

# How Insulation Saves Lives and \$\$ in Iraq and Afghanistan

By Kristen Ammerman, Executive Editor

**M**ichael O. Page, a Registered Roof Consultant and Registered Roof Observer working for Honeywell in the Middle East, took time out of his busy schedule recently to explain how his work is helping to cool U.S. military buildings in Iraq and Afghanistan while simultaneously making our soldiers safer in the process.

Page, who has been in Baghdad since January, is providing technical consulting services and business development for Honeywell's Specialty Materials Fluorine Division. He works specifically with the company's TerraStrong® business, a "consulting and contracting arm of Honeywell that specializes in application of closed-cell spray polyurethane foam (ccSPF)."

Page notes that the primary focus of TerraStrong® is the Exterior Insulation on Temporary Structures (EITS) program. Launched in 2008 at U.S. military bases in Iraq and in 2009 in Afghanistan, EITS "was



*Typical convoy.*

initiated as a means of reducing the number of convoys delivering fuel to the Forward Operating Bases (FOBs) of the U.S. military located throughout Iraq and Afghanistan.

By 2007, 1,000 trucks/day were transporting critical supplies for the military from Kuwait, Jordan, and Turkey into Iraq alone. Some 25% of these were fuel trucks, and 80% of those were transporting fuel "specifically for generators powering air conditioning units at noninsulated struc-

*Militia gunmen near Basra, Iraq, ambushed the military supply convoy below in May 2007, destroying a fuel tanker and killing its driver. (Essam Al-Sudani/Agence France-Presse - Getty Images.)*



tures such as tents, trailers, and buildings built with sheet metal and plywood," according to a transportation study by a military taskforce.<sup>1</sup> The Center for Army Lessons Learned (CALL) states that resupply casualties historically have accounted for 10% - 12% of total Army casualties, the majority being water- and fuel-related,<sup>2</sup> making this, quite literally, a deadly issue.

The U.S. Army's Rapid Equipping Force (REF) commissioned Synovision Solutions, LLC, to see how the number of supply trucks on the road could be reduced. As a result, a wide range of solutions was suggested in a May 2007 report by Dan Nolan, chief of the Power Surety Task Force.<sup>3</sup> Many of these concepts involved alternative energy options that might provide long-term relief, but one proposed idea could be implemented almost immediately.

Joe Amadee, VP of operations with Synovision, had suggested applying SPF to the exterior of Army tents. That summer, he tested a large tent used as a gymnasium at Camp Victory in Baghdad. "During the summer months," Mike Page notes, "outside temperatures [in Baghdad] can easily reach 130°F."

Synovision's test showed that even with eight air-conditioning units running at full power, the temperature in the gym could only be reduced to 92°F. After Synovision applied spray foam, temperatures were



*Typical tent before spray foam application.*



Tent cleaning (left) prior to foam application.



Foam application on tent (right).

reduced to 70°F with only two AC units.

Based on the reduced usage, it was calculated that foam application paid for itself in energy savings in approximately 75 days. Reduced energy use means less fuel deliveries and fewer deaths by ambush or improvised explosive devices (IEDs). As Bruce Jette, CEO of Synovision, says, "The best way to beat an IED . . . is to not be there in the first place."

Other benefits, impossible to quantify, are the enhanced health and comfort of military personnel living in the treated tents. According to Page, following application of ccSPF, the "large quantity of dust entry into structures was reduced to almost nothing because the foam insulation sealed small cracks and other entry points."

The sound-insulating qualities of the foam also enhance the ability to sleep. A good day's sleep can make the difference between life and death when one is acting or reacting in a hostile environment.

Other reported benefits include mold, rodent, and insect control, as well as extension of the service life of the tents. And eyewitness reports from contractors onsite even claim that shell fragments and shrapnel from mortar shells have actually been stopped by the foam.<sup>4</sup>

Since the initial test in 2007, the U.S. Army has funded numerous contracts through three main applicators: Synovision, Honeywell, and Critical Mission Support Services (CMSS). One Honeywell applicator, West Roofing Systems, Inc., LaGrange, OH, was presented with a 2010 SPFA Industry Excellence Award from the Spray Polyurethane Foam Alliance for its work on applying the foam in Iraq.<sup>5</sup> West's workers

use Honeywell TerraStrong® 2-lb density closed-cell spray polyurethane foam utilizing Honeywell Enovate® with 32 mils of Honeywell TerraStrong acrylic coating applied in two coats.

A U.S. Army Material Systems Analysis Activity (AMSAA) study in the summer of 2009 concluded that almost \$1 billion is being saved annually due to the increased

energy efficiency from the spray foam.

Page notes, "While the EITS program has been discontinued in Iraq due to the troop drawdown, there is still plenty of opportunity to continue the work and to provide insulation to some of the noninsulated tents that remain in the region, offering improved living conditions and energy savings."

