

LORENTZ smartTAP

Enabling sustainable water provision
for everyone



LORENTZ smartTAP is an off-grid water dispensing and management system which enables revenue collection, water entitlement and sustainable water provision.

LORENTZ smartTAP combines hardware, software and predefined business models to allow for water infrastructure to be delivered in an economically sustainable way.

Users of the system access water from a tap using a tag. The tag is pre-

charged with water credits at a local shop or directly with the connected optional GSM modem.

The revenue collection function allows the system to be maintained, any investments to be returned and for the system to be expanded to more users.

LORENTZ 
The Solar Water Pumping Company

Managing a global challenge



Reliable access to clean water

Reliable access to clean water is still a challenge around the world. For many communities further improvements are required in order to bring reliable and clean water within easy reach of their homes.

LORENTZ smartTAP provides a way to extend water provision to the world through micro payments at point of water delivery

Sustainable solutions

Maintaining water infrastructure requires skills, resources and organization, all of which require money. Through the revenue collection function, water systems become self-sustaining and waste is reduced.

LORENTZ smartTAP allows for water system sustainability and resource management

Meeting local needs

How water is used in a community is as diverse as the people that are served. Technical solutions need to be designed to fit local needs, expectations, customs and culture in order to be fully accepted and integrated.

LORENTZ smartTAP works well for donors, governments, commercial operators and communities

Inclusion and equality

Water solutions need to be accessible and support the whole of a community. Technology can assist this by providing personal entitlement to water based on specific needs such as age and gender.

LORENTZ smartTAP can be used to provide personal daily water entitlement to individuals within a community

The Solar Water Pumping Company

The LORENTZ smartTAP solution

The LORENTZ smartTAP solution provides the necessary technology for sustainable water solutions anywhere in the world.

The LORENTZ combination of field experience, hardware design, manufacturing for off grid environments and software development results in a solution that is reliable and flexible.

The LORENTZ smartTAP components allow for not only a single tap deployment, but also for a fully scalable multi community solution. The modular design means the system is cost effective at any size.

The system analyses and reports any problems for long lasting service. Hardware is designed to be repairable with low skill levels and limited training. Sub unit parts are simple to replace and can even be repaired down to component level in country, making smartTAP a dependable long-term solution.



Connectivity (optional)

All management functions are available without connectivity. An optional GSM modem can be added where realtime device status and the feature to add water credits to tags without local agents is required.

