Presentation on Solar Pumping

ALSA

نحصد الشمس!

Harvest the Sun!

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In cooperation with

LORENTZ

Sun. Water. Life.

About ALSA Solar

- ALSA Solar, part of ALSA Technical Services & Supplies & the esteemed Al Sayegh Brothers Group, is a reputed UAE based Solar EPCM with offices in Abu Dhabi (Masdar City) and Dubai (TECOM).

- **Services (OnGrid + OffGrid) include:**
  - Site survey and resource estimation
  - Proposal generation – System design & specification
  - Worldwide sourcing from category leading vendors
  - Installation & Commissioning
  - Annual maintenance & allied after market services

- **Additional Activities:**
  - Solar Parking Structures (Carports)
  - **Solar Pumping**
  - Solar Water Heating
  - Solar DC AirConditioners
  - Solar Street Lights
  - Solar Light Tower
  - Mobile Solar Generator
  - Trading

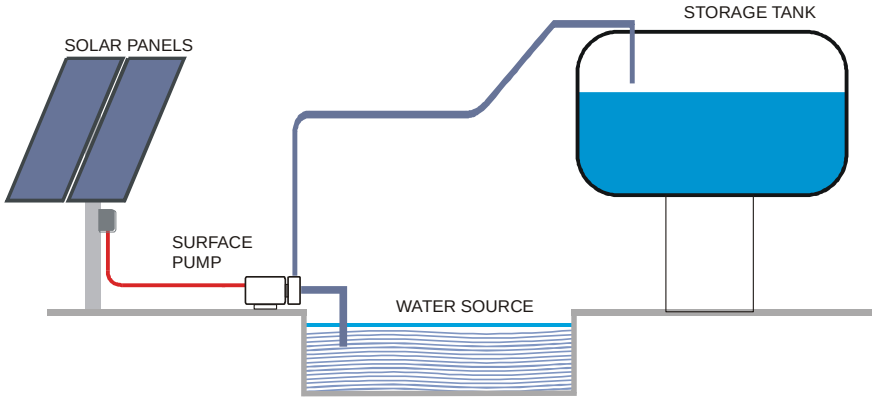
About LORENTZ - Company

- Headquarters / Engineering in Germany
- Activities: Engineering, designing and manufacturing of:

- ISO 9001 certified
- Experienced in >120 countries.

