



Source
California

Energy
Services



Your Source for Powerful Solutions

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Do you use...

- Electricity?*
- Hot Water?*
- Cold Water?*

Are you interested in...

- Slashing Your Energy Bills?*
- No Blackouts?*
- Cleaner Air?*

then

Generate Energy Onsite!



Source California Energy Services, Inc. specializes in helping our clients get economic benefits from generating electricity at the location that it is used. Our systems are tailored to provide electricity and hot/cold water resulting in many benefits.

- **Reduce Your Electricity Bill and Lower Your Thermal Energy Costs—Guaranteed!**

Generating onsite energy with natural gas systems is significantly less expensive than purchasing power from the utility company. With cogeneration, a typical plant can operate at over 80% efficiency. Waste heat is used to provide steam, hot water and/or chiller water for cooling. We guarantee that your energy costs will drop by 10% to 40%.

- **Improved Reliability and Versatility**

Because the power generation system is onsite, it will be there even when utility company power is not. The system can be operated 24 hours a day, seven days a week. The units can be used for primary power, base-load power, peak shaving or emergency power.

- **Environmentally Friendly**

Emissions levels are below any existing air quality standards. And the systems are guaranteed to pass all applicable air quality standards. In Los Angeles, many plants have emissions that are better than normal air quality.

- **Eliminates Blackouts, Brownouts, Curtailments, and Surges**

Onsite units can be configured to eliminate these problems. Onsite power can produce cleaner, more stable power. Power doesn't have to travel hundreds of miles through "the grid" to your site.

- **Avoid the Hassles of Selling Power to the Utility**

Using the Generation Onsite (GO) concept, there is no need for utility power purchase agreements. Expensive protection equipment required by the utility is not required.





Generating Onsite (GO)?

Generating energy onsite is a concept of producing electricity and thermal energy at the location it will be used. This technology has been around for over 50 years. Recent events in the energy marketplace have made Generation Onsite the right solution for clients that are concerned about rising energy costs, power outages, and air pollution.

When designing a generation plant for a client, Source California will “weed-out” the technologies that do not make sense. We look for a match between the client’s needs and the technology that meets those requirements. The majority of our systems operate in a combination mode of heat and power, therefore, achieving efficiencies in excess of the utility grid and using less fuel to produce the same amount of energy.

Here are some commonly used terms in Generating Energy Onsite:

- **Distributed Generation** is the concept of installing and operating electric generators at or near the electrical load.
- **Generate Onsite or Self-generation** is the concept of generating electricity that is only used at that electrical load/site. Self-generation units are not capable of sending excess power generation onto the grid. In fact, at self-generation sites, the utility will always supply a small amount of electricity to the site to avoid back feeding to the grid.
- **Cogeneration or “Combined Heat and Power” (CHP)** is a type of distributed generation that uses fuel, such as natural gas to simultaneously produce useful heat and electricity from the same source.

INTERNAL COMBUSTION ENGINES

Natural gas burning internal combustion engines connected to electrical generators are highly efficient and reliable. These systems are usually skid mounted and include all of the equipment to meet the energy requirements of the site. Multiple engines may be utilized to match the demand and provide consistent reliability/redundancy. The engines provide maximum heat recovery while they are generating electricity. The thermal energy (jacket water and exhaust) is collected and then used onsite for both heating and cooling applications. For cooling applications, an absorption chiller is included in the system to provide chilled water at approximately 40°F. The internal combustion engines are very efficient, reliable, quiet and very clean burning.

