

Black Powder Solutions Keeps Oil and Gas Flowing

NCRA—IRAP and Black Powder Solutions

Black Powder Solutions, with strategic advice and support from the National Research Council's Industrial Research Assistance Program (NRC-IRAP), is scoring global success with its Black Powder Magnetic Separator, developed to remove black powder, a potentially damaging substance that occurs in gas and oil transmission lines, and reduce the risk of pipeline breaches and spills.

What if you could design a technology that would improve performance, reduce costs in multiple industries, and yield environmental benefits? This is what Black Powder Solutions – with help from the National Research Council's Industrial Research Assistance Program (NRC-IRAP) – does with its Black Powder Magnetic Separators that capture and remove contaminants to reduce erosion (corrosion) of pipeline walls in gas and hydrocarbon fluid transmission lines.

“Removing abrasive black powder contamination maintains the integrity of the pipeline wall protects against the risk of breaches and spills,” said Roger Simonson, owner and President of Black Powder Solutions and parent company, One Eye Industries.

Using patented, rare-earth, magnetic technology installed at various points along the transmission line, a system of Black Powder Magnetic Separators can reduce the operational cost of pipelines and produce a higher quality, finished product from refineries, gas and petrochemical plants. Cleaner fuels provide a higher quality burn resulting in lower emissions.

The new technology is proving its value in transmission lines, petrochemical plants, and refineries around the world. A project in Houston, Texas is currently showcasing how Black Powder Magnetic Separators can improve efficiency, extend equipment reliability, and lower operation costs in the loading of hydrocarbon liquids onto ocean tankers. A second project in Houston, that places Black Powder Magnetic Separators before and after refining processes, is also realizing these benefits.

Expanding Horizons Through Innovation

“The IRAP team was fantastic. They put in many hours helping us, and their door was always open to bounce off ideas.”

Roger Simonson, President, Black Powder Solutions and One Eye Industries

The primary catalyst of black powder is the presence of moisture on carbon steel. This is a huge problem for industry because it enables chemical and bacterial corrosion of the pipeline wall that creates very abrasive particles that damages valves, meters, and pumping equipment along the transmission and refining process.

“In 2010, clients in the oil and gas industry were coming to One Eye Industries for a solution to address the challenge of black powder contamination,” said Simonson.

Seeing the need to increase the company's engineering capacity, Simonson founded Black Powder Solutions to focus on this new technology, and turned to IRAP for help. The company quickly developed a strong relationship with IRAP, with a series of projects to develop the Black Powder Magnetic Separator, build a prototype, and modify the technology to ensure it would work in corrosive environments. Simonson also turned to Industrial Technology Advisors (ITAs) Twyla Legault, Barbara McCarthy, and Bob Golding for a wealth of technical and business advice, including strategic ideas.



A Black Powder Solutions project at the Houston, Texas loading dock demonstrates the efficiency Black Powder Magnetic Separators can bring to the loading of hydrocarbon liquids onto ocean tankers. Traditional disposable filtration requires daily disposal, with four to eight hours of downtime. This Black Powder Magnetic Separator did not require cleaning until 27 ships had been loaded. (Photo credit: Black Powder Solutions)

A recent sale to Hyundai in South Korea for a liquid natural gas facility bodes well for Black Powder Solutions. Once installed in the facility, this Separator removed 48 pounds of black powder from a condensate line in two days. (Photo credit: Black Powder Solutions)

“In 2012, we introduced Black Powder Solutions to Tangent Engineering, another IRAP client, to help with the design of the magnetic separators for natural gas pipelines,” said Bob Golding. “We also connected them with other engineering firms, management experts, and a variety of provincial government agencies and industry representatives.”

“The IRAP team was fantastic,” added Simonson. “They put in many hours helping us, and their door was always open to bounce off ideas.”

In 2016, IRAP helped the company launch a study to independently validate the scope of how well the technology performs. “Having the data and our own case studies is critical to opening people’s minds about what we’re doing. Change is difficult,” explained Simonson.

Traditional filtration technology requires frequent change out, leading to high maintenance and operation costs. The Black Powder Magnetic Separator is a cleanable, reusable technology that offers years of service, and reduces the disposal of contaminated filters in landfills. The ability to hold high volumes of black powder contamination before cleaning is required reduces the travel to, equipment contact and travel from site, significantly reducing the opportunity for injury. The company is now working on a fully automated system.

“IRAP funding and support has helped us expand our company in a whole new direction,” said Simonson.

Going International

The patient development work appears to be paying off. Black Powder Solutions now has sales across North America, Europe, the Middle East, and Southeast Asia. The company recently landed a large sale to Hyundai in South Korea for a liquid natural gas facility – representing a big success for the company. Revenues have increased exponentially year over year. “The market is vast for this technology.”

“Working with IRAP has greatly assisted us in becoming an international supplier of environmental technology for applications around the world.”