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# Military to mainstream

## High Impact Technology works on vexing problem

**Premium content from Portland Business Journal by Aliza Earnshaw, Business Journal staff writer**

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A Tigard company founded to answer the U.S. Army's need for fuel protection in Iraq is now striving to broaden its market.

High Impact Technology Inc., just three years old, recorded \$18 million in revenue in 2005 and 2006 for its first product, a "self-healing" armor for fuel supply tanks in Iraq.

But that contract is complete, and High Impact expects just \$4 million in revenue this year. To continue growing, the company has had to develop new products, especially for commercial industries that can yield steadier ongoing business than the military.

The U.S. military spends about \$200 billion per year with private companies -- one-third of its total budget -- according to the Brookings Institution, a research organization in Washington, D.C.

But it's a rocky revenue source for private companies, and even more so for smaller companies that don't have a diverse product line. A company supplying equipment, rather than materials needed on an ongoing basis, will get huge payments for one or two years and nothing after.

The founders of High Impact are well aware of the problem, and are seeking new markets for their military products while working on entirely different, commercial uses for the materials they've developed.

They're so confident of their strategy and their business model that they chose their company's name -- they refer to it as "Hit" -- to reflect that optimism.

"Someday this is going to be a real hit," said Russ Monk, the co-founder who runs operations.

If the Tigard company does succeed, it will be due as much to its bootstrapping operating model as to its products.

The five founder-owners are also the owners of three other companies. Rather than setting up elaborate operations for High Impact, the owners have outsourced manufacturing, supply chain management, finance, human resources and other business operations to their own companies.

High Impact subleases its spartan offices from Barrier Corp., a 33-year-old foam and barrier manufacturer located in Tigard. The company uses Barrier's manufacturing operations, and calls on Barrier founder Mark Dove's many years of business experience.

High Impact also depends on Mark Atwood, co-owner of Salem rain gear maker Watershed Inc., for his financial expertise, and on Watershed to manufacture some of High Impact's products.

High Impact's product development and research is carried out by Monk, a co-owner of Barrier; Bruce Thede, a co-owner of Watershed; and Tom Ohnstad, who owns two Salem companies: Composite Materials Research and Development LLC and Oregon Ballistics Laboratories LLC. Ohnstad's ballistics lab performed the early tests on High Impact's self-healing ballistics armor.

High Impact's five founder-owners aren't taking any salaries; all still work their "day jobs" at their other companies.

Keeping expenses to a minimum has allowed High Impact to put 90 percent of gross profit into product research and development.

Outsourcing to the partners' other three companies has also meant growth for these established firms.

High Impact was born out of a request for proposals put out by the U.S. Army three years ago, for a new kind of armor to protect fuel tanks.

"It was the worst problem in the world for the DOD [Department of Defense] at that time," said Ohnstad.

Military convoys traveling across Iraq were coming under regular attack.

"The insurgents would spray the tanks with bullets," said Ohnstad. "That would wet the road and then the insurgents would hit it with an RPG [rocket propelled grenade]."

With the leaked diesel fuel aflame, soldiers had a choice of abandoning their trucks and running through the "kill zone," or driving out on burning tires.

Monk began working with Armor Systems International Inc. of Vancouver, Wash., on a concept for ballistic armor. He enlisted Ohnstad for his materials expertise, and Rhino Linings USA Inc., a maker of spray-on truck bed linings headquartered in San Diego.

The group eventually developed a spray-on, inch-thick coating that "self-heals." When a bullet is shot at a tank, the entry hole instantly closes up behind it, leaving just a pinhole that won't let fuel leak out.

As for the fuel inside the tank, that is itself an effective ballistics barrier, said Ohnstad. A bullet can't penetrate more than a foot into the liquid.

The Army bought the armor, which Armor Systems sold through another military supplier under the name TankSkin.

High Impact came up with another product idea after Ohnstad arrived in Iraq to apply the coating to fuel supply tanks, and discovered he had to improvise his own spray booth to apply the armor.

High Impact has developed and built a portable production environment, a pop-up, 1,300-square-foot space that includes power, lights, air-flow equipment, a generator, a satellite phone, and a complete office, including a computer.

It's an expensive product, at \$500,000. High Impact thinks it can lease the portable production environment for its original purpose, and also as a mobile hospital or command center for disaster situations, such as Hurricane Katrina or the tornado that recently hit Kansas.

As for the spray-on armor, High Impact is now talking to the federal railroad department about using it to protect rail tankers carrying hazardous chemicals.

But military and disaster markets aren't the only ones that interest High Impact. The company has developed a new kind of moldable building material to replace fiberglass in boats and recreational vehicles.

The material, called Poly-Kore, can be manufactured without emitting styrene gas, a byproduct of fiberglass manufacturing that is implicated in global warming and suspected of causing some cancers.

"It's a green technology, and that's what will sell it," said Dove.

High Impact has sold prototype Poly-Kore panels to several recreational vehicle manufacturers the company won't disclose. Eventually, said Dove, Poly-Kore sales could overtake the ballistics armor as the company's main revenue source.

While HIT expects just \$4 million in revenue this year, Dove said the company could see as much as \$50 million in sales over the next five years, as Poly-Kore and its other commercial products take hold.

Even as HIT diversifies, the company is still developing new military products. HIT has a secret weapon for this market: Chad Knowles, a reservist who returned from Iraq in late 2005, and is now working at HIT as a project manager.

Knowles made a list of more than 40 products he could have used in Iraq shortly after coming to work for HIT. So far, the company has sold four of these to U.S. military departments.

Pulling double duty is tough, say High Impact's partners. Without family cooperation -- read "supportive wives" -- it would never work, they admit.

"My wife understands that there's a soldier out there who can now see his grandchild because of what we do," said Monk.

And of course, if the company really does hit the big time, the partners' families will share in the more material rewards of success, too.

## **High Impact Technology Inc.**

- Four employees on payroll; the five partners are not paid. Founded in 2004 by partners from three companies:
- Barrier Corp. Located in Tigard, the 33-year-old company makes foam insulation and barriers. Annual sales \$6 million, employs 40 people. Mark Dove founded Barrier Corp. with his father; Russ Monk is co-owner.
- Watershed Inc. Located in Salem, the company manufactures rain gear. Annual sales \$5 million, employs just under 50 people. Owner Mark Atwood is the "financial brains" of HIT, while co-owner Bruce Thede works with Monk and Tom Ohnstad in product development.
- Composite Materials Research and Development LLC. Located in Salem, with eight employees. Owner Tom Ohnstad also owns a separate business, Oregon Ballistics Laboratories LLC, which employs three people. Between them, Ohnstad's companies have less than \$1 million in annual revenue.

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