



The Power **Authority**

**Automatic
Transfer Switches**

Communications

**Power Control
Systems**

**Industrial
Control Products**

**Service and
Maintenance**



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We Keep Your Power On

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Armand Visioli, President

SETTING THE STANDARD FOR THE EMERGENCY POWER CONTROL INDUSTRY

To be the leader in an increasingly competitive marketplace, our company depends on leading edge technology, quality workmanship and exceptional service. Each of us at ASCO make a special effort to ensure that these high standards and goals are reached and maintained.

There is no great secret to the success we've enjoyed at ASCO over the last 100 years. We have concentrated our efforts, totally, on the design, manufacture and worldwide distribution of outstanding Automatic Transfer Switches, Power Control Systems and Industrial Control Products and the service organization to back them up. We have stayed at the leading edge of advanced technology by maintaining a substantial, growing investment in research and development. Staying at the forefront of new technology has helped us continually set and reach new standards of excellence for our entire industry.

Since our beginning in 1888, our first priority has always been meeting the needs of our customers with quality driven products. No single element of our business is as important to our reputation, as the premier emergency power control company in the world, as quality.

ASCO's entire range of products represents the industry's most precisely engineered lines of equipment, manufactured to the strictest standards. As a result of this unwavering commitment to quality, ASCO has obtained the highest level of quality certification under ISO9001 requirements.

Our goal of industry leadership could never be accomplished without the support of our dedicated team... a family of professionals, committed exclusively to what matters most... teamwork and quality.

Welcome to the world of ASCO.

“We don't generate the power... We Control, Distribute, Transfer, Monitor, Measure, Manage, Display, Maintain, Service & Communicate with it.”

As the world's leading manufacturer of Automatic Transfer Switches, Power Control Systems and Industrial Control Products, ASCO has dedicated approximately a half a million square feet to design & manufacturing facilities throughout the world.

ASCO also maintains a strong and growing global presence with sales and service facilities in North & South America, the United Kingdom, Europe, the Middle East, South Africa, Asia and Australia.

ASCO's Worldwide Headquarters and manufacturing facility located in Florham Park, New Jersey is home to over 1300 employees. This facility manufactures and ships the largest volume of Automatic Transfer Switches in the world as well as housing our design...sales...service...warehouse and testing facilities.



Fig. 1 World Headquarters, Florham Park, New Jersey, USA



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ASCO®

WORLD WIDE LOCATIONS

ASCO's experience in emergency and standby power applications, power switching, power control systems, surge protection and lighting controls is unsurpassed within the industry. Since the introduction of the first Automatic Transfer Switch in 1920, ASCO has pioneered every major transfer switching solution and product innovation in power transfer technology. And ASCO remains committed to providing a full range of quality

driven products, backed by a 24 hour nationwide service organization.

ASCO is indeed The Power Authority and continues to be ranked number one in brand preference studies conducted by all of the major trade publications. These studies state that consulting engineers, electrical contractors, and facility electrical personnel prefer ASCO products above all others.

Automatic Transfer Switch

ASCO Automatic Transfer Switches are the standard of the industry. Instantaneous transfer of loads between alternate sources of power, regardless of ampacity size, is achieved by a reliable, field proven single solenoid operating mechanism. When combined with microprocessor controls it offers the most advanced method of transferring motor loads available today. It is the only true double throw, inherently interlocked transfer switch and is available in a broad range of sizes from 30 through 4000 amperes. Available open or enclosed, with the largest selection of optional accessories available anywhere.



Fig. 2 Automatic Transfer Switch rated 3 pole 400 amperes.

Automatic Transfer & Bypass Isolation Switch

ASCO Automatic Transfer & Bypass Isolation Switches are available for open transition, closed transition and delayed transition applications. Developed by ASCO to allow power transfer switches in critical locations to be inspected, tested, and maintained without any interruption of power to the load. Available 150 through 4000 amperes.



Fig. 3 Automatic Transfer & Bypass Isolation Switch rated 4 pole 2000 amperes.



