



**entrust**  
planning for renewables



**Providing  
Renewable  
Energy Solutions  
Worldwide**

Solar PV – Wind – Hydro – Biomass

# Many areas across the world have inadequate grid electricity. At the same time, choosing diesel as the main power source has become increasingly hard to justify - both financially and environmentally.

To address this issue, Entrust Renewable Energy Ltd provides a cost effective off-grid or grid connected hybrid or single renewable energy technology solution wherever electricity is required; for agriculture, commercial, industrial, public sector including hospitals & health facilities, telecoms installations, towns, villages and community services. We can also develop rural electrification by way of a standalone renewable energy mini-grid system.

We can provide a complete end-to-end renewable energy solution; from initial feasibility of your facility/site, technical design of system, implementation and maintenance.

We provide a complete renewable energy solution in conjunction with our technology partners, which are world leaders in renewable energy technology; designed and engineered for total reliability, performance and after sale warranty/service.

## Entrust Renewable Energy Ltd Turnkey Solution

FEASIBILITY STUDY

TECHNICAL DESIGN

IMPLEMENTATION

MAINTENANCE





# THE CURRENT POWER DILEMMA

## Energy Costs

In the current economic climate, fossil fuel costs are escalating and organisations need to provide services to their customers at a competitive rate while governments are required to provide electricity for its citizens irrespective of the increased cost of energy. In order to maintain an energy supply to its customers, organisations have relied on diesel fuel and propane generators which require frequent maintenance, spare parts, continuous fuel supply, and high personnel and supply chain costs. Diesel costs for off-grid sites can be substantial and impacts on the overall operational cost. Our renewable energy hybrid solutions, integrates one or more renewable energy technologies which will dramatically reduce your fuel consumption and lower operating costs significantly.

## Reliability

Power failures caused by unreliable or incomplete power distribution can cause operational disruptions. Remotely located facilities with limited grid connectivity require more energy supply reliability and less maintenance. Our solution is a complete system designed to provide complete reliability of power supply.

## Inadequate Grid

In many rural locations, power grid is sporadic or completely unavailable, generator fuel supply capability is not always reliable, and generators and fuel storage tanks are targets for theft or vandalism.

## Regulatory Restrictions on Generators

Environmental agencies are increasingly restricting the use of fossil fuel generators as a source of energy because of noise and air pollution and this is set to increase in future.

# BENEFITS

Our off-grid renewable energy solutions provide a totally reliable, uninterrupted and continuous power supply 24x7x365 and it has the potential to significantly increase operating efficiencies, as well as meet or exceed stringent environmental requirements in the future.

Renewable energy is particularly well-suited for applications in remote areas, where electric grid service does not exist or is unreliable and the cost of a grid extension is too expensive.

In comparison with the cost of grid extension or the ongoing high costs of fuel delivery to remote locations, renewable energy can offer a number of immediate benefits to agricultural, commercial, community and industrial users.

Hybrid renewable power systems deliver efficiency that organisations seek in order to optimise their productivity and the hybrid technology system provides a significant breakthrough in operating costs and fuel efficiency by significantly reducing diesel fuel consumption or eliminating it completely depending on the type of technology used and maximising system reliability whilst being environmentally friendly.



# HOW A RENEWABLE ENERGY HYBRID SYSTEM TYPICALLY WORKS

1. Use any combination of wind, solar, hydro, biomass
2. Utilise an existing unreliable grid power source (if available)
3. Optimise battery power storage, charging and lifetime
4. Maximise the facility availability (telecoms example in this instance)
5. Supplement diesel generators with wind/solar renewable energy or replace a diesel generator completely with a fuel cell or other cutting edge renewable technology
6. Introduce a smart generator-battery hybrid power
7. Sophisticated Management Software for total power management, remote monitoring, control and ongoing optimisation



## CUSTOMIZED TO YOUR SPECIFICATIONS

We know that properly sizing the hybrid power system is critical to the success of your operation. Also meeting peak electricity demand whilst providing a competitively priced solution is a challenge that has to be balanced. So we will work closely with you to customize your system to your exact specifications.

We will design a tailored system, evaluating your electrical loads, the strength of the sun, wind, water course or other natural elements existing on site, and the price of fuel and delivery charges. We will give you the flexibility to choose the optimal renewable energy solution that meets your needs. We will analyse and provide you with the quickest payback period, minimum diesel consumption or eliminate diesel completely, longest maintenance intervals, or any criteria of your own choosing.

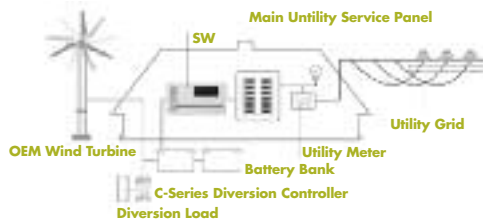
Our technology partners are world leaders in designing and providing proven hybrid system components to meet your electricity needs now and in the future. We offer an excellent after sales service and warranty.

### Our flexible suite of services includes:

- Detailed product specifications
- Expert system sizing services and dealer consultation
- Flexible configurations
- Project Management of complete end-to-end process
- Implementation & Commissioning of system
- After sale service, maintenance & warranty

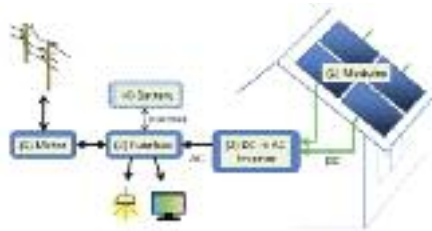
# RENEWABLE ENERGY TECHNOLOGIES

Once we have your site/premises details and electrical load requirements we will then choose the renewable hybrid solution to best suit your operational requirements from one or more of the following renewable energy technologies.