Solar Pumping System Schematic

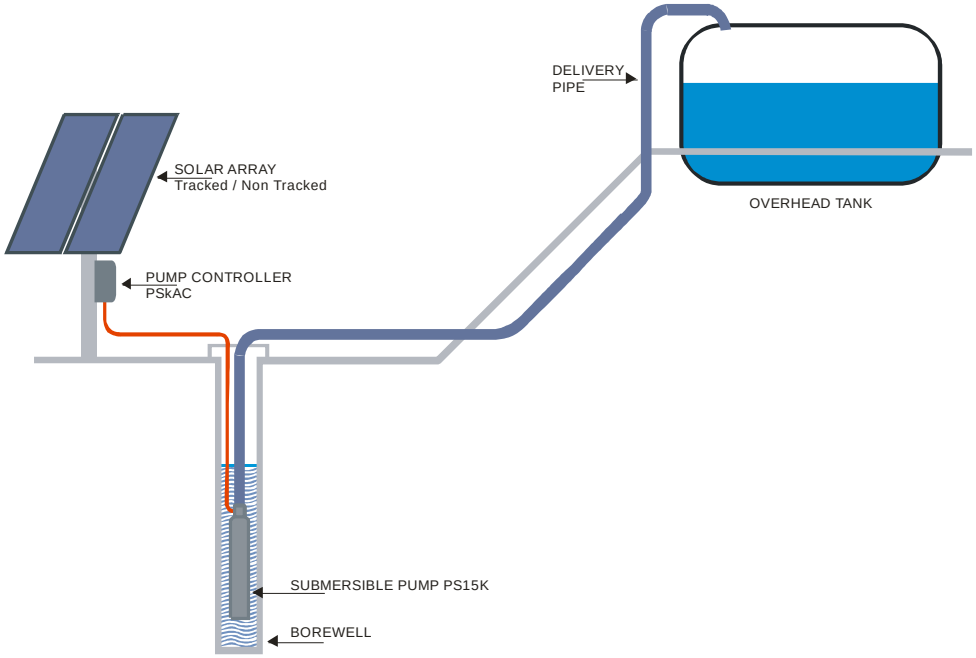
Surface Pump



Advantages

- **Low cost of ownership**
- **Quick Installation**

Submersible Pump

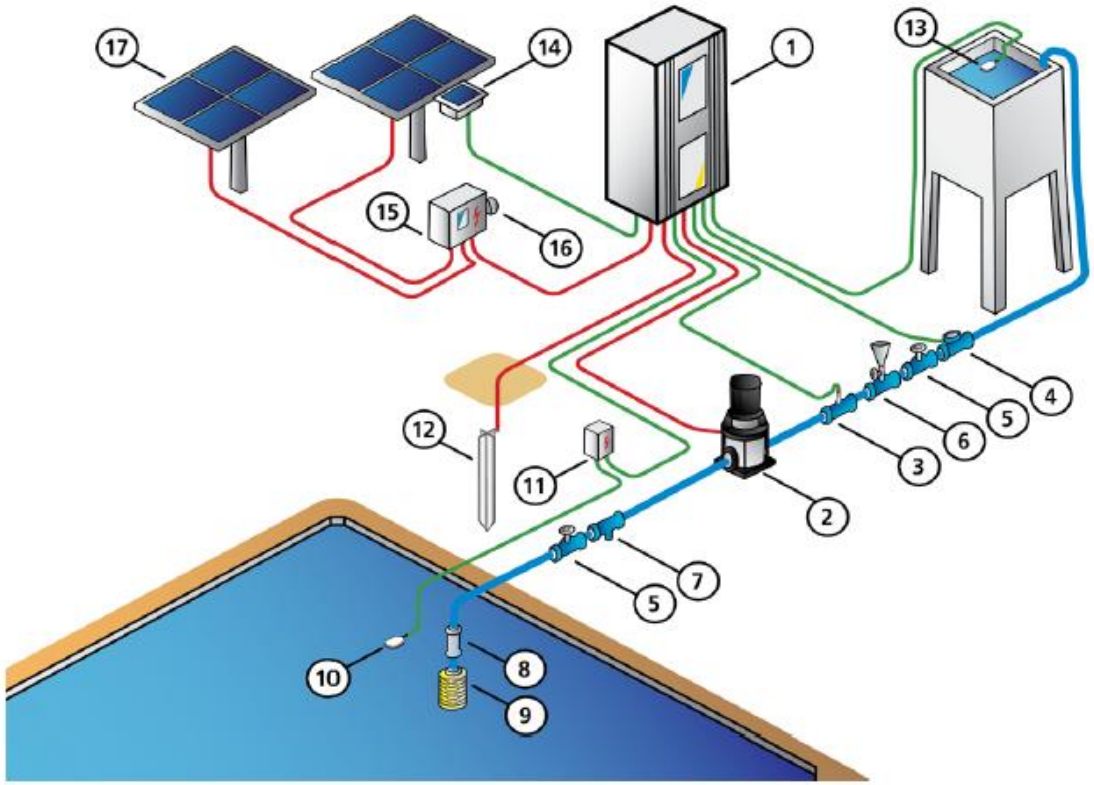


Advantages

- **Modular Design**
- **Low Maintenance**

Solar Pumping System - Surface

System Layout

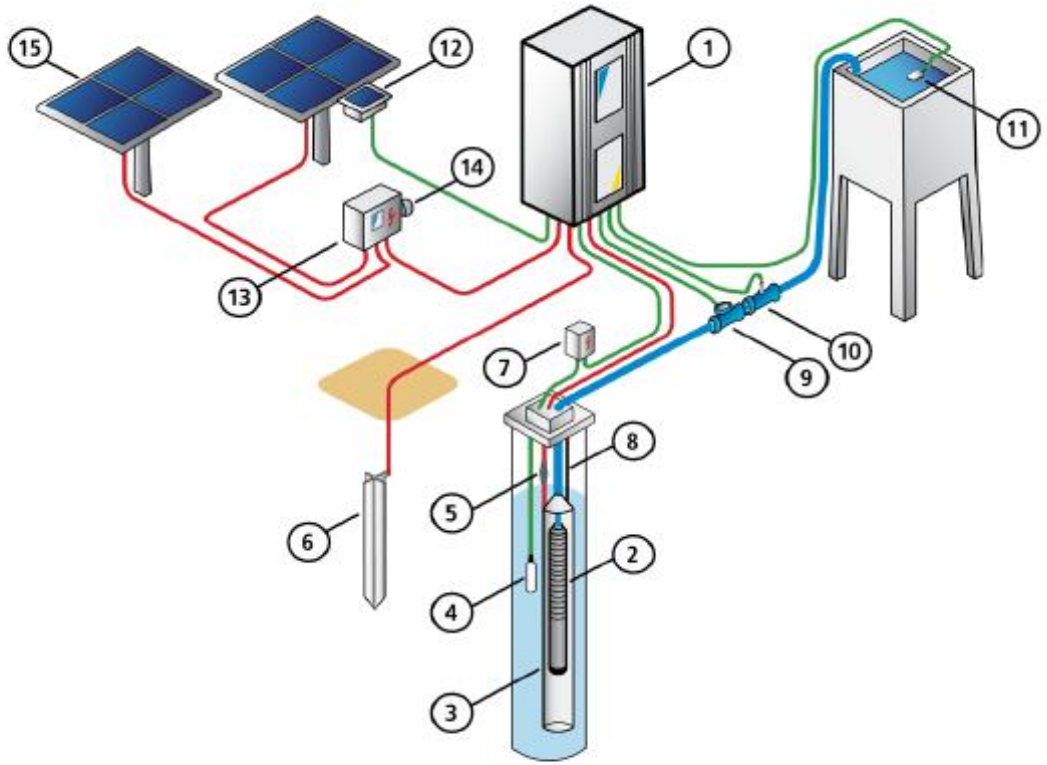


1: PS Controller	11: Surge Protector*
2: Surface Pump	12: Grounding Rod
3: Pressure Sensor	13: Float Switch
4: Water Meter	14: Sun Switch
5: Gate Valve	15: PV Disconnect
6: Filler	16: Lightning Surge Protector
7: Strainer	17: PV Generator
