreme heat to test a process that could become the future of military waste management.

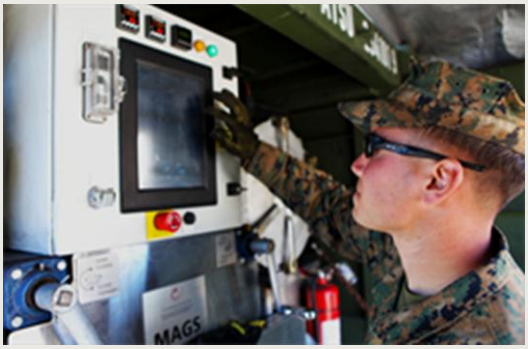
The science advisor for U.S. Marine Corps Forces Pacific, supported by the MarForPac Experimentation Center, demonstrated a green, rubbish-reducing technology here Jan. 25.

“It’s not burning,” said Ben Tritt, the MarForPac science advisor for Office of Naval Research. “It’s gasification under a very controlled environment, and it’s much cleaner than burning … It’s (also) a self-sustaining process.”

The machine behind the magic is called MAGS (Micro Auto Gasification System), and perhaps the most impressive aspect of the technology is its simplicity.

Operators start MAGS with diesel fuel, bringing the inside of its insulated drum to temperatures exceeding 1,000 degrees Fahrenheit. The machine is then “fed” trash at a rate of approximately 50 pounds per hour, turning 95 percent of it into gas which is used as fuel to sustain the process. The remaining 5 percent is converted to inert ash which can be safely disposed of in landfills, or mixed with compost, asphalt or cement. One machine is capable of meeting the daily waste disposal needs of approximately 1,000 troops.

PHOTOS



Pvt. Dylan Bolt, a mortarman with 3rd Battalion, 3rd Marine Regiment, 3rd Marine Division, operates the tablet-like interface on the MAGS (Micro Auto Gasification System) here Jan 25, as part of Exercise Lava Viper. MAGS is being tested by the U.S. Marine Corps Forces Pacific Experimentation Center to determine whether it is a viable waste management solution for Marines operating out of austere environments. The machine is capable of handling the daily waste disposal needs of approximately 1,000 troops, converting 95 percent of the waste to gas, which is then used to fuel the process. Bolt, 21, is from Prosser, Wash. **(Photo by Cpl. Ben Eberle)**

Lance Cpl. James Russell, an electrician with Combat Logistics Battalion 3, 3rd Marine Logistics Group, explains how he and other Marines operate MAGS (Micro Auto Gasification System) here Jan 25. The system was being tested as a waste disposal solution during Lava Viper, a Marine Corps field training exercise that takes place at PTA, and is being considered for additional follow-on tests in austere environments. In a controlled extreme-heat environment, Processing about 50 pounds of solid waste per hour, MAGS is capable of handling the daily waste disposal needs of approximately 1,000 troops, converting 95 percent of the waste to gas, which is then used to fuel the process. Russell, 24, is from Poughkeepsie, N.Y. **(Photo by Cpl. Ben Eberle)**

"It not only (handles) mixed solid waste – trash that you would typically throw away – but we've also done some testing with petroleum, oil and lubricants," said Tritt. Virtually the only materials MAGS cannot "digest" are glass and metal, which the system leaves intact and sanitizes so they can be easily recycled.

Aside from the obvious environmental and health benefits of reducing landfill usage and burn pits, MAGS and similar waste-to-energy technology can be operated expeditiously in austere and remote environments.

Wherever Marines go, MAGS can follow. This provides an economic benefit by greatly reducing the amount of waste that needs to be shipped from the forward operating base to the nearest disposal site.

The benefits are plentiful and the technology is state-of-the-art, but does it take a scientist to operate?

"Actually, it's simple enough that a scientist can operate it," joked Tritt. "It's kind of like running an iPad."

During Exercise Lava Viper, a field training exercise currently taking place at PTA, several Hawaii-based Marines gained firsthand experience with the MAGS. They agreed that the system was easy to use.

"The best thing about this machine is not having to load all our trash into Humvees and other vehicles to get it out of our training site," said Lance Cpl. James Russell, an electrician with Combat Logistics Battalion 3, and Poughkeepsie, N.Y. native. "(Technology like this) will cut down on burn pits, and it's easy to clean. All you need is a broom and dustpan and you'll get it done in an hour … she's good to go."

So MAGS is self-sustaining, environmentally friendly, highly transportable, reduces waste disposal costs, and it minimizes the amount of time a Marine spends with his broom and dustpan. Unlike the Big Island's majestic volcanoes, this type of waste-to-energy technology won't inspire any postcards, but there are at least a few reasons to get excited.

PHOTOS

Pvt. Dylan Bolt, a mortarman with 3rd Battalion, 3rd Marine Regiment, 3rd Marine Division, shows off the waste disposal capability of MAGS (Micro Auto Gasification System) here Jan 25. Through the gasification process, a 30-gallon bag of solid waste can be reduced to a jar of baby food. Additionally, the gas produced is captured and used as fuel to sustain the process. MAGS is capable of handling the daily waste disposal needs of approximately 1,000 troops. Bolt, 21, is from Prosser, Wash. **(Photo by Cpl. Ben Eberle)**

Ben Tritt, U.S. Marine Corps Forces Pacific science advisor with the Office of Naval Research, speaks to military personnel and a local community group here Jan. 25, on the intricacies of MAGS (Micro Auto Gasification System). The MAGS demonstration, supported by the MarForPac Experimentation Center, provided a forum for experts to explain the potential waste management solutions offered by waste-to-energy technology, as well as describe some of the environmental benefits of deploying MAGS and similar technology to austere environments. MAGS turns 95 percent of solid waste into gas, then converts the gas into fuel to sustain the process. **(Photo by Cpl. Ben Eberle)**