## WIND ENERGY

We can design a wind system (grid connected or off-grid) to meet your demand. Reliability of uninterrupted electricity supply is our main priority.



## SOLAR PV

Solar Power is the conversion of sunlight into electricity either directly using photovoltaics or indirectly using Concentrated Solar Power (CSP). Solar is by far the most suitable technology for a hybrid either on its own with or without diesel or together with another renewable technology.



## HYDRO

Hydro can be used for small scale operations up to very large scale ones and the use of this technology is dependant on the availability of an existing water course at or near the site.



## ANAEROBIC DIGESTION

Anaerobic Digestion is now widely used as a source of renewable energy. The process produces a biogas, consisting of methane, carbon dioxide and traces of other 'contaminant' gases. This biogas can be used as cooking fuel and the nutrient-rich digestate produced can be used as fertilizer.



## COMBINE HEAT AND POWER (CHP)

Integrated systems for combined heat and power (CHP) significantly increase efficiency of energy utilization, by up to 85%, by using thermal energy from power generation equipment for cooling, heating and humidity control systems.



## PORTABLE HYBRID SYSTEM

Electricity is typically generated by a portable photovoltaic generator, a wind generator and a back up generator. This solution may be used for a wide variety of uses off-grid such as telecoms sites, hospitals, villages etc. and can be deployed rapidly. A battery bank serves as energy storage device for weather periods with little wind and sun. All components can quickly be packed into the standard container and can be transported wherever needed.



# ENTRUST RENEWABLE ENERGY SERVICES

## **Renewable Energy Consultancy**

We are an independent consultancy and project management company specializing in renewable energy. We provide a wide range of services on various renewable energy projects including micro renewable hybrids and large scale projects such as solar parks and wind farms. We can provide advice at governmental level or for the private sector wherever there is a demand for electricity to choose the renewable energy technology and scale of project based upon a multitude of factors such as the electricity demand now and in the future, financing, existing grid capacity and site constraints.

## **Project Management**

We provide a complete end-to-end project management service from project initiation, design of system, implementation, commissioning, after sale service and warranty. We will recommend and agree our project or programme management strategy at the outset of each project so that your project is sufficiently resourced locally to meet the project needs in conjunction with our local partners and clients.

We provide an impartial service to choose your renewable energy system components from tier one manufacturers only around the world that have proven success and an excellent track record.

## **Customer Support Agreements (CSAs)**

CSAs are the most effective way of operating your hybrid power systems at peak performance. They greatly reduce the risk, disruption and loss of revenue caused by unscheduled downtime. And they ensure that your service, maintenance and repairs are performed by highly skilled professionals, giving you more time to concentrate on driving your business forward. Our CSA's are available for many years following the commissioning of your system if required.

## **Maintenance Contracts**

From analysis and assessment to the service agreements that take maintenance worries off your mind, we can supply the total support you need for maximum efficiency and peak performance.

## **Project Finance**

Entrust renewable energy ltd can assist in sourcing finance from the private sector or from public bodies such as UN, EU, World Bank where we have built up a strong network of contacts which can advise on what and amount of finance available depending on the project location, use and size.

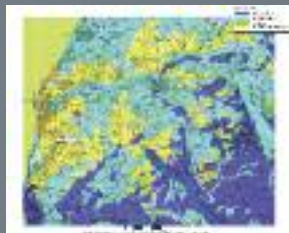
# CASE STUDIES

## Mixed Use Urban 10 Storey Development in Mumbai, India

The development consists of basement offices, ground level retail units including 2 banks and 9 storeys of residential apartments. The load assessment showed that the building had a peak load demand of 100.9 kWh. In order to meet the demand a PV-diesel-battery hybrid system was chosen. There were some major constraints when designing the system related to the area available and cost of electricity in this highly urbanised area where grid electricity exists.

## UK/EU GIS System for Renewable Energy Developments

Entrust renewable energy ltd has been awarded a prestigious project in conjunction with the Centre for Global Eco-Innovation which is a collaboration between the University of Liverpool, Lancaster University and Inventya a private sector organisation. Over the coming 3 years, Entrust will assist in the location of suitable onshore wind, offshore wind, solar PV and other renewable energy projects taking into account environmental and other constraints.



## UK & Ireland Onshore Wind, Solar PV & Telecoms

Entrust renewable energy ltd is one of the UK's leading renewable energy consultancies. Over the past 4 years Entrust has provided a consultancy service on over 275 Onshore Wind and Solar PV projects across the UK & Ireland in addition to providing a service on over 100 telecoms sites across Ireland. Through our efforts we have made an important contribution to cutting the UK's carbon levels and increasing its generation of electricity from renewable energy.



## Solar Parks & Wind Farms

Entrust Renewable Energy Ltd. has carried out a significant number of feasibility studies for solar parks and wind farms right across the UK. These desk and comprehensive field feasibility studies have covered; environmental, ecological, grid connectivity, peak/existing/future electrical demand, financing and site constraints and optimum siting options.



## Gambia - Village Hybrid System

We carried out a feasibility study for a village in Gambia that consisted of 57 houses, 19 community buildings, 4 offices, 1 night club and a cinema. The load assessment showed that the village's daily electricity demand was on average 191.624 kWh. Following the site's resource assessment we designed the hybrid system that consisted of a Solar PV array which was designed with a battery backup and diesel generator to provide a reliable electricity supply.



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