# Solar Water Pumping System

## CUSTOM SOLUTIONS

MEFIT

SOLUTIONS PROVIDER

o KHARTOUM o ROME o HOUSTON o LONDON

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# About MEFIT

- MEFIT is involved in a wide range of activities; from regional and urban planning, and complete design of a commercial or industrial center or a new city to energy projects.
- MEFIT's experience and expertise in consulting, engineering and project/program management is capable to construct an original overall approach to projects development.
- MEFIT wide network of Specialists provides to Government agencies or private developers, the expertise required to carry out Analysis, Feasibility Studies, Planning, Budgeting, Engineering and Designing, Tendering and Program/Project management.
- There is, an outstanding difference between the traditional consultancy approach and the philosophy adopted by MEFIT. The difference is immediately identifiable by the great importance MEFIT attaches to the local cultural aspects of the work at hand.
- Due to its modern organisation, MEFIT can provide answers to the most complex demands to the satisfaction of clients. The many clients are testimony to the magnitude and quality of MEFIT work.

**MEFIT is implementation** - from the first idea, possibly a simple line or colour hypothesis, to the completion of the smallest sophisticated detail, fit-for-purpose solutions produce an entire package of comprehensive design and implementation.

**MEFIT is dynamic** - it aims at the development of the potential creativity, energy and enthusiasm of a youthful staff, supported by experienced and skilful managers who represent the driving force of the company.

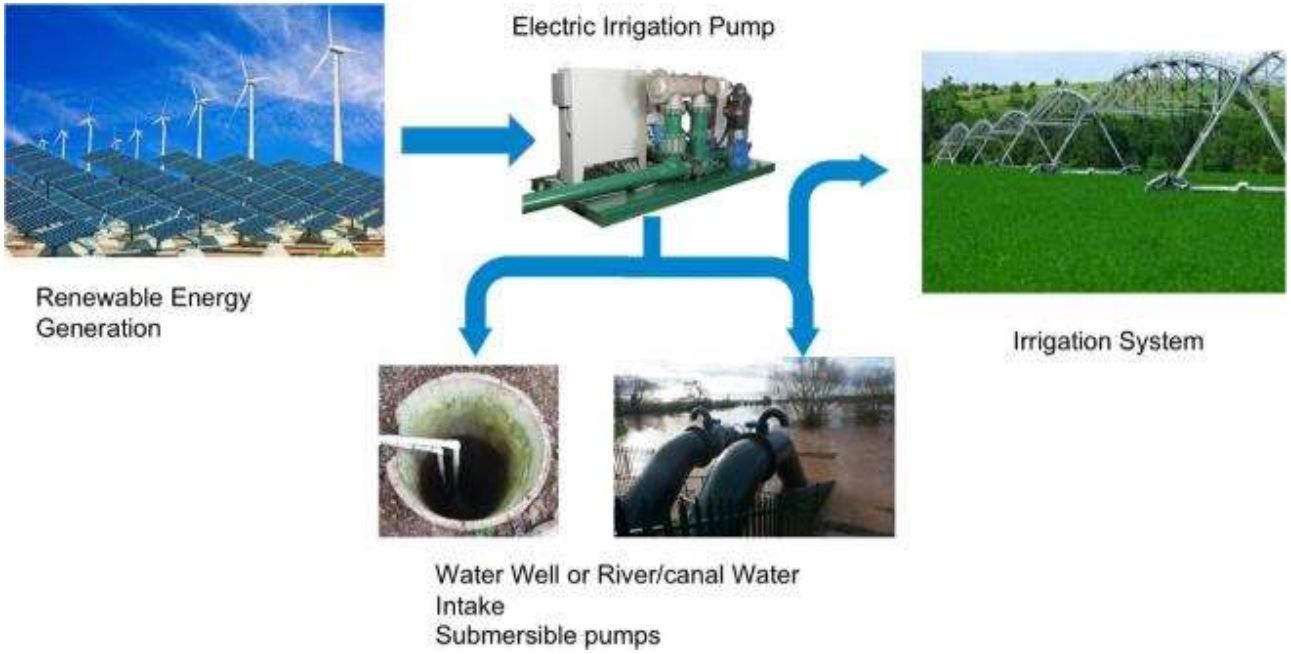
**MEFIT is agile** - know-how and organization bring the most compatible partnerships for any requirement. These qualities insure the commitment and the fulfillment of the project's objective.

# Water as a Resource

- Water resources are essential for satisfying human needs, protecting health, and ensuring food production, energy and the restoration of ecosystems, as well as for social and economic development and for sustainable development.
- Cost-effective pathways utilizing clean energy technologies such as solar energy would contribute significantly to the sustainable development of agricultural sector in these countries.

# MEFIT Approach

- MEFIT remote water pumping systems are a key component in addressing the great and urgent need to supply environmentally sound technology for the provision of water for domestic and agriculture use.
- MEFIT solar powered systems represents a cost effective, simple to install and easy to maintain solution for rural applications.

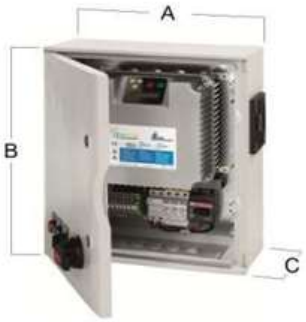


# Solar Water Pumping Systems

- A water pumping system needs a source of power to operate. In many rural areas, water sources are spread over many miles of land and power lines are scarce.
- Photo Voltaic (PV) systems are highly reliable and are favorable economic choice offering a low life-cycle cost.

# Solar Water Pumping Components

- Solar Panels
- Submersible Pump
- Surface Pump
- Inverter
- Control System
  - LCB
  - MPPT
- Accessories
  - filters, valves, and strainers, as well as dry run, float switches and more.




# Solar Water Pumping Components

**Photo Voltaic (PV) Panels -** are made of semiconducting materials that can convert sunlight directly into electricity. Poly-crystalline solar panels very well in hotter areas, are lower in price and satisfy most needs.

**Inverter -** converts the variable direct current (DC) output of a photovoltaic (PV) solar panel into a utility frequency alternating current (AC)

**Maximum Power Point Tracking (MPPT) -** to get the maximum possible power from the PV array.

**Linear Current Boosters (LCB) -** allow the pump motor to run longer during the day by translating additional voltage to necessary current during periods of low sun.

**Submersible Solar Pumps -** can lift up to 200 m (656 feet) and fit in a 4" or larger well casing and are used when the water supply is deeper than 6 m (20 feet) from the surface.

**Surface Solar Pumps -** are good for applications with shallow wells, ponds, streams or storage tanks.

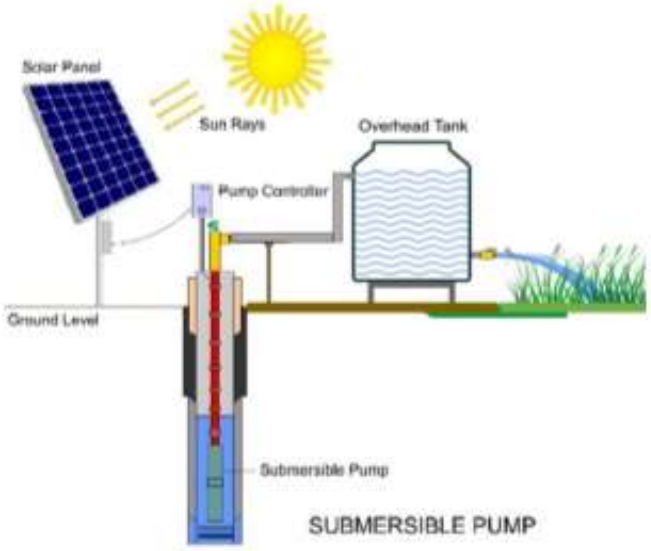
# MEFIT Solution

- MEFIT provides the optimum solution for each pumping requirement.
- MEFIT designed, supplied and installed standard or custom solar powered water pumping systems are reliable, cost effective and easy to maintain.
- MEFIT utilizes established quality suppliers from USA, Europe, China and India to provide solutions that meet all needs and financial availability.

