

# GAS OIL & MINING CONTRACTOR

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# PAVING THE WAY

Increasingly sophisticated cold mix asphalt products are making inroads in harsh environments where hot mix fears to tread **By Peter Kenter**

**BUILDING ROADS AND LANDING STRIPS FOR GAS, OIL AND MINING** facilities is often a challenge. Traditional hot mix asphalt and associated road-building equipment is difficult to transport to remote sites and traditional asphalt either goes down poorly—or not at all—in cold or wet weather. Cold asphalt products, or *hot mix alternatives* as they're commonly known, aim to fill that gap by providing materials that can be delivered and applied in a broad range of environments, using minimal equipment.

Originally developed for the Florida Department of Transportation in 1995, Miami-based EZ Street's cold asphalt is being used on mine sites ranging

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from Chile and Colombia to Canada's north, and on traditional roads as far away as the United Kingdom.

“The freeze-thaw cycle is not asphalt's worst enemy,” says EZ Street senior vice president Lars Seagren. “Water is asphalt's number one enemy. Whether in the form of rain, snow runoff, condensation or humidity, asphalt considers water an evil presence.”

Florida has plenty of that, which is why Seagren and his brother hired a team of chemists to develop an advanced polymer that would not only cause the asphalt mix to stick to asphalt and concrete, but to do so in the presence of water. A chemical reaction displaces any environmental moisture, allowing the product to adhere to the surface below. Better still, the product can be applied cold, eliminating the need to heat the asphalt on site.

“We're not trying to misrepresent the product,” says Seagren. “Hot mix asphalt is the best asphalt product for patching or surfacing a road if it's properly installed, using the right equipment under ideal



Cold mix asphalt is formulated to be applied with minimal equipment and in a broad range of environments. (Photos courtesy of EZ Street)



At left, workers apply cold mix asphalt on an airport runway in the South Pacific. Above, cold mix asphalt is used to create a mining road in Chile.

conditions. But in many parts of the world we can't always choose to pave a road or airstrip on a warm, clear day. If you use hot mix under adverse conditions, you'll need to come back in days or months to replace it."

EZ Street's is one of a number of cold asphalt products available. The product sold is the polymer itself, which is shipped in drums or totes and mixed with local aggregate and asphalt cement, which comprises about 95 percent of the asphalt mix. The product has been shipped to remote locations by road, sea and air.

"We're something like Coca-Cola, shipping their syrup to bottling companies around the world," Seagren explains.

### STORE UNTIL READY

While traditional hot mix must be applied within hours of mixing, the cold mix product can be stored indefinitely until ready for use. Additionally, hot mix must be applied in moderate temperatures, while EZ Street has been applied at temperatures approaching 15 degrees F on the low end and up to 100 degrees on the high side. It's also applied a little thinner than hot mix—about two inches thick before compacting.

"If the road we'd paved had lasted six months and a day it would have been a success ... But that trial strip has already held up for 10 years."

### Lars Seagren

Surfaces can be paved anywhere the polymer drums can be shipped and where a device is available to compact the material. While a mini or full-sized paver is ideal, the product has been compacted using anything from shovels and truck tires to vibratory plate compactors, hand tampers and hand rollers.

The EZ Street product has been used to patch and pave roads, parking lots, airports, military bases and U.S. Air Force airstrips.

The company began to use the product for mining applications around 2000 with a project completed for the Corporación Nacional del Cobre de Chile (CODELCO), the country's government-owned copper mining company.

"We were approached by our producer in Santiago who had made contact with CODELCO regarding maintenance on the thousands of kilometers of

roads surrounding the world's largest underground copper mine," says Seagren. "We were slated to use it on parking lots, potholes and utility cuts but we were also invited to look inside the mine."

To the EZ Street rep's surprise, the mine had an interior network of about 1,000 miles of underground roadway, of which about one quarter was paved with asphalt.

"Hot asphalt was traditionally used for paving, but it would last only between four and six months," says Seagren. "It was probably 35 or 40 degrees inside the mine and damp. You could touch the walls and roadway and feel the moisture."

### TRIAL WITHOUT FIRE

Mine management agreed to a trial interior application using the cold asphalt product. The asphalt was mixed in Santiago, about 100 miles away, shipped to the mine in trucks and stored on the mine site for several weeks before paving began. EZ Street worked with the mine company's own paving contractor who drove a traditional paver inside the mine to compact the mix.

"If the road we'd paved had lasted six months and a day it would have been a success, simply because we eliminated the need for a lot of the equipment that would have to be shipped in for hot mix production," says Seagren. "But that trial strip has already held up for 10 years."

