

Global and local communities are facing great challenges; the classical energy and water resources are coming to end. These challenges are leading humanity toward new and modern way of thinking and changed its behavior. Moreover, irresponsible use of energy and water has direct negative impact on the environment and contribute to the global climate change.

Eco Engineering and Energy Solutions “EcoSol” was established to assist governments, developers, industries and organizations into continuous growth, in harmony with the efficient use of energy and water along with preserving the environment and natural resources.

Our success is attributed to our commitment to maintain equilibrium between all the economic development activities, and the sustainability requirements as well as our professionalism in presenting the following services and solutions:

- Energy Management
  - Energy Infrastructure Assessment
  - Energy Strategic Planning
  - Energy Auditing
  - Energy Performance Contracting
- Green Buildings and LEED Certification
- Water Efficiency
  - Water Auditing
  - Water Sensitive Urban Design
  - Wastewater Management
  - Irrigation Solutions
- Renewable Energy
- Clean Development Mechanism “CDM”
- MEP Value Engineering
- Maintenance Programs
- Engineering Services

By this spirit we declare our commitment toward green and shiny future.

Board of Directors

## Energy Efficiency A Step Toward Sustainability

Energy cost is a major cost for any facility. In the past few years, energy prices were dramatically increased, creating a new and serious challenge for governments, developers, industries and individuals. This has made energy saving a necessity not only for cost reduction, but also for environmental reasons and for reducing CO2 emissions.

Energy saving starts with a smart decision; whether your project is: Industrial, Commercial, residential or a community; EcoSol's experienced energy engineers can help you to reduce your energy consumption and start realizing the benefits of lower energy bills, higher performance of energy systems, lower maintenance cost, lower CO2 emissions and consequently help to maintain a better environment.



As a leader in the energy consulting services in the region, EcoSol provides a diverse range of energy services to its customers including:

- Energy Infrastructure Assessment
- Energy Strategic Planning
- Energy Auditing
- Energy Performance Contracting

## Energy Infrastructure Assessment



A successful project must focus on its energy infrastructure equipment and the available alternatives; a smart and successful energy infrastructure design provides you with the maximum utilization and benefits from your infrastructure equipment with the lowest construction and operation cost.

EcoSol as a specialist in energy infrastructure assessment can improve and enhance the project infrastructure design to meet your objectives through intelligent and advanced energy infrastructure solutions including:

- **Electricity source:** EcoSol helps you to select the most practical and feasible electricity source such as grid connection, self generation, combined heat and power CHP,..etc .
- **Electricity transmission and conversion:** EcoSol verifies power transformers capacity and power transmission cables, identifying their most efficient locations and routes to ensure appropriate sizes and minimum construction costs.
- **District heating and cooling:** EcoSol assesses on the feasibility of installing district heating and cooling plants which are more economically viable on larger projects.
- **Domestic water and wastewater systems:** EcoSol assesses the required capacity of water storage tanks, pumping stations and potable water network, EcoSol will examine the feasibility of installing a sewage treatment plant and present the available options for water harvesting and recycling.

## Energy Strategic Planning

Many organizations spend most of their time responding to unexpected energy risks instead of anticipating and preparing for them.

Large energy consumers such as industries and urban development have to create a short and long term strategic plan that provides a framework for future growth and performance which yields in incorporating energy efficiency standards into operation and retrofitting your energy consuming systems.

Simply, energy strategic planning is the key to help your organization collectively and cooperatively gain control of future and destiny.

Benefits of energy strategic planning:

- Minimize the effect of energy risks and crises.
- Maximize energy efficiency and lower energy cost.
- Maximize the reliability and productivity of energy systems.
- Lower maintenance costs through effective use of energy systems.

### Where



### How



### Now



# Energy Auditing

The energy management program is a systematic strategy for controlling a building's energy consumption pattern, and reducing it to the minimum permitted without compromising production, comfort, operations and other factors. It establishes and maintains an efficient balance between a building's annual functional energy requirements and its annual actual energy consumption.

Energy auditing is a crucial step in the energy management program which includes a practical evaluation of your energy consuming systems aiming to optimize its energy efficiency and reduce energy consumption and thus, saving your money. As a specialized entity in energy auditing, EcoSol helps its clients for improved energy performance by implementing energy auditing programs through:

- Data collection and measurements.
- Analysis of the collected and measured data using specialized tools and software.
- Identification of major energy consuming systems.
- Identification of energy saving opportunities.
- Calculating the expected energy saving and the associated costs of implementing the energy saving measures.
- Financial assessment of the feasibility of implementing these measures.
- Documentation and reporting.



