Technology Applications, Inc.

Engineering Resources and Qualifications

TechBits

What MSE Can Do For You

Engineering Services

An engineer is a skilled technical professional concerned with developing solutions to complex problems by applying innovative solutions and scientific knowledge while considering technical constraints.
Engineering is the creative application of scientific principles to design or develop solutions with full cognizance of their design and the ability to forecast their behavior under specific operating conditions.

From pioneering work in wind tunnel technology to site evaluations in Guam to mechanical design of ergonomic equipment, MSE has been synonymous with engineering excellence. On any given project, novel and puzzling situations can crop up. The ability to respond creatively to these challenges can be the difference in between project success or failure. We offer a comprehensive range of effective engineering solutions. For over three decades, our clients have come to depend on us for the high level of service that has become our corporate trademark. No matter the size or duration, MSE engineers deliver practical, cost-effective solutions.

From initial studies and site visits to final design and construction oversight, we have completed hundreds of millions of dollars of work directly related to engineering services. Our uniqueness lies in the ability to offer all the engineering services required for a successful project. **We specialize in developing creative solutions.**

For your project, a multidisciplinary staff of engineering professionals work together using Project Management Institute (PMI) body of knowledge-based project management systems. This diverse staff also allows us to respond rapidly and appropriately to customer requirements. Licensed professional engineers (PE)—we have PEs licensed in 23 states—lead project efforts while Project Management Professionals (PMPs) manage cost, schedule, scope, and milestones.

Combine this engineering resource with a creative, internal support staff for drafting, surveying, laboratory, and document production and an advanced testing facility and **you can see how MSE can be your one-stop shop for solutions.**

How MSE can help your bottom line

- Provide Professional Engineers (PEs) to support peak work loads imposed by Stimulus funding-to support your staff or complete an entire task
- Provide small business contracting credit
- Provide experience and processes to meet ARRA* Reporting Requirements
- Provide Project Management Professionals

MSE Engineering Resources

- Professional Engineers
- Professional Geologists
- Certified Environmental Managers
- Certified Hazardous Waste Managers
- Project Management Professionals
- Aerospace Engineers
- Biologists
- Chemical Engineers
- Chemists
- Civil Engineers
- Compliance Specialists
- Economists
- Electrical Engineers
- Environmental Engineers
- ES&H Specialists
- Geochemists
- Geologists
- Geophysicists
- Geotechnical Engineers
- Hydrogeologists
- Instrumentation & Control Engineers
- Information Technology Specialists
- Mechanical Engineers
- Metallurgical Engineers
- Microbiologists
- Process Engineers
- Project Managers
- QA Specialists
- Soil Scientists
- Statisticians
- Structural Engineers
- Systems Engineers
- Technical Communicators
- Waste Management Specialists
- Water Resources Engineers
- Operations Specialists

* ARRA: American Recovery and Reinvestment Act of 2009

MSE: OVER 30 YEARS OF EXPERIENCE

MSE Technology Applications, Inc. is a diversified engineering and technology solutions company providing a wide range of professional services to the government and private industry. We have three decades of professional service experience that includes countless successful project deliveries and technology innovations.

MSE is an engineering and technology company focused on providing engineering solutions to clients. Founded in 1974 to conduct research and development to assist the United States become less dependent on foreign sources of energy, we have years of experience providing a full range of engineering services to a variety of clientele.

In business for more than 30 years, we provide direct engineering services: mechanical, electrical, instrumentation and control, chemical, process, structural, construction management, geological, geotechnical investigation, modeling, subsurface exploration, feasibility studies, waste cleanup, supervisory control and data acquisition systems, and project management. Our current customers include government and commercial entities.

The list below shows a partial list of current and past customers.

ARDEC (U.S. Army Armament Research, Development and Engineering Center)
Bechtel
BNL (Brookhaven National Lab)
CH2M HILL
DAC (Defense Ammunition Center)
DoD (Department of Defense)
DOE (Department of Energy)
EPA (Environmental Protection Agency)
EPRI (Electric Power Research Institute)
Fluor Fernald
General Dynamics
Hanford Site
U.S. Army Aviation and Missile Command
LANL (Los Alamos National Lab)
Lockhead Martin
NASA (National Aeronautics and Space Administration)
Naval Air Warfare Center AD (LKE)
Naval Surface Warfare Center, Crane Div.
NETL (DOE National Energy Technology Laboratory)
REC Silicon
Reliant Energy
RDS (Research and Development Solutions LLC)
SAIC (Science Applications International Corporation)
TRICAT, Inc
USACE (United States Army Corps of Engineers)
U.S. Air Force
U.S. Navy