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Closed Transition Transfer Switch

ASCO Automatic Closed Transition Transfer Switches feature contacts that overlap, permitting the transfer of electrical loads without power interruption. The switch transfers in a make-before-break mode if both sources are acceptable. Control logic automatically determines whether the load transfer should be open or closed transition. Available 150 through 4000 amperes.



Fig. 4 Closed Transition Transfer Switch rated 4 pole 1200 amperes.

Soft Load Closed Transition Transfer Switch

ASCO Soft Load Closed Transition Transfer Switches provides a make-before-break transfer of a building load from a utility source to an alternate in-house stand-by engine driven generator. This system brings the engine-generator, into synchronism with the utility source, then gradually shifts the load over to the engine-generator with virtually no voltage or frequency fluctuations. Available 400 through 4000 amperes.



Fig. 5 Soft Load Closed Transition Transfer Switch rated 3 pole 800 amperes.

Delayed Transition Transfer Switch

ASCO Delayed Transition Transfer Switches are designed to provide transfer of loads between power sources with an intentional disconnect of the load for an adjustable period of time. Applications include variable frequency drives, rectifier banks, and specialized medical equipment. Available 150 through 4000 amperes.



Fig. 6 Delayed Transition Transfer Switch rated 3 pole 800 amperes.

Static Transfer Switch

ASCO Static Transfer Switches are designed for extremely fast (1/4 cycle maximum) break-before-make transfer to the alternate source. Therefore, under test or power failure conditions, transfer is seamless and goes virtually unnoticed by even the most advanced and sensitive electronic equipment. Available 80 through 4000 amperes.



Fig. 7 Static Transfer Switch rated 200 amperes.

The ASCO Microprocessor Control Panel is used with all sizes of Automatic Transfer Switches from 30 through 4000 amperes. It represents the most reliable microprocessor control panel in the industry and includes, as standard, all of the voltage, frequency, control, timing and diagnostic functions required for most emergency and standby power applications.



Fig. 8 Automatic Transfer Switch rated 3 pole 400 amperes with microprocessor controls on door.

Voltage & Frequency Sensing

- Adjustable close differential voltage sensing on all phases of normal source.
- Voltage and frequency sensing of emergency.
- Selectable for single or three phase operation, 50 or 60 Hz.

Control Features

- Test switch to simulate normal source failure.
- Switch position lights.
- Source availability lights.
- Time delay bypass switch.
- Inphase monitor to transfer motor loads, without any intentional off time, to prevent inrush currents from exceeding normal starting levels.

Time Delays

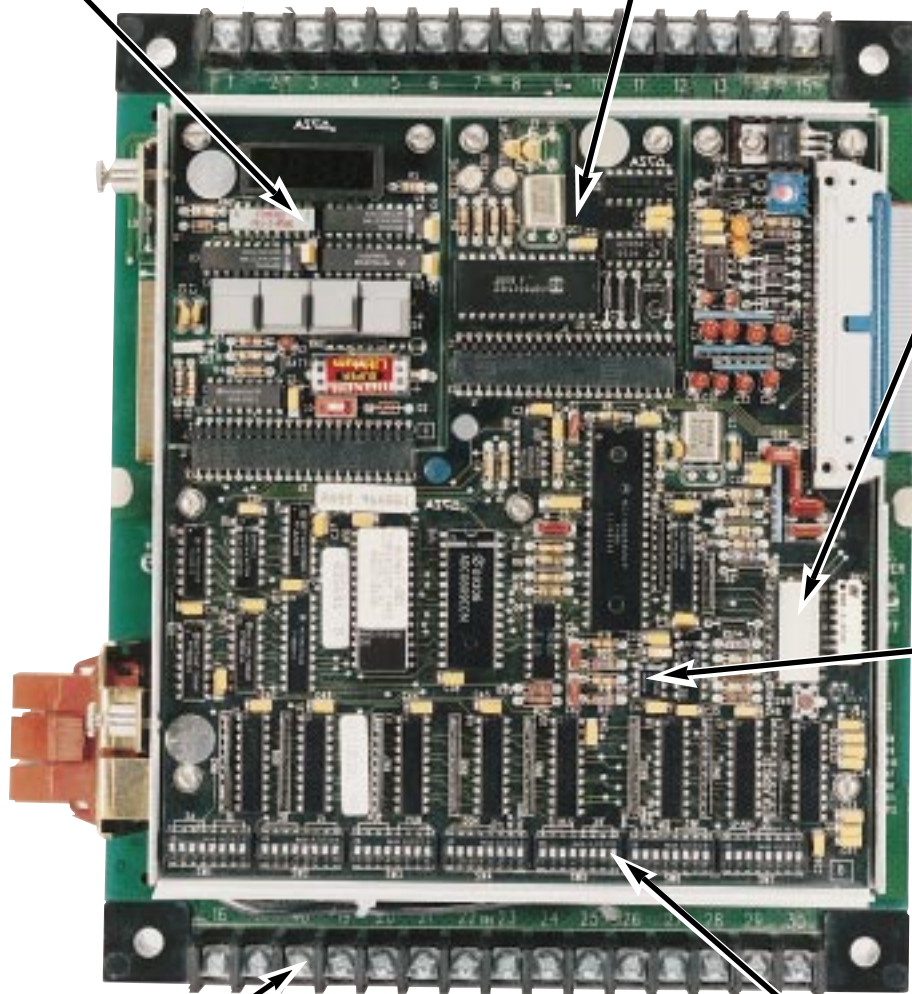
- Time delay to override momentary normal source outages to delay all transfer switch and engine starting signals.
- Transfer to emergency time delay provides controlled timing of load transfer to the emergency source.
- Retransfer to normal time delay with automatic bypass if emergency source fails.
- Unloaded running time delay for emergency engine generator cool down.



