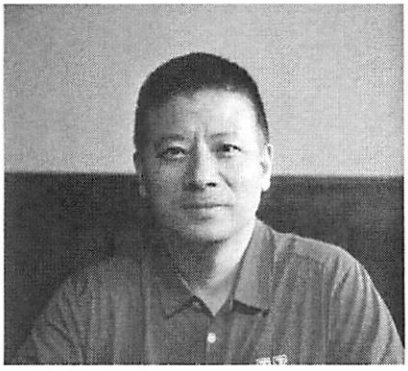

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Noncontact Macrobend Fiber Optic Corrosion Sensor

Non-Provisional Patent Application:

UHID: 2015-007

Technology Description: Corrosion in metals can occur when metals are exposed to the right conditions. The corrosion process is accelerated if aggressive chemical agents are present, and can lead to pitting corrosion, which is a type of severe, localized corrosion that eats away at the metal. Pitting corrosion can be dangerous depending on the application of the corroded metal piece. This fiber optic sensor technology that provides an alternative method for corrosion detection and may provide unique sensing solutions to situations in which conventional methods do not work. Essentially the fiber optic is bent into a U-turn shape, and one side of the fiber is bonded to a magnet. As the magnet moves due to varying levels of metal in the sample, the bending radius of the U-turn also varies, thus causing corresponding levels of light loss in the fiber (light escapes from the fiber when the bending is to severe). This light intensity is measured and thus provides a record of corrosion on a sample.

Potential Applications: The main market for the IP is the oil and gas industry, in particular those that operate, maintain, produce pipelines. With further development, the IP can be turned into a device that can be more easily adapted for use inside pipelines. There is potential for use in pigging operations where a machine is sent through the pipeline for cleaning and maintenance. Other applications include corrosion detection in hard to reach places that electronic sensors cannot survive.

Time to market: The technology is in its laboratory phase, and while its operating principles have been demonstrated, many engineering aspects have not yet been considered/refined. With proper development, it may take 1-2 more years to begin transitioning to a more commercial level.