The product has more recently been used in aboveground applications at other South American mine sites, including mining concessions in Colombia and Bolivia.

"These are very remote mine sites, and Colombia has experienced some of the worst rain in over 10 years," says Seagren.

### COLD CASE

The product is being put through its paces for extreme cold-weather application by licensee EZ Street Canada, with headquarters in Yellowknife, Northwest Territories. The company was established in 2008.

"We found the product almost by chance on the Internet," says one of the company's founding partners, Chris Hunt. "I talked to Lars on the phone and he sent up some samples which we arranged to test with the Northwest Territories Department of Transportation."



Hunt initially used the material to patch potholes, repair utility cuts and to pave small overlays. In October 2009, the contractor completed its first full-width test application on a 200-foot stretch of Highway 3 approaching Yellowknife. The project was unique not because it used cold asphalt, but because it used any kind of asphalt at all. Most of the roads around Yellowknife are constructed of chipseal—crushed gravel sealed with an oil spray.

“The traditional road-construction season here is about eight weeks long and this fell considerably outside of that,” says Hunt. “We worked as both supplier and paving contractor at a temperature of about 10 degrees Fahrenheit. The asphalt had been mixed previously and stored near the site at ambient temperature.”

The paving work has continued to hold up.

Synergy struck again that same year. Hunt’s father is Fred Hunt, CEO of Nunasi Corporation, an aboriginal birthright company with shares owned by all three of the regional Inuit associations. Nunasi, in turn, owns Nuna Logistics,

Cold mix asphalt has exceeded expectations for durability in below-ground applications, making developers optimistic about a bright future for the product.

a company specializing in construction of mines, mining roads and remote airports. Nuna is responsible for most of the mine site design in Canada’s far north, including airstrip construction.

“We sold a half-interest in the Canadian company to Nuna Logistics,” says Hunt. “That was not so much for what EZ Street would do for them that year, but for what’s about to happen to a whole fleet of airplanes supplying mines in the region.”

Hunt is talking about the Boeing 737, referred to in the region as the “workhorse of the north.” Northern airport runways are traditionally made of gravel, so the cargo planes are outfitted with a gravel kit that allows them to land on rough terrain.

“The new 737s are designed with engines at a lower profile,” says Hunt. “They’re simply not designed to land on gravel. In the meantime, the last of the old 737s are rapidly reaching the end of their service life. That’s not only an issue recognized by Nuna, but one that the mining companies themselves are discussing with us. They know that the clock is ticking on the 737s and that EZ Street has already been applied in the impact zones of some of the busiest runways in the world.”

### **AIRSTRIPS NEED UPGRADES**

While the ultimate decision about paving the airstrips is up to the individual mining companies, Nuna has considerable confidence that cold asphalt will be the material chosen to pave the airstrips and is planning to have a cold asphalt mine runway project under its belt by the fall of 2012.

Some of the mine locations are accessible by ice roads, but Hunt says the company is currently designing a suite of mobile paving equipment that’s “herkable”—capable of being airlifted by Lockheed C-130 Hercules transport planes. While the Hercules craft can land on gravel, it’s the 737s that perform the lion’s share of transport work.

“A small asphalt plant, paver, and compactor is all we need,” says Hunt. “One thing we’re not lacking in Canada’s north is aggregate so we’re working on runway designs that use crushed local rock in the asphalt. We’re not only working in consultation with Canadian labs, but the top runway laboratory in Florida.”

The company is also in talks with engineers at several northern diamond mines to perform underground paving similar to EZ Street’s work in Chile.

“They’re continually grading and regrading the underground roads in diamond mines,” says Hunt. “Now they’re looking at something more permanent.”

Mines are also dealing with another shortage that has the company ramping up for access roadwork.

“The mines are facing a shortage, not of construction vehicles, but of large profile tires,” says Hunt. “Those rocky surfaces eat up tires with a vicious appetite, but tires are back-ordered everywhere. If they can extend the service life of the tires of rock crushers and transport trucks by paving the access roads, they can extend the lives of those vehicles.”

In the meantime, EZ Street Canada will be working on two major road-paving projects in Yellowknife this summer. The company is partnering with aboriginal development group Deton’Cho Corporation to pave three miles of roads in the N’dilo community within Yellowknife and another five to eight miles of roads joining it to the community of Dettah.

“Our logic in taking on these contracts is that if we can show that these projects can succeed in the harsh environment of Yellowknife, we’ll have no problems promoting it to the gas, oil and mining sector,” says Hunt.

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### **Comments or Suggestions ...**

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