8: Nonreturn Valve	
9: Filter Cage	
10: Float Switch for Well Probe	

*It is recommended to install a Surge Protector at each controller sensor input.

Solar Pumping System - Submersible

System Layout



1: PS Controller	11: Float Switch
2: Submersible Pump	12: Sun Switch
3: Stilling Tube	13: PV Disconnect
4: Well Probe	14: Lightning Surge Protector
5: Cable Splice Kit	15: PV Generator
6: Grounding Rod	
7: Surge Protector*	
8: Safety Rope	
9: Water Meter	
10: Pressure Sensor	

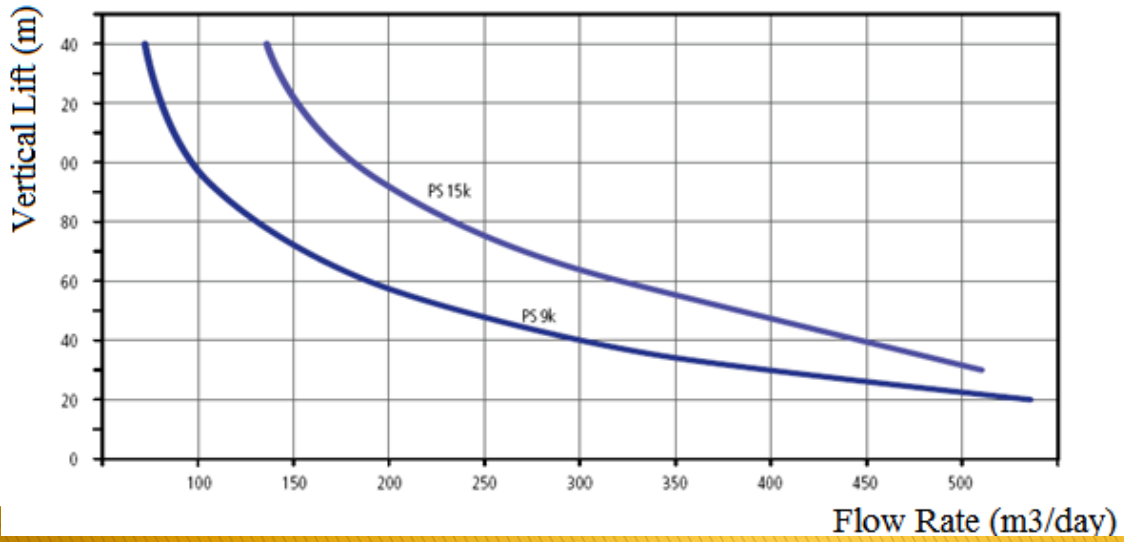
*It is recommended to install a Surge Protector at each controller sensor input.

