Radio frequency identification (RFID) smart corrosion coupon

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Main Objective

This project was awarded to Mary Kay O’Connor Process Safety Center to develop an economic, universal, non-intrusive, continuous, real-time wireless monitoring system to simplify the corrosion inspection process, improve the accuracy and effectiveness of the resources, and enhance the overall safety performance of pipeline systems.

Project Approach/Scope

- RFID smart corrosion coupon design
- Explore potential applications for areas susceptible to corrosion
- Design laboratory corrosion testing methodology
  - Validation of RFID corrosion coupon
  - Corrosion rate tests
  - Well controlled corrosion process in a corrosion testing chamber

Expected Results or Results To-Date

1. Environmental chamber constructed under ASTM B-117 standard
   - Temperature, humidity, salinity control
   - System graphical user interface
2. Preliminary tests
   - Evaluation of environmental chamber
   - RFID tag signal test
3. Validation of corrosion coupon (expected)
   - RFID coupon design
   - Effectiveness of different RFID corrosion coupons
4. Further modification of RFID coupon (expected)
   - Correlate the corrosion rate of the supporting material with that of pipeline material

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References


Public Project Page

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https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=505