From conception to completion, we are ready to make your control system project a success.

2017

Control Systems

Engineering and Technical Services

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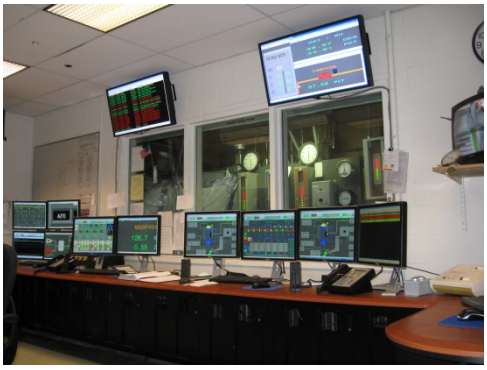
Qualifications from:

POWER ENGINEERS

CONTROL SYSTEMS



OVERVIEW

POWER Engineers has been providing high quality control system services to utilities, independent power producers, institutions and district energy clients since 1976. As a result, we have a unique core group of dedicated, highly experienced control professionals. We provide an open and friendly working relationship with our clients and their staff.

Our goal is to identify cost-effective solutions for your controls needs. We accomplish this by visiting your facility to listen to your ideas and problems, as well as reviewing your budget and schedule. We use a unique design, procurement, configuration, and staging process that has proven advantages in cost, schedule, and results compared to a traditional architect/engineering firm approach.

We will work closely with your plant personnel to ensure the project exceeds your expectations. We can support any part of the project life cycle from conception to startup and maintenance. You will benefit from services such as system integration, high fidelity simulation, panel fabrication, training, startup, maintenance and loop tuning.

CONTROL SYSTEM SERVICES

A high quality control system improves the reliability, maintainability, and thermal performance of the plant by giving operators the information they need when they need it. In addition, it allows you to respond to more stringent environmental regulations. POWER can help you design a superior control system that will improve overall operating performance and have a positive impact on your bottom line.

CONTROL UPGRADE SERVICES:

- Studies
- Conceptual design
- Control system specification and bid evaluation
- Control devices specification and bid evaluation
- Instrument installation design and review
- System Installation design (mechanical, electrical, and structural)
- Control room modification
- Control logic development
- Customized Distributed Control System (DCS) and Programmable Logic Controller (PLC) configuration services

- In-house staging and testing
- High fidelity training simulator design and implementation
- Alarm management
- Custom communication links
- Operator and maintenance training
- Checkout and startup
- Tuning

CUSTOM CONFIGURATION

Whether you're replacing the entire control system or just need a tune-up, our control specialists have the necessary experience to help. We have developed logic and provided custom configuration for systems including:

- Unit load control
- Combustion control
- Burner management systems
- Balance of Plant (BOP)
- Turbine water induction protection
- Selective Catalytic Reduction (SCR)
- Wet Flue Gas Desulfurization (WFGD)
- Flue gas fabric filters
- Ash handling systems
- Sootblowers
- Water treatment
- Steam turbine bypass systems
- Chilled water systems

FIELD CONTROL SERVICES

POWER's control specialists provide a top-to-bottom solution for your critical control systems. Equipped with an in-depth knowledge of various control system platforms, POWER's control specialists apply advanced techniques to assist you in obtaining the maximum benefit from your control system. POWER also provides expert calibration, installation, repair, and maintenance services for a wide variety of electronic, pneumatic, and mechanical control instrumentation. The field control specialists are supported by an application and design staff consisting of control, mechanical and electrical engineers.

INDUSTRIES SERVED:

- Electric utility
- Independent power producers
- Geothermal power
- Manufacturing
- Colleges and universities
- Pulp and paper
- Hospitals
- Food processing
- Chemical processing
- Energy from waste

- Refineries
- Oil and gas recovery
- Government agencies
- Commercial buildings

FIELD CONTROL SERVICES:

- Boiler controls services
- Process controls services
- Burner management compliance audits
- Performance testing
- Instrumentation calibration
- Instrument installation review
- National Institute of Standards and Technology (NIST) traceable calibration
- Control system startup, testing, and tuning
- System maintenance
- Control system retrofit
- Repair and refurbishment
- Documentation and inventory
- Boiler performance testing
- Control system troubleshooting
- Staff training

OUR APPROACH

CONCEPTUAL DESIGN

No one understands your plant's needs better than you. Our engineers will listen to your ideas and produce a design concept based on your input. We will evaluate existing equipment and offer recommendations to make your unit more stable, responsive, and robust.

DETAILED DESIGN

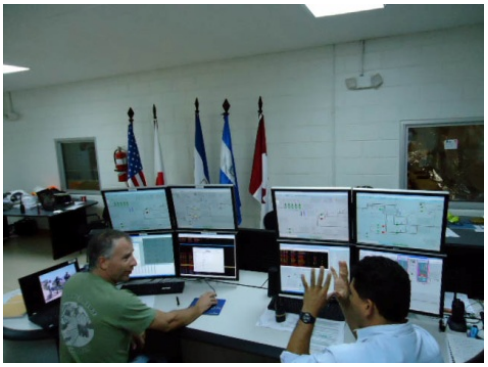
The same team will follow through with the detailed design. We will provide an integrated mechanical, electrical, and control software document package that eases troubleshooting and improves system maintenance. All coordination between the design engineer and software engineer happens under one roof, producing an integrated hardware and software design.

