AMPED LLC

A Design & Engineering Co.®

STATEMENT OF QUALIFICATIONS

To Our Prospective Clients,

At Amped I, we are an iconic company that is sensitive to the fact that your design and engineering power infrastructure projects MUST be completed on time and on budget. When you partner with Amped I, we will take sole responsibility and mitigate all risk associated with the design, engineering and construction of these complex projects.

Our goal is to eliminate those continuous hassles and inconsistencies that tend to arise when outsourcing your projects. We do so by taking the time to listen to you at the beginning of a project, during the implementation and at the bid of the project for feedback. With 10 years of experience listening to our client's needs, we have developed and refined our services therefore providing you with a more precise outcome.

We hope to have an opportunity to listen and discover your needs. We know your time is valuable and communication would be at your convenience. Please email or call us to get started.

We are eager to take the next step with you in hopes of creating an ongoing collaboration.

Sincerely,

Melissa Wasielewski, Partner of Amped I

Bryan Pyka, Partner of Amped I

AMPED I is an innovative design and engineering firm specializing in power infrastructure projects ranging from brownfield upgrades to greenfield distribution projects for electric utilities, industry, government and commercial facilities.

Our experienced design and engineering team has been instrumental in the successful planning, development and commissioning of power engineering across the U.S. including electrical substations, wind farms, industrial utility interconnects, and smart grid upgrades. We foster collaborative efforts and partner with world-class industry leaders to offer complete solutions to client needs.

Through our substation design and engineering services, AMPED I consistently provides exceptional value, integrity and client satisfaction. We manage utility and building projects in a timely, safety-conscious manner with a commitment to quality assurance, budget efficiency and customer service. AMPED I's 40+ years of experience enables us to take a project from initial assessment and design to full compliance and operation.

We are recognized for our demonstrated track record of effectively handling projects both large and small including those with unique challenges.

From P&C engineering of state-of-the-art distribution systems to reducing liability and securing life, property and assets, AMPED I's talented, dependable team offers a responsive, comprehensive approach to power engineering and project completion. We look forward to creating a seamless working relationship with you that will provide dependable solutions for your power infrastructure with an eye toward maximizing your return on investment.

If we could be of any assistance in your project plans, please contact any of the individuals listed below. All can be reached at (312) 981-8889.

Melissa Wasielewski mwaz@ampedi.com

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Professional Services

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Professional Services

PROTECTION & CONTROL

Our team of engineers analyzes every system to determine the design of the P&C equipment needed to sufficiently provide protection. This typically involves the use of microprocessor relays. Our protection and control capabilities include 1- lines, 3-lines, AC/DC Schematics, Wiring Diagrams, Panel Front Views, and Termination Cabinets.

SCADA/ COMMUNICATIONS

We have the full capability to design the communication network that connects the relays from one substation to another. Some of our communications capabilities include Fiber Routing, Power Line Carrier Communications (PLC), Audio Tone (Leased Line), WIMAX (5-7 miles), and JMUX/IMUX. Amped I creates SCADA Points Lists and Configuration Files for the RTUS of electrical substations, including LANDAC II, Sage 2400, SAGE 3030M and Axion 2240 RTAC RTUs.