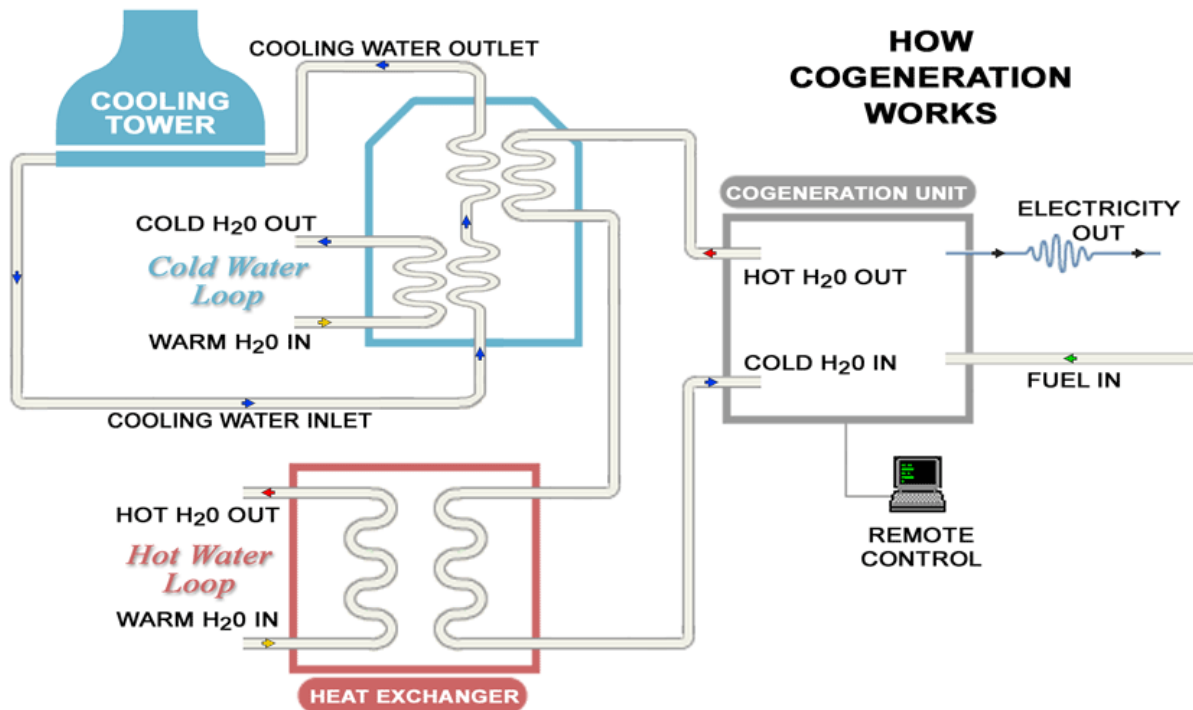


Capstone
Microturbine

MICROTURBINES

Microturbines are small-scale natural gas fired turbines ranging in size from 28 kW to 500 kW. The micro-turbine can deliver clean power from a wide variety of fuels with superior safety and low emissions. Microturbines generate useful exhaust heat energy, which will be utilized in cogeneration applications, allowing the systems to achieve higher efficiencies and further reduce electrical energy demand. Microturbines have many of the same benefits as the internal combustion engines. This technology can be recommended for sites with space limitations.

INTERNAL COMBUSTION ENGINE EXAMPLE OF A COGENERATION SYSTEM



Does GO make sense for me?



Generate Onsite (GO) systems are ideal for those applications where electricity and hot/cold water are required on a continuous basis. Examples of these are: wineries, hospitals, hotels, universities, large office buildings, industrial projects and prisons.

The process Source California uses to determine if generating onsite power makes sense for a client's site is very straightforward. Ideal sites have several of the following attributes:

1. The site has a thermal load such as hot water, steam or cold water.
 - a. Hot water can be used for heating production processes, cooking, heating, laundry, swimming pools, etc.
 - b. Chilled water applications could be air conditioning and refrigeration.
 - c. Steam can be used in process applications or converted to chilled water for cooling loads.
2. Electrical base load consumption is 200 kW or greater. Several additional considerations are:
 - a. Plants that are less than 1.5 MW qualify for a California self-generation rebate.
 - b. Plants that are less than 5 MW avoid PG&E standby charges.
 - c. Plants that are less than 50 MW require less stringent (and costly) environmental reports.
3. Site conditions that will support a cogeneration system, such as:
 - a. Space to utilize skid mounted equipment.
 - b. Natural gas is available and pressure is manageable.
 - c. Local zoning and environmental issues are not limiting.
4. Client/management is supportive of GO.
5. Backup capability requirements and client specific needs such as voltage fluctuation control. Designing of the cogeneration facility at the initial stage should incorporate the possible evolution of future energy demand. This would help in the appropriate choice of equipment and in planning the schedule for expanding capacity according to the changes in need. There may be a need for backup power to assure continuous operation of activities at the site. One solution would be to provide standby generation capacity at the site, which will increase the investment further.

Onsite cogeneration economics are in part dependent on what is known as the "Spark Spread," the difference between the cost of purchasing electricity from the utility and the price of the cogeneration fuel (natural gas, propane, etc.). Other important considerations include the cost of interruption or damage to your business because of power outages or dirty power, both of which can be addressed by a cogeneration system. Therefore, the higher the utility electricity price relative to the cost of fuel, and the greater the value placed on reliable, clean power, the more economically attractive onsite cogeneration becomes.

5 Steps to Success



Source California uses a simple, 5-step process to take a project from conception to completion. This process is fast, logical and gets results.

