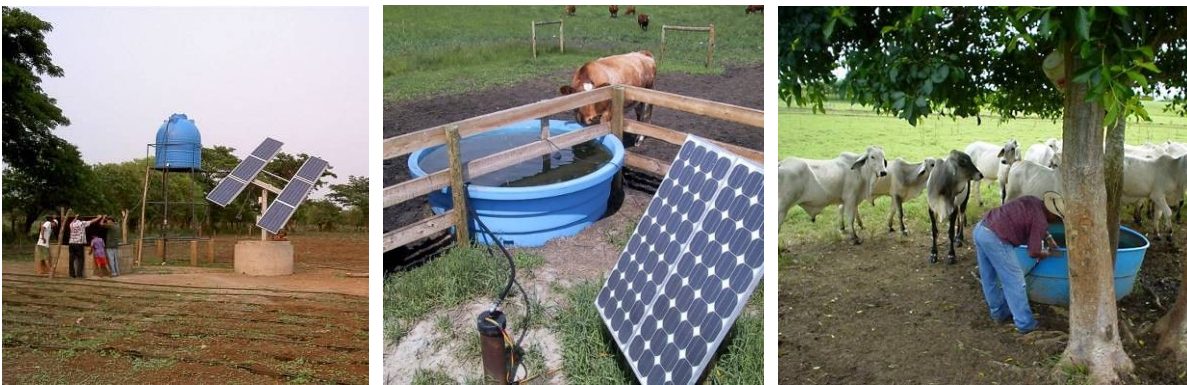


# Project Proposal

## Topic: Livestock Watering – Water for Animal Husbandry

### Introduction

In many regions livestock is the main or even only form of agricultural production. This is true especially for arid and semi-arid zones, such as grassland areas. These are often based on labour-intensive family businesses run as mixed farming system. Besides many smallholders and families have animals for home and local consumption, mainly poultry and small animals like goats and rabbits.



LORENTZ pumps provide water for cattle and other farm animals, independent of weather conditions

Meat, milk and eggs are a vital part of the family diet. They are particularly important to improve the nutritional situation of children. Together with side products like fur, feathers, skin etc. they also amend the household income through small-scale trading etc.

**Water is one of the most important factors next to alimentation for efficient animal husbandry and rearing. For successful maintenance of a healthy stock, it is obligatory to have clean water in sufficient quantity available at any time. Particular for breeding water is crucial.**

### Water supply and Pumps

Providing a stable water supply is at the core to ensure good living conditions as well as the framework for successful business and agricultural development. Two sources are common:

1. **Rivers and ponds** can provide water, but the availability of water can change during season and the time of the year – and sometimes dwindle in summer, when it is most urgently needed. Also, these sources might be at considerable distance from people’s dwellings or the pasture of the animals.
2. **Drilled wells** are costly to develop, but give a more stable water supply. Ground water is normally fresh and no contaminated.

Pumps are used to lift and transport the water to where it is needed – sometimes over substantial distances. Earlier wind and hands pumps were used, but their applications are very limited and not reliable. They cannot

be transported easily and need regular maintenance of the mechanical parts. Later diesel-operated pumps came into use, but their popularity is in decline due to rising fuel prices, the cost of spare parts for maintenance, the need to transport fuel to the system's location and the noise and pollution they cause.

Since the 90s solar pumps have been developed and reached technological maturity. They are successfully tested and used for many years in various parts of the world. Despite their higher initial cost, solar-operated pumps are an economical alternative to the widely used diesel-operated pumps. The breakeven point is usually reached after 2-4 years only.

Especially solar-operated submersible pumps have proven to be the solution for remote areas with no connection to the electrical grid. The electric energy is produced by a set of PV modules during daytime. This renewable, cost-free energy powers the submersible pump which is controlled and optimized by a pump controller on top of the well. With a battery system attached, the pump can also run at night and provide electricity for some small lamps, a radio and a telephone charger by the side. The whole system operates automatically. It is protected by a tank float switch as well as a low water well probe.



