



Owner's Engineer Services

MSE provides owner's engineering services with a diverse, experienced base of experts.

Engineering services help define projects at the front end and keep projects on track.

Owner's Engineering Services

Every project contains relative risks in terms of general ideas, capital expenditure, operation, safety, and performance. As with any capital-intensive project, it is important to understand all facets and identify risk areas to institute appropriate control measures. An initial, qualified review or feasibility phase for any project lays the groundwork to identify not only the opportunities available, but also the risks that will endure with the project once it begins. And continued, effective project management and monitoring ensures the project success. During the early stages of a project the owner's engineers can provide added value:

- Review the project scope (if defined)
- Define the project scope (if not defined)
- Review the scope with the business objectives
- Conduct site selection and assessment studies
- Assess capital budgets.
- Identify Environment, Safety, & Health (ES&H) issues
- Identify and evaluate technological alternatives.
- Research additional technology development
- Prepare owner's design criteria for use in detailed engineering
- Prepare project schedules

These initial activities define the project scope and help minimize costly changes and define a path for effective project management, coordination, and monitoring. To manage the project, the owner's engineer can:

- Provide part or all of the engineering development
- Provide detailed engineering,
- Oversee the work of other engineers/contractors
- Identify and manage ES&H projects
- Represent the owner's interests

This keeps the project true to business objectives, schedule, and budget—increasing the project success and profitability.

Maintaining a diverse engineering department that includes design, analysis, safety, and quality engineers can be expensive. Consequently, many companies today do not maintain their own engineering staff. But they still need the engineering services, so owners turn to contractors for design and construction assistance.

MSE AS OWNER'S ENGINEER

MSE offers a diverse, added-value approach to engineering. We work with customers to identify, manage, and/or provide engineering and project management services at each stage of a project with qualified professionals. **We run an OSHA-compliant facility and so are familiar with standards.** We have a staff of multi-disciplined engineers, including registered PEs, structural engineers, certified Project Management Professionals (PMPs), process engineers, and analysis personnel. **MSE engineers review completed work packages and designs for ES&H, constructability, and compliance** including:

Initial Project

- Feasibility studies
- Site selection
- Preliminary engineering
- Design reviews - architectural, civil, structural, mechanical, electrical, and instrumentation
- Plan reviews
- Inspections
- Structural design and review
- Building permit reviews
- Detailed engineering and procurement
- Prelim design and cost estimate to scope project
- Life expectancy evaluations

ES&H Analysis and Monitoring

- Serve as focal point on safety policy
- Manager comprehensive safety oversight plans
- Perform line management assessments
- Compile, review, analyze, and monitor safety performance data
- Develop & coordinate technical standards
- Conduct design and safety system oversight
- Provide technical leadership in safety disciplines (using subject matter experts)
- Maintain awareness of site safety
- Review/approve safety basis documents and design analyses

Project and Construction Oversight

- Construction/ construction management
- Review/monitor the detailed engineering, construction, and plant startup efforts
- Startup and operations
- Project development /equity participation
- Consulting engineering
- Building/environmental permitting and licensing



SPECIFIC MSE MANAGEMENT AND OWNERS ENGINEERING EXPERIENCE

MSE was providing Owner's Engineering services long before the term actually came about. Here are a few examples of MSE's long-term engineering support, program management, and subcontractor coordination for customers.

US Army Corps of Engineers, Construction Engineering Research Laboratory:

Facility Modernization and Sustainability. *Engineering services: Scoping evaluations to determine cost effectiveness, potential payback, and regulatory compliance issues of projects submitted by Army facilities to CERL.*

MSE reviews projects and sends comments/recommendations to CERL. Once CERL selects a project, we develop project execution plans, designs, and test programs; install, test, and evaluate systems, and report results, conclusions, and recommendations.

U.S. Army Mariah Hypersonic Wind Tunnel Development Program: to develop the materials necessary to build the world's first hypersonic wind tunnel. *Engineering services: engineering and technology development, analytical experimental technology, project management, process engineering, prototyping, tooling, manufacturing, ES&H, hardware, and software support.* MSE is the prime-integrating contractor. We manage multiple, simultaneous, dissimilar tasks concurrently. For this project, MSE designed, developed, and constructed the Ultra-High Pressure Test Facility (UHPTF), and we coordinate the efforts of multiple contractors: U.S. Air Force, Lawrence Livermore National Laboratory (LLNL), Sandia National Laboratories (SNL), Princeton University, Ring Technical Services, Butte Local Development Corporation (BLDC), State of Montana, and Montana Energy Research and Development Institute (MERDI).