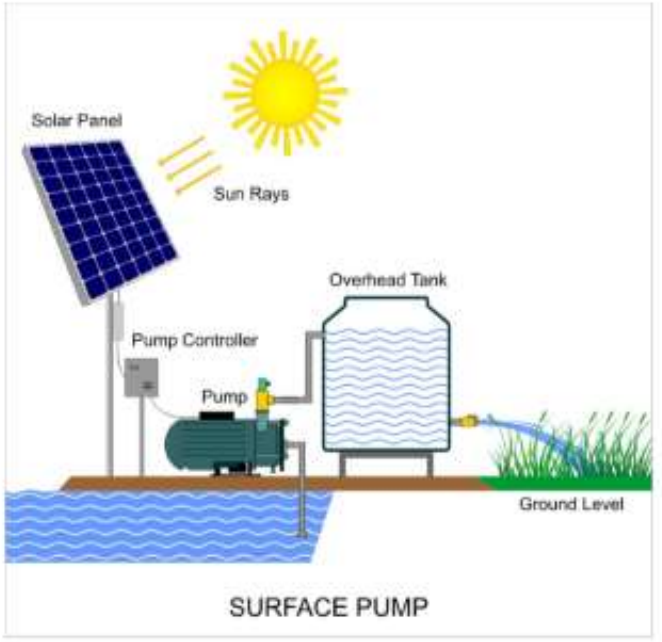
# MEFIT Solution

## Two basic configurations:

**Submersible Pump**
Water supply is from a well




**Surface Pump**
Water supply is from a river or canal




In both cases water is pumped to a reservoir and from there distributed through gravity or using a booster pump, also solar powered.

# MEFIT Solution

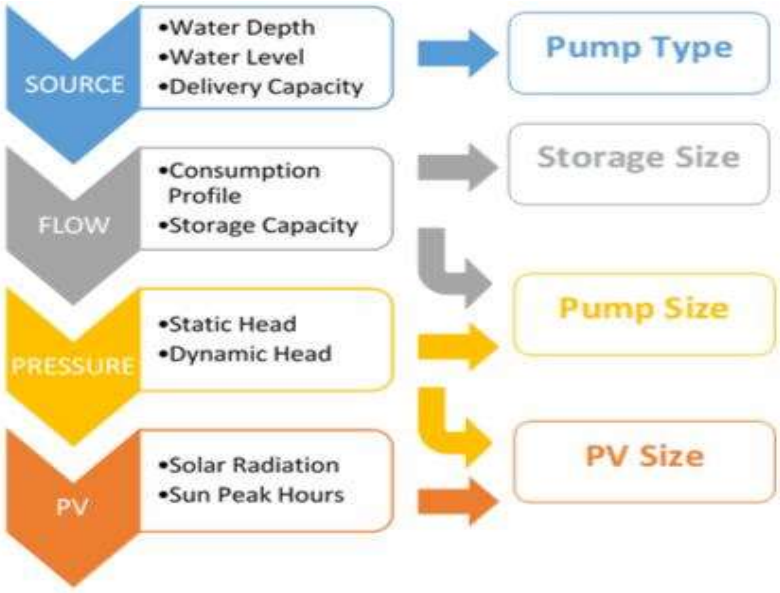
## Systems Specifications:

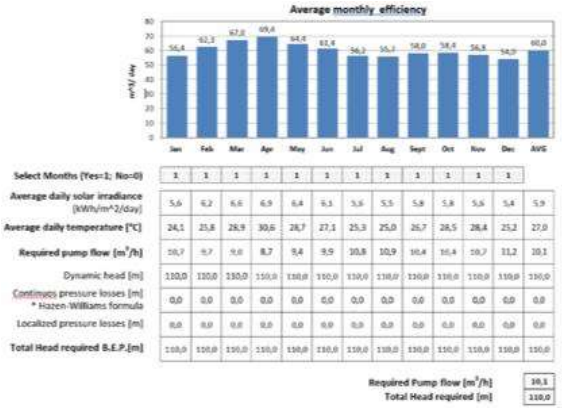
| Parameters | Supply Range |
|---|---|
| Flow rate | 0.5 – 50 m3/hr (2.2 GPM – 183 GPM) |
| Total Dynamic Head | Up to 200m (650ft) |
| Power | 2 KW - 22 KW (3.7Hp - 30HP) |
| Motor Types | AC or DC |
| Control Systems | Pump Protection, MPPT, LCB |
| Operation Modes | Manual to Fully Automatic |
| Solar Panels | Poly-crystalline |

# MEFIT Solution

**Effective Execution Method**

- MEFIT provides global technical expertise and flexible execution from the conceptual stage to the full implementation stage meeting clients' requirements in an effective and efficient manner.
- MEFIT planned and systematic approach guarantees the required uninterrupted system performance. In the event of a system malfunction, troubleshooting promptly restores functionality.
- MEFIT approach, as a matter of fact, can also be applied to existing systems to rapidly identify cost effective permanent solutions.