Fig. 9 User controls and indicators.

Programmable engine exerciser to automatically test engine generator each week. Includes control switch for testing with or without load. A reserve power feature allows accurate timing for up to 1 yr without external power.

PowerQuest communications module for remote monitoring and control of Automatic Transfer Switches.



LED diagnostic status indicators for activated controls and transfer signals.

Built-in inphase monitor for transferring motor loads.

Fig. 10 Microprocessor Control Panel with protective cover removed.

Terminal provisions for remote customer contacts (remote test, peak shave circuit, transfer inhibit, retransfer).

Accurate adjustment of voltage, frequency and time delay settings without the need for meters and variable power supplies.



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The ASCO **PowerQuest** monitoring and control management system is available in a complete windows based system that allows the monitoring and control of multiple engine generator paralleling systems and up to 128 Automatic Transfer Switches from a personal computer. And with an ASCO modem connection, you can remotely access information about your emergency power system, from around the corner or around the world.



PowerQuest Monitoring and Control Station

Standard Serial Communication Highway

Redundant Serial Communication Highway



Dual Serial Interface Module

TRANSFER SWITCH EC - 1 DETAILS

Emergency BUSDUCT "A"

SWITCH RATINGS	ACTUAL VALUE	TIMER SETTINGS
Voltage 480 V	Normal Voltage 498V	Timers Setting Actual
Amperage 1200 A	Emergency Voltage 488V	TD ES - 00.00 N/A
Frequency 60 Hz	KW TOTAL 1515	TD NE - 00.00 1:34
# Phases 3 Ph		TD EN - 00.15
		TD EC - 02.00
		LD TDBT - 00.00 N/A
		LD T DAT - 00.00 N/A

STATUS INDICATIONS	ACCESSORIES	PICKUP/DROPOUT SETTINGS
Test Schedule: 5	11C	Parameter Value % Norm
Volt. Reference: Nom	27	N - Volt P.U. 432 V 90%
Serial Address: 100	28	N - Volt D.O. 406 V 85%
Inphase Monitor: Off	75	E - Volt P.U. 432 V 90%
Test Mode: Off	1/6/98 08:38	E - Volt D.O. 367 V 77%
	Password	E - Freq P.U. 57 Hz 95%
		E - Freq D.O. 50 Hz 84%

Transfer Retransfer Timer Bypass ATS Summary I/O Details Main Menu

Automatic Transfer Switch Details

Displays detailed automatic transfer switch information including: real time voltage, time delays, pick-up & drop-out settings.

