

SPEEDING UP REPAIRS

MLI's North American Editor, Scott Gourley, looks at innovative ways to effect infrastructure repairs.

It might be a linguistic stretch to say that CERATECH, Inc. literally found its military logistics niche in filling niches, but the stretch wouldn't be too far from the truth. Today the company's expanding line of high tech concrete products is being employed in a wide range of hole filling and other infrastructure applications.

According to Jon Hyman, Chief Executive Officer of CERATECH, Inc., the military application of the company's products has expanded over the past several years.

"We started off with very simple infrastructure repair, mostly focused on aviation," Hyman says "In 2002 the Air Force was the first service to realize the potential of the material, and actually took it into Afghanistan, principally for the repair to Bagram and Kandahar air bases".

"They were doing mostly airport infrastructure: runways, aprons, and taxiways," he continues. "The two principal materials they used were Pavemend TR™ and Pavemend 15.0™. And the Air Force has been using the product ever since for both domestic and international aviation-type repairs."

Pavemend TR, for example, is described in company literature as, "a cementitious, rapid setting, slope grade (up to 60 %) structural repair mortar with a gel like consistency suitable for trowelling on horizontal and/or sloped grades and for aggregate extension. It is a single component powder that is water activated. Pavemend TR has 25 to 30 minutes of working time and will reach compressive strengths of 3,000 psi within three hours from final set; making it an exceptional choice for critical infrastructure repair scenarios where workability, cost and return to service are key factors..."

The company's Pavemend 15.0 works even faster. The water activated, self-leveling structural repair mortar has 7 to 9 minutes of working time and will reach



CeraTech Inc.

compressive strengths of more than 3,000 psi within two hours and more than 6,000 psi at 28 days.

The Marine Corps became the second significant user of CERATECH products. As with the Air Force, Hyman said that they began with aviation infrastructure repair and then moved into other applications.

"For example, they did small area construction work with it. They also did counter-IED work with it because of how quickly it mixed and how quickly it set up, giving it an advantage over any of the other products that they had used in theatre," he said, adding, "For counter-IED work, where you could go along a road and if there was a problem you mixed the product up, put it in the hole, and then drove away. It set up very quickly".

He noted that the expansion of Marine Corps applications has moved beyond airport and IED repair and small construction to large, new construction projects.

"Over time the material has evolved. And we have refined it, improved it, and expanded the product offerings to now include new construction," he explains. "As an

example, at the Marine Corps Mountain Warfare Training Center up at Bridgeport, California, we just finished doing work in conjunction with another contractor [MadridTomkins]. We just finished a warehouse there and basically we had less than a month to get everything put together in the ground. So we poured all the footers, foundation walls, slabs, and retaining walls. Then, on top of that, MadridTomkins ended up putting a product, which is an aluminum-polystyrene composite, to finish the walls, the high bay and the roof. So it was a combination of two very high performance materials to very quickly build this structure."

He continues, "I think all of the services are now looking at this fast construction type of product that we can put down, where you can quickly go in and build something. Instead of taking what would ordinarily be two or three months to do something you can literally get done in under a month."

In the near term, however, Hyman reiterated the significance of the company's products to warfighters in harm's way.

“The flexibility was obviously the real interest up front,” he says. “It was easy to manage. It’s a water activated product. It can use multiple water sources. It can be applied in a very wide range of temperatures – we have put this material down at minus 20 degrees below zero to 160 degrees above zero. So there’s a very broad range of ambient temperatures. We can put it down in wet or dry conditions. So it provides them great flexibility. And the other piece that was very important for the military was the need for something that they could mix quickly, put down, and that would harden up very quickly, so they don’t have to spend a lot of time managing that repair – standing there and guarding it. One of the issues was that the military was using standard Portland concrete and putting it on the ground. And then they would have to stay there and provide overwatch on it for hours before the material would actually cure enough to allow them to drive away – so insurgents could not place explosives within the freshly curing cement or concrete. But with our material it is a rapid hardening process that allows you to work it and then you’re done. And it quickly becomes too hard for anybody to disturb without using some type of power tools.”

“That speed is important to the warfighter because it reduces his exposure to possible enemy fire,” he added. “And that’s also been one of the big advantages on the commercial side as well. On all highways, bridges, or anywhere that you have the public using surface transportation you want to be on it, repair it, and then get off so the public can go back to using it as quickly as possible.”

In addition to the Air Force and the Marine Corps, the Army is also using CERATECH products for both IED-repair and general road work.

“We have a number of initiatives ongoing with the Army Engineers now. None of them are as evolved as we have been with the Air Force and the Marine Corps,” Hyman notes.

EXPANDING PRODUCT AND PRODUCT RANGE

The company’s new product listings include a volumetrically mixed product that can be used in the Army’s truck mounted mobile mixers.

Describing the mixers as “a self-contained ‘batch plant’ on a truck,” Hyman explains, “You can literally go into an area and you can precisely control the quantity of material you want to use to do whatever repair is necessary. Unlike when you use a transit truck – the typical truck you see rolling down the road with the barrel turning. There is ‘X’ amount in that truck. It’s usually about eight to ten yards of material. That’s mixed and you have to use it. With a volumetric truck you have all of the components that make up concrete in different compartments. And you bring them together at the point of discharge in the exact quantities you need. So there is no waste. If you want to put down a cubic yard or you want to put down ten cubic yards, you can do it all right there and you can control it. So the military has been very smart in procuring these systems so they can now go and manage their placement of concrete. And we have a product that we have developed for use in that system,

which will be a very high strength product. It will be fast setting – the fastest setting large-volume product in the marketplace. It’s called GreatWhite™”.

Another new company product, called FireRok™, is a high-early strength concrete that can be used as either a repair product or structural concrete with initial set in 35-45 minutes and final set in 45-60 minutes. The products most significant trait is that within 24 hours of placement it can be placed in high temperature environments as high as 1500 degrees F.

“FireRok is one of our concretes that is used for high temperature cycling – principally aviation-focused such as for V-22, or Joint Strike Fighter – infrastructure supporting those airframes. And it is able to take the jet blast high heat cycling with no negative effects on the overall material matrix. So it’s a very, very unique product. We have had a great deal of success thus far and we have some construction projects in the works for the Navy to put that product down to support the V-22,” Hyman says.

In terms of international military applications of CEATECH products, Hyman noted that Japan’s Self Defense Forces have used the company’s materials extensively in Japan. In addition, the company plans military engineering projects in both the Philippines and Thailand during 2008.

Summarizing the product benefits for today’s warfighters, Hyman concluded, “I think the real significance to the warfighter is the ability to reduce exposure. A lot of the specifications of the material were built around the mission: being very flexible; the ability to quickly mix, place, finish; and then the ability to move away from that area without continuing exposure to the troops. Our experience with the military has been extremely positive. And, in fact, with the number of people in this organization that are prior military, understanding the military mindset and specification requirements have been very helpful in designing material around requirements. A lot of what we have done has been built around military requirements – to satisfy specific needs.” ■