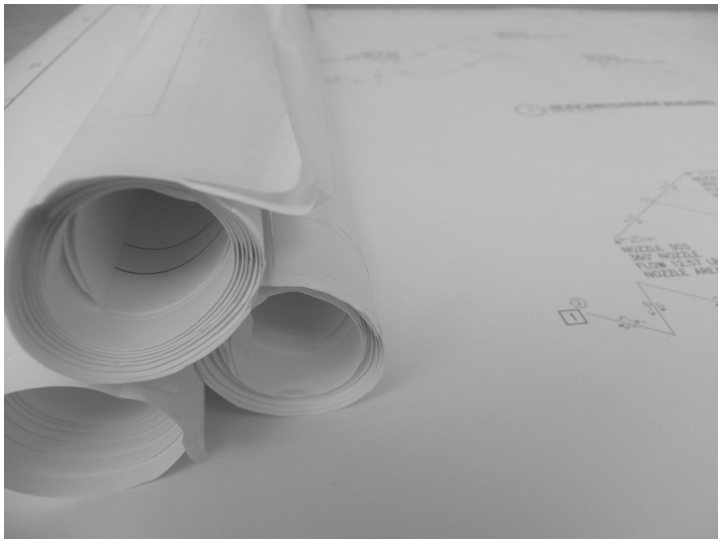
BROWNFIELD UPGRADES

Differential relay panels, buss differential panels, current and voltage transformers, 345kV ring bus to breaker and-a-half scheme, transformer replacement, breaker replacement, breaker failure relaying, mid-circuit re-closers, bus tie, feeder upgrades, remote end line upgrades, cap bank switchers, lightning arrestors, fiber patch panels, SF6 dead tank and hybrid circuit breakers, phase shifter, line differential panels and more.

Professional Services

CALCULATIONS

We perform calculations during the design phase, and it includes voltage drop, battery/charger calculations, DC panel, AC panel, and AC station service.



Drawing Automation Services

We employ our drawing automation algorithms in AutoCAD to save our clients up to 1 hour of drafting time per drawing. The program automates cover sheets, title block revisions, layers, codes, titles, numbering and seals using client EDMS data.

This service is designed to relieve your company's most valuable resources from monotonous, time consuming busy work and give the Project Manager more man-hours to help flatten resourcing curves.

CIVIL/STRUCTURAL ENGINEERING

Amped I can also provide civil & structural design services for substation and distribution center projects, among others. In coordination with our partners, we have the capability to design the physical layout of both conventional and GIS substations.

Recent Projects

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Recent Projects

Intelligent Substation Upgrades

Amped I has completed protection and control designs for a program that involves updating antiquated protection and switchgear to new equipment with microprocessor and I/P based relaying and control. The first project involved interface with a major American automobile manufacturing company that involves sophisticated and unique protection schemes to increase reliability to their manufacturing facility. The second project involved the removal of outdoor switchgear and replacing it with indoor metal clad switchgear. The first project will replace existing antiquated switchgear with 41 new cubicles of switchgear with additional SCADA and paralleling cabinets to supplement. The second project took antiquated outdoor metal clad switchgear and replaced it with 12 new indoor cubicles of metal clad switchgear as well as additional SCADA and Paralleling cabinets.

Midway Network Center Upgrades

AMPED I, has recently completed work at a local Airport for monitoring of equipment for the Utility. The cost effectiveness of running fiber optic service to the site was unrealistic and construction of the connection would have been extremely difficult. Utilizing power line carrier signals on the primary circuits coming into these sites, we were able to provide remote monitoring of equipment which included analog readings of power delivered (current and voltages) along with analog values of the transformers local temperature, pressure, and oil levels remotely. In addition, new DGA technology was added in order to anticipate transformer failure before actual occurrences.

Recent Projects

1300 Network Center Upgrades

AMPED I completed the design for 11 Network Center sites in the Chicago Downtown area. This included local electrical infrastructure monitoring of Network Transformers and associated Protectors. Utilizing the primary cabling back to the sourcing substation we are able to utilize power line carrier equipment to carry SCADA signals to and from the Network Centers. Equipment included transformer DGAs on main tank and primary compartments, Oil levels, pressurization, transformer temperature and floats for water levels in the underground vaults. Controls are also available via Power Line for the Network Protectors from the main substation.

Substation RTU Upgrades

AMPED I created SCADA Points Lists and Configuration Files for the RTUs of 24 electric substations. The RTUs involved in the projects included LANDAC II, Sage 2400, SAGE 3030M, and Axion 2240 RTAC RTUs. Prior to submitting the configuration files to the field Amped I tested the RTU configurations in our State of the Art laboratory and assisted with field troubleshooting and commissioning of these RTUs. These RTUs are used to poll data from a variety of IEDs including relays, meters, security equipment, communication switches and processors as well as other IEDs/equipment.

Recent Projects

Hawaii Solar Project

Provided protection and control support for a new Solar Interconnection Substation in Hawaii between the Electric Utility and Solar Provider This support included electrical single line design. From there we provided design for the electrical details, rack elevation, RTU points list, and the AC/DC schematics. Our support concluded with providing a cable schedule, detailed wiring connections, and panel nameplate schedule.