Monitoring

- ATS voltage and frequency settings.
- ATS time delay settings including indication of any time delays that are active.
- Real-time sensing of voltage, current, phase angle, power factor, KW and KVAR.
- Transfer Switch Position and source availability.

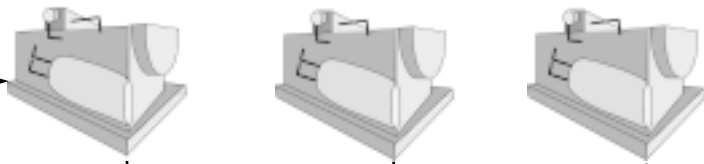
Control Functions

Each Automatic Transfer Switch can be remotely tested with password protection preventing unauthorized access.

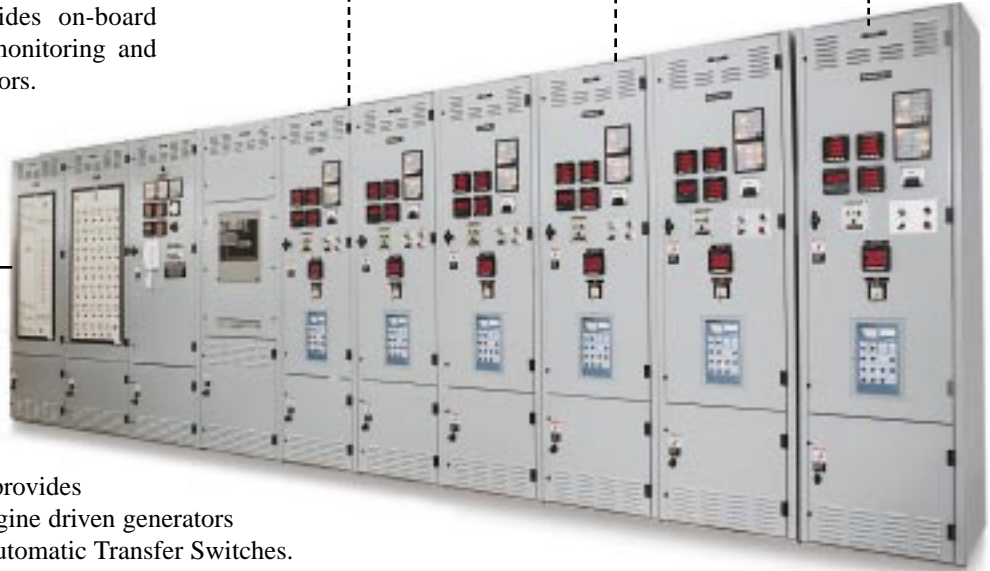
- Transfer test (to simulate a normal power failure).
- Retransfer back to normal.
- Bypass active time delays.
- Seven different automatic test schedules (seven days a week) for testing various priorities of load.



Multiple Engine Driven Generators (only three shown)



The Data Monitor also provides on-board digital input and outputs for monitoring and control of engine driven generators.



SYNCHROPOWER® System provides paralleling of six 1750 KW engine driven generators and load control of multiple Automatic Transfer Switches.



Dual Serial Interface Module

The Dual Serial Interface Module (DSI) is designed to support a serial communication highway where redundant communication wires are required. The DSI converts a single channel, four-wire RS485 serial transceiver into a dual-channel, 8 wire RS485 transceiver. It senses communication failures on the primary channel and automatically switches over to the secondary channel to provide continuous communication signals to the **PowerQuest** emergency power system highway.



The Data Monitor senses single or three phase voltage and current and displays a full compliment of power parameters locally or remotely by using the **PowerQuest** communications highway.



Up to 128 Automatic Transfer Switches and/or Automatic Bypass Isolation Transfer Switches can be monitored and controlled by **PowerQuest**.

Two-Source Automatic Transfer System

ASCO two-source systems are designed for automatic switching of loads between the utility source and an engine generator set. The system provides all of the necessary controls to start the engine, put the generator on line at the proper time, and transfer the loads to the emergency source. When normal power is restored the controls retransfer the loads to the utility and shutdown the engine after allowing it to cool down.



