

# Arizona Daily Star®

[www.dailystar.com](http://www.dailystar.com)® [www.azstarnet.com](http://www.azstarnet.com)®

Published: 01.09.2007

## Local firm's product may help save underground miners' lives

By Richard Ducote

ARIZONA DAILY STAR

Federal mine safety regulators will soon test a building product developed by a Tucson firm to see if it will help save lives in underground coal mines.

BlastSeal is a carbon-fiber material developed by First Defense LLC, based in Tucson and part of HJ3 Composite Technologies, a company that sprang from University of Arizona research.

Jim Butler, president of HJ3, sees promise in BlastSeal for strengthening barriers installed in underground mines to protect miners from explosions. Methane gas explosions killed 17 miners last year in separate accidents in West Virginia and Kentucky.

Regulators raised standards on such blast seals in the wake of the tragedies. Now, thousands of seals in mines around the country will need upgrading to meet the new standards.

First Defense is working with the federal Mine Safety and Health Administration to test its product.

A big test for the BlastSeal product for coal mines will come in several weeks at the federal testing facility at the Lake Lynn Experimental Mine, 50 miles southeast of Pittsburgh.

The company has demonstrated a similar treatment for concrete masonry walls where a blast from 220 pounds of TNT blew down one wall, while an adjacent wall reinforced with BlastSeal protective material one-quarter inch thick per side withstood the blast.

The big question for the mining test, Butler said, is whether some of the existing block seals are strong enough to keep the new blast material in place long enough for it to do its job of dissipating the force of the blast. The majority of the estimated 13,000 seals now in place probably can be retrofitted, he said.

The company's products have found many other uses.

A recent application was restoration of a Salt Lake City warehouse for use as a restaurant and pub by providing seismic protection with materials that preserved the look of old brick walls while strengthening them against earthquakes.

"The fun of it all is finding ways to solve problems. To dig in and come up with a solution is very satisfying," Butler said.

HJ3 has also developed a system to strengthen steel utility poles that have corroded in the ground. Use of the FibreCore product is saving the Salt River Project about \$2,000 for each repaired pole, he said. It uses a carbon-fiber "sock" and epoxy-like materials to seal and strengthen the corroded metal poles.

The company also has developed a system for basement repair, which is a big business in many parts of the country. A carbon fiber strip is applied to the walls, which strengthens walls weakened by moisture and ground pressure, he said.

General repair for industrial and commercial customers is the biggest revenue generator for the privately held firm, he said. Butler said revenues have grown more than 200 percent in each of the past two years and he expects that rate to continue, though he declined to provide dollar figures out of "competitive concerns."

Much of the technology HJ3 is developing for practical use came from University of Arizona research by

Hamid Saadatmanesh, professor of civil engineering.

Butler is an Eller College of Management graduate from the entrepreneurship program with an MBA.

Translating technology into practical use for customers is what companies like HJ3 do, said Pat Jones, director of technology transfer at the UA. Having a partner "like HJ3 is precisely what's needed to make it go forward," he added.

"They have been a very good partner," Jones said. "It's an investment in the future."

The company and the university are negotiating royalty fees for the technologies now being marketed, Butler said.

"This is a very early-stage business and application," Jones added.

• *Contact Richard Ducote at 573-4178 or [rducote@azstarnet.com](mailto:rducote@azstarnet.com).*

All content copyright © 1999-2006 AzStarNet, Arizona Daily Star and its wire services and suppliers and may not be republished without permission. All rights reserved. Any copying, redistribution, or retransmission of any of the contents of this service without the expressed written consent of Arizona Daily Star or AzStarNet is prohibited.