GRIP

Amped I is designing multiple microprocessor based 138kV transmission line relaying to support the protection needs of a major urban area by replacing antiquated electromechanical relaying and telephone line based pilot schemes. The relaying includes designs that implement fault detectors that prevent reclosing for an underground portion of a line but allow reclosing for an overhead portion of a 138kV transmission line. On this same transmission line newly developed protection schemes have been implemented to protect a phase shifter integrated with the transmission line relaying. Additional protection schemes within the same program have delayed tripping of 138kV bus ties to coordinate with low side protection to prevent Ferroresonance spikes that can damage equipment tied to underground transmission lines. Other developments in protection include the implementation of newly adapted carrier protection transceivers as well as multiple multiplexing network interfaces with microprocessor based relays for 138kV transmission relay upgrades. This program has also implemented, through our design, the upgrading of SCADA including Cluster Controller's, Human Machine Interface's (HMI), and upstream communication upgrades to facilitate more access to information in the station.

Recent Projects

Pumping Plants

Amped I completed four communication upgrades for 138kv transmission line pumping plant systems. Data such as pressures, temperatures, and flow are aggregated through communication cabinets designed uniquely for each pumping plant project. These cabinets included devices such as SEL-2241, SEL-2243, SEL-2244, SEL-2245, SEL-2812, and SEL-2890. Communication methods such as fiber, Ethernet, and serial were utilized. This data is routed to SCADA.

Utility Substation Upgrades

AMPED I had recently completed the design consisting in upgrading a total of four (4) 12kV feeders and SCADA upgrades at one of the local utility substations. The scope of work included the design revisions to the existing SCADA panel, upgrading the electromechanical relays to microprocessor relays, relay fiber communication. As part of the design process the following items were prepared: one line, front views, AC and DC schematics, bill of materials (estimates and bid process), wiring diagrams and DC calculations.

138kV to 13.8kV Transformer Replacement Relay Upgrades

Amped I is designing the relay protection for a 138kV to 13.8kV two winding transformer with the addition of a new primary 138kV circuit breaker to replace the existing motor operated disconnect. The protection will include a new microprocessor based transformer differential relay as well as a breaker failure relay projection for the new primary circuit breaker. We will also be converting all protection and control drawings for the new breaker and transformer to client/ owner formatted drawings.

Recent Projects

138kV Relaying

Midwest location: 138kV Line and Bus Relaying replacement/69kV Line and Bus Relaying replacement. A unique feature of this project required the 138kV Bus Relaying to have individual phase relaying. Between Primary and Backup, six SEL 487B relays were installed.

345kV/138kV Line Relay Upgrade

Our team is currently completing five remote end line upgrades. This project consists of two 345kV line relaying packages and three 138kV line relaying packages. The communication methods consist of Power Line Carrier or Fiber depending on the remote end. The SCADA/RTU system was also upgraded/modified. Relays used include SEL321, SEL 311, SEL 352, SEL 501, RFL 9780, RFL 9785, and SEL 2032. Schemes used were PLC OCB scheme, Fiber current differential, Step Distance and Breaker Failure.

Feeder Relay Upgrade

Amped I is currently performing fault analysis and modelling using Aspen oneliner and Cymdist to help determine recloser settings and coordination on a distribution circuit. We will then be using acSelerator software from SEL to load these settings into the database for the utility showing feeder, device, fault, and curve edits. Reclosing shots, stuck breaker timers, and downstream protective devices will all be considered. We are then verifying coordination between other bus feeders on the system.

Recent Projects

Forced Cooling

Amped I completed three communication upgrades for 138kv transmission line forced cooling systems. The B-phase current of the designated 138kv line is monitored by an SEL-751A within a cabinet designed specifically for these forced cooling projects. The cabinets also house a fiber distribution panel, SEL-2241, SEL-2243, SEL-2244, and SEL-2245 for data aggregation and transmission. Data such as pressures, temperatures, and flow are gathered and routed to SCADA. If the B-phase current of the 138kv line is measured above a designated amount, the installed cabinet starts the cooling process for a designated amount of time. Also, if current on the line drops below a designated amount, the new equipment will place an emergency stop on the forced cooling system.

