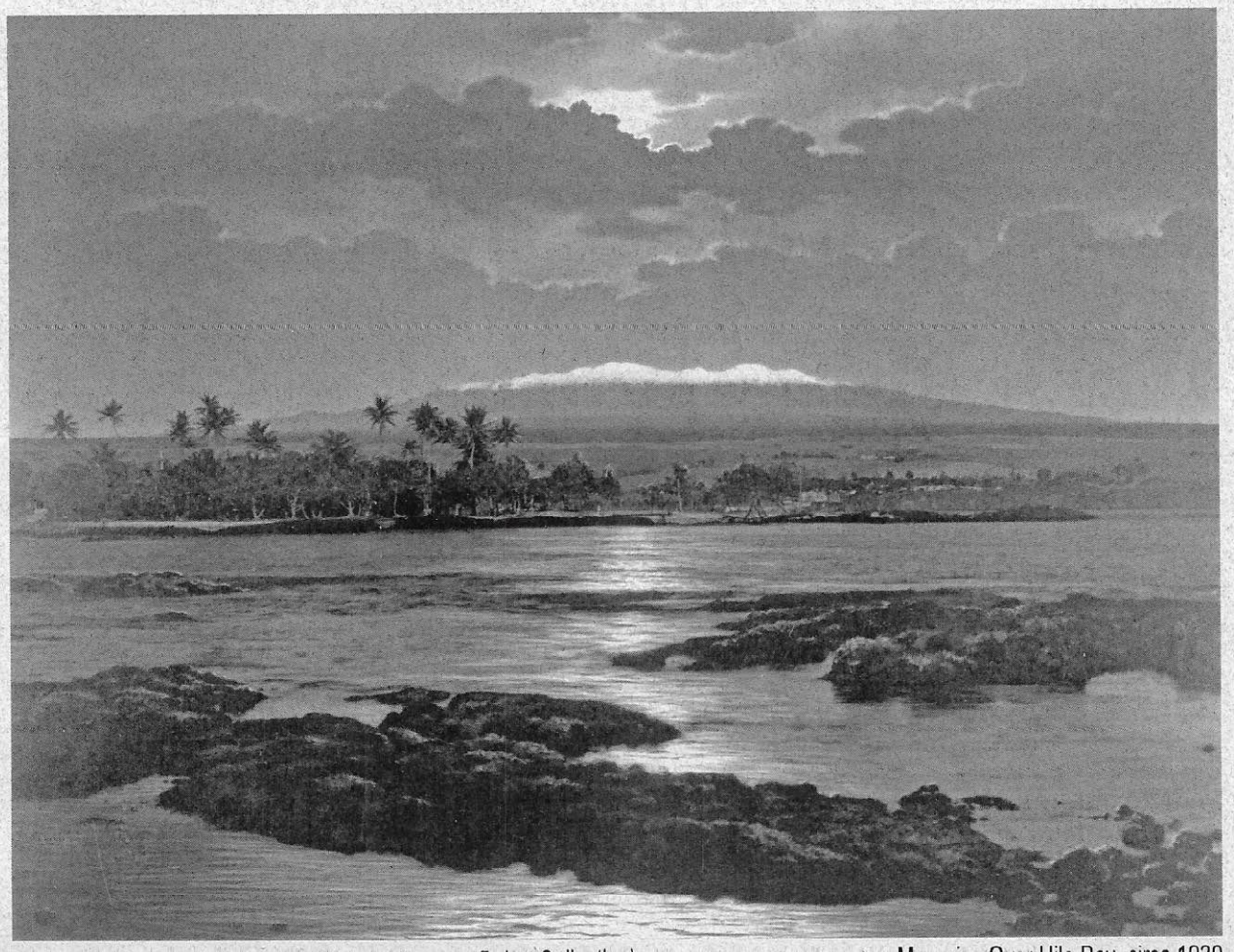
IslandEnergy.us

Island Energy Systems LLC

Preserving Our Fragile Resources
With Innovative Energy & Environmental Engineering Solutions



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Moonrise Over Hilo Bay circa 1930

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Energy Efficiency

Island Energy Systems, since 1987, has provided a range of expertise and service in the fields of Energy and Environmental Engineering. This broad scope of work covers energy audit/evaluation, system design and engineering, project financing, implementation, management and final commissioning. By utilizing state of the art technologies, progressive strategies and innovative financing, client bottom line lost profits are recovered and enhanced.

Island Energy was established to develop programs that demonstrate and validate the intelligent use of our natural resources, in the commercial and industrial sectors of Hawaii's business. Electricity costs in Hawaii are higher than any state in America. This program is essential, and vital to Hawaii's economic and energy future. Island Energy offers a broad spectrum of finance options, from out-right purchase to 100% funding without economic or technology risk.