Benefits We offer Customers:

- ✓ **Full Analytical Laboratory –** *Fully accredited analytical laboratory and soils testing facilities.*
- ✓ **Established in 1974 –** *Our procedures and infrastructure are mature and can quickly accommodate your needs.*
- ✓ **Key Licensed Professionals Engineers in 23 states –** *We have the right people who understand the technical principles and solutions required*
- ✓ **MSE Headquarters Quality Management Program is ISO 9001:2000 Certified -** *We consistently and reliably deliver what we promise within a safe environment.*
- ✓ **Certified Project Management Professionals –** *Our project managers are trained in Project Management Institute (PMI) methods and can leverage experience to meet goals and deadlines*
- ✓ **DCAA-Audited & Approved –** *We have the corporate experience and proven success to manage large programs to meet customer needs.*

The MSE testing facility contains a complete analytical and soils laboratory.

We are certified as a small business and have offices in Montana, Washington State, West Virginia, and Tennessee.

ENGINEERING SERVICES

Aerospace Engineering

- ✓ Fluid mechanics
- ✓ Statics
- ✓ Dynamics (engineering mechanics)
- ✓ Mathematics
- ✓ Electrotechnology
- ✓ Propulsion.
- ✓ Control engineering
- ✓ Materials science
- ✓ Solid mechanics, and risk and reliability
- ✓ Modeling
- ✓ Advanced Computational Fluid Dynamics (CFD)

Chemical Engineering

- ✓ Mass and energy balance
- ✓ Process flow development
- ✓ Control philosophy
- ✓ Heat transfer assessment
- ✓ Energy utilization
- ✓ Process evaluation
- ✓ Operational analysis

Civil/Structural Engineering

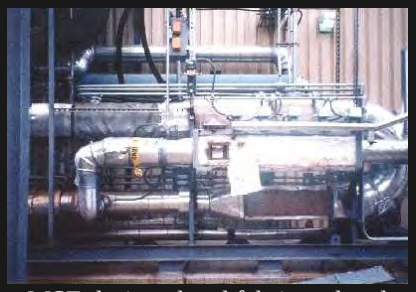
- ✓ Civil engineering
- ✓ Structural engineering
- ✓ Site preparation
- ✓ Foundation design
- ✓ Structural design
- ✓ Surveying for most general facility construction
- ✓ Foundation design
- ✓ Integration of results within a 3D lateral and floor model
- ✓ Software for general frame, truss, and plate/shell structures
- ✓ Software to provide collaboration and improve workflow
- ✓ Software to streamline all projects including RISA software, Descon, Ansys, Modeling Software with COSMOS, SolidWorks, and AISIWIN

Electrical Engineering

- ✓ Electricity, electronics, and electromagnetism studies and design
- ✓ Power electronics
- ✓ Substations
- ✓ Control system
- ✓ Signal processing
- ✓ Integrated circuit
- ✓ Instrumentation and control design

MSE engineers are thoroughly familiar with government and commercial specifications and codes such as the Uniform Building Code (UBC), Uniform Fire Code (UFC), National Fire Protection Association (NFPA) Codes, Uniform Mechanical Code (UMC), National Electrical Code (NEC), and seismic design requirements.

MSE houses a complete soils laboratory for geological testing.



MSE designed and fabricated and Experimental Russian Catalyst DeNOx System.

MSE Engineered, developed, constructed, and is testing an Ultrahigh-Pressure Test facility to test and evaluate hypersonic technologies, components, and systems to design and develop a successful mid-scale hypersonic wind tunnel.

Environmental Engineering

- ✓ Water and air pollution control
- ✓ Waste treatment for site closure
- ✓ Waste minimization/treatment
- ✓ Mining cleanup
- ✓ Material recycling
- ✓ Water treatment/reuse
- ✓ Environmental studies to reduce use of raw materials, increase energy efficiency, enhance regulatory compliance, and improve waste management, disposal, and handling.
- ✓ Remote monitoring
- ✓ Economic analysis for long-term performance monitoring
- ✓ Cost modeling for environmental technologies
- ✓ Risk analysis/mitigation analysis