Wind Farm Cap Banks & Switcher with RTAC

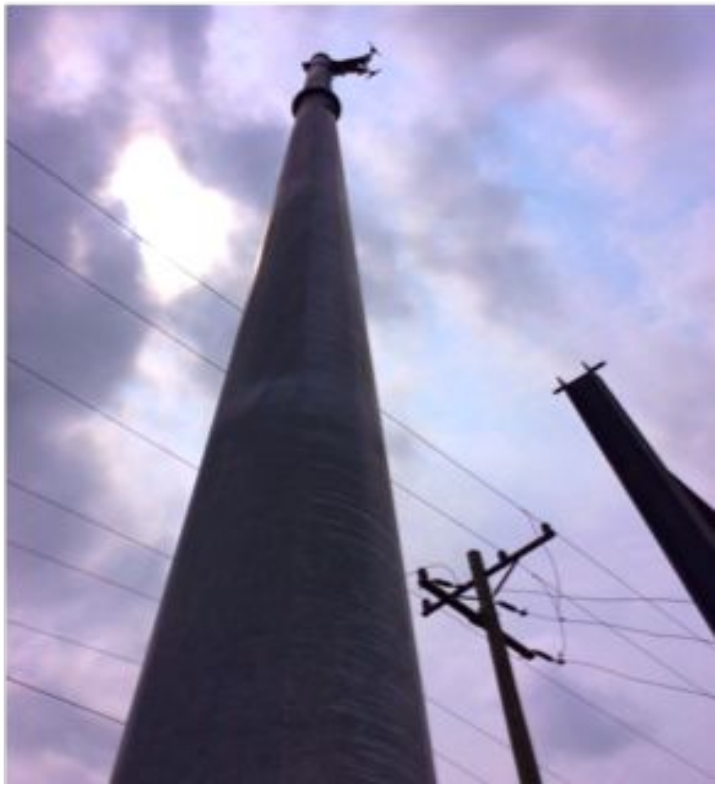
Our electrical division completed the electrical protection and control design of three capacitor bank integration projects for several wind farms in the southwest region of the United States. SEL-487V relays were used in order to control and monitor each of the installed cap banks and associated cap switchers. External cap switchers were installed to allow for the switching in of VARS into the system as needed to regulate the power factor output.

This design involved the addition of several new panels at a couple of the sites in order to incorporate the protection and control of two cap switchers per relay panel. At one of the sites the P & C relays were integrated into the existing relay panels and the older controllers were removed. An RTU connection was established to monitor the relays and to allow for remote SCADA control of the equipment, using a SEL-3530 as the Real-Time Automation Controller (RTAC).

Recent Projects

12kV Feeder Upgrades and Fiber

AMPED I has recently completed the design consisting in upgrading a total of sixteen (20) 12kV feeders and SCADA upgrades at one of the local utility substations. The scope of work included the design of a fiber tray, installation of a new SCADA panel/revisions to the existing SCADA panel, upgrading the electromechanical relays to microprocessor relays, relay fiber communication. As part of the design process the following items were prepared: one line, front views, fiber tray layout, AC and DC schematics, bill of materials (estimates and bid process), wiring diagrams and DC calculations.



Analog

Amped I completed a 3 year program involving more than 150 substations to retire the Analog SCADA Circuits for a Midwest utility. The goal of this project is to remove the dependence on the telephone provider for SCADA Communications. Many different technologies are being implemented in the substations to achieve communication including Point-to-Point Radios, WiMAX Antennas, SSN, Fiber, and Cellular. The technology chosen for each site depends on many factors: location, size of substation, available coverage, and distance from communication base stations. The SCADA/RTU systems at the Substation are also upgraded to become IP enabled. This project began in 2013 through 2017.