## Miami-Dade County Approved Roof Hatches



Bilco Roof Hatches have received Miami-Dade County's Notice of Acceptance (NOA). The NOA certifies that Bilco's hatches comply with the Florida Building Code, including the High Velocity Hurricane Zone standard, which is the most stringent in the world.

### Features:

- Heavy-duty construction for overall strength
- Fully welded corners on both the curb and cover
- Full perimeter gasketing for complete weather tightness
- Heavy-duty slam latches to ensure covers remain closed in extreme conditions

**MIAMI-DADE COUNTY**  
APPROVED

Also available in new  
Enhanced Performance design  
for green building applications




**Bilco**®

For more information call 800-366-6530  
or log on to [www.bilco.com](http://www.bilco.com)

Page has been in Iraq for six months now and states that the “Nightly incoming rounds of mortar fire and rockets have slowed down substantially. . . . The Iraqi government is redeveloping the infrastructure, and it appears that there are a number of groups willing to invest in its redevelopment.” He noted the Asian Cup soccer games are scheduled to be held in Basra in 2013, and the stadium and associated structures have yet to be built.

As U.S. military involvement in Iraq winds down and construction there shifts to rebuilding, our military focus is also shifting to Afghanistan, where the “true” cost of fuel delivery is estimated at about \$13.80 per gallon due to inadequate trucking routes and isolated bases.

Michael Page will continue his consulting and business development duties in the Middle East with Honeywell for the foreseeable future. 



Finished tents.

## REFERENCES

1. “Spray Foam Insulation Saving Lives and Billions of Dollars in Iraq and Afghanistan,” [www.sprayfoam.com/npps/story.cfm?nppage=418](http://www.sprayfoam.com/npps/story.cfm?nppage=418), accessed June 22, 2010.
2. “Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys,” Army Environmental Policy Institute, Final Technical Report, September 2009, p. 17, [www.aepi.army.mil/docs/whatsnew/SMP\\_Casualty\\_Cost\\_Factors\\_Final1-09.pdf](http://www.aepi.army.mil/docs/whatsnew/SMP_Casualty_Cost_Factors_Final1-09.pdf)
3. Dan Nolan, “Power Surety for the Enduring Operations,” PPT presentation, Outlook 2007 Conference, May 2007.
4. See “The Use of Closed-Cell Spray Polyurethane Foam (ccSPF) to Enhance the Structural Properties of Wall and Roof Assemblies,” by Mason Knowles, this issue of *Interface*, p. 12.
5. <http://www.sprayfoam.org/uploads/pages/4524/2010%20Contractor%20Award%20Nominees.pdf>

## ANSI APPROVES THREE SPRI ROOFING STANDARDS

SPRI, the association representing sheet membrane and component suppliers to the commercial roofing industry, announced that three of its roofing standards have been approved by the American National Standards Institute (ANSI). The three key standards approved by ANSI are as follows:

- **ANSI/SPRI RP-14 2010, Wind Design Standard for Vegetative Roofing Systems**, produced in partnership with Green Roofs for Healthy Cities. RP-14 provides design guidelines associated with wind uplift and stone scour and defines items such as setbacks from the edges of roofs in areas with high winds, use of wind erosion mats, as well as edging details. There is also a discussion of the various types of materials and their behavior under varying wind conditions.
- **ANSI/SPRI/FM 4435-ES-1 2010, Wind Design Standard for Edge Systems Used with Low-Slope Roofing Systems**. This provides the basic requirements for wind-load resistance testing and design for roof-edge securement, flashing systems, and nailers. It also provides minimum fascia thicknesses that lead to satisfactory flatness and designs to minimize corrosion. It is intended for use with the specifications and requirements of the manufacturers of the specific roofing materials and the edge systems used in the roofing assembly, excluding gutters. The latest revision to ES-1 combines the performance requirements included in the current version of ES-1 and has been expanded to include requirements addressed in FM4435.
- **ANSI/SPRI IA-1 2010, Standard Field Test Procedure for Determining the Mechanical Uplift Resistance of Insulation Adhesives Over Various Substrates** was developed to provide a uniform field testing procedure for determining the suitability of using an insulation adhesive for insulation or cover board attachment to a substrate. This standard is intended primarily for situations when an existing roofing system is being replaced or recovered and the general condition of the substrate is in doubt. This procedure, however, is also applicable to new construction. The uplift data obtained provide the roof system manufacturer, adhesive manufacturer, and design professional with pull resistance values that will assist in verifying the suitability of the intended design. The standard was first approved as an American National Standard in 2005. It has been revised and reapproved by ANSI.

All three standards will be posted on SPRI’s Web site ([www.spri.org](http://www.spri.org)) and may be downloaded free of charge.