The energy audit would reveal to the management committee the options available for reducing energy consumption, the costs involved and the achievable benefits from implementing those energy conserving opportunities (ECOs).

## Energy Performance Contracting



Energy performance contracting is a smart, affordable and innovative method for saving energy and money. The concept behind performance contracting is the leverage money saved on energy and operating costs to pay for energy system's improvements.

Performance contracting offers an alternative to the traditional bid and spec process by placing the demand of performance and guaranteed results on energy service contractor. Our customers can apply the savings they realize toward energy systems improvements, within existing budgets and without the need for capital investment.

Any large building or group of buildings including hotels, hospitals, commercial buildings and industrial facilities is an ideal candidate for energy performance contracting.

EcoSol offers energy performance contracting to its clients as a financial mechanism to finance and implement energy management programs, by which the saving produced by the project pays for its implementation cost.



Think Green

Green is your Shiny Future

Build Green

Green is an outcome of new concept in design and construction philosophy when it comes to the design and construction of the environmentally friendly buildings. The development of a high performance green building starts in the early stages of a project life, extends throughout during the construction phase and last until the post-construction phase.

Live Green

Green buildings address sustainable criteria in several areas; the project site, water and energy efficiency, material and resources and the indoor environmental quality.

Whether you are designing a single building or multiple buildings (i.e. a community), EcoSol will be your partner throughout the design and construction of the sustainable green building. EcoSol experts and certified LEED Accredited Professionals will help developers, designers and contractors into better understanding and implementing of environmental and sustainable solutions.



As a pioneer in sustainability consulting and LEED certification attainment, EcoSol will guide your project to be green designed and LEED certified from the United States Green Building Council USGBC through:

- LEED design management and sustainable assessment
- LEED commissioning
- Energy modeling and simulation
- Assessment of green products and materials
- LEED certification management, coordination and follow up with the US green building council
- LEED pre-construction preparation and documentation
- LEED construction assessment and follow up
- LEED certification management and finalization with the US Green Building Council

EcoSol has experience with the numerous LEED rating systems such as : LEED for new construction, LEED for existing buildings, LEED for core and shell, LEED for green interior design and construction, LEED for schools and LEED for neighborhood development.

Why to go Green ?

Green buildings comprise a realistic benefits to the owners, occupants, economic and environment through :

- On average 20 – 30 % more energy and water efficiency.
- Lower CO2 emissions and more renewable energy use.
- Reducing the negative impacts of buildings on the surrounding environment.
- Increasing property marketability and the resale value.
- Significantly better and healthier indoor environment which means higher productivity.
- Green buildings are designed to be more comfortable and more enjoyable.

## Energy Modeling

Energy modeling and simulation is a powerful tool to examine the energy performance of your building prior constructed and quantifies savings contributable to your proposed design.

Energy modeling and simulation is required by the US Green Building Council USGBC for LEED certification under some LEED rating systems. EcoSol simulation engineers will build a model for your project using a specialized computer software to reproduce essential features of your project's energy performance. Our experienced energy engineers will assess your project and optimize the design for a greener and more energy efficient design.



Reduce

Reuse

Recycle



## Custom Solutions to your Water Needs

Water resources are being drained and depleted day by day, The scarcity of new water resources placing us into a position of great responsibility toward ourselves and next generations to conserve fresh water resources and reduce water consumption.

EcoSol water experts help municipalities, industries, commercial, residential, medical care and hospitality sectors to reduce their water consumption through water management programs.



EcoSol Water management programs provide comprehensive and innovative solutions to meet the needs of humans, ecosystem and sustainability. EcoSol water management program comprises of the following solutions:

- Water auditing
- Water sensitive urban design
- Wastewater management
- Irrigation solutions

## Water Auditing

Water auditing is a practical smart approach for quantifying water consumption, water flow and water needs to reduce water consumption alongside saving your money. EcoSol has extensive experience in auditing and implementing water saving projects to help you saving more water without compromising your comfort or process.



## Water Sensitive Urban Design

Urban planners always think of better use of water in cities and communities to ensure that the development is carefully designed, constructed and maintained, thereby minimizing the negative impacts on the natural water cycle.