Fig. 11 Two source system with main circuit breaker, protective relaying and and Automatic Transfer Switch rated 1200 amperes.

ASCO two-source systems include an Automatic Transfer Switch, automatic engine starting controls, overcurrent protection for emergency and normal sources, instruments, status panel, and audible alarm. The systems are NEMA switchboard construction designed and UL 891 labeled.

Systems are provided for top or bottom cable entrance or bus duct connections.

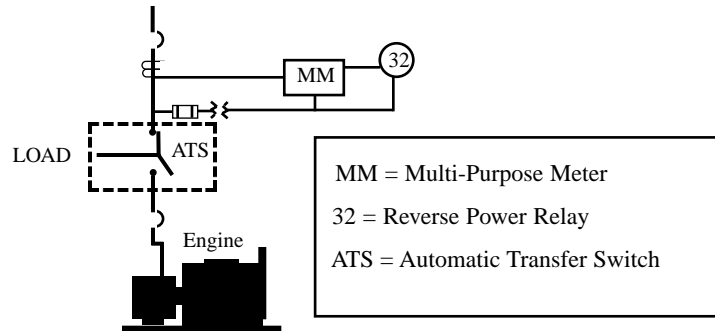


Fig. 12 ASCO basic system for automatic emergency power transfers.

Three-Source Automatic Transfer System

ASCO three-source systems are similar to ASCO two-source systems except that a second engine generator is added to back up the first if the first engine fails. The system provides all necessary controls to start both engine generators. Loads are automatically transferred to the first engine generator set that achieves acceptable voltage and frequency. The second engine generator set is then automatically shutdown after a time delay and cooldown period.

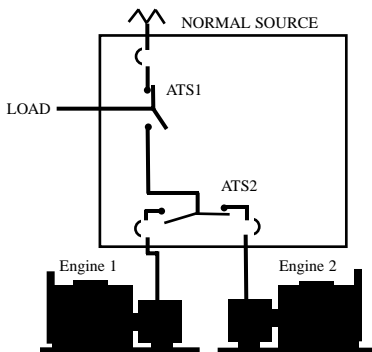


Fig. 13 ASCO three-source system for automatic power transfer.

If the first engine generator set fails, the second one will be automatically started and the loads will be automatically transferred to it. When the normal power is restored, the controls automatically retransfer the loads to the utility.



Fig. 14 Three-source system with automatic transfer switches.

ATS Switchboards



Fig. 15 ATS Switchboard with five automatic transfer bypass isolation switches, and emergency distribution circuit breakers.

ASCO ATS Switchboards include distribution and main circuit breakers or disconnect switches and automatic transfer switch products. Instrumentation and protective relaying are provided as required. Designs are available with up to 10,000 amperes main bus and are UL 891 listed.

In addition ASCO Service Entrance Rated Switchboards are available up to 4000 amperes with a service entrance label. This switchgear consists of a main disconnecting device and ground fault protection, required instrumentation and manual or automatic transfer switches.

SYNCHROPOWER® Systems



Fig. 16 Four 1500KW engine generator SYNCHROPOWER® paralleling system with both manual and electrically operated distribution circuit breakers.

ASCO SYNCHROPOWER® systems provide synchronizing and paralleling of multiple engine generator sets. Each system includes a master control section, individual engine generator control sections and power distribution sections. A full complement of instrumentation is provided for each engine generator and the total system. All systems include automatic and manual paralleling controls, status indication and PLC-based load add/shed control. Additional protective relaying is provided as required. Standard products include emergency power, prime power and parallel with utility designs.

ASCO low voltage SYNCHROPOWER® systems are provided with UL 891 and UL 1558 listings up through 10,000 amperes. ASCO medium voltage SYNCHROPOWER® systems are designed to ANSI C37.20 requirements. Designs are available for up to 10,000 amperes main bus and 200,000 amperes short circuit ratings. All bus designs are designed for 800 amperes per square inch rather than the industry standard of 1000 amperes per square inch. This eliminates the need for fans or forced air devices within the switchgear.

Lighting Contactors Feeder Circuit

The ASCO 920 is designed as a feeder disconnect switch for lighting panelboards. The ASCO 920 is available for separate mounting in enclosures or direct bus mounting within lighting panelboards for total or split-bus applications. They also meet UL 67 withstand current rating requirements for panel-board applications.