Simple installations provide stable, efficient water supply

Solar pumps can push your water through plastic pipes over long distances. A combination of lift and pressure pumps powered by sun are common. The water is normally stored in a reservoir or tanks. With gravity-feed pipes you can serve several outlets with only one pump. If your cattle are moving, you make your solar pump system mobile and follow your animals with only one pump set. This also allows you to put the system aside in winter or for protection.

## LORENTZ Solar Pumps

All LORENTZ solar pump systems are designed to serve your need for a stable water supply in remote and rural areas. Motors and pump ends are made for operation far away from streets and roads, where experts are not available for setup and frequent service. LORENTZ provides rough and reliable tools with a high life expectancy that are easy to install and need no maintenance.

LORENTZ solar pumps are highly efficient and especially constructed for solar operation – they work as long as there is some daylight, also on cloudy days. They do not need full sun shine. Rather than stopping, they still provide water at a reduced flow rate. Pumping time is approximately 8h per day or more, depending on season and latitude of the system location.

LORENTZ solar pump system consists of three components only:

1. solar generator
2. pump controller
3. submersible pump

For easy repair and service all parts are interchangeable. The cabling and pipe connections are straight forward – no need for an expert for installation. Refer to your manual, available in e- & print form, besides English also in other languages.

The sizing of the solar generator and the pump selection follows a standard procedure using simple tables and diagrams as well as a software programme. The LORENTZ team supports you in choosing the right device for your individual situation.



LORENTZ systems are installed in more than 100 countries all over the globe

## Examples for a LORENTZ Solar Pump System

Like all other pumps, LORENTZ solar pumps are also defined by the vertical lift [H, measured in metres] that must be coped with and the water volume pumped up [Q, measured in m<sup>3</sup>/day]. The following examples show standard demands and pumping solutions in livestock watering.

### Example A

**Model:**

PS 1200 HR-07 with a 660 W(p) solar generator, 72-96 V DC  
(fixed mount, no tracker)

**Output:**

Volume [Q] = 8.5 m<sup>3</sup>/day at a lift [H] = 60 m



**With 8,500 l per day you can provide water for the following number of animals:**

Animal	Liter per day range / average*		Quantity of animals
Milk cows	80–150	110	75 pc
Cattle	45–80	65	130 pc
Sheep	5-15	8	1.050 pc
Pigs	2-10	7	1,200 pc
Chicken	0.2–0.3	0.25	34,000 pc

\*) Figures for water consumption are average values and can greatly differ depending on location, season and concrete composition of the flock, e.g. the number of lactating or child-bearing animals, the type of species, the distance between standpipe and pasture etc.

See [http://www.lorentz.de/pdf/lorentz\\_waterconsumption\\_en.pdf](http://www.lorentz.de/pdf/lorentz_waterconsumption_en.pdf) for details.

### Example B

**Model:**

PS 200 HR-07 with a 200 W(p) solar generator, 36-48 V DC  
(fixed mount, no tracker)

**Output:**

Volume [Q] = 6.5 m<sup>3</sup>/day at a lift [H] = 25 m



**With 6,500 l per day you can provide water for the following number of animals:**

Animal	Liter per day range / average*		Quantity of animals
Milk cows	80–150	110	60 pc
Cattle	45–80	65	100 pc
Sheep	5-15	8	810 pc
Pigs	2-10	7	930 pc
Chicken	0.2–0.3	0.25	26,000 pc

\*) Figures for water consumption are average values and can greatly differ depending on location, season and concrete composition of the flock, e.g. the number of lactating or child-bearing animals, the type of species, the distance between standpipe and pasture etc.

See [http://www.lorentz.de/pdf/lorentz\\_waterconsumption\\_en.pdf](http://www.lorentz.de/pdf/lorentz_waterconsumption_en.pdf) for details.

## About LORENTZ Germany

Since more than a decade, LORENTZ successfully produces solar pump systems and solar tracking systems. In R&D, LORENTZ pays special attention to the maintenance-free long-term service of its products. The success of this concept is proven by the daily performance of LORENTZ pumps and trackers in more than 100 countries all over the globe.

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