Water sensitive urban design helps to counteract many of negative impacts of the development on the natural water cycle by implementing intelligent measures in the design and operation of the development which achieve the following benefits:

- Balance in the natural water cycle.
- Reduce the cost of providing and maintaining water infrastructure.
- Better and improved utilization of storm water.
- Reduced flood risks in urban areas.
- Reduced erosion of waterways, slopes and banks.



## Wastewater Management



Through a series of strategic audits and field experience, wastewater was found to be a major source of the rejected water from any project or community. Wastewater is often divided into two main categories; grey water, which includes the water discharged from sinks, showers, bathtubs, toilets, washing machines and dishwashers. And black water which includes substances such as human waste, food scrapes, oil and chemicals.

Wastewater also includes storm runoff. It is commonly assumed that rain that runs down the pervious surfaces is clean, although it often includes harmful particles washed off of surfaces, roads, parking lots and rooftops that contaminate water sources.

EcoSol water experts can enhance the treatment of your wastewater which can in turn be reused again for other applications specific in your project.

## Irrigation Solutions

Plants irrigation is one of the several water consuming systems that require special attention and management. Although it is commonly assumed that is a negligible quantity, it really isn't.

With EcoSol smart irrigation solutions, you will provide your plants with sufficient supplies of water while reducing your overall water consumption, resulting in lower water bills and decreased environmental impacts.





## Get Your Clean and Free Energy Now

Rapidly growing populations and increasing urbanization have placed massive pressure on energy and natural resources throughout the world, pushing us towards exploring other sources of energy including renewable energy.

Renewable energy is generated from natural and free sources such as sun, wind, geothermal, tidal power ...etc.

The use of renewable energy sources is increasing daily producing clean and sustainable energy, lower energy bills due to reduce dependency on oil and electricity, and lower green house gases.

As a specialist in renewable energy studies and projects implementation, EcoSol offers its customers a wide range of services related to renewable energy.



## Solar Thermal Systems



Solar thermal systems capture energy from sun and use it to heat water. The effectiveness of such systems depends on the proper selection of your system among the available options. EcoSol will help you tailoring the solar thermal system to match your needs at a minimum cost and quick return on your investment.

EcoSol engineers will study your project requirements and will assist you for a better and customized selection and implementation of the solar thermal heating system to help you choose the most effective and efficient systems to your needs.



## Solar Photovoltaic Systems



The solar photovoltaic systems which are commonly known as (PV systems), convert the sun energy to readily usable electric power. Generally, PV systems can be a substantial investment; hence EcoSol engineers will guide you through careful planning to help you take the right decision to meet your individual needs.

## Wind Energy

Wind energy systems transform the kinetic energy of the wind into mechanical or electrical power that can be harnessed for practical use. Mechanical energy can be used for pumping water in rural or remote areas while electrical energy can be used in homes, business or sold back to the utility. EcoSol offers technical and financial wind energy expertise to assess the applicability and feasibility of installing wind energy systems for your project.



The continuous development and urbanization resulted into continuous production of CO<sub>2</sub> and gas emissions which contributes to the global climate change. This is putting countries in front of a challenge of reducing their emissions of CO<sub>2</sub> along with continuous development under global regulations, for this purpose the Kyoto Protocol was developed.

Kyoto protocol requires that industrialized countries limit or reduce their greenhouse gas emissions. By setting such targets, emission reductions took on economic value to help countries meet their emission targets, and to encourage the developing countries to contribute to emission reduction efforts through the Clean Development mechanism.



Clean development mechanism (CDM) is an arrangement under Kyoto protocol which allows the industrialized countries to invest in projects to reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries. The CDM allows projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one ton of CO<sub>2</sub>. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol.

The clean development mechanism stimulates sustainable development and emission reductions, while giving industrialized countries flexibility in how they meet their emission reduction limitation targets.

EcoSol CDM experts help our clients to sell and trade their own CO<sub>2</sub> reductions through a specific process, helping them into continuous development by providing a financial mechanism by the industrialized countries to develop their projects.

## Optimum Design

Design Auditing and Value Engineering are innovative processes to optimize your design, reduce your capital investment and reduce energy cost of your project.

EcoSol provides third party independent design auditing and value engineering services focusing on reviewing electromechanical designs and identifying areas that lack effective approaches for their respective applications.

EcoSol professionals use their “trained eyes” and expertise to identify appropriate designs that meet your project’s requirements and safely reduce your capital cost. Moreover, EcoSol experienced energy consultants will optimize your electromechanical designs to meet energy efficiency standards during the design to ensure higher efficiency of equipment and low energy costs. Simply, our evaluation will protect you from future replacement of inefficient systems and losing money. Additionally, we will enable you to begin saving immediately.

