

Power Generation



ENGINEERING & TECHNICAL SERVICES

POWER GENERATION OVERVIEW

Peak electrical power demand continues to increase in the U.S. As the generating fleet ages, reliable power supply becomes more of an issue. Changing environmental regulations require difficult and costly decisions regarding plant upgrades. You need a firm with a proven track record of delivering successful steam and electric generation projects of high quality at a fair price and with a strong customer focus.

Sega Inc. is responding to this need by providing the services you need to plan, procure, design, construct, startup, and manage your generation projects. We provide unbiased information to help you evaluate your options between thermal units, combined-cycle units, and simple-cycle units.

Sega Inc. provides the technical experts to complete the design and construction. Our civil, structural, mechanical, electrical, power delivery, and controls engineers, together with our technicians, document specialists, and project managers, provide the capabilities to deliver both small and large full-scope projects.



PLANT BETTERMENT

Sega Inc.'s Plant Betterment projects help tackle the problems that develop as plants and facilities age, improving your capability, reliability and efficiency.

Plant Betterment is Sega Inc.'s term for investments that improve the efficiency and longevity of existing plants and facilities.

The experience of our specialists covers a wide variety of applications. From foundations, supports and access to piping, wiring and controls, our experienced mechanical, electrical, control, and structural engineers address the needs of your entire plant. Sega Inc.'s specialists assist with maintenance outages as an extension of your staff. Whether individual system problems or major refurbishment projects, our experts are available to help you compete.

Sega Inc. can provide advice on plant life expectancy, plant additions and expansions, plant operating limits, and plant replacements. We have provided services on power stations to enable these plants to outperform their design life and rated output. Our specialists continue to build on their extensive knowledge base, including component and material behavior, allowing them to optimize plant effectiveness.

Sega Inc. understands the importance of maintenance outages and taking advantage of scheduled downtime. We can assist your staff with outage support services or we can provide top-down solutions that free your staff to handle other assignments.



Independence Power & Light,
Independence, Missouri



PowerSouth Energy Cooperative
Leroy, Alabama

Plant Betterment Services:

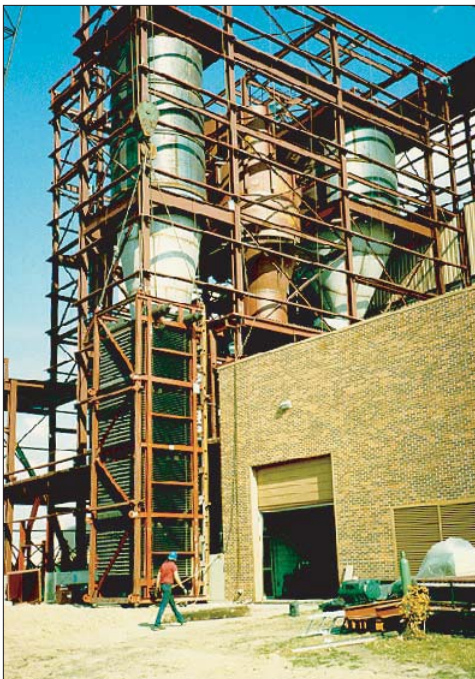
- Planning and Feasibility Studies
- Condition Assessments
- Controls Replacements
- Plant Refurbishments and Life Extensions
- Fuel Conversions
- Combustion Turbine Upgrades
- Plant Additions and Expansions
- Information Management and Data Storage
- Forecasting and Economic Analysis

STEAM GENERATION

Sega Inc. is a recognized expert in boiler and steam generator services.

We have experience with large utility-grade steam generators, combined-cycle processes, industrial packaged boilers, gasification, and all the associated equipment and processes. We also leverage our experience in electrical generation to offer unique resources to cogeneration facilities.

We work with several fuel types including coal, oil, gas, biomass, wood, waste, and other renewables. We have hands-on experience with most steam generator technologies including pulverized coal, fluidized-bed, once-through, regenerative, super- and sub-critical steam pressures, heat recovery (HRSG), and more.



University of Northern Iowa, Cedar Falls, Iowa



University of Kansas, Lawrence, Kansas



Kansas City Power & Light Company, La Cygne, Kansas

ELECTRIC GENERATION

Sega Inc. has provided services for electric generation including both steam turbines and combustion turbine generators.

Over the last ten or more years, we have seen the steady increase in popularity of combustion turbines. The expense of new coal unit construction combined with changing environmental regulations and concerns, as well as tentative financial lending practices, make the simpler combustion turbine units more attractive. As deregulation evolved, independent power producers could utilize combustion turbines to deliver and sell power in a relatively short amount of time.

A phased construction approach is also popular. It is relatively common for the first phase of a large unit to include the combustion turbine so that it can be completed and begin producing revenue. Sometime later, an HRSG, steam turbine, and balance-of-plant equipment is added to convert to more efficient and combined cycle operation. This phased approach helps with capital budgets and lessens early commitment risk.

No matter what makes a steam or combustion turbine unit attractive for your company, we can help with all phases of planning, procurement, design, and construction management. We also provide betterment and upgrade services. We offer the benefits of a full-service firm with the customized services and personal attention of a small firm.

Empire District Electric Company Riverton, Kansas



Trigen St. Louis Energy Corporation, St. Louis, Missouri



Miramar Energy Facility, San Diego, California

STEAM & ELECTRIC GENERATION SERVICES

Preparation and Evaluation

- Site Planning
- Feasibility Studies
- Fuel Analysis
- Cost Analysis
- Permit review and preparation

Procurement

- Contract Management
- Surveying Services
- Geotechnical Services
- Bid Evaluation
- Submittal Review
- Equipment Checkout

Project Management

- Schedule Development
- Vendor Management
- Project Status Reporting
- Risk Management
- Project Communication
- Single Point-of-contact Services

Construction, Startup and Commissioning

- Construction Management
- Interface with Permitting Agencies
- Construction Inspection
- Equipment Checkout
- Start-up Activities

Kansas City Board of Public Utilities Nearman Creek Power Station
Kansas City, Kansas



Civil Design Services

- Site Permitting: Planning, Zoning & Public Works
- Site Plans, Layouts & Roads
- Site Utility Plans: Gas, Water & Wastewater
- Stormwater Management, Grading & Drainage Plans
- Detention and Retention Ponds & Infiltration Systems
- Geographic Information System (GIS) Mapping, Creation & Management

Controls Design Services

- DCS Design
- PLC Design
- Process Logic Diagrams
- Instrumentation

Electrical Design Services

- Raceway Systems
- Cable Routing
- Single and Three Lines
- Schematic Diagrams
- Load Calculations
- Equipment Sizing



Iowa State University, Ames, Iowa

Mechanical Design Services

- Mechanical Specifications
- Heat Balance Calculations
- P&IDs
- Pipe Sizing and Routing
- Pressure Drop Calculations

Structural Design Services

- Structural Steel
- Reinforced Concrete
- Masonry
- 3D Analysis
- 3D CADD Models
- Existing Structure Modifications
- Foundation Design: Mat Type, Drilled Pier Type and Pile Type Foundations
- Foundation Resonance Studies

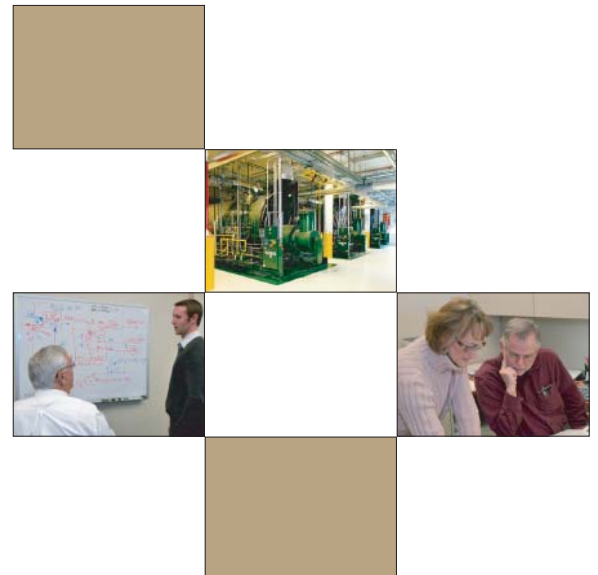
Training & Simulation Design Services

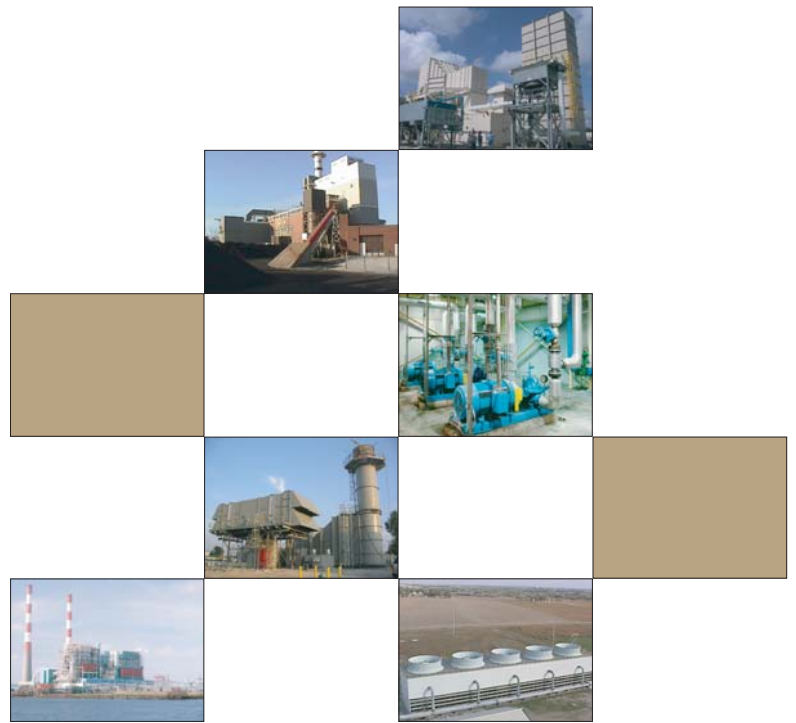
- Training Simulators
- Operator Training

REPRESENTATIVE CLIENTS

Alliant Energy Corporation
AmerenUE
Associated Electric Cooperative, Inc.
Basin Electric Power Cooperative, Inc.
Central Electric Power Cooperative
City of Ames, Iowa
City of Chanute, Kansas
City of Coffeyville, Kansas
City of Columbia, Missouri
City of Gardner, Kansas
City of Independence Power & Light
City of Ottawa, Kansas
City of Sikeston, Missouri
City Utilities of Springfield, Missouri
Empire District Electric Company
Industrial Construction Company

Iowa State University
Kansas City, Kansas Board of Public Utilities
Kansas City Power & Light Company
Kansas State University
MidAmerican Energy Company
NV Energy
Power South Energy Cooperative
San Diego Gas & Electric
Southern Illinois University
Trigen
University of Kansas
University of Missouri-Columbia
University of Nebraska-Lincoln
University of Northern Iowa
Westar
Wolf Creek Nuclear Operating Corporation





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