1. Initial Contact: 1 Hour

- Assess Client Needs
- Identify Thermal Load
- Identify Electrical Load
- Determine Client's Interest

2. Site Walkdown: 3 Hours

- Gather Client Input and Preferences
- Gather Critical Power Information
- Determine Client Fuel Access and Price
- Determine Tie-in Points
- Gather Electrical and Thermal Load Data (Utility Bills)
- Gather Drawings
- Identify Environmental Issues
- Gather Letter of Intent to Proceed

3. Proposal and Financial Feasibility: 1 Week

- Financing Options
- Equipment Recommendations
- Savings/Payback Analysis
- Operations and Maintenance Recommendations
- Proposal with Scope, Cost and Schedule
- Utility Interconnection Requirements

4. Contract to Engineer, Procure and Construct: 1 Week

- Client Review of Proposal
- Negotiate and Sign Contract

5. Perform Project: 4 to 6 Months

- Design and Permit Project
- Procure Major Equipment
- Construct
- Testing/Commissioning



Source California takes two primary approaches to Distributed Generation projects. There are variations to these approaches and these will be considered and discussed in the initial steps of a project.

1. **We provide project financing.** This eliminates the need for capital expenditures by our client. This can be attractive, especially when capital money is hard to come by.
 - a. We provide EPC services.
 - b. We provide long-term operations and maintenance services.
2. **Source California provides Engineering, Procurement and Construction (EPC) services.** This is described as Steps 1-5 of our 5-Step Approach.

CASE STUDY: AGRICULTURE/MANUFACTURING

Challenge:

Winery with year-round cold storage and bottling capability.

Client Input/Needs:

"Lower my energy bill"

"I don't have capital, so Source California must finance"

"Give me some redundancy so when I have an outage, I don't lose my product"

"Make it hassle free"

"Operate and maintain the system so I don't have to worry about it"

"Make sure it's quiet and meets air quality standards"

Source California's Solution:

Client's energy bill reduced by 12% per year.

Absolutely no installation cost paid by the client.

The system operates in conjunction with grid power to provide outage protection.

Installation and operation does not impact winery production. The system looks sharp and professional.

Maintenance is performed by trained technicians during off-peak periods.



Source California

Energy Services

Source California Energy Services, Inc. is an engineering and project management company serving the power generation industry. Our team is successful because we are power generation professionals who design solutions that deliver the most value for your money.

Founded in 1997, our Design Engineers and Project Managers provide engineering, design, procurement and construction management services that exceed our customer's requirements. We ensure that every job is performed safely, with quality workmanship, on schedule and at competitive costs.

The Source California professional staff are highly experienced and committed to the principles of integrity and quality work. The firm has a customer focused team structure and we know how to take actions necessary to achieve a level of performance that will match or exceed the customer's expectations. The engineers and management have extensive experience and knowledge.

Source California is independently owned and managed. The firm does not sell proprietary energy products, and is free to recommend the materials, products or services offering the best balance between performance and savings to meet our customer's needs.

Management Profile



DAVID J. MC MILLAN ME, P.E., Executive Director

Mr. David J. McMillan is Principal Engineer of Source California. Mr. McMillan is one of the co-founders of Source California Energy Services. He has a Bachelor of Science degree in Mechanical Engineering from California Polytechnic State University and is a registered Professional Mechanical Engineer in the State of California. Mr. McMillan's experience spans 27 years in the energy industry in multiple engineering and supervisory capacities. Prior to founding Source California, Mr. McMillan was employed by Pacific Gas & Electric Company (PG&E) as Plant Engineering Supervisor, Senior Engineer, Project Manager/Engineer, Mechanical Engineer and Design Engineer. He has supervised power production engineers, project engineers, plant chemistry as well as administrative. Mr. McMillan has extensive knowledge in capital projects, project management and managed projects specifically designed for reliability and environmental compliance. He worked approximately six years as an engineer designing power-generating facilities.

JOHN ANTHONI ME, MBA , Executive Director

Mr. John Anthoni is a Principal Engineer and one of the co-founders of Source California Energy Services. Mr. Anthoni has a Masters Degree in Business Administration with a Management concentration from Golden Gate University and a Bachelor of Science Degree in Mechanical Engineering from California Polytechnic State University. Mr. Anthoni is the Chief Financial Officer and directs the Contracting and Financing Processes. Prior to founding Source California, John was employed by Pacific Gas & Electric Company (PG&E) as the Plant Engineering Supervisor at the Morro Bay Power Plant. He was responsible for managing plant performance, maintaining equipment, system reliability and implementing capital upgrade projects. Mr. Anthoni was a Project Manager for a major Boiler and Turbine Controls Replacement Project replacing older pneumatic controls with state-of-the-art distributed control systems. John worked as an Instrumentation and Controls (I&C) Group Supervisor, Test Supervisor, and I&C Engineer.