Recent Projects

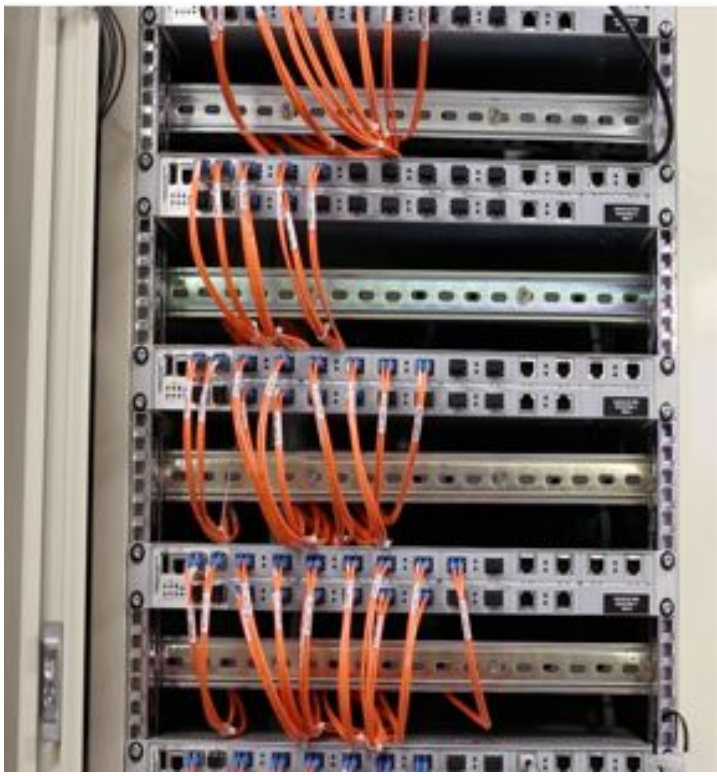
SF6 Breaker Upgrade with Switchgear Relaying

Amped I recently completed design work for the upgrade of an existing 12kV substation consisting of 41 switchgear cubicles. The project involved installation of 30 new cubicles and 11 new cubicle doors which will upgrade the existing substation to a microprocessor based intelligent substation. Additional design work includes SCADA, AC, and DC upgrades as well as transformer monitoring. The project continues this Spring with engineering and design of the 138kV portion of the substation including 3 new SF6 dead tank breakers and 4 new SF6 Hybrid circuit breakers.

138kV Grid Improvement Program

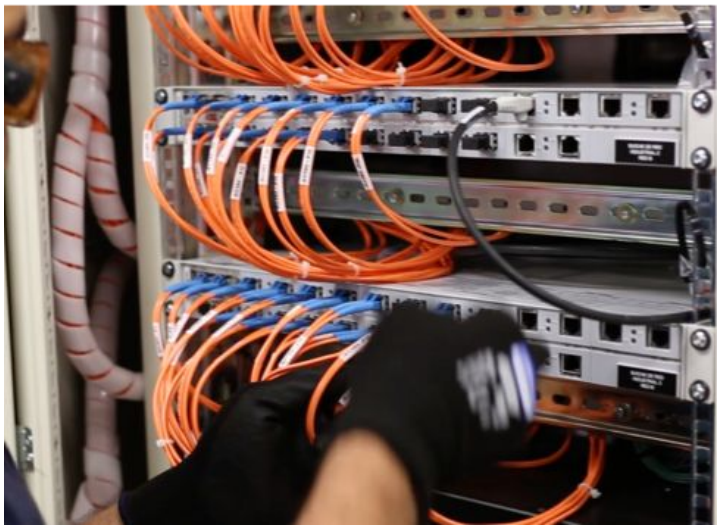
Amped I has completed (99) 138kV terminals on sixteen line upgrades in a major metropolitan area for a utility line upgrade obsolescence program. These encompass line differential, directional comparison, and permissive overreaching transfer trip relay schemes as well as breaker failure, transformer, phase shifter, and leads protection. The locations vary from a major city to rural areas from two terminal lines to multi-terminal transmission lines with various aspects of communication. They also include overhead, underground, and combinations of overhead and underground lines. These include multiplexing fiber rings, direct fiber, as well as carrier communication. Some terminals also require SCADA upgrades that are either IP based or serial based as well as the installation of new nodes of multiplexing and fiber equipment for both relay communications, SCADA communications, and telecom to support substation requirements. This project involved over 6,000 drawings.

Recent Projects



Fiber Optic RIng Upgrade

Amped I LLC is currently completing a fiber optic routing plan for a local utility to create a MUX node on an existing fiber optic ring. We will be utilizing SEL ICON equipment at the new node at an existing substation. The new node will be able to transmit data via 15-40 kilometer fiber optic laser cards installed on the rack. A fiber distribution panel will be added to creating two diverse routes out of the station to diverse splice points on the existing fiber optic ring. We will be working with the Utility, the local municipalities, and the department of transportation for permitting of the new construction. Specifications will also be provided for railroad crossings along the way. The fiber optic cable utilized is mostly ADSS (all-dielectric self supporting) over-head type, connected onto existing electrical poles.
In some sections we will be using directional bored underground fiber optic cables. The intent of the installation is to provide high speed closed circuit data connectivity between the local stations for high-speed tripping and for the collection SCADA information.