Safety Analyses (Process Hazard Analysis (PHA) or Safety Hazard Analysis (SHA)). Recent reviews include PHAs for

- Mobile plasma systems
- Plasma demilitarization systems
- Molten salt oxidation processes
- BioSources
- Bio-diesel processes
- Cryoplasma/fracture processes

DOE Subsurface Contaminants Focus Area Program (SCFA)

Since 1992: MSE provides management, engineering, and technology support to the DOE-SCFA to address environmental problems associated with hazardous and radioactive contaminants that exist throughout the DOE Complex. This includes **technology testing, treatability studies, sampling and analysis, quality analysis/quality control, economic analysis, modeling.** Prior to starting work at a DOE site, MSE submits the following data for review:

- Operation Training Certification
- Material Safety Data Sheets
- Spare Parts List
- Chemical Inventory List
- Job Safety Analysis
- Personnel Training Information
- Maintenance of Equipment Records
- Personnel Rad Exposure Records
- Verification Letter Stating no Modification of Equipment by Subcontractor
- Schedule of Values
- Critical Path Schedule

U.S. Department of Energy

Under a DOE support contract, MSE provides diverse engineer services to help accelerate DOE site closure and cleanup and waste handling/ treatment at sites throughout the DOE Complex. Services include technology assessment, long-term site management, regulatory analyses of wastestreams (Liquid and Gaseous Waste Operations Engineering (LGWO) Evaluation – Oak Ridge), sorbent testing: **research, feasibility studies, sampling, in-situ work, cost analysis, etc.**

MSE Offices

Butte, MT	Richland, WA
Morgantown, WV	Oak Ridge, TN

A hazard analysis is an organized method to identify hazards at any point in the life cycle of the system and to ensure that the hazards are properly controlled to minimize or accept the level of risk.



MSE EXPERIENCE & QUALIFICATIONS

MSE staff has direct experience working with the industry standard software for engineering, mechanical, and structural design.

Software Experience

Mechanical Design Software

- SolidWorks - Used for MCAD design and fully detailed fabrication drawings
- CSMOSXpress - Used for simplified first pass stress analysis of parts
- Mathcad - Used to perform and document calculations

Structural Design Software

- RISA-3D - Structural design software
- Mathcad - Used to perform and document calculations

Extended List

Accurender	Electrical Pro	Mohrview	Revit Structure
AnSys	Energy Science and Technology Software	MS Winseis	RGM HEC2000
AnSys CFX	Foundations for Excellence	National Electrical Code	RISA-3D
AqtesSolv	Generic Cadd	National Electrical Code Estimator	RISAFooter
ArcView	GeoTom 3D	National Fire Code	ROCKWORKS
AutoCad 2007	Gradix	NI Developer Suite	S-144DR
AutoCad LT 2000	Heastad Methods	NIST - Fluid	SealLogix-Electrical
AutoSketch V6.0	HEC-RAS	Thermodynamic & Transport	SigmaPlot
AXum	HSC Chemistry	NoeSys	Simply Motion
CadStar	Infinite Extent	Pond Pack	SIPx
ChemStructure	Intellution	Primavera - P3	Solid Works
ChemWindow	Inventor(Autodesk)	Pro/E Fliexible Engineering	Solute
Corral (AWI)	JMP Statistical Analysis	Package w/intralink	Spectext
CosMos	LabTech Notebook Pro	QuestSuite	Superpump
DasyLab-Plus	LabView Graphical Programming	QuickTech Pro Diagnostic	Superslag
Descon Structural Design	MathCad	RayFact	TAK III Thermal System
Design MET	MathCad Pro	RBCA Spreadsheet system	TecPlot
Doors/Analysis	MatLab	Advisor	Visual Design
Dranetz	Mechanical Desktop w. AutoCad	Retain Pro	Visual ModFlow
Dynamic Designer			Visual ModFlow + MS
EaglePoint 2002			WinPest
Electrical Calculation			

MSE is ISO 9001:2000 certified and we run an OSHA-compliant facility.



ABOUT MSE

MSE is a diversified engineering company providing general and specialized engineering and unique technical solutions to government and commercial industries. In business for more than 30 years, we have completed thousands of successful projects across the United States and internationally. We are a small business (under 500 employees) and are ISO 9001:2000 certified.

We focus on solving customer problems. Headquartered in Butte, MT, we have 7 field offices in the U.S. providing engineering services throughout the States.

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