They are available from 30 through 225 amperes per pole with 2 or 3 poles and service voltages through 600 volts AC. They are listed under UL 508 for ballast lighting, tungsten, general use and resistive loads.



Fig.17 920 rated 3 pole single throw 225 amperes.

Lighting Contactors Branch Circuit

The ASCO 917 Lighting Contactors have a 20 amperes rating to 600 volts AC. Available with 2 to 12 poles, they are the most compact multi-pole lighting contactor available. Suitable for handling all types of lighting, the ASCO 917 is listed under UL 508 for ballast, tungsten, resistive and general purpose loads. The general purpose rating is 30 amperes to 600 VAC. They are a lighting contactor that is mechanically held and electrically operated. Contacts are power driven to both the open and closed positions by a momentary pulse, thereby providing quieter operation because there is no AC hum as is experienced with electrically held contactors.



Fig. 18 917 rated 12 pole single throw 20 amperes.

Lighting Control System

The ASCO 641 Lighting Control Panel is designed to be used for area lighting controls, such as the automatic and manual on/off control of parking lot lighting, signs, building exterior lights, security lighting, interior safety lighting, and recreational lighting areas. They are available with multiple ASCO 917 lighting contactors and any combination of timer and/or photocell controls.



Fig. 19 641 Lighting Control System with 12 pole 917, HOA switch and timer.

Dimmer Bypass

Dimmer Bypass Switches are essential switches (NEC mandated) in auditoriums and theaters where dimmer controls are used to provide smooth and gradual control of the lighting intensity. The ASCO Dimmer Bypass Switches provide the control to automatically bypass failed dimmers to provide full lighting intensity from an alternate power source. Switches are listed to UL 1008, and are available 2-12 pole at 30 amperes.



Fig. 20 Dimmer Bypass System rated 12 pole D/T 30 amperes.

Remote Control Switch for all Class of Loads

The ASCO 911 single-throw mechanically held remote control switch is used for remotely-controlled feeder disconnect applications such as bulk load control and energy management. Using an ASCO 911 switch reduces wear on the overcurrent protective devices, provides more flexibility and increases system reliability. They are available for single phase or 3 phase applications in sizes from 100 through 4000 amperes.



Fig. 21 911 rated 3 pole single throw 400 amperes.

Remote Control Switch for Single Source/Dual Load

The ASCO 175 double-throw mechanically held remote control switch is used in applications requiring that one or another load be supplied from a common source. The true double-throw nature of this product prevents the two loads from being simultaneously connected to the single source of power. They are available for single phase or 3 phase applications in sizes from 100 through 800 amperes.



Fig. 22 175 rated 3 pole double throw 800 amperes.

Pulsar™ 450 Surge Suppressor

Provides unparalleled protection from power surges and transients for smaller electrical panels or any application where a compact size is necessary. They are a high performance surge suppressor which limits large surges and transients through a unique array of computer matched metal oxide varistors and individually fused MOVs.



Fig. 23 Pulsar™ 450 rated 40 KA.



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Pulsar™ 451 Surge Suppressor

High performance surge suppressor which provides unsurpassed protection from damaging power surges and transients. The Pulsar™ 451 is rated from 100 KA to 400KA.

All ASCO Pulsar™ 451 models are mounted in standard type 12 enclosures. A door mounted membrane status panel provides LED status indication of normal operation, under voltage, power loss, phase loss or component failure.



Fig. 24 Pulsar™ 451 rated 100 KA.



Fig. 25 ASCO Services, Inc. Headquarters in Florham Park, New Jersey, USA.

ASCO Services Inc. (ASI) is a wholly owned subsidiary and the exclusive OEM service arm of The Automatic Switch Company. ASI provides a wide range of technical services to ensure the integrity of your emergency power system. ASI people are professionally trained, motivated and equipped with fully stocked vehicles allowing them to respond any time, anywhere, 24 hours everyday.