Island Energy is now the Best.Energy Global Network Partner for Hawaii. Best.Energy is a UK based developer and manufacturer of a ground breaking suite of energy applications for buildings, combining a powerful hardware platform with intuitive cloud based software, resulting in the most comprehensive energy management package of efficiency solutions available to businesses today.

The environmental impact of displaced energy consumption exposes potential rewards that rival the economic benefits. We can no longer ignore the negative impact of our current environmental attitude. With intelligent, conscientious use of our energy resources, we can preserve and secure them for our children and their future.

Combined Heat & Power

CHP or Cogeneration is simply using one fuel source to meet multiple energy demands. A packaged Cogen unit utilizes a fuel-fired prime mover that drives an electrical generator, recovering the rejected heat through a very efficient process, in the form of steam or hot water that can be used for domestic hot water, heating, space cooling or industrial processes.

Micro turbines are the prime mover of choice and are an ideal solution for waste water treatment plants, dairies and other bio-gas applications because of their ability to generate clean electricity from landfill and digester gas while producing hot water to optimize digester efficiency.

The CHP Plant is modular in design. It is sized to meet the building's thermal load so whenever the CHP System is operating, part of the facility's electrical load is met by the CHP System, reducing electricity purchases from the utility. These Systems have an overall performance efficiency in excess of 80% by recovering and utilizing virtually all rejected heat and avoiding utility transmission and distribution losses. Prime mover and generator are housed in a weatherproof, sound attenuated enclosure for installation indoors or out. The system is quiet and sound levels do not exceed normal night time noise levels.

Economic benefits are greatly influenced by climate, with Hawaii's moderate weather conditions providing the best performance for this technology. Applications for this system include hotels and resorts, nursing homes, hospitals, health clubs, dormitories, universities, residential buildings, recreation centers, commercial buildings, pools, waterparks and agricultural facilities, like MacNut and Coffee processors.

AIR CONDITIONING AND REFRIGERATION

HVAC and refrigeration systems in operation today consume far more energy than is necessary to provide dehumidification and space cooling. State of the art technologies are available for retrofit that can improve the performance levels of most refrigeration and HVAC equipment.

Heat Pipes, initially developed for NASA are an excellent example. HVAC Systems are designed to transfer moisture from air along with heat. Heat Pipes, a passive dehumidification device that contains a phase change fluid, supplants the traditional technique of over cooling and reheating air to control humidity, which is energy intensive. Heat Pipes accomplish this without any moving parts or energy consumed. Indoor Air Quality issues like Sick Building Syndrome are also mitigated with Heat Pipes.

ECMs, Electronically commutated motors consume a mere fraction of the energy of PSC motors and can directly replace refrigeration case motors, fan coil unit motors and many others. When technology increases system capacity, decreasing energy use, compressor demand is also reduced. The result is less damaging heat, which will shorten the lifetime and increase the need for repair and replacement of HVAC and refrigeration equipment. All of these technologies can achieve the following:

Substantial Energy Savings
Improved Indoor Air Quality
Enhanced Comfort Conditions
Reduced Environmental Impact

DRIVEPOWER

In most applications, electric motors have been specified that exceed the requirements for normal operating loads that will be encountered. Induction motors draw nearly full load current regardless of the actual requirement. Running over sized or partially loaded motors at reduced voltage and current decreases energy consumption while preserving normal motor operation. This process is achieved with the installation of Electronic Motor Controllers and Variable Frequency Drives.

Excess current is averted by continually monitoring load shifts in the motor and adjusting current and voltage to match the workload. Solid State Motor Controllers feature soft start and surge defense functions to protect motors from stress caused by sudden starts or from voltage disturbances in distribution lines. When excess current is eliminated, motor operating temperatures are much lower and maintenance costs are reduced over the life of equipment. A partial list of uses follows:

Fan Coils
Air Handlers
Kitchen Equipment
Cooling Tower Motors
Refrigeration Compressors

Most motors consume 100 times their initial cost in energy during their lifetime. Purchasing only the highest efficiency motors available will provide a return on investment within months in many cases. This practice will substantially curtail our growing energy demand and will contribute to reversing the pollution and environmental degradation we have fostered on a global level.

LIGHTING

The vast majority of commercial buildings in America have by now switched to decades old electronic ballasts and high efficiency lamps. All of these fluorescent tubes should be replaced at once with LED tubes. This hardware is state of the art and will supply light superior in reliability and consistency. LED tubes consume considerably less power than these T8s, and T5s, contributing to a reduction in energy costs for air conditioning as well as demand charges for both air conditioning and lighting, as a result of less heat generated.

The cost/benefit ratio to install this extremely efficient lighting is well within the range of installation costs for standard retrofits employing obsolete equipment. Operating costs will be 30 to 40% lower, resulting in substantial energy savings. LED lighting can replace any and all Compact Fluorescent and Halogen Lamps while providing equivalent lumen output and color rendering. LED lamps contain no mercury and are not considered toxic or hazardous.

A tremendous amount of energy is consumed in providing light along our public thoroughfares and in our communities. We have an opportunity to replace these existing light sources with solar powered alternatives and to employ this option as we grow and develop. Even the devices that control these lighting systems, if upgraded, can yield maintenance and energy savings. If we examined all use of energy in practice today we would find most of them offer exceptional opportunities for improvement.

Island Energy Systems has partnered with the Best of Breed LED lighting manufacturers in America to assure that quality and efficiency goals are primary considerations when retrofitting lighting systems.

ENVIRONMENTAL APPLICATIONS

Our industrial society has created compelling problems we are only beginning to address. It should be of great concern that we may be too late. Common methods of treatment and disposal of hazardous, and non-hazardous wastes and industrial by-products are incineration and other forms of combustion-based processes, deep-well injection, land filling or direct release to the environment.

All these methods have serious transportation, treatment, environmental and safety risks. Most then generate large volumes of problematic waste, which may require further treatment prior to final disposal.

In an effort to anticipate Hawaii's Environmental crises, we have introduced solutions to critical problems like wastewater and process related pollution and soil and water contamination. These natural solutions remediate toxic contaminants, mitigate sewage treatment adversity and alleviate a broad spectrum of environmental threats.

Island Energy grows and propagates proprietary bio grasses with some of the highest tonnage yields per acre in this industry. These grasses can be digested to produce methane to power microturbines which in turn produce electricity, chilled water, steam and hot water. We are on the front line with all of these technologies, changing the way we live, power our businesses and protect the planet. It is imperative that we leave the land, air and water, more valuable than we found it.

NEW CONSTRUCTION

It should be obvious by now the most appropriate time to address and evaluate advanced energy use strategies is at the design stage. The potential for offsetting future expenditures is overwhelming. Least first cost is no longer a valid reason to include inefficient equipment in new building design. The incremental costs of efficient technologies are no greater than for their inadequate and out-of-date counterparts.

HVAC Systems, including air and water-side distribution components can be downsized when high performance machinery is specified and when appropriate lighting technology is applied. This actually lowers first cost. Further incentive is provided by way of diminished maintenance, life cycle equipment replacement and labor costs.

Our comprehensive approach to energy efficiency will always improve the quality of service that energy systems provide. These techniques will result in many other valuable benefits. Increased productivity and reliability are two of them. Improved Indoor Air Quality and diminished equipment, labor and maintenance costs are additional effects.

Every energy project is unique and must be evaluated as such. Costs to implement progressive energy strategies are site specific and results are totally dependent upon synergistic combinations of measures.

We have inherited the remains of a lifestyle without regard for energy source depletion. This burden is ours now, regardless of where or who we are. It is within our power to reverse this, but we must begin at once. Let us share this vision and begin to heal our planet.

PROJECT EXPERIENCE

Pearl Harbor
Stryker Brigade
Joint Astronomy Center
Keck Observatory Headquarters

UH Watanabe Hall
University of the Nations
Winward Community College
UH Hilo Student Life Complex
UH John Burns School of Medicine
Kauai Community College
McKinley High School

Ace Hardware
BJ Furniture
CS Wo & Sons
T Kaneshiro Store
Naalehu Food Center
Sure Save Supermarket
Spencer Health & Fitness Center

Pohai Nani Retirement Community
Shriners Hospital for Children
St. Francis Medical Center
Kaiser Permanente Moanalua
Hi'olani Care Center at Kahala Nui

Bank of Hawaii
County of Hawaii
First Federal Savings
Old Federal Building

Westin Maui
Mauna Lani Resort
Mauna Lani Racquet Club
The Orchid at Mauna Lani
Ka'anapali Ocean Resort
Disney Resort Kapolei
Hilton Hawaiian Village

Bakken Hale
Cafe Pesto
Merriman's Restaurant
Aloha Luigi Restaurant
Blockbuster Video
Oahu Transit Service
Hawaiian King Candies

Straub Medical Center
Regency at Hualalai
Kuakini Medical Center
Kapi'olani Medical Center
The Queen's Medical Center

For the children,
and their future.

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Keawe Street, Hilo circa 1916