

Field Services

Start-up Commissioning Services

General

We realize that, even though our Totally Integrated Automation® and Totally Integrated Power® products are designed for quick and easy installation, your schedule may not allow you to allocate the resources and personnel necessary to get this equipment up and running when it is required.

In today's business environment, staff members are frequently overloaded, or they may be dedicated to other projects. Now, when you purchase new equipment from Siemens, you can add startup services at special rates. This will give you the additional help required to meet even the most pressing deadlines... at affordable rates. You can be confident that we will arrive at your door with the installation experience necessary to get your new general purpose drives, motor control center or switchgear properly started up and working when you need it.

Factory-trained engineers will:

- Startup your newly-purchased Siemens equipment
- Test for operational functionality
- Provide a written report detailing tests and services
- Advise your team on upkeep and maintenance.

In many cases, you will receive a one-year parts warranty extension on your new equipment such as:

- Motor control centers
- General purpose variable speed drives
- Low voltage switchgear.

Bonus:

Receive an additional one-year parts warranty when you purchase Siemens startup services with your new motor control centers, general purpose variable speed drives and/or low voltage switchgear.



Medium Voltage Switchgear Startup Service

- Inspect anchorage, alignment and grounding
- Check tightness of bolted bus joints
- Measure and record critical distances such as contact gap
- Perform mechanical operation tests on the operating mechanism
- Perform a contact resistance test on the breaker vacuum contacts
- Perform insulation resistance tests
- Perform vacuum interrupter integrity (over-potential) tests
- Perform insulation resistance test on all control wiring at 1000 volts DC
- Verify trip, close, trip-free and anti-pump functions
- More



Low Voltage Switchgear Startup Service

- Perform mechanical operational test
- Check cell fit and element alignment

- Check tightness of connections
- Lubricate as required
- Perform a contact resistance test
- Perform an insulation resistance test at 1000 volts DC from pole-to-pole and from each pole-to-ground with breaker closed and across open contacts of each phase
- Perform secondary current injection testing
- More



Switchboards and Power Switching Centers

- Inspect for physical damage and nameplate compliance with single line diagram
- Perform mechanical operational test. (circuit breakers, switches, etc.)
- Check cell fit and element alignment
- Check tightness of connections and lubricate
- Perform a contact resistance test on RL/WL/SB breakers and power switches
- Perform an insulation resistance test at 1000 volts DC from pole-to-pole and from each pole-to-ground with breaker or switch closed and across open contacts of each phase
- Perform Secondary Current Injection Testing (RL/WL/SB breakers)
- More

13

SWITCHGEAR

For more information, please visit <http://automation.usa.siemens.com/consultant/> or contact your local sales office.

Field Services

Start-up Commissioning Services

General



Motor Control Center Startup Service

- Ensure that all protective devices have been properly set and locked
- Review power fuse selection and installation procedures
- Conduct a general physical inspection of MCC power and control connections. Check tightness of connections

- Ensure incoming line power connections comply with UL/NEC requirements where applicable
- Ensure that any special motor starting and running applications have been considered when selecting motor starter controls, and that main metering is functioning properly
- Perform startup on drives, solid state/soft-start starters and other equipment
- More

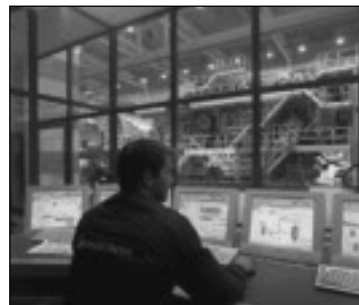


General Purpose Variable Speed Drives Startup Service

- Inspect electrical and mechanical parts

- after installation and wiring (per drawings)
- Make final adjustments such as speed range, acceleration/deceleration and tuning to motor
- Check starting, stopping, interlocking and sequencing (per drawings)
- Check and adjust for purchased options such as bypass, braking, serial communications, encoder interface, and line filters
- Verify power quality (MM440 units only)
- More

Engineer-by-the-Day for new equipment purchases



*Minimum purchase required. Extended warranty not available with Engineer-by-the-Day service.



Now, you can take advantage of the expertise of a Siemens factory-trained engineer to startup your Siemens power distribution and control equipment purchases.

Engineer-by-the-Day is available in complete one-day increments for setup of the following products*:

- ACCESS power monitoring
- Busway
- Dry type transformers
- Insulated case circuit breakers
- Molded case circuit breakers
- Panelboards
- Sensitrip circuit breakers
- Switchboards
- Switches
- More

Siemens Energy & Automation is committed to ensuring that your equipment is up and running...when you need it. Siemens Industrial Services provides expert factoryauthorized equipment startup at a special rate when you purchase the service before your product is delivered.

Get your equipment up and running on time. Contact your local distributor or Siemens Energy & Automation sales office to learn more.

Field Services

Power System Studies



Short Circuit Study

Power system specialists from Siemens will determine the maximum duty that your system's protective devices, transformers, and interconnections will be subjected to in the event of three phase and/or line-to-ground fault conditions. In addition, we will provide basic information required to establish protective relay settings.

Coordination Study

Under fault conditions, systems should isolate the faulted area to minimize disturbance to the remaining system, and simultaneously limit damage to equipment. We will review the characteristics of your protective devices, then provide the settings necessary to ensure that your system functions optimally should a fault occur.