Geological and Geophysical Engineering

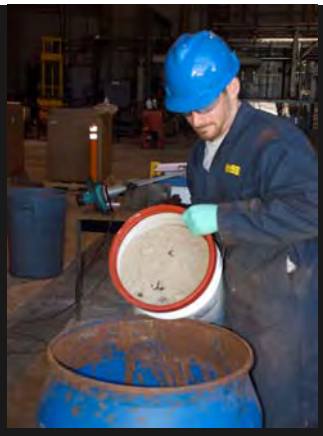
- ✓ Geotechnical - investigating existing subsurface conditions and materials; determining their physical/mechanical and chemical properties, assessing risks posed by site conditions; designing earthworks and structure foundations
- ✓ Monitoring site conditions and foundation construction
- ✓ Ground and surface water pollution
- ✓ Site surveys
- ✓ Subsurface investigations
- ✓ Drilling
- ✓ Modeling - Haestad: Flood Plain Hydrogeology and Watershed Modeling; Haestad: Water Surface Profiling and Flood Plain Analysis, and Haestad: Urban Stormwater and Detention Pond Design

Mechanical Engineering

- ✓ Mechanical design
- ✓ HVAC (Industrial, commercial, and residential heating, ventilation, air conditioning)
- ✓ Dry material transfer
- ✓ Equipment sizing and specifying
- ✓ Automatic and manual value sizing and specifications
- ✓ Piping design – above and below grade
- ✓ Pipe Support Design
- ✓ Pump Design - air, cryogenic fluids, water and other fluids
- ✓ Facility layout, system design
- ✓ Heat transfer

Program/Project Management

- ✓ Planning, organizing and managing resources for successful project
- ✓ Manage project goals and objectives within time, cost, schedule, and resources.
- ✓ Certified Project Management Professionals



MSE experienced professionals work in a safe manner and with access to a soils testing facility and fully certified analytical chemistry laboratory.

MSE engineers work on and off site, such as working on a control system or an underground power distribution construction site.

Construction Management

- ✓ Preconstruction, construction, administration, contract finalization, and startup and commissioning
- ✓ Design review
- ✓ Construction plan review
- ✓ Life-cycle cost analysis
- ✓ Cost benefit and risk and decision analysis
- ✓ Construction schedule development
- ✓ AWS weld procedure development
- ✓ Construction surveying
- ✓ DP Weld inspection
- ✓ Concrete testing
- ✓ Damage investigations
- ✓ Checkout procedures
- ✓ Startup initiation

Instrumentation and Control (I&C)

- ✓ Design, manufacture, install, and start control and operation systems
- ✓ Design/implement integrated and distributed control systems using various field-bus configurations
- ✓ Design and fabricate control panels, equipment racks, and control consoles [*MSE has an approved UL® Listed Panel Shop*]
- ✓ Build, assemble, test, and debug control and monitoring equipment and systems
- ✓ Assemble analog and digital circuit boards
- ✓ Build the connection cables
- ✓ Final testing
- ✓ MATLAB
- ✓ Process control
- ✓ Similink

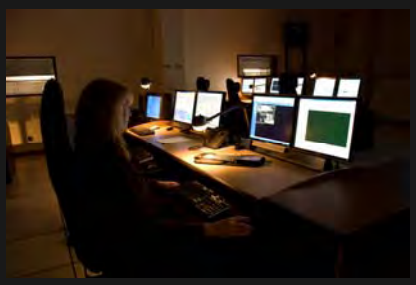
Supervisory Control & Data Acquisition (SCADA)

MSE offers customers a complete line of SCADA products

- ✓ Security systems
- ✓ System automation
- ✓ Sensors and controls
- ✓ Local and Remote monitoring
- ✓ Engineering studies and cost estimates for plant control systems automation and modernization.
- ✓ Design/implement Programmable Logic Controller (PLC) ladder logic control programs

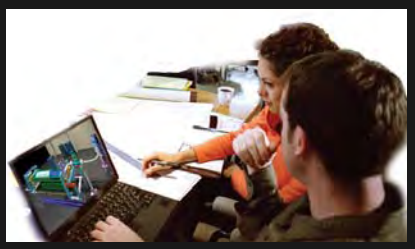
Drafting and Design Capabilities

MSE's in-house drafting capabilities include both CAD and hand drafting. We offer twelve CAD stations and design and drafting software that includes AutoCAD 2007, AutoCAD Mechanical, AutoCAD Mechanical Desktop, Inventor, Pro-Engineer, SolidWorks, Revit, ArcGIS, ANSYS, and RISA-3D, RadCad, Visual Analysis, Visual Design, Eagle Point, and Carmel

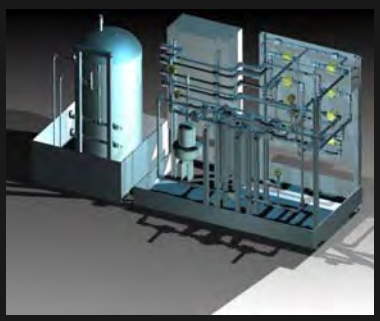


MSE's offers complete turn-key and SCADA systems and provides personalized training sessions.

