

PROFESSIONAL SENIOD SOLAR PUMP SOLUTION OFFER

Sizing a Solar Pump System:

Step 1: Determine whether a submersible pump or a surface pump is best. This is based on the nature of the water source. Submersible pumps are sometimes suitable for either deep well or surface water sources. Surface pumps can draw water from only 20-25 feet (7-8 m) below ground level, but they can push it far uphill.

Step 2: Determine how much water per day is required for your application.

Each person, for all purposes, requires	75 gallons per day (GPD)
Each Milk Cow requires	35 GPD
Each Cow calf pair requires	20 GPD
Each Horse, Dry Cow, or Beef Animal requires.....	15 GPD
Each Sheep requires.....	2 GPD
Each Hog requires.....	4 GPD
Each 100 chickens requires.....	4 GPD

Gallons per Hour = Gallons Per Day divided by Available Peak Sun Hours per Day

Gallons per Minute = Gallons per Hour divided by 60.

1 Gallons = 3.785 Liter.

Peak Sun Hours refers to the average equivalent hours of full-sun energy received per day. It varies with the location and the season. For example, the arid central-western USA averages 4-6 peak hours in summer, and dips to as low as 2 peak hours in mid-winter. Five hours is a good average figure for summertime pumping applications but to get a more accurate calculation, refer to the sun hour table at <http://rredc.nrel.gov/solar/pubs/redbook>.

Example: To calculate water per day required by 50 Cows with Calves:

Multiply 50 X 20 = 1000 Gallons per Day

To get gallons per hour, divide 1000 by 5 = 200

To calculate gallons per minute, divide 200 by 60 = 3.33 GPM

Therefore, to water 50 cows with calves you will need a system that produces 3.33 gallons per minute for an average of 5 hours each day.

Step 3: The most important question you need to answer is whether or not your water source will produce enough water to supply the application and the pump system. If the water source is a well or a stream and recovery or flow rate is not known, a pump test may be required to determine whether or not the source will produce enough water to supply the pump system and water delivery requirements.

What was the production rate (GPM) during pump testing? Pump Test GPM = _____.

Step 4: Determine which system best fits the application:

A. If the application is a well, measure the well depth. Total Depth (TD) = _____ feet.

B. Water Levels: Vertical head _____ + Distance from well to tank _____ (See C. Item)

C. If the water delivery point is far from the water source, refer to the pipe sizing charts to determine which pipe size is required for the application flow rate. Also, determine the elevation difference between the water source and the delivery point and add the elevation difference to the total lift requirement.

D. What is the Inside Diameter of the well casing pipe? _____ inches.

Small well casing sizes may prevent the use of some solar pumps.

E. Refer to the SD SOLAR's pump sizing charts and select the system that will perform best for this application.