During the design auditing and value engineering program, EcoSol will use a multi dimensional approach to examine the design and determine the least costly and energy effective means to accomplish the desired objective without impairing safety, performance, reliability or ease in operations.

EcoSol’s design auditing and value engineering includes assessment of the following:

- Cooling and heating loads, systems, equipment and efficiency.
- Hot water and steam systems’ requirements, capacity and efficiency.
- Electrical power requirement and substations.
- Electrical power cables and circuit breakers.
- Lighting system design and lighting controls.
- Pumping system and their controls.
- Ventilation system and their controls.
- Water system capacity and requirements.
- Wastewater system capacity and requirements.
- All other electromechanical equipment.



## Minimum Investment

## Maximum Energy Savings

According to maintenance surveys, at least 40% of maintenance cost is being wasted. Insufficient maintenance programs are responsible of equipment failures, disrupted production schedules, delays in deliveries, and poor product quality.

Preventive and Predictive maintenance techniques provide data that determine and define servicing and inspection periods and practices so that maintenance departments can predict in advance when equipment should be shut down and serviced for maintenance. Statistics show that these programs, when properly implemented, can minimize equipment and system breakdowns, resulting in a major reduction in total maintenance and operation costs and increasing equipment reliability as well.

Benefits of Maintenance Programs:

- Lower equipment stoppages and faults.
- Lower maintenance costs.
- Higher product quality.
- Higher labor productivity.

As a specialized firm in developing and implementing maintenance programs, EcoSol can assist you in implementing international strategies for improved system’s maintenance based on the concepts of the Total Productive Maintenance described below.

## Total Productive Maintenance

EcoSol provides on-site assistance and guidance to help customers in developing or enhancing a comprehensive plan for equipment care and reliability improvement. Our TPM related services range starts from readiness assessments to strategic planning to post implementation audits. EcoSol is recognized as one of the premier providers of TPM consulting and training.



## Maintenance Effectiveness Assessment and Audits

EcoSol can help you in evaluating your facility’s existing maintenance systems and processes by assessing your existing systems and identifying gaps through various approaches and assessments tailored to your specific needs.

## Preventive Maintenance Optimization

Performing too much Preventive Maintenance (PM) or conducting ineffective PM is costly. PM optimization employs Reliability Centered Maintenance (RCM) principles to quickly improve performance of existing systems and assets by eliminating unnecessary, redundant or ineffective PM.

## Engineering Solutions to Your Needs

Many organizations like financing firms, small industries, hospitality and management firms suffers from the lack of specialized experience in fields related to the electromechanical systems' selection, improvement, and control.

This results in various technically and financially problems starts from wrong selection of the electromechanical equipment, moves to high energy costs and ends to unjustified expenses for these electromechanical systems.



EcoSol through it experience in electromechanical and energy systems' design, operation and selection helps you to take the right decision when it comes to retrofitting and improving your systems to avoid extra unjustified expenses and reduce your energy costs in many areas such as:

- New expansion requirements and verification
- Energy saving devices and equipment
- Stand by generators sizing and capacity
- Heating, Ventilation and Air Conditioning HVAC systems' selection, type and capacity
- Lighting systems and lighting controls
- Hot water systems
- Steam systems
- Pumping Systems
- Ventilation systems
- Compressed air systems

EcoSol offers its customers a whole year consultancy contracts in which EcoSol acts as you energy and engineering advisor to help you take your right decision

## How to Get Started

EcoSol offers its customers a unique and flexible methodology developed specifically to meet their needs and for better satisfaction throughout performance oriented methodology.

Upon receiving your contact through telephone, fax or e-mail, our team will arrange for a meeting with you to understand your needs and share with you our experience in similar projects aiming to develop together the best approach to meet your goals.

EcoSol experts will conduct a preliminary evaluation of your project needs and will develop the optimum solution designed specifically for your project.

Based on this EcoSol would be able to provide the client by a detailed technical and financial proposal including the following:

- Definition of client needs.
- Proposed solutions.
- EcoSol scope of work.
- EcoSol fees and payment terms.
- Financial aid or support such as funds, grants or loans if applicable to the project.

EcoSol proposal will be submitted to you and explained in full details. Upon your approval on the proposal, EcoSol shall execute the proposal/contract in cooperation and coordination with the client team.

Finally, EcoSol discriminates itself from all other service providers by providing FREE technical support related to its finished work for one full year.