Harmonic Analysis

As AC drives have become increasingly prevalent in industry, we have seen the introduction of destructive harmonics to many systems. The power quality experts from Siemens will determine the extent and severity of harmonics in your system, then recommend the appropriate means of limiting potential damage.

Transient Stability Study

This study is particularly valuable for facilities that generate their own power, and those with very large motors. Our

power system specialists will study the transient response of rotating equipment following system disturbances, and analyze system behavior in relation to the power company tie.

Protective Device Evaluation

With the objective of achieving optimum protection, we will perform the necessary calculations required to select the interrupting rating of power fuses, circuit breakers, and other protective devices.

Power Quality Assessment

With the proliferation of sensitive electronic equipment in recent years, power quality has become a major concern for industry. We perform structured, step-by-step studies with timely diagnosis and expert solutions to the complex challenges of utility and end-user power quality issues.

Arc Flash Study

NFPA 70E recommends that an Arc Flash Hazard Analysis be performed prior to work on electrical equipment. Siemens will determine the incident energy levels, Arc Flash Boundary (AFB), and required level of Personal Protective Equipment (PPE).

Load Flow Study

This steady-state analysis of your system's capability to supply the connected load will produce a listing of real and reactive power flow in each line or branch, and the bus voltages, under both normal and abnormal system conditions.

Voltage Unbalance Study

Voltage flicker and poor voltage regulation are a common concern on systems with large arc furnaces. The experts from Siemens use this study to develop comprehensive solutions that limit the effects of voltage irregularities and protect sensitive equipment.

General/Selection

Grounding Study

With the goal of ensuring proper protection and reducing the possibility of excessive transient overvoltages during line-to-ground faults, our engineers will determine and recommend the most appropriate form of system grounding protection (including solidstate, low resistance, and high resistance).

With power system expertise and experience that comes from real-world successes, the specialized team of professional engineers and certified technicians from Siemens will help you:

- Minimize downtime
- Improve the safety of your operations for employees and sub-contractors
- Optimize your system's performance
- Extend your equipment's life cycle
- Reallocate your valuable internal maintenance resources to your core business
- Maximize the protection of sensitive electronics
- Ensure your facility complies with applicable safety regulations

In addition, the power system specialists from Siemens also provide the following:

Power System Studies on "Equipment Release for Manufacture"

- To ensure adequate interrupting rating, and to ensure that coordination capabilities are recognized

Streamlined Power System Construction Studies (PSCS)

- For devices being installed on construction projects

For more information, please visit <http://automation.usa.siemens.com/consultant/> or contact your local sales office.



Arc Flash Hazards

In the fraction of a second that it takes copper to expand to vapor, an arc flash can generate skin-searing heat — four times hotter than the surface of the sun.

Recent revisions to NFPA70E require that an Arc Flash Hazard Analysis be performed prior to working on or near electrical equipment containing exposed energized conductors. The analysis determines the arc flash boundaries (AFB), incident energy levels and the required level of personal protective equipment (PPE). The recommendations in the analysis can be used to determine hazards in your workplace. Implementing the recommendations will help protect your workers and help you satisfy OSHA requirements.

The Siemens solution to minimize risks from arc flash hazards

Working within NFPA and IEEE guidelines, our experienced power systems engineers will perform systematic and accurate Arc Flash Hazard Studies as follows:

- 1. Short Circuit Calculations**
Siemens will either use your data, or make calculations for you, to identify bolted and arcing fault levels at key points in a power distribution system.
- 2. Protective Device Coordination**
Using the customer's electrical systems coordination study, Siemens determines the duration of the arcing faults.
- 3. Arc Flash Hazard Calculations**
The incident energy level, the flash hazard boundary, and the PPE required are then calculated for each location.
- 4. Documentation**
The information above is compiled for you into a comprehensive report, which contains information necessary to comply with regulatory requirements.
- 5. Unsafe Work Locations**
The report will identify work locations having incident energy levels in excess of available PPE ratings.
- 6. Arc Flash Hazard Mitigation**
Recommendations will be made to minimize Arc Flash Hazards by changes in system protection or operational procedures.
- 7. Arc Flash Hazard Labels**
In addition to the report, our customers will receive a field label containing the flash hazard boundary distance, incident energy level, PPE category and shock hazard for each location.

Implementing recommendations from a Siemens Arc Flash Hazard Study can bring you the following benefits:

- Improve employee safety
- Improve your electrical system
- Provide safety information to subcontractors
- Assist in compliance with regulations
- Provide you with documentation that may bring about reductions in workers compensation and insurance rates

Turn to Siemens for Arc Flash Hazard Studies, comprehensive safety training and other related services that will enhance the safety of your personnel and the reliability of your operation.

SARRACS — Complete arc flash protection for switchgear racking.

After completion of your Arc Flash Hazard Study and Equipment Labeling efforts, why not consider another aspect to your personnel safety initiatives? Why not consider Siemens' SARRACS remote circuit breaker racking system? Racking medium voltage circuit breakers (>1000V) into and out of a live bus is one instance where the PPE required may not be adequate to protect personnel from arc flash. Siemens SARRACS effectively removes the operator from the arc flash boundary by allowing for remote installation or removal. In addition, SARRACS provides torque monitoring to detect improper breaker connection.

For more information, please visit <http://automation.usa.siemens.com/consultant/> or contact your local sales office.