Fiber Routing for Substation to Data Center

Amped I Electrical is currently completing a fiber routing plan for a local utility, between a substation and a large data center, to be utilized for DTT relay tripping and co-gen. The routing involves the use of existing manholes and direct buried HDPE along the local state highway. We assisted in the permitting process with the DOT and the local county to provide for digging and roadway obstruction.

Recent Projects

345kV/138kV Line Upgrades & Bus Tie

We are also currently continuing work on the installation of a 345/138kV transformer, and 345kV Line package. This work will also include the installation of new relay protection panels for the equipment and a couple of upgrades to 138kV Bus Tie Circuit Breakers. The relaying involved will mainly be SEL and communicate to remote ends via fiber.

138kV Line Upgrade to SEL Relaying

Amped I Completed the design of a 138kV line upgrade in Indiana. This line upgrade improved the electrical grid's reliability by upgrading outdated, pre-existing protection and control relays with Schweitzer Microprocessor relays and automation controllers. One of the challenges faced in this design was obtaining the technical clarification of design details that match supplied templates to existing schemes.

115kV Cap Bank & Circuit Switcher

We are working on the installation of a 115kV cap bank at a substation. This Cap will be fed through a Circuit switcher and the protection relaying includes the SEL-487V and the F-Pro5100 for the caps and an SEL-351 for circuit switcher.

Substation Aux Power Upgrade

Amped I recently completed design and engineering work for complete aux power replacement at an existing 138kV-12kV substation. The project involved upgrading the normal and emergency aux power transformers as well installation of a new automatic throw over panel. The existing main AC panelboard was also upgraded. Completion of the project will result in cleaner, safer, and more efficient aux power for the substation as well as added capacity for any potential future AC loads.

Recent Projects

Analog Telecom Circuit Program

Amped I completed work on a distribution audio-tone replacement project in the Midwest. The utility needed to retire the telecom circuits that were currently being used to provide Distribution Transfer Trip between the utility's substations and customer generation sites. The distribution is at both the 34kV and 12kV level. DTT Transceivers and Receivers were removed and replaced with microprocessor relays that will communicate over a new fiber backhaul being installed.

Intelligent Metering Upgrade

Amped I is in the process of replacing antiquated current and potential meters on critical substation systems with new digital technology multifunctional meters at multiple 12kV and 4kV sites in Illinois. Only a local digital display exists for many of these meters and it is essential to have remote, up-to-date and real-time access to full analytics pertaining to essential equipment such as transformers, feeders and voltage regulators. The need for remote data output was essential to this design, so new meters are either to be connected to existing remote terminal units or to newly installed remote terminal units. After further evaluation, Amped I is utilizing existing power, current transformer and potential transformer cables to save the client resources.

Feeder Relay Upgrade

Amped I is currently working on a 12KV (6) feeder relay upgrades, (4) transformer relay upgrades as well as bus differential protection system on the south side of Chicago. The scope of work also includes an addition of potential transformers for two 12KV buses and new SCADA system to support all new microprocessor relay communications. Along with this scope, Amped I is also designing for the addition of a new DC panel board. This project advances our physical design capabilities and cable routing due to the station being completely indoor and compact.

Recent Projects

Protection & Coordination Study

Protection Coordination Study, short circuit analysis for multiple distribution substations and recommend new settings. This involved our partner HMV, who performed analysis in ASPEN models of line properties, busbar protection, and power transformers. Operation conditions and scenarios were established in mutual agreement with the client for the full analysis. The client provided the power system database, equipment specifications, and settings criterias for all protective devices, as well as a reference coordination study done recently. Amped I provided coordination graphs for overcurrent and distance protections to ensure correct grading, as well as asset capability curves and short circuit results to ensure their protection.