Solar Pumping – Product Range

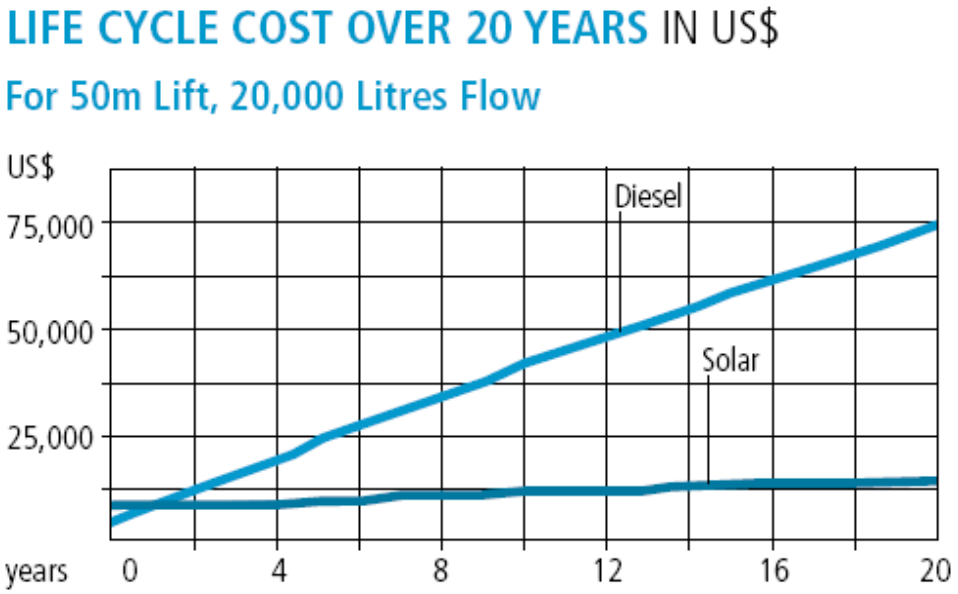
- Submersible Pumps → 0.15 to 21 kW
- Surface Pumps → 0.15 to 1.8 kW

Pump Range	Lift up to (meter)	Flow up to (cbm)	Flow per day (8.5 hrs/day*)	PV Power (Wp) Solar Generator
PS150 C	20 m	3.1 cbm / h	26 cbm / day	500 Wp
PS 200 HR	50 m	2.9 cbm / h	25 cbm / day	200 - 500 Wp
PS 600 HR/C	180 m	14.5 cbm / h	123 cbm / day	400 - 1500 Wp
PS 1800 HR/C	250 m	68.8 cbm / h	585 cbm / day	500 - 3000 Wp
PS 4000 HR/C	450 m	109.6 cbm / h	932 cbm / day	5000 - 7200 Wp
PSk Series	200 m	312.4 cbm / h	2655 cbm / day	11000 - 65000 Wp