# MEFIT Solution

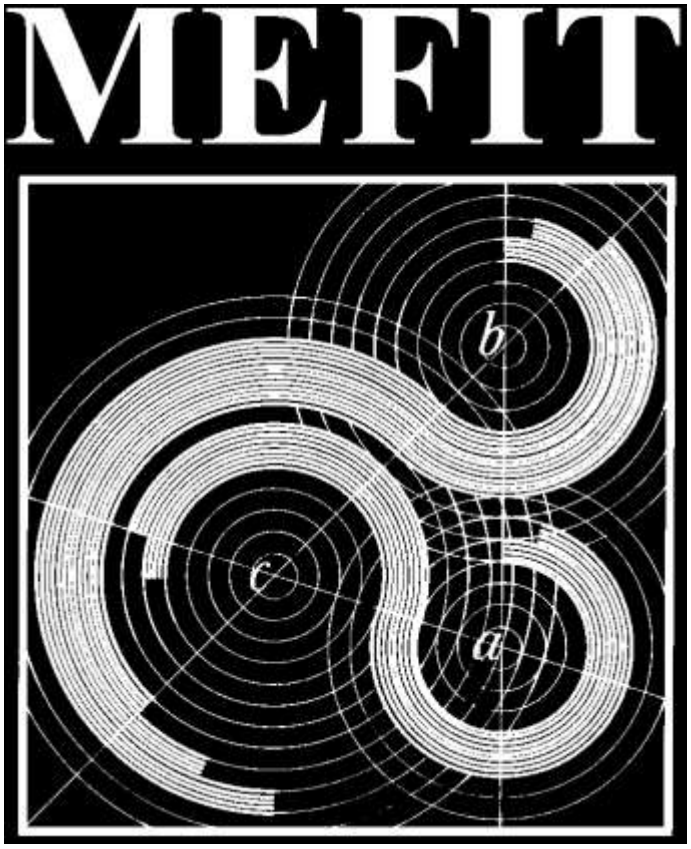
**Project Management**

Business Plan, Execution Plan, Master Budget, Master Schedule, Notification to Authorities, Contracting Strategy, Project Reporting, Project Reviews, Document and Manage Issues, Interface Management, Project Completion and Hand Over Strategy and Implementation, Training Program

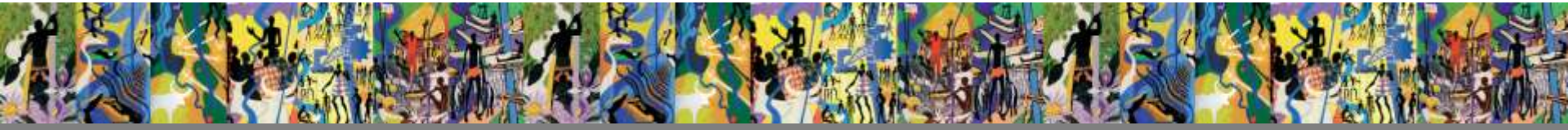
| Development | | Evaluation | | Implementation | |
|---|---|---|---|---|---|
| Project Concept | • Basic Operation, Logistics, Conceptual Planning, Market Research, Future Program Planning, Feasibility Study, Technology Selection. | Studies & Evaluation | • Feasibility Studies, Permitting, Case Studies, Optimization Studies, Technology Integration. | Detailed Engineering | • Detail Design, Equipment Selection, Vendors List |
| Master Planning | • Site, Capacity Determination, Basic Data, Master Schedule, Manning Schedule, Budget Estimation, Other Client's Requirement. | Basic Design | • Process Design, PFD, P&ID's, Equipment Design, Heat & Material Balance, Preliminary Bill of Quantities. | Procurement | • Procurement Detail Schedule, Vendor Selection, Purchase Order, Machine/ Equipment Fabrication, Inspection. |
| Finance Planning | • Investor Research, Official Development Assistance, Export Credit Agency, Offtake & Sales Assistance. | Cost Estimate | • Develop TIC Estimate, Engineering to Support Estimate, Material Take Offs, Budgetary Quotes. | Construction Management | • Construction Detail Schedule, Temporary Work, Selection of Contractors, Selection of Fabricators, Quality, Safety, Cost, Schedule Control, Inspection. |

# Conclusions

1. MEFIT has the expertise and know how to understand not only the technical aspects and the international reach to provide the optimum solution in a cost effective manner.
2. MEFIT is the ideal partner when addressing water requirements for large single or multi-crop farms, with or without animal rearing, since MEFIT proven Program Management approach will provide the optimum solution for the entire lifecycle of the investment.
3. MEFIT is the ideal partner because of its unique organization to provide the highest quality services and products at the most cost competitive value.





# Thank You!