



Mechanical Engineering Services

- Equipment Selection
 - Pumps - All types and sizes from fractional to 10,000hp
 - Gas Turbines
 - Steam Turbine Generators
 - Cooling Towers
 - Air Compressors from 100 to 10,000 scfm
 - Boilers - Gas, Oil, and Coal-Fired
 - Process Equipment - Heat Exchangers, Water Treatment
 - Scrubbers, Precipitators, Baghouse Chillers
- Equipment Layouts
- Piping Design and Layout
 - Flow - Pressure – Temperature
 - Stresses and Forces
 - Flexibility
 - Supports/Hanger Design
 - Material Selection
 - Joining Methods
 - Valve Selection
 - Insulation
- Piping Isometrics
- Process Design
 - Skids
 - Thermodynamic Cycles (steam-gas turbine-diesel)
 - Heating, Ventilating and Air Conditioning
 - Cooling Systems
 - Water Treatment
 - Wastewater Treatment
- System Design
 - Steam - Water and Hot Gas Systems in support of Steam and Gas Power Cycles
 - Combustion Air and Flue (Exhaust) Gas
 - Fuels - Natural Gas - Light and Heavy Oil - Coal – Lignite
 - Fire Protection
 - Water Distribution
 - Wastewater Sewerage
 - Chemical Processes
 - Lube Oil
 - Gasses
- Material Handling Design
 - Bulk Solids (coal, limestone, and dry chemicals)
 - Wet Conveying of Solids (slurries)
 - Air Conveying of Solids (vacuum and pressurized)
 - Rail Loading and Off-Loading Facilities



Electrical Engineering Services

- Specification and Design of Complete Electric Systems
- Electrical Generating Plants - Steam, Diesel, Combustion Turbine
- Transmission Systems - 69 to 345 kV
- Substations – Power Generation, Stepdown, Transmission
- Electrical Distribution
- Switching & Power Station Distribution Facilities and Systems
- Emergency Electrical Power
- Supervisory Control and Data Acquisition
- AC and DC Auxiliary Systems
- Load Flow Analysis
- Fault and Short Circuit Studies
- Motor Starting Studies
- Lightning Protection
- Protective Relay Selection - Application – Coordination
- Circuit Breaker / Fuse Trip Setting – Coordination
- Hazardous and Non-Hazardous Area Design
- Lighting Systems
- Communication Systems
- Fire Detection Systems
- Alarm Systems
- Energy Analysis
- Feasibility Studies
- Rate Studies



Instrumentation & Control Engineering

- Instrument Systems Design
 - Flow Meter Engineering
 - Control Valve Selection and Sizing
 - Instrument Specification and Procurement
 - Burner and Boiler Controls
 - Process Control Systems
 - Materials Handling Systems
 - Analytical Instrumentation and Sampling Systems
- Control Panel & Cabinet Design
 - Microstation, Intergraph, and AutoCad capable
 - Panel & Cabinet Layouts
 - Wiring Diagrams
 - Termination Layouts
 - Interconnect Diagrams
- Instrument Installation
 - Loop Sheets
 - Instrument Location Drawings
 - Cable Schedules
 - Installation Details & Practices
- Control Systems Engineering
 - Batch Programming per ISA S88
 - Continuous Process Control
 - Logic Diagrams
 - Logic Narratives
 - SAMA Diagrams
- DCS Systems Design and Implementation
- PLC Systems Design and Programming
- HMI System Design and Programming
- Checkout, Startup, & Tuning Services Available



Civil / Structural / Architectural

- Industrial Steel Design
- Foundation Design
- Site Development
- Architectural Building Development
- Geotechnical Review
- Piling Design
- Machinery Foundation Vibration Analysis
- Reinforced Concrete Design
- Subgrade and Pavement Design
- Lime and Cement Stabilization Design
- Structural Design
- Structural Frame Analysis
- Site Selection Studies
- Railroad Route Selection and Design
- Hydrological Studies
- Culvert and Drainage Analysis and Design
- Pipeline Routing and Design
- Concrete and Steel Tank Design
- Sanitary Sewer and Storm Sewer Design



Chemical Engineering

- **Water and Wastewater Treatment**
 - Clarification
 - Lime and Lime/Soda Softening
 - Filtration
 - Reverse Osmosis and Ultrafiltration
 - Ion Exchange
 - Sedimentation
 - Flow Equalization
 - Chemical
 - Conditioning Heavy Metal Removal
 - Piping systems, piperack, underground, steel, stainless, non-metallic
 - Pump selection and systems
 - System controls
 - Tanks
 - Ponds, Lagoons
- Particulate Removal
- Sulfur Dioxide Reduction
- Solid Waste Disposal
- Environmental Monitoring

Project Development & Controls

Feasibility Study
P & ID Development
General Facility Layout
Project Schedule
Budget Estimate
Project Scope