



Erosion Programs

GSE TrueNorth updates and develops comprehensive Erosion Programs, tailored site-specific requirements or broad corporate objectives. Our process and services are based on top industry guidance for a program that mitigates piping degradation due to erosion mechanisms.

As Flow-Accelerated Corrosion (FAC) programs continue to mature and mitigate the risk of piping failure, the nuclear industry has turned its attention to degradation that occurs due to various mechanical erosion mechanisms, including:

- Cavitation
- Liquid droplet impingement
- Flashing
- Solid particle erosion

Erosion can result in leaks, ruptures, unplanned shutdowns, and the ongoing expense of inspection, repair, and replacement. Significant industry operating experience has shown that a programmatic approach must also be taken to combat erosion degradation and reduce the risk of piping failure. GSE TrueNorth stands ready.

BASIS DOCUMENT

Like our FAC Programs, the basis document of an Erosion Program is developed through a systematic evaluation of all station piping and components. GSE TrueNorth Erosion Susceptibility Evaluation (ESE) is prepared using a 'drill down' approach to determine which systems and lines are susceptible to each type of erosion mechanism or non-susceptible. This methodology effectively bounds the scope of the Erosion Program.

The ESE basis document is developed using plant configuration and operating data (P&ID's, isometrics, system descriptions, valve line-ups, plant and industry operating experience, etc.) and categorize plant piping into three distinct categories:

- Susceptible to erosion and modeled in SFA
- Susceptible to erosion and non-modeled
- Non-susceptible to erosion

Our ESE basis document also consists of an Engineering Report documenting the susceptibility evaluation, a database reflecting the susceptibility status of each plant line, and a set of corresponding color-coded flow diagrams or P&IDs.



CHECWORKS™ SFA EROSION MODELING

EPRI CHECWORKS™ SFA includes a module to predict the potential for various erosion mechanisms in plant piping. The scope of piping suitable for erosion-prediction modeling in SFA will be determined in the ESE basis document. The modeling effort required to predict erosion potential will require significant knowledge of SFA modeling best practices, especially in network flow analysis. The GSE TrueNorth team offers the expertise necessary to maximize the effectiveness of erosion modeling output in SFA.

RISK RANKING

For plant piping that is susceptible to erosion but not suitable for modeling in CHECWORKS™ SFA, we offer a qualitative, engineering judgment-based approach to systematically prioritize the inspection of both large and small-bore erosion susceptible (but not modeled) plant piping.

INSPECTION SCOPE DEVELOPMENT

GSE TrueNorth offers inspection scope development services that optimize inspection value and resource usage while reducing risk, increasing plant safety, and ensuring asset reliability.

DATA EVALUATION & TRENDING

The non-linear nature of erosion degradation calls for a different approach to inspection data evaluation and trending. We apply industry best practices and significant operating experience to evaluate inspection results and make erosion mitigation decisions on a case-by-case basis.

LONG-TERM STRATEGY

The goal of minimizing erosion damage requires significant effort in planning design mods, inspections, and piping replacements. GSE TrueNorth can assist in developing a sound long-term strategy.

TRAINING

No comprehensive program would be complete without knowledge transfer. GSE TrueNorth offers hand-on training on erosion fundamentals and erosion program management.

The GSE TrueNorth Erosion Programs, like our other services, include:

- Program Implementation Procedures
- Basis Document
- CHECWORKS™ SFA Erosion Modeling
- Risk Ranking/Prioritization
- Inspection Planning & Management
- Long-Term Strategy
- Program Assessment
- Training

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ABOUT GSE TRUENORTH

Engineering. Thermal performance. Leading-edge software. These are the heart of GSE TrueNorth's offerings for the nuclear industry. As part of GSE Solutions group, GSE TrueNorth supports operational excellence in the power industry. We leverage decades of specialized expertise in plant thermal performance and regulatory engineering programs that refine and update systems, ensure compliance and optimize performance for our clients.

