



This floating man-made island in Bruce Kania's back yard supports several people

Islands help clean pollution

By Tom Howard

SHEPHERD — This tiny agricultural community on the arid plains of Eastern Montana seems like an unlikely spot from which to launch a business that aims to clean up the world's polluted waterways. But scientists, businessmen and government officials from around the world are flocking here, hoping to learn how a small company has harnessed nature to clean up pollution.

Bruce Kania, founder of Floating Islands International, believes his invention will play a major role in cleaning the world's polluted waters. The buoyant, plant-covered islands developed by his company mimic the crucial water purifying capabilities of wetlands.

"It's hard to find a waterway that wouldn't benefit from more wetland effect," Kania said. He said it's appropriate that a Montana company should play a role in cleaning up water pollution. Studies show that runoff from Montana — much of it from agriculture — represents the 11th largest contributor to the Gulf of Mexico's "dead zone," a 7,000-square-mile area near the mouth of the Mississippi River where aquatic life is scarce because water is starved for oxygen. Nitrogen, phosphorous and other chemicals linked to human activity are blamed for the dead zone.

New research also shows that the floating islands effectively remove greenhouse gases from the atmosphere, he said.

Floating Islands International began producing the islands about three years ago. Since then, Kania has seen the potential for developing a worldwide market.

"During the last 14 months, we have had visitors from New Zealand, Australia, Singapore, the People's Republic of China, Mexico and Germany," Kania said. "They've come here to Shepherd Montana."

A forum held in Billings last July attracted more than 60 professionals who are interested in the technology.

“We’re bringing some entrepreneurial energy. We attracted some big players who are interested in turning this concept of floating treatment wetlands into a major industry,” Kania said.

To date, more than 3,100 floating islands have been launched around the world, and they’re used in a number of applications. A model the size of a card table is marketed for use in backyard ponds, but larger ones have been used to treat effluent from a sewage treatment plant.



Clark Bosch, a production assistant at Floating Islands International, works on an island under construction.

In New Zealand, a government agency is using one of the company’s floating islands to remove heavy metals from water.

In early September, the first floating island used in a saltwater environment was launched in Alaska.

In November, the largest ever floating island is scheduled to be launched in Florida. The 22,000-square-foot behemoth is nearly half the size of a football field.

The city of Billings also is investigating the technology to help manage its storm runoff.

“We’re looking to use it as a way to do a little water treatment for our storm system before the water is discharged into drainages,” said City Engineer Vern Heisler.

Floating Islands International has a small manufacturing facility in Shepherd, but it produces only a fraction of the islands that are put into use. Kania said the business is structured so that licensees are authorized to manufacture and distribute the islands within a specific geographic area.

The company’s location dictates the business model, Kania said. If Floating Islands International were located in a metropolitan area, he said, it might make sense to do more of the manufacturing in a centralized location.

“We want the manufacturing to occur regionally so that ultimately the technology remains affordable,” Kania said. “Some of the islands are bulky and they’re difficult to ship cost effectively. At this point there’s a facility going in Louisiana, and it looks like there’s one going in China. There’s a facility in New Zealand, and there’s already one happening in Santa Fe.”

Natural floating islands, masses of living and dead plant matter that are common in the boggy stretches of northern Wisconsin, are the inspiration for Kania’s invention.

Instead of using plant material, Kania crafted islands from a buoyant polyester batting that’s made from recycled carpet fibers.

Kania has a number of inventions to his credit. While developing his concept of a man-made island, he consulted a number of engineers and scientists to see what would work and what wouldn’t. The research could result in nearly two dozen patents. But Kania refuses to take all the credit.

“It’s not just me,” he said. “We’re a think tank. A lot of people have contributed to the success of this company.” Several ponds in Kania’s back yard act as a testing lab for floating islands. The buoyant structures, teeming with plants like cattails, watercress, monkey flower and willow, are thriving artificial wetlands. They act as floating filters that draw nitrogen, phosphorous and other pollutants from water.

The floating structure allows native plants to take root. As the plants grow and tiny microbes cling to the island, they draw excess nutrients out of the water. The plant roots provide a vast surface area to remove pollutants.

Although the man-made island is designed to mimic nature, it’s much more efficient. For example, a 250-square-foot manmade island has the same filtering capability as an acre of natural wetland, Kania said.

Under a \$300,000 study from the Montana Board of Research and Commercialization, the company demonstrated that its floating islands effectively remove nitrogen, phosphorous and ammonia — all pollutants related to human activity — from water. And cleaner water leads to diversity of species, he said.

Kania says research confirms that the floating island technology represents a cost effective strategy for treating some of the world’s most vexing pollution problems. For example, the city of Helena estimates that it would cost \$55 million using conventional technology to solve its wastewater problems.

“Using our technology, we can get the job done for about \$4.5 million,” he said.