



Stand-alone Photovoltaic (PV) Solutions
Solar & Non-Conventional Energy
Industrial Supplies Division



Bhatia Brothers Group

Solar & Non-Conventional Energy - ISD

Solar & Non-Conventional Energy

There is now an increasing awareness of the impact of carbon emissions and their impact on global warming. This is resulting in countries taking initiatives to reduce their carbon footprint and corporates are also playing their part in trying to create a sustainable future.

In this context Bhatia Brothers has now launched a Solar & Non-conventional Energy Business Initiative. The aim of this initiative is to develop a profitable business in the renewable energy segment and contribute to reducing the impacts of global warming.

Solar PV systems are considered one of the most “democratic” renewable technologies, in that their modular size means that they are within the reach of individuals, co-operatives and small-businesses who have the leverage to own their power generation.

A PV system consists of PV cells that are connected together to form a PV module, and the auxiliary components (i.e. balance of system - BOS), including the inverter, controls, etc.

As energy demands around the world increase, the need for a renewable energy source that will not harm the environment has never been greater. Some projections indicate that the global energy demand will almost triple by 2050.

Using photovoltaic (PV) cells is one way to meet the need, converting sunlight directly into electricity with no moving parts and no harmful pollution. Although more conventional sources of energy, such as fossil fuels, are still satisfying the majority of the world's energy demand, PV systems are used in a great variety of applications. These applications may be grouped into two categories: utility interactive systems and stand-alone systems.



“I'd put my money on the sun and solar energy. What a source of power !! I hope we don't have to wait until oil and coal run out before we tackle that.”

Thomas Edison
(1847-1931)

Stand Alone PV Systems

Stand-alone systems can be explained as systems where the customer load is energized by photovoltaic panels and most of these loads would be independent from the Utility power. The power produced from the panels would be stored in batteries and thus can be used to power the loads.

Solar lighting Solutions

The availability of low power DC lighting and energy efficient LED lighting makes PV an ideal power source for meeting stand-alone lighting solutions. These applications for lighting range from lighting billboards, signs, public-use facilities, parking lots, street lanes and driveways.



PV Solutions for Telecom Tower



Most of the telecommunications network towers operate on Diesel Generators which consumes Diesel to generate power. These results in cost increase in the form of fuel consumption resulting in operating costs and increase in maintenance trips to the field.

By optimizing the usage of widely available renewable energy resource, Sun and thus reducing the operating hours of the Generator would substantially decrease fuel consumption, and maximize system reliability keeping a note that Solar Photovoltaics is cost competitive with Diesel power generation.

Signs and Signals

Critical applications which include highway signs, rail road signs, airport warning lights are in remote locations and is most cases is impossible to connect to the grid. These applications where the power consumption is low are most reliable on Solar PV Power.



Water Pumping Solutions

PV power is a profound solution for pumping water in different applications including remote village water supplies, irrigation and livestock watering. The solutions for water pumping can be categorized as direct systems which operate during the sun hours of the day and also the other system is designed such that water can be pumped and stored at an elevated storage tank and during day time and thus be used according to requirements. These systems avoid the usage of batteries which results in system cost and maintenance needs.



Solar PV Applications for Oil & Gas



Oil & Gas explorations are majorly in remote locations and these are in areas where utility power is unavailable. Solar power is the most reliable and cost effective power solution for monitoring systems of Oil & Gas equipment, cathodic protection and communications aspects of oil and gas exploration, particularly Remote Telemetry Units (RTU's) & Supervisory Control and Data Acquisition equipment (SCADA).

Remote Monitoring & Telecommunication System

Most of the scientific research and other remote applications occur in sites which are far away from conventional power sources. Thus PV Systems can primarily forms a power source to monitor weather information, high way traffic information, and irrigation control systems.

The automation equipments used in the Oil & Gas industry including gas flow meters, Remote Telemetry Units (RTU's) and Supervisory control & Data acquisition (SCADA) possess low power requirements. Vital data from well heads and valves are collected by the RTU & SCADA systems and is analyzed and control measures generated for enhancing the gas used for lifting the Oil. This makes Solar PV systems the suitable cost effective power source for monitoring of oil & gas equipments.



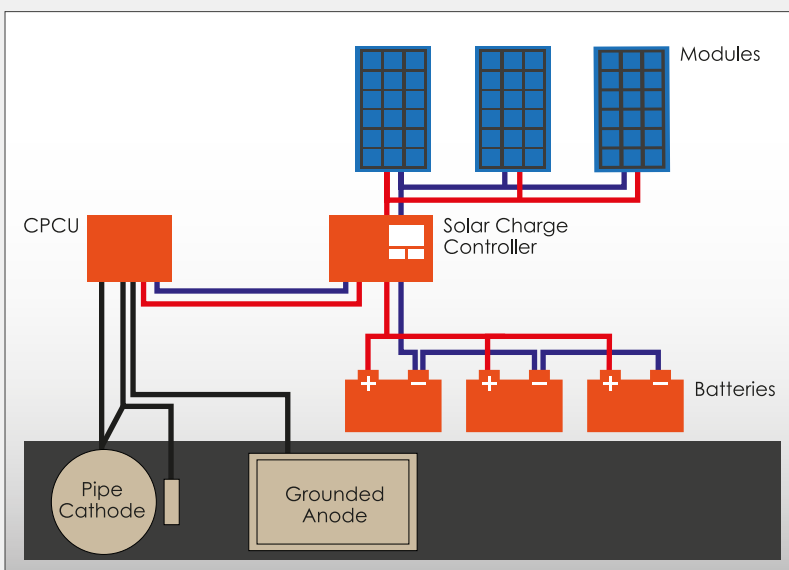
Chemical Injection Skids



Chemical injection skids are used for injecting a specific and precise quantity of chemical into a system at a required pressure and are in use in Oil & Gas applications. Solar PV Systems are the ideal power source for driving the pump of the skids in remote locations. The solar PV system is equipped with a battery bank to provide power in terms of low sun hours. These systems are well designed to operate in hazardous regions.

Cathodic Protection System

Safety is considered with immense care in the Oil & Gas fields and corrosion in the pipelines can lead to leaks. This is a controllable factor and cathodic protection which is an electrical method of preventing corrosion is best suited method. Impressed Current Cathodic protection which is widely used for corrosion protection to pipelines, offshore production platforms and underground storage tank systems require the use of an external DC power supply. Solar PV systems are the most suitable option for DC power supply.



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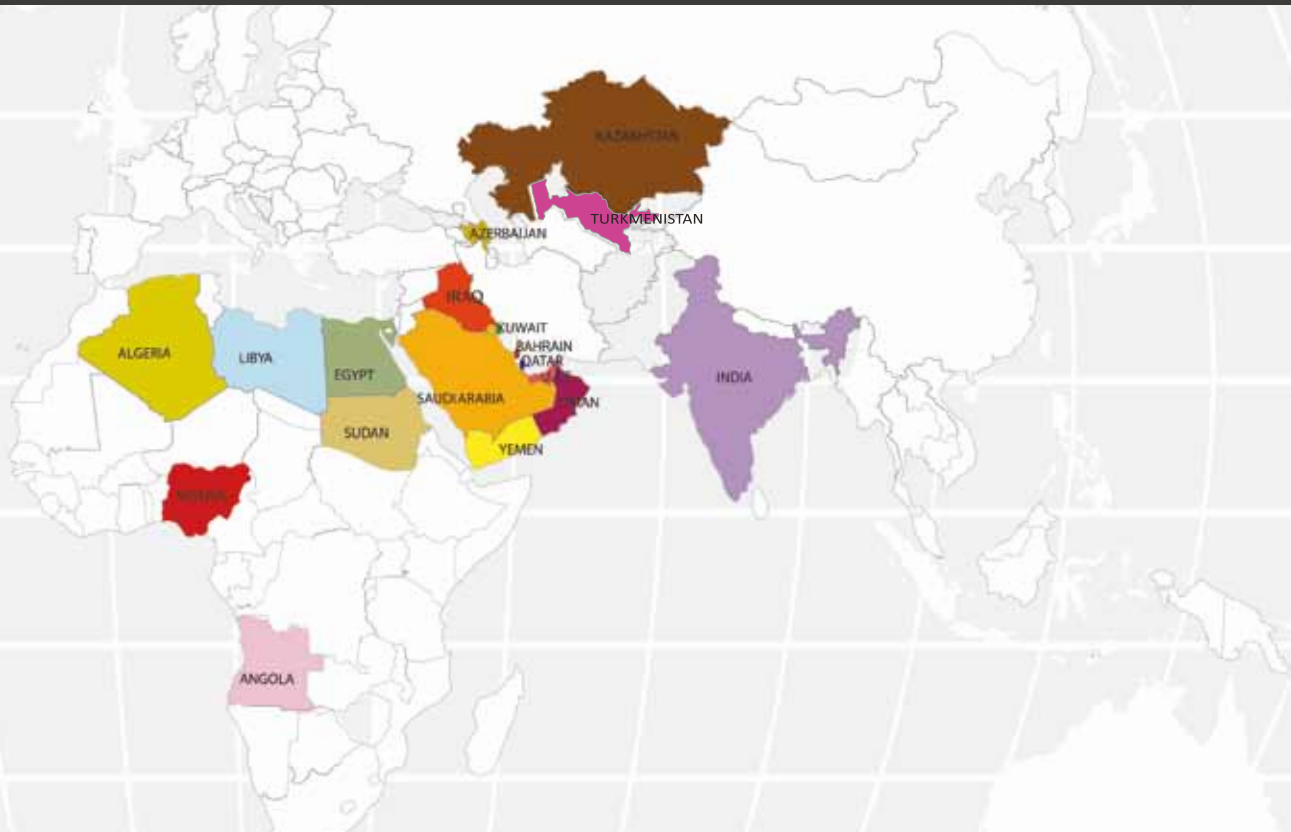
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