*with solar tracker



Case study:
Comparison Diesel vs. Solar pumping

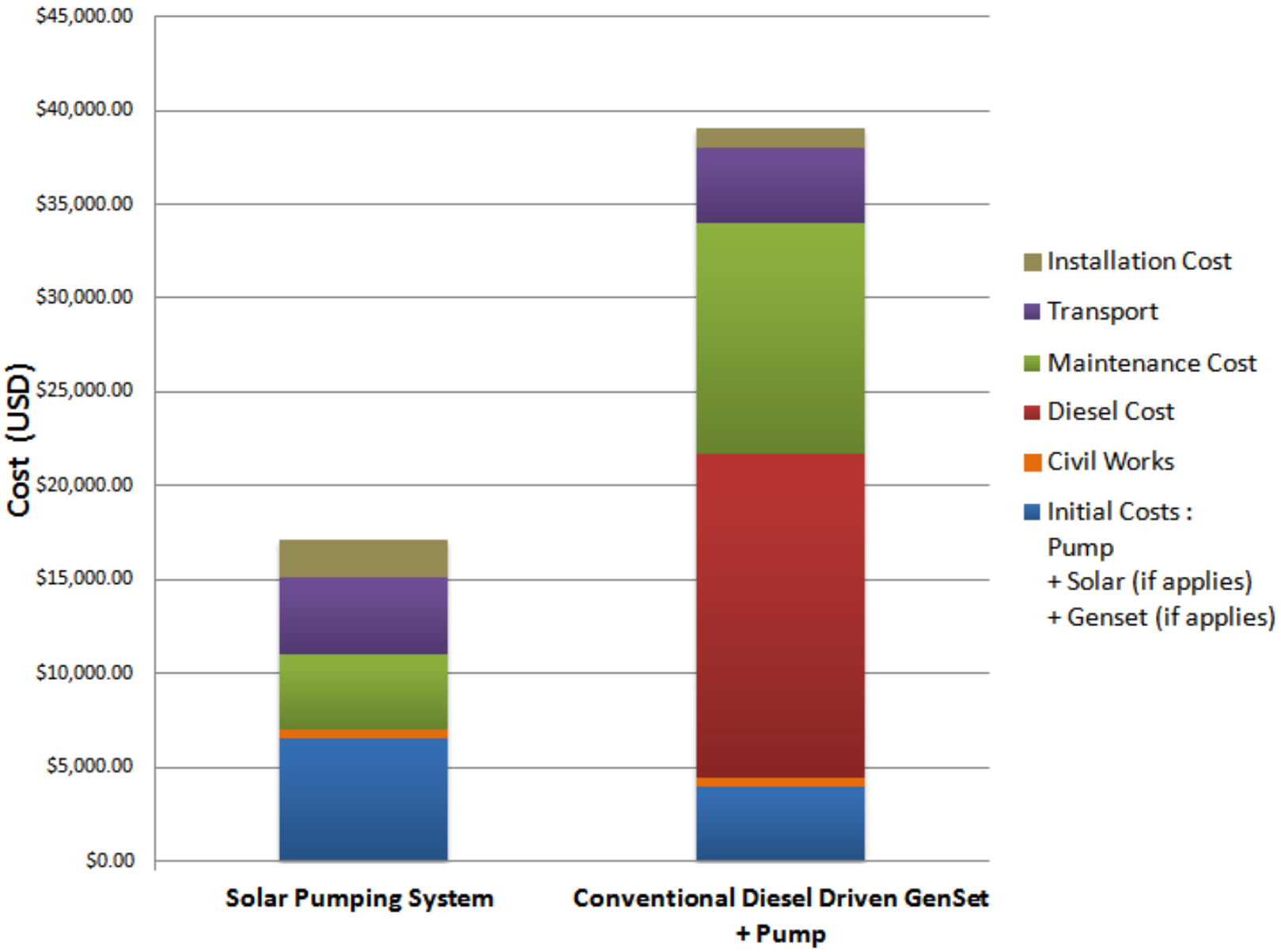


- **Solar panels have no moving parts**; most have a **warranty of at least 20 years**.
- **No fuel deliveries**, and **very little maintenance**.
- Most solar pumps operate **without the use of storage batteries**.
- **Water tank ➔ simple, economical means of storage**

CONCLUSION:

Solar pumps offer a clean and simple alternative to fuel-burning engines and generators for domestic water, livestock and irrigation.

Commercial Comparison Over 5 Years
Solar Driven Pumping vs. Diesel Driven Pumping



Solar Pump Sizing

Daily output in average month **44 m³**

Daily values	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Av.
Output [m³]	42	45	45	46	46	45	42	43	45	46	44	40	44
Energy [kWh]	8.8	9.8	9.5	10	10	9.7	8.9	9.2	9.8	10	9.5	8.2	9.5
Irradiation [kWh/m²]	5.4	6.2	6.1	6.6	6.8	6.6	6.0	6.3	6.6	6.7	6.1	5.1	6.2
Rainfall [mm]	0.63	1.0	1.0	0.23	0.067	0	0.10	0.067	0.033	0.10	0.20	0.60	0.33
Ambient temp. [°C]	20	21	24	28	32	34	35	35	33	29	26	22	28

Hourly values	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Output [m³/h]	0	1.4	3.2	4.5	5.2	5.3	5.3	5.2	5	4.4	3.1	1.4	0
Energy [kWh]	0.031	0.28	0.60	0.89	1.1	1.2	1.3	1.2	1.1	0.86	0.58	0.27	0.030
Irradiation [kWh/m²]	0.019	0.17	0.37	0.57	0.72	0.82	0.86	0.82	0.72	0.57	0.37	0.17	0.019
Ambient temp. [°C]	23	23	24	26	28	30	32	33	33	33	33	32	32

Example – Performance of PS1800 C-SJ5-12 –D Submersible Solar Water Pump in Dubai, UAE

Solar Pumping Case Study – Case 1

Project	PROJECT : Solar Water Irrigation Systems SOLUTION: 200 Wp water pump SITE : Dubai, UAE – Remote desert site No access to electricity
Scope of work	Supply, installation and commissioning of 320 Wp solar panels, water pump, power back up system
Highlights	• Robust system design • System works without any user intervention • Number of systems installed: 20+ • Payback within 3 months !!
Specifications	• Solar Panels: 4 x 80 Wp • Battery bank: 24 V 300 Ah, Maintenance free AGM • Charge controller, Inverter • Pump: 200 W submersible pump
Performance	• System in operation since August 2009 • Minimal Maintenance