ASCO Services Inc. is your sole source for comprehensive maintenance programs, modifications, upgrades and emergency repair. The ASI / ASCO corporate relationship means that our people have direct off hours access to the largest stock of genuine ASCO replacement parts and stock in the world. Our people are empowered to take the necessary actions to get your site back on line.

There are over 60 locations nationwide to serve you better with our network of ASI direct offices and our trusted Certified Service Centers. ASI continues to add factory direct locations each year.

All ASI personnel are constantly trained in the newest equipment concepts, design and controls. Our people are also trained to address total system problems. Training on older designs is also addressed as an important aspect of our field representatives education. The ability to evaluate the total system allows us to get to the solution of the problems at your facility. Average experience of our Engineering Service Representatives is 13 years.



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People, expertise, training and professionalism are the ASI hallmarks. You'll see, at ASCO "Service is an attitude not just a department".



Fig. 26 ASCO Services, Inc. Customer Service.

The ASI Comprehensive Maintenance agreements are designed to keep your emergency power system ready to respond. A 35 point checklist ensures that all critical systems and components are in top operating condition when called upon. We'll even assume complete responsibility for replacement if desired.

Maintenance programs can be customized to national accounts. This approach allows central corporate control of maintenance and cost. Comprehensive, computer generated reports assure you, the owner, of clearly defined information regarding the activity, maintenance or corrective action.

Commissioning of new systems provides you with the piece of mind that your system has been thoroughly checked, adjusted and tested by personnel who are factory trained on your system. No contractor or third party service organization can make that statement.



Fig. 27 SYNCHROPOWER[®] system with distribution breakers.

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Conversions and upgrades are a cost effective way to bring the newest technology to your existing ASCO equipment. Control panel upgrades, PLC retrofits, additional accessories, site monitoring, **PowerQuest** and refurbishment are but a few available programs. At ASI we are not limited to a fixed catalog. Need something special? call us. Our experience and equipment knowledge allows us to design solutions to your service problems.

Training is extremely important. Aside from the constant training ASI people receive, we offer a full range of customer training courses which allow your operations people to become familiar and proficient in the operational concepts of your emergency power system.



Fig. 28 Training and familiarity can make the difference between reliable operation and downtime in an emergency situation.

For 24 Hour Service Call 800-800-ASCO

Additional Services

A broad range of specialized testing services is available through ASI. Whether you need a standard or custom package, give ASI a call. We will design a program that will ensure your systems integrity and your peace of mind.

Coordination Studies ensure all overcurrent protective devices in your system are properly adjusted to trip in a coordinated and expected succession. Avoid tripping main building feeder breakers.

Protective Relay test and calibration services are imperative to the proper operation of these critical protective devices.

Circuit breaker primary and secondary injection testing goes hand in hand with breaker coordination studies and adjustments. You've determined what the proper settings are, now make sure they respond properly.

Transformer Dielectric Absorption, Winding Resistance, Turns Ratio

Infrared Surveys can identify connection problems, overloads etc. before failures occur. Non Invasive in nature, IR surveys can be done any time without site impact.



Fig. 29 ASCO maintains a fleet of service vans equipped with parts and advance test equipment.

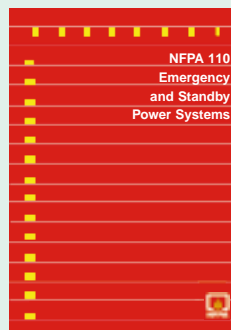
The ASI Advantage

Your Emergency Power System is essential to your company. In some cases, a dependable Emergency Power Supply may literally be a matter of life and death.

Will your Emergency Power System function when normal fails? Is your system regularly inspected, maintained and tested?

To insure your system provides continued reliable operation... *whether it includes a single automatic transfer switch or multiple transfer switches and engine generators...* you should be sure it undergoes a regular program of inspection maintenance.

The National Fire Protection Association stresses the need for maintenance and testing in its "Standard for Emergency and Standby Power Systems," NFPA 110. This standard



specifically describes the requirements for routine maintenance and operational testing to assure the "reliability and integrity" of emergency power systems (NFPA 110, Chapter 6).

Fig. 30 NFPA 110 Emergency and Standby Power Systems Publication.