



MSE Advanced Testing Facility

Mike Mansfield Advanced Technology Center

engineering **DESIGN**

- Operations
- Component Testing
- Fabrication / Weld Center
- High Temp/Pressure Test Area

MSE Testing Facility

The MSE Technology Applications, Inc., Testing Facility at the Mike Mansfield Advanced Technology Center is a versatile test facility where technologies, components, and subsystems can be developed, tested, evaluated, and integrated. This facility is available to federal and state agencies, local governments, and private industry.

The MSE Testing Facility, located in Butte, Montana, is near the intersection of I-15 and I-90, in close proximity to the municipal airport and a major railroad intersection connecting north-south Union Pacific and east-west Burlington Northern rail lines.

Facility Capabilities

- Cooling water for heat removal
~3700 gpm @65 psig
22 MWt heat removal
Open loop system
- Cryogenic Nitrogen storage
~28,000 gallons total
Delivery @ 250 psig, ~150 scfm
or
350 psig @ up to 25,000 lbs/hr with modifications
- Site power: 20 MVA substation
161 kv or 4160 VAC
Distribution @ 4160 and then
480/277 + 208/120 VAC
- Ultra-high pressure test area
- Controlled access to site
- Site Access 24/7
- Site network of heavy dirt roads for support
- Access to dedicated rail spur for unloading or equipment
- Test Bay: ~9000 sq feet of area
- High Bay: ~25 feet
- 10 ton bridge crane w/22' hook height
- Blast wall separating test bay and control room
- Adjacent control room with visual access, cameras, and configurable data acquisition system (DAS) for project support
- Full width service pit, 25' deep, for equipment support
- Holding ponds

Component test building bay dimensions are shown in the schematic on page 3

MSE Experience

*Hi Temperature filtration
~1600 degrees F*

*Plasma Arc Systems
- MSE designed and built a Mobile Plasma Treatment System to destroy energetic explosive ordnance materials and devices.*

Ultra High Pressure Systems - MSE recently successfully simulated the required Test Section flow-field for the large-scale Mariah Wind Tunnel. The requirement was to be able to create a flow-field in the Test Section of Mach 12 velocity, 2,000 lbs/sq. ft. dynamic pressure, 44" diameter, and 1-sec duration. The program's analytical models can now be used to develop the design criteria required for the large-scale Mariah Wind Tunnel.

MSE Test Facility capabilities



Facility Test Areas

Operations Office Buildings—Two steel buildings house offices occupied by MSE engineering and project support personnel.

Component Test Building, Including Test Areas—

This high bay steel structure currently houses thermal waste treatment technologies for demonstration. The structure has reinforced concrete floors and is designed to withstand equipment loads as well as blast, magnetic, and thermal expansion forces resulting from test operation. A reinforced concrete blast wall for personnel protection is in place between the component test building and the operations and services building. Walls on the other three sides of the component test building consist of a metal blowout wall-panel system.

Two test bays comprise a 90- by 100-foot area of the building and are equipped with a 10-ton overhead crane. The structure contains a pit that is 90 feet long, 25 feet wide, and 25 feet deep with 3-foot-thick concrete walls, which is accessed by two stairways.

Operations and Services Building—This is a two-story steel structure adjoining a low-bay, one-story steel structure with a total area of 25,500 ft².

The ground floor measures 150 by 100 feet. The rectifier room, boiler room, electrical equipment and switchgear room, operation office room, and locker rooms are located on the north side of the building. A cooling water pump and air compressor room are located on the south side. The second floor is 90 by 100 feet and houses an instrumentation and control laboratory, mechanical equipment room, data acquisition area, central control room, and offices.

Resource Recovery Building—This 5,194-ft² steel building currently houses process and product handling equipment to evaluate and demonstrate technologies for reclaiming clean, usable water and marketable mineral resources from surface and groundwater systems contaminated with heavy metals.

Warehouse—This one-story, steel structure has a total floor space of 5,244 ft² available for use.

Fabrication and Weld Center—This 12,000-ft² steel structure is for fabrication and assembly. The building is structurally designed and configured to accommodate a crane; an automatic sprinkler system provides fire protection for the building.

Machine Shop—This metal building contains 5,000 ft² of floor space. It houses welding equipment, an air compressor, several lathes, mills, a gun drill, presses, and other typical machine shop equipment intended for nonproduction work.

Yard Facilities—Railroad access is available to the facility. All facility roads are designed to support an axle load of 18,000 pounds with an average daily traffic of 400 vehicles. An on-site water distribution loop services all facility test areas.

Analytical Lab—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. We routinely perform analyses of rock, soil, sediment, water, biological, solid, and hazardous waste samples. Equipment includes Gas Chromatograph/Mass Spectrometer (GC/MS) Equipment, meters, augers, field testing kits, etc.

Waste Management—Drainage and wastewater collection includes collection and storage of all liquid industrial wastes. Two collection ponds and two evaporation ponds are located at the MSE testing facility. The facility has four deep and eight shallow monitoring wells at various locations to monitor groundwater activity. Waste management activities are accomplished under State of Montana permits.

UL Listed Panel Shop—MSE contains a UL® Listed Panel Shop that manufactures custom control panels used in a variety of applications. MSE is certified with Underwriters Laboratories UL508A in the United States and Canadian Underwriters Laboratory CUL for Industrial Control panels in Canada, as shown at www.ul.com (file: E229857 INDUSTRIAL CONTROL PANELS - NITW, NITW7). MSE's Industrial Control Panel Shop provides design, fabrication, wiring and installation services. Panel applications include SCADA, pump/motor/process control, and security/remote monitoring. MSE's staff are UL-trained and Instrument Society of America (ISA) Certified Technicians and Engineers.

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MSE Testing Facility
Providing engineering solutions for 30 years.

We find engineering solutions for our customers. MSE headquarters are in Butte, MT, with offices in Washington and Tennessee

MSE
Technology Applications, Inc.