WILLIAM G. HAENDLER ME, P.E., President

Mr. William "Bill" Haendler has over 30 years in the electric power industry. Proven experience designing, installing and maintaining both steam and gas turbine generator equipment. Mr. Haendler graduated from Penn State University with a Bachelor of Science in Mechanical Engineering and is a registered Professional Engineer in the State of California. Prior to joining Source California, Mr. Haendler was employed by Pacific Gas & Electric Company (PG&E). Mr. Haendler directed a team of highly skilled engineers and analysts on identifying new generating technologies on an ongoing basis. He effectively coordinated the implementation of electric restructuring, minimizing the adverse regulatory impact to PG&E. Mr. Haendler supervised individual project budgets up to \$12 million. Mr. Haendler was also a Senior Mechanical Engineer who supervised the design and construction of systems modification to PG&E's Geysers Power Plant.

Important Questions



Does Source California prefer a specific technology or manufacturer?

It is important to note that Source California is committed to using only the best available solution for our client's site. We consider all technologies and manufacturers when evaluating a project. Since cogen must be able to provide prime power for the bulk of a company's energy needs, reliability and efficiency are critical. While micro-turbines and fuel cells are exciting technologies, reciprocating engines often times pencil out as meeting the requirements of providing around-the-clock reliability and high efficiency at a competitive cost.

Why is onsite power cogeneration important?

Cogeneration is recognized as the most economical and environmentally sound method of producing power from fuel. Cogen systems can run cleaner than utilities on a usable kilowatt basis and provide local, reliable energy. The President's National Energy Policy encourages the development of combined heat and power systems (synonymous with cogeneration) to help conserve power, lower overall emissions, and reduce reliance on foreign fuels. Onsite cogeneration provides the added benefit of allowing a business to control its power needs.

Why is cogeneration so efficient?

Taking into account both the electrical and thermal energy, cogeneration is more efficient than even the most modern large-scale power plants. Cogeneration is more efficient in part because it is not practical for utility power plants to distribute thermal energy over long distances, whereas for onsite cogeneration systems the application of thermal energy is relatively easy. Furthermore, by locating a cogeneration system at the point of consumption, the line losses associated with transmitting electricity over long distances are avoided. As a result, through cogeneration, a greater percent of the energy in the fuel is converted into useful power, making it a more efficient and economical way to provide power.

Can Generation Onsite systems be used as backup power?

GO systems are often designed to be used to provide backup power to the site. Generally, the systems run in parallel with the utility and generate the bulk of your base load energy requirements. Operating in this fashion has the ability to generate the most savings.

What is an absorption chiller and how does it work?

Like any chiller, an absorption chiller generates chilled water or brine for cooling applications, such as refrigeration or air conditioning. However, unlike compressor driven chillers for example, an absorption chiller uses thermal heat to create cold water. It does this by using an intermediary substance, such as lithium bromide, to transfer the energy in the hot water from a cogen unit into energy that is used to remove heat from water in order to chill it. The use of an absorption chiller can make a cogeneration system an attractive solution for a variety of cooling needs.

Does a client's site have to disconnect from the utility?

In almost every case, the system will run in parallel with the grid, so most customers remain interconnected with the utility and their existing systems operate as always. This is because the greatest energy savings occur when an onsite cogeneration system is sized to handle a facility's base-load electrical and thermal needs and the utility provides the remainder of the power requirements. In the event of a utility blackout, the cogeneration unit can be designed to run without the grid in order to provide the emergency backup power needed to keep a business up and running. If a company desires to disconnect from the grid, or if local power is not available, the system will be designed to run without any utility interconnection.

What about California emission requirements?

The units that Source California designs and installs will meet or exceed California emissions requirements. All units will be tested during startup and operation to ensure that air quality requirements are met and maintained.

How are the Generation Onsite systems operated and maintained?

Some clients prefer to operate and maintain the system with onsite staff. Depending on the location, Source California may also offer operations and maintenance contracts. These contracts vary in price based on the nature of the contract and the complexity of the system.



Through 2004, the State of California is offering an Incentive Program for Cogeneration:

1. For cogeneration systems up to 1,500 kW, the State of California will pay for 30% of the system cost including feasibility study, engineering, installation and the first three years of maintenance.
2. Cogeneration systems up to 5,000 kW are exempt from payment of demand charges on standby electricity supplied by the utility.