



UNDERGROUND GAS STORAGE INTEGRITY MANAGEMENT

OUR SOLUTIONS

In response to recent industry events, natural gas storage operators are seeking a comprehensive approach to assess the integrity of their storage facilities. Recently published API 1170 and 1171 Recommended Practices, as well as PHMSA Advisory Bulletin ADB-2016-02, provide guidance to operators when developing and implementing an Underground Gas Storage Integrity Management Program.

EN Consulting has the experience to design integrity programs including risk assessment, preventive and mitigative measures, continual monitoring, physical assessment, and data management. EN Consulting also offers design services for above and below grade facilities, maintenance, and remediation.

INTEGRITY RISK MANAGEMENT

EN Consulting's team of code compliance, integrity management, and gas storage specialists evaluate existing integrity programs and recommend adjustments to comply with API Recommended Practice Documents and PHMSA Advisory Bulletins.

Overview

- Gap analysis against requirements of API 1170, 1171, and other industry documents
- Recommendations on how to modify existing programs to further enhance integrity management principles and/or maintain regulatory compliance
- Procedure review and development
- Data collection, record retention, and performance metrics

System Baseline

- Data collection
- Service pressure rating verification and documentation

Risk Management

- Threat identification
- Risk prioritization
- Remediation and reassessment triggers

INTEGRITY VERIFICATION AND MONITORING

EN Consulting assists with the ongoing evaluation and monitoring of gas storage wells and reservoir fluids.

Ongoing Risk-Based Evaluations

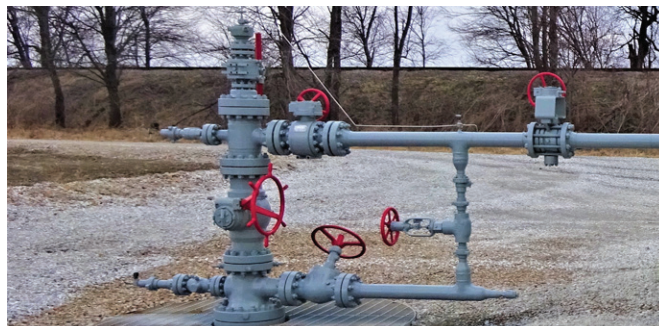
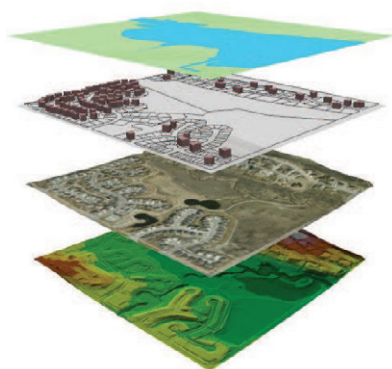
- Data integration and analysis
- Updates to threat and risk evaluations

Corrosion Control

- Corrosion testing of fluids
- Casing Potential Profile tool support
- (E-Log I) and interference testing
- CP system design and remediation

Metallurgical Analysis

- Materials assessment
- Fitness-for service
- Mechanical inspection analysis
- Metallurgical failure analysis



GAS STORAGE OPERATIONS

New regulations could impact gas storage operations from a standpoint of work prioritization, documentation, well configuration, and remediation requirements. EN Consulting's experienced engineers assist with operation planning, program implementation, and project detailed design that address these needs.

Program Development

- Well workovers and remediation programs
- Injection and withdrawal programs
- Well logging programs
- Drilling and completion programs
- Emergency response plans

Engineering

- Pressure drawdown and buildup testing
- Gas volume calculations
- Flow erosion and hydrate potential at operating conditions
- Produced fluid production analysis and volume control

Design Capabilities

- Wellhead maintenance and modifications
- Gathering systems
- Gas processing facilities

GIS Analytics & Mapping

- 3D geographically referenced modeling
- Database asset management and analysis