



Mobile Robot for In-Service Solid-State Repair of Pipeline Internal Cracks

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Summary: A mobile robot for in-service solid-state repair of cracks formed on the interior surface of liquid and gas pipelines.

Description: Stress corrosion cracking can occur in the internal walls of both gas and liquid pipelines as a result of a corrosive environment and tensile stress on a susceptible material. Pipeline repair or rehabilitation is often driven by considerations of economics, urgency and engineering approaches. In-service repair is a highly economic strategy since the need to excavate the pipeline or take the pipeline out of service is precluded. This is particularly attractive for pipelines serving in hazardous environment (e.g., corrosive, high temperature, pressure or radiation conditions) and populated areas. This invention of a mobile robot for in-service repair of cracks formed on metal pipeline internal wall using an innovative solid-state repair technology. Solid-state repair is advantageous since it can minimize strength loss during the repair process and prevent defects and property degradation associated with conventional fusion repair.

Main Advantages of this Invention

- Can be used on hard to reach cracks
- Can potentially restore the strength of the pipe and
- Produce compressive surface residual stress to improve cracking resistance
- Removes human operators from repair work in hazardous environment

Potential Areas of Application

- Oil and Gas
- Utility Companies
- Construction

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Intellectual Property Status: US provisional patent filed.

Opportunity: We are seeking an exclusive or non-exclusive licensee for implementation of this technology.

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