



 **GSE Engineering™**
Design & Analysis

ENGINEER-OF CHOICE PROVIDER

As an EOC provider, GSE leverages specialized, high value engineering design and implementation to create end-to-end solutions that reduce risk and optimize performance.

In the spirit of sustainability, GSE Engineering has both younger and more experienced staff, some with more than 30 years experience. We are a full-service consulting engineering firm supporting the continued safe and cost-effective operation of power generating facilities through engineered solutions and project management.

MECHANICAL ENGINEERING

Our mechanical design engineering team is well versed in the design and license basis of plant systems, and our design solutions seek to preserve them.

- System design and layout, including piping & instrumentation diagrams, component location and selection
- System operating mode calculations
- Piping analysis, component specs, system evaluations
- Identification of ASME Section XI boundaries
- Waste stream reduction analysis
- HVAC design, sizing & off-normal operational evaluations

ELECTRICAL, INSTRUMENTATION & CONTROLS ENGINEERING

GSE's team focuses on power plant electrical, instrumentation and control systems. Though medium- and low-voltage systems within the power block make up most of our engineering work.

- System design and layout including development of one-line and other electrical / I&C schematic diagrams, component layout and selection
- Electrical transient analysis using ETAP (load flow, arc flash, short circuit relay coordination, cable ampacity, degraded voltage)
- Breaker replacement, inverter replacement

- Appendix R
- Digital upgrades
- Protective relaying

CIVIL/STRUCTURAL ENGINEERING

Our civil and structural engineering team perform analyses and design services for nuclear power plant structures, including support of plant systems and components.

- Foundations, reinforced concrete, structural-steel, rigging
- Piping supports, pipe stress analysis, other suspended system design and analysis
- Seismic qualification
- Temporary and permanent shielding requests

FIRE PROTECTION ENGINEERING

Fire protection is unique in that it consists of not only a regulatory-required program, but also a collection of individual systems and components. GSE engineers perform fire protection analysis and design services, applying both deterministic and probabilistic rules and methods.

- Fire protection licensing & compliance
- Fire protection programs (10CFR 50 Appendix R, NFPA 805, etc.)
- Evaluation & analysis
- Design & qualification
- System layout
- Identification of maintenance, testing & surveillance requirements

DESIGN ENGINEERING & MODIFICATIONS

GSE is a full-service consulting engineering firm supporting the continued safe and cost-effective operation of power generating facilities through engineered solutions and project management.

- Design studies to evaluate modification alternatives
- Conceptual & final designs
- Cost/benefit analysis
- Engineering support during field installation, testing, & startup



QUALITY ASSURANCE

GSE Design & Analysis performs work in accordance with our nuclear Quality Assurance Program, meeting the requirements of 10CFR50 Appendix B. We are also proficient at completing managed task projects under the auspices of our clients' QA programs. In these instances, GSE personnel are trained on the clients' programs and complete relevant client qualification cards. Client QA Training can often be conducted in house by our staff certified as trainers/mentors.

Quality means going beyond the legal requirements — it reflects the pride in our work and the services we provide to our clients. The requirements and commitments contained in the QA Program are mandatory and must be implemented, enforced, and adhered to by our employees. The GSE Design & Analysis QA Program is administered under the direction of our QA Manager, who has direct access to the highest level of GSE management and is required to make periodic reports to them regarding program effectiveness.

Engineering & Consulting Services

GSE Engineering is a leading provider of engineering and consulting services to the power industry in the United States. Our client-focused approach creates value and gives our clients a competitive edge. Our company was founded to provide value-added engineering services to the US power industry. Established in 1995, GSE Design & Analysis continues to thrive because of our customer first, right solution attitude. GSE focuses on the right solution, often resulting in less scope for GSE and lower costs for our customers.

Our primary goal is to establish client relationships while ensuring our clients' short and long term goals are met in a safe, timely, and cost-effective manner. Core competencies are engineering, project studies and design modifications, but through alliances with our teaming partners, we offer a myriad of related services.

AREAS OF EXPERTISE

- Scoping Studies to identify the right solution for an issue
- Balance of Plant Modifications
- Degraded Voltage Assessments and Modifications
- Independent Third Party Reviews of High Risk Modifications
- Cyber Security Evaluations and Support
- Diesel Generators
- Digital Control Systems Upgrades
- Installation, Testing, Startup Support
- Turbine Generators
- Project Management
- Engineering Staff Augmentation

About GSE Solutions

Proven by more than 50 years of experience in the nuclear power industry, GSE knows what it takes to help customers deliver carbon-free electricity safely and reliably. Today, GSE Solutions leverages top talent, expertise, and technology to help energy facilities achieve next-level power plant performance. GSE's advanced Engineering and Workforce Solutions divisions offer highly specialized training, engineering design, program compliance, simulation, and technical staffing that reduce risk and optimize plant operations. With more than 1,100 installations and hundreds of customers in over 50 countries, GSE delivers operational excellence. www.gses.com

 GSE Design & Analysis™

 GSE Programs & Performance™

 GSE Systems & Simulation™

 GSE Training Services™

 GSE Technical Staffing™



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