Motor Operated Load Break Tap's

Amped I recently performed engineering and design services related to the installation of RTU's to support operation of MOAB's on tap locations on the sub transmission system. Amped I created schematic diagrams for the MOAB's & RTU's, wiring diagrams, BOM's, cable diagrams and cable layouts for each install location. Amped I also assisted in the procurement of the cabinet assembly with Systems Control who handled fabrication, assembly, wiring, and testing.

RTU Design & Settings Upgrade Program

Amped I was given the communications architecture drawing, excel points list, and asked to configure the RTU files and settings. Some of the devices included 3555, 3332, 3355, SEL-2440's, Satec's BFM, MFM, analog I/O, Bitronics M871, Nexus Meters, All done remotely with access to the client network. We added master/slave device names, configured baud rates, and mapping of the addressing scheme was all part of the scope. Amped I also performed design and engineering for multiple sites where the entire RTU was being upgraded.

Recent Projects

Digital Fault Recorder (DFR) Panel Replacement

Amped I was asked to provide engineering and design support in a emergent application. The substation currently has (4) transmission line feeds, (2) 115kV busses, (1) 14kV bus, (1) 161kV bus, (4) transformers, (1) cap bank and (5) feeders. Amped I provided metering and relaying 1-Lines, tripping diagrams, AC/DC schematics, cable schedules, and BOM's. There were bi-weekly conference calls and engineering progress reports while the files were transmitted via secure FTP site. The client handled all the testing, commissioning, and outage coordination services.

A challenge with this project was that the panel needed to be located in an existing equipment enclosure to accommodate outage constraints.

Greenfield Distribution Substation

Amped I recently performed the protection and control design for a greenfield distribution substation. The design included Two 345kV main breakers, Two 345kV/34.5kV Transformers feeding 2 buses with Six 34.5kV feeders and One 34.5kV Capacitor bank each. Various protection schemes were utilized for protecting the Transformers, Buses, Feeders & Cap-banks using Micro-processor & Lock out relays.

Amped I created 1-Lines, AC/DC study & schematics, Control house layout, Panel front views, Reviewed Vendor drawings and completed External equipment wiring diagrams, Voltage drop calculations & Cable schedule, RTU Programming, HMI screen development, SCADA points list, Integration with Solar plant controller, Bill of materials etc.

Leadership

MELISSA WASIELEWSKI

As Partner of Amped I, Melissa brings a strong background in finance and project management to the overall success of the entire Amped I team. She is dependable, driven, well organized and above all, an exceptional leader.

Melissa performs tasks aimed at developing our organization's vision, while implementing policies and procedures that will allow this vision to become a reality. She ensures that all people, products, and services are moving forward in a consistent, efficient, and productive manner.

Melissa also effectively oversees multiple project teams and solves critical issues in a time-sensitive environment. Melissa has proven quality assurance, risk management, and change management expertise. She maintains open lines of communication with project stakeholders and manages expectations.

Leadership

BRYAN PYKA

As partner of Amped I, Bryan is a seasoned electrical engineer with 21 years of experience in substation protection and control. Throughout his career, he has successfully designed and engineered numerous protection schemes for both large and small clients.

Bryan's expertise includes project management, estimating, protection and control engineering, SCADA, commissioning and testing of electrical power substations, marketing & sales strategy, and competitive market intelligence. He has experience successfully managing multi-site substation projects as well as projects that include fossil plant separation, replacing/upgrading substations, creating new schematics and wiring diagrams, converting existing substations into intelligent substations, distribution automation upgrades, engineering new wind farm substations, and more.

Leadership

WAYNE DOWER

As Quality Manager of Amped I, having 21 years of experience managing P&C and substation design projects, Wayne is skilled in project management, estimating, substation engineering, protection and control engineering, SCADA, relaying communications, SONET networks, fiber optics, and more. He is very skilled at ensuring client and project performance requirements that are reflected in schedule, budget, design calculations, and technical analyses are all met as well as providing technical guidance and training to project team members in determining design parameters. Wayne successfully oversees quality reviews of all technical work on a project, coordinates and integrates all system designs for the entire project, coordinates the interface between design and engineering, reviews and approves documentation and specifications, defines technical and commercial requirements for procurement (including scheduling of vendor submittals to meet design-input requirements of a project), directs efforts of project disciplines to ensure schedule, budget, accuracy, constructability, operability, and quality of design, and more.

Visit Us At

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