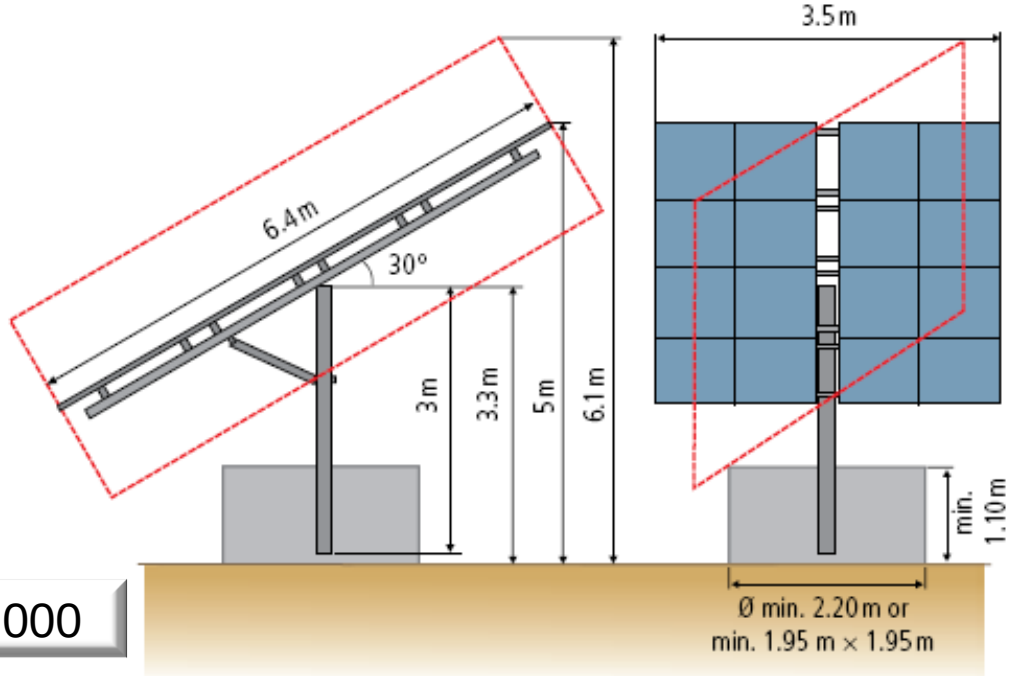
Solar Pumping – Case 2

PS15K pump

SYSTEM PROPOSED:

Location:	**UAE**
Application:	Drip Irrigation
Pump:	1 x PS15K C-SJ95-2
Trackers	8 x ETATRACK 2000 A
Vertical Lift:	20.0 m
Flow Rate:	951 m^3/day
Source:	Lake / Holding tank
Solar PV:	21 kWp
Space required:	768 m^2

ETATRACK 2000



Location:	**Egypt**
Application:	Flood Irrigation
Pump:	PS1800C-SJ17
Vertical Lift:	5.0 m
Flow Rate:	250 m^3/day
Source:	Well
Solar PV:	1.4 kWp

Location:	**India**
Application:	Flood Irrigation
Pump:	PS1800C-SJ17
Vertical Lift:	30.0 m
Flow Rate:	500 m^3/day
Pipe Lenght:	1700 m
Solar PV:	14 kWp

Location:	**Bangladesh**
Application:	Flood irrigation
Pump:	PS9K SJ42-4
Vertical Lift:	15.0 m
Flow Rate:	450 m^3/day
Source:	Water course
Solar PV:	12 kWp

Other projects …

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Syria
Flow Rate: 155 m^3

Syria
Flow Rate: 110 m^3

Gambia
Flow Rate: 120 m^3

Cambodia
Flow Rate: 60 m^3

Australia
Flow Rate: 80 m^3

Cyprus (North)
Flow Rate: 95 m^3

Gambia
Flow Rate: 180 m^3

Pakistan
Flow Rate: 92 m^3

Tunisia
Flow Rate: 115 m^3

Malaysia
Flow Rate: 54 m^3

Egypt
Flow Rate: 100 m^3

Australia
Flow Rate: 140 m^3

Contact Us

For further details, additional information & clarifications please contact us:

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Thank You

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