Technicians provide Velometer testing and welding inspection for various projects.



MSE's offers complete in-house design and drafting facilities including 3D modeling



SAFETY AND HEALTH POLICY

MSE has a proven, approved safety and health plan and an approved quality management plan. We are committed to providing the best quality service to our customers and making sure our workers go home safely every day. We believe that all accidents are preventable and consider no phase of operation or administration more important than health and safety. For all projects we provide and maintain safe and healthy working conditions and establish and insist on safe work practices at all times by all employees. Our policy is to meet our meet our safety and health responsibilities. We have a written policy available on request.

MSE is committed to ensuring safety is the highest priority at each and every level of our operation and for each project. We know worker safety is no accident--it takes training, vigilance, prevention, open communications, and a safety first commitment from top management. Our ultimate goal is an accident free work place and we work diligently at that goal.

EMR	
2008	**0.80**
2007	**0.75**
2006	**0.74**
OSHA TRC/TIIR	
2007	4.9 (7)
2006	2.7 (4)
2005	1.4 (2)
DART Rate	
2007	0
2006	0
2005	0.7 (1)

Benefits MSE believes that essentially all serious injury to workers can be successfully prevented. Safety is a formal part of our corporate quality program. Our low EMR rate shows our commitment and translates into real world benefits such as elimination of unnecessary indirect costs; reduction of worker's compensation insurance premiums; personnel trained in workplace safety, confident in their safety training, and empowered to stop work in unsafe situations.

MSE TESTING FACILITY

MSE owns and operates the Mike Mansfield Advanced Test Center (MMATC) situated on 45-acres in Butte, Montana. This nationally known facility is a premier operation with equipment and systems available for testing components, equipment, and energy/material handling systems ranging from bench-scale apparatus through engineering-scale demonstrations and full-scale equipment development.

MSE Facility is Adaptable, Diverse, and Offers a Range of Services

MSE Geotechnical & Environmental Laboratory Capabilities

The MSE Laboratory (MSE Lab) has been performing analytical work for both public and private sector clients since 1978. Located near one of the nation's largest Superfund sites, we routinely perform analyses of rock, soil, sediment, water, biological, solid, and hazardous waste samples. The MSE Lab has high-tech instrumentation, performs work under a rigorous quality assurance program, and possesses a willingness and flexibility to provide tailored services. We also follow a strict laboratory process for every sample that follows quality standards and ensures defensible results.

Our laboratory experience **includes rock, soil, sediment, water, biological, solid, and hazardous waste analyses.** The laboratory is equipped to perform all inorganic analyses and physical testing parameters on sample types including water, wastewater, soils, coal, tailings, ores, hazardous wastes, and airborne pollutants. Technicians often work on projects that entail analysis of unusual, often difficult sample matrices, and require the development of specialized methods to assure accurate, defensible results. Because of our location to a Superfund site and various clients across the region, the MSE Lab also has experience analyzing Superfund samples and working under the Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) requirements.

The MSE Lab features a 4,000 square foot certified analytical laboratory to perform drinking water analysis, wastewater analysis, metals analysis, general chemistry testing, organic analysis, soils analysis, and waste characterization. An adjoining 5,200 square foot resource recovery facility allows us to perform Geotechnical lab testing of soil, aggregate, and rock.

The MSE Lab maintains an internal data quality assurance/quality control (QA/QC) program that meets or exceeds criteria established by State agencies and the EPA.

Our Geotechnical testing capabilities range from simple soil index and permeability testing to sophisticated triaxial shear strength, hydraulic conductivity and one-dimensional consolidation-swell testing. Upon completion of laboratory analyses, results undergo an internal review and are reported to the client in both electronic and hard copy format. All analyzed samples are stored at the Laboratory at no cost for up to three months. We also dispose of non-hazardous analyzed samples at no cost to the client.

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