

CORROSION MITIGATION TECHNICAL CAPABILITIES

EXPERIENCED TECHNICAL SPECIALISTS

PureChem has chemists that are knowledgeable about all inhibition chemistries currently on the market. We are continuously improving our product line for the most optimal and cost-effective corrosion inhibition performance. Our corrosion specialists are focused on identifying root-cause attributes:

- Assessing corrosion potential in pipelines and downhole equipment
- Designing corrosion mitigation strategies based on assessments and monitoring history
- Performing assessments of failure mechanism
- Participating in regular pipeline integrity management meetings
- Providing support in all aspects involving integrity management

FULL FIELD REVIEWS INCLUDE

- Field maps
- System surveys
- Sampling and analysis of system fluids and solids
- Gap analysis of existing programs

PureChem has the ability to design specialized testing protocols for investigation of any potential corrosion related concerns

LABORATORY CORROSION INHIBITOR PRODUCT EVALUATION

High Pressure High Temperature Autoclave with Linear Polarization Resistance

- Sour capability
- Test conditions designed to simulate field conditions
- Provides corrosion rate based on coupon weight loss and LPR real-time corrosion rate
- Visual inspection and photos of post-test coupons
- Specialized equipment for investigation of under-deposit corrosion and corrosion in the vapour phase

Rotating Cylinder Electrode with Linear Polarization Resistance

- Allows for introduction of shear
- Observe impact of shear to corrosion inhibitor film life
- Provides corrosion rate based on coupon weight loss and LPR real-time corrosion rate
- Visual inspection and photos of post-test coupons

Corrosion Inhibitor Compatibility Testing

Emulsion tendency and foaming tendency with produced fluids

- Solubility/dispersibility in produced water
- Solubility/dispersibility with proposed diluents
- Partitioning co-efficient

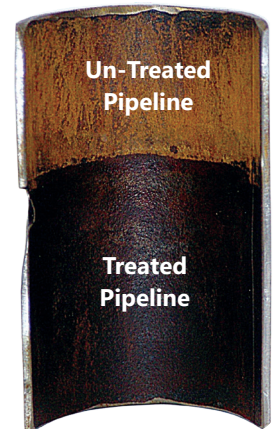


HPHT AUTOCLAVES

PIPELINE CORROSION POTENTIAL ASSESSMENT

BENEFITS OF PIPELINE CORROSION ASSESSMENT

- Provides a consistent method for comparing a group of pipelines
- Identifies pipelines of increased risk for corrosion
- Serves as a benchmark for identification of potential management of change initiatives
- Document to capture and assess changing production and operating conditions



CRITERIA

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| <ul style="list-style-type: none"> • DWM corrosion rate • Well performance history • Elevation profile consideration • Acid gas content • Water cut • Chloride content of water • Dissolved oxygen • Bacteria | <ul style="list-style-type: none"> • Methanol • Failure history • Monitoring history • Pigging capability • Superficial gas velocity • Liquid transit time • Proximity consideration of environmental factors |
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PURECHEM PROVIDES TRACKING PROGRAMS WITH MONTHLY REPORTING

Laboratory Testing:

- Full water analysis
- Fe/Mn trending
- Corrosion inhibitor residuals
- Bacteria testing using ATP and serial dilution methods as well as kill studies for the purpose of designing a bacteria mitigation program where required
- Solids analysis
- Failure opinion
- Corrosion coupon analysis

Field Monitoring:

- Suggested KPI targets
- Real-time monitoring using Electrical Resistance probe:
 - Management of change
 - Program optimization
- Dissolved oxygen
- Copper ion displacement testing for corrosion inhibitor film coverage