SYSTEM CONFIGURATION

Your plant is unique and the control solution should reflect that. Our control engineers and specialists will produce custom designed configuration software to meet the needs of your plant. We will simulate and test the system at our facilities, reducing the need for software design and tuning in the field.

STARTUP

Our control engineers and specialists start up their own designs and have extensive experience on control system retrofit projects. This high level of expertise results in fewer problems and delays during startup.



PROJECT EXPERIENCE

GENERAL ELECTRIC
Power Plant Controls, Schenectady, New York

POWER provided controls engineering support to GE on two combined cycle projects where GE was providing full power island controls design. We generated logic diagrams in GE standard format, generated HMI graphics using GE Cimplicity application, and reviewed logic diagrams generated by GE's overseas office staff.

ENEL NORTH AMERICA
Stillwater and Salt Wells Binary Geothermal Plants, Nevada

POWER provided engineering for two new binary geothermal plants in the Great Basin desert of Nevada. Salt Wells is a two-unit 13 MW plant and Stillwater is a four-unit 34 MW plant. A Rockwell solution was used for the control system for both plants, where POWER did equipment selection and application programming.

RAM POWER
San Jacinto-Tizate 70 MW Flash Geothermal Plant, Nicaragua

POWER provided engineering services for the 70 MW flash plant at the San Jacinto site in Nicaragua. An Emerson Ovation control system was provided consisting of redundant Ovation OCR400 controllers, Ovation 3.2 HMI, Ovation SCADA server, Bristol ControlWave Micro RTU, Softing Foundation Fieldbus interface modules, Foundation Fieldbus controlled valves, and a SEL 3530 real time automation controller.

BOEING COMPANY
Energy Management and Control System (EMCS), Auburn, Washington

POWER provided design and integration for a plant-wide EMCS control system, consisting of Allen-Bradley, HP, Alerton, and GE components.

KANSAS CITY POWER & LIGHT
Sibley Plant, Unit 3 Controls Upgrade Project, Missouri

POWER was selected by Kansas City Power & Light to upgrade the controls on Unit 3 at the utility's Sibley Generating Station. Unit 3 is a cyclone-fired, supercritical unit that generates 360 net-MW. The existing control system is a combination of Emerson Ovation Distributed Control System (DCS) and hard-wired benchboard controls. POWER's scope included replacing the existing DCS with the latest version of Emerson

Ovation as well as absorbing the benchboard controls into the new Ovation system cabinets.

UNIVERSITY OF NORTHERN IOWA
Boiler Controls Upgrade Project, Iowa

The University of Northern Iowa (UNI) contracted with POWER to provide engineering services to upgrade controls on Boilers 3 and 4 at their campus power plant. The facility generates steam used to heat and cool all facilities on the 12,000-student campus in Cedar Falls, Iowa.

FUEL TECH
Fuel Tech E-CL and Endesa Boiler Upgrades, Chile

POWER controls engineers traveled to Mejillones and Tocopilla in northern Chile to walk down six coal-fired boilers. The boilers are used as prime movers for steam turbine-generator sets in that region of the country. Fifty-six months later, POWER successfully completed electrical and control engineering services for burner controls, boiler emissions, reliability and efficiency upgrades at 40% (by MW output) of Chile's base load, coal-fired power generation fleet.

BASIN ELECTRIC POWER COOPERATIVE
Laramie Station DCS/PLC Migration Project, Wisconsin

Laramie River Station consists of three coal-fired units with a total capacity of 1,800 MW. POWER was responsible for the controls upgrade of main unit, scrubber, bottom ash, fly ash, condensate polisher, water treatment, demineralizer and coal handling systems. Each system previously used different stand-alone DCS or PLC controls. The purpose of the project was to upgrade all of the systems to a single Emerson Ovation DCS control system.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Central Plant Controls Upgrade Projects, Massachusetts

An obsolete control system for the Central Utilities Plant was migrated to a modern DCS. Plant control systems that were upgraded include combustion burner management interface, balance of plant, combustion turbine, electric and steam chiller, cooling tower and electrical switchgear. POWER was selected as owner's engineer/commissioning agent for the control system upgrade. POWER was responsible for the preparation of equipment and installation specifications, as well as planning the migration to the new control system. Based on the unique needs of the campus, POWER developed and implemented a plan to perform the migration in a staged manner so that the plant did not have to take a complete outage of their system.

Why POWER?

- Secured controls labs for use in system configuration testing and FAT witness tests.
- World-class expertise engineering and designing electric generating systems.
- Worldwide experience in the development and design of renewable and conventional generation.

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POWER ENGINEERS