

Advanced Magnet Lab's Fluid Containment Technology Solution

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Overview

The Advanced Magnet Lab (AML) solution for containing oil or other fluids uncontrolled flow (spills, ruptures based on a very elegant, low-tech, low-cost and environmentally benign process. Using a mixture of high field permanent magnets and metal spheres, the company's technology provides a means for controlled stoppage of "leak". AML has validated the solution in the lab with a scaled mockup which emulated a 44,000 barrel per day flow of oil from a steel pipe. The test results verified that the magnetized spheres attach to each other and the steel pipe to gradually "stop" a leak, like plaque which clogs the arteries in the flowing blood of an artery. The materials and application process forms a monolithic, cement like plug inside of pipes or a "blanket" for ruptures outside of a pipe.



Value Proposition

What is the value to have a solution allowing rapid deployment of a versatile oil containment solution?

"According to BP, the oil spill has cost the group 19 billion dollars. BP has made provisions in the volume of 41 billion dollars to pay the damages from the oil spill, said the president of BP America, Lamar McKay, on an energy conference in New Orleans."

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By Tom Bergin
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(Reuters) - BP and its partners involved in the Gulf of Mexico oil spill have unleashed a \$100 billion-plus barrage of legal claims a year after the rig blast killed 11 workers and created an environmental disaster.

Field of the Invention

AML's invention relates to systems and methods for mitigating uncontrolled flow of fluids, through walls, including walls of pipes and, more specifically, to insertion of magnetic materials in any flow path to limit or prevent the unwanted flow. In one series of embodiments the inventive concepts are applicable to mitigation of uncontrolled flow of oil or gas from a well bore, particularly in relation to underwater well heads.

Patent Status

On June 1, 2011 AML filed a PCT patent application based on an earlier provisional filing to seek international protection for the application of magnets to mitigate uncontrolled flows of environmentally damaging fluids. The concept originated in the context of the 2010 Gulf oil spill, but has application to a wide variety of ruptures, both land and sea based. For example, the concept may be applied to containment structures used for radioactive materials, to hulls of tankers, to large pipelines and to land based storage facilities or holding tanks. The PCT application provides the basis for a broad and comprehensive claim strategy, having described in detail a number of example applications.

The technology also provides a basis to protect a delivery system with which it is contemplated that high strength permanently magnetized particles and non-magnetized ferromagnetic particles will be separately delivered to the site of the rupture. The system design and method permit insertion of magnetic particles within the interior of the structure whose integrity has been compromised, as well as selective deposition of magnetic material over the exterior surfaces of the structure (e.g., a pipe) to seal off the flow.

IP Protection in International Waters

The results of legal research are that protection in international waters will depend on the law of the country under which the vessel is flagged. However, it is AML's understanding that with regard to oil well drilling, most of the wells are in territorial waters. AML will have to confirm with agents and patent attorneys of individual countries, but it seems that meaningful protection of the methods and the delivery system can be acquired based on use in territorial waters. Further, with the PCT application, there is the ability to enforce the patents based on country of manufacture, sale and importation. In summary, although we do not have a firm assessment of how this will play out, it appears that suitable protection can be acquired to protect deployments of the inventions. The laws in the US are favorable for infringements in the territorial waters of the United States.