Storage tank

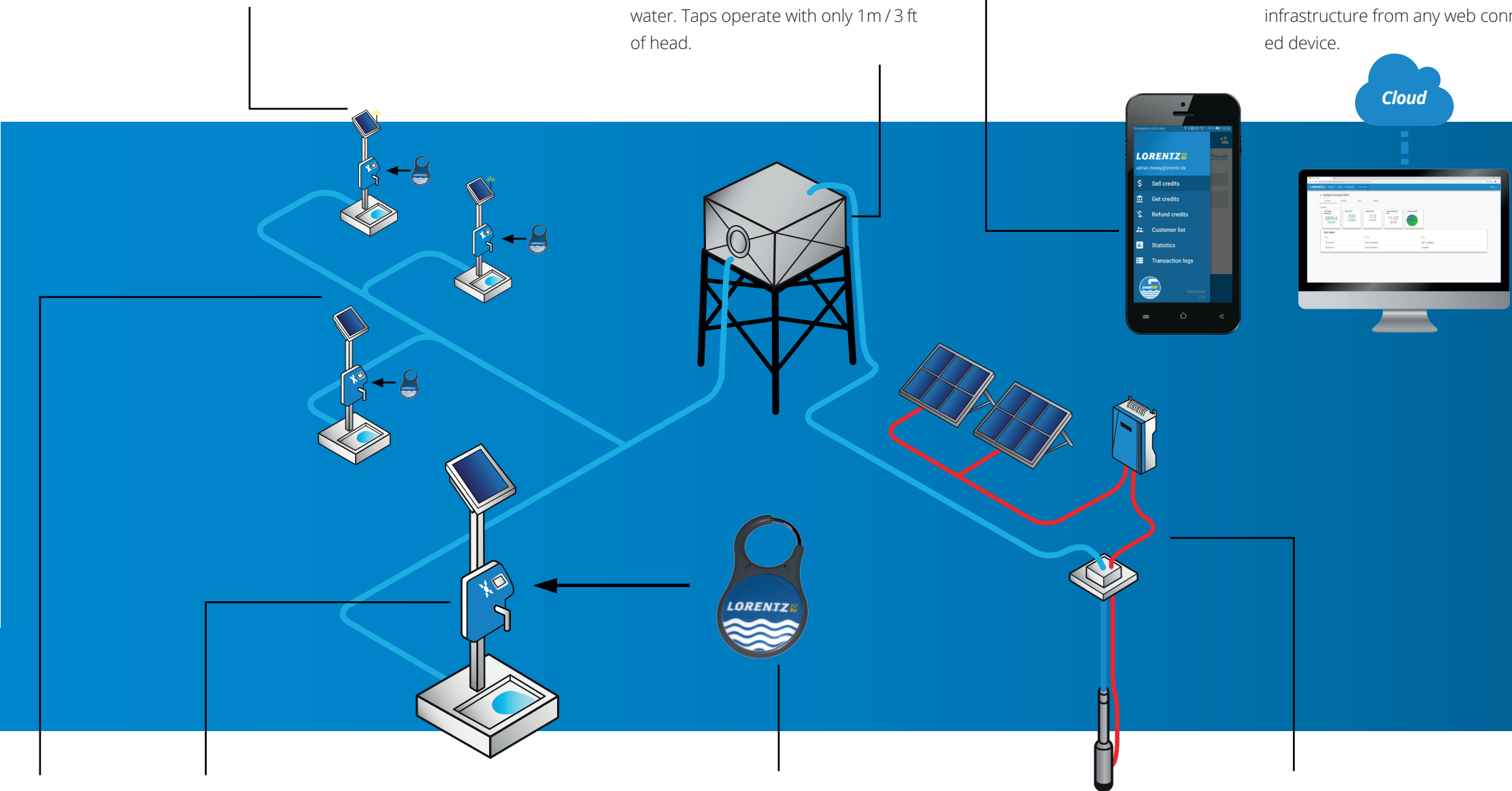
Central storage allows many taps to be served. The tank is also typically the logical point where any water treatment takes place. The elevated position of the tank provides pressure to the taps without the need to pump water. Taps operate with only 1m / 3 ft of head.

smartTAP App

The smartTAP App is used by local water sellers to add credit to users tags. The App provides a simple point of sale service without complex and expensive infrastructure.

LORENTZ Global

The smartTAP solution offers a Cloud based management system where taps and water services can be managed. Technical, financial and usage information is available to allow for effective management of the entire infrastructure from any web connected device.



Distribution network

Existing pipework can be utilized with LORENTZ smartTAP. To secure the pipework from tampering it is often run underground. The LORENTZ smartTAP water dispenser unit is secured to a post or wall.

smartTAP water dispenser

The smartTAP water dispenser is self-contained, needs no external power and is robust to reduce the chance of damage. A simple graphical display allows users to comfortably operate it without training. Each tap serves approximately 500 people.

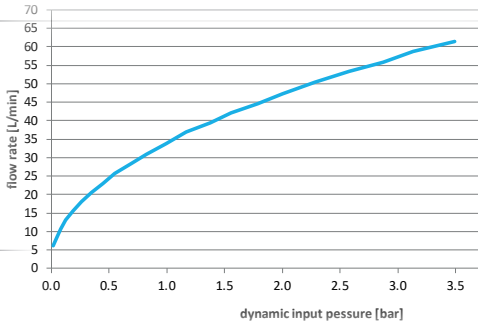
LORENTZ smartTAP tag

The tag securely holds customers water credit and identification. Tags can be recharged by a local water seller or charged directly using mobile money. The water dispensers add and decrement credits.

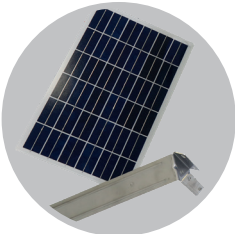
Pump system

LORENTZ smartTAP integrates fully with LORENTZ solar pumping systems. The smartTAP is also fully functional with any other manufacturer's pump system or existing infrastructure.

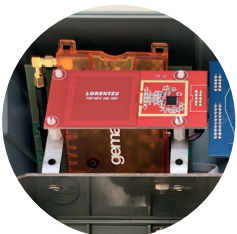
LORENTZ smartTAP technical capabilities

Technical description	<ul style="list-style-type: none">off-grid, self-contained water dispensersolar powered with battery backup72 hours of operation without any sunoptional internal GSM modem for realtime communicationhead unit with PV module for charging	
Internal data storage	<ul style="list-style-type: none">records up to 10 years of water transactionsintuitive external data collection via Bluetooth	
Operating modes	Autonomous <ul style="list-style-type: none">completely standalone operationtap operates autonomously in an island modecredits are held on the tagtag charging is handled via local water sellerfull data analysis with local pull/push of data from assitant app	Connected (with optional GSM modem) <ul style="list-style-type: none">bi-directional connection to smart-TAP communication hub for data collection and remote credit deploymentfull remote analysis and problem reporting
smartTAP tag charging	<ul style="list-style-type: none">via local water seller (cash or mbile money)with the smartTAP Android TM App (autonomous mode)collect credit at any tap (connected mode)hybrid of autonomous and connected modes to fit local social requirements	
Pressure requirements and delivery flow rates	<ul style="list-style-type: none">minimum 0.1 bar / 1.5 psi (1 m head of water)minimum 100 ml water delivery23 l/min @ 0.5 bar (5 m / 16 ft head) – fill 20 l container in 52 seconds14 l/min @ 0.2 bar (2 m / 6.5 ft head) – fill 20 l container in 85 secondsmaximum pressure for practical use – 7 barabsolute maximum pressure – 10 bar	
Pressure / flow diagram		
Dimensions and weights of smartTAP body	<ul style="list-style-type: none">height 400 mm / 15.75 "length 300 mm / 11.81 "width 187 mm / 7.36 "weight (dispenser) 4.8 kgweight (PV module and cable) 1.36 kg	

Environmental conditions	<ul style="list-style-type: none">enclosure rating IP66ambient operating temperature 45°Cstorage temperature -15°C to +65°Cdesigned for drinking water	
Security	<ul style="list-style-type: none">robust polycarbonate caseanti-tamper screwsanti-tamper alarmshigh security NFC tags - MIFARE DESFireanti-fraud software features	
Serviceability	<ul style="list-style-type: none">internal isolation valve for servicesimple to replace hydraulic unitdesigned for technicians with low skill levelscolor-coded replacement components for simplicitysimple valve and flow meter swaplong life sealed battery – standard model, locally sourceable	
Usability	<ul style="list-style-type: none">LCD screen – fully graphical interface, no wordsserves low literacy usersintuitive water dispensing and credit checking	
Mounting options	<ul style="list-style-type: none">all options are available with the standard housingsurface mounting (wall / post)pole mountingflush mounting (in wall / in pillar)	
Connections	<ul style="list-style-type: none">external water connection – 3/4" BSPwater deliver connection (spout) – 3/4" BSPsolar input from head unitantenna connection for optional GSM modem	
Equipment	Included <ul style="list-style-type: none">smartTAP water dispenserdelivery spout10 Wp PV module with bracket and cableSilicone delivery hoseInstallation manual	Optional <ul style="list-style-type: none">smartTAP user tags x 50pole mount kitflush mount / cast in kitGSM cellular modem with antenna



10 Wp PV module with bracket



Optional GSM cellular modem

Software solutions

LORENTZ smartTAP Apps for water sellers

Low cost infrastructure

The smartTAP App provides the infrastructure to allow local charging of water tags. The App runs on any Android smartphone that has NFC capabilities. This NFC capability is now becoming common on all mid range Android phones in the price range of \$80 (as of 2020).

Flexible working models

Water sellers may be employed or may be agents for selling water. The water seller can be allocated water credits (1 credit = 1 litre) or they may be pre-purchased at a wholesale rate from the water operator.

Simple operation

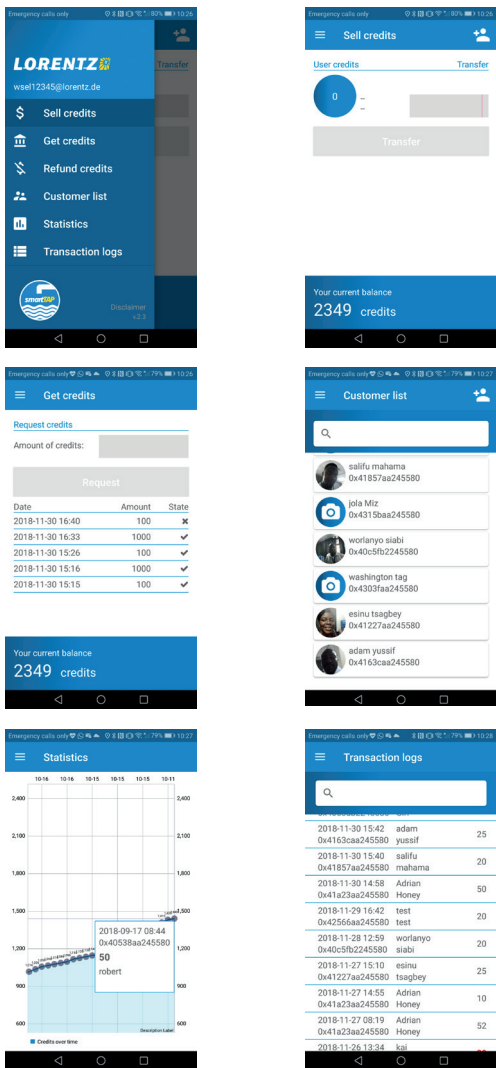
Water sellers can register new users to the system.

Water sellers can sell credits to users with a cash or local mobile money transaction and are then transferred instantly to the user's tag. This is all done without the need for network connectivity.

Water sellers can provide refunds of tags if necessary.

Water sellers can request more credits from the water operator.

All transactions are recorded and transferred to the management system when connectivity is available.



LORENTZ Global for management

Cloud based

LORENTZ Global is the management system for managing water dispensers and other connected LORENTZ products. LORENTZ Global requires no local IT knowledge, server infrastructure or software updates. The highest security levels possible are employed with data centres assured to SOC 1/ISAE 3402, SOC 2, SOC 3, FISMA, DIACAP, and FedRAMP, PCI DSS Level 1 and ISO 9001, ISO 27001, ISO 27017, ISO 27018.

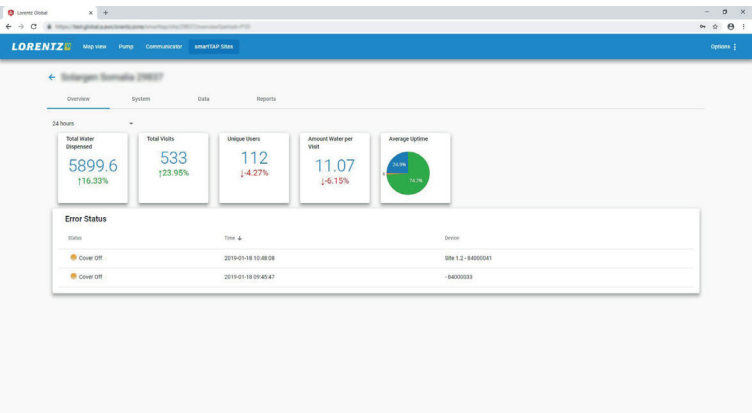
Managing operations

LORENTZ Global records, manages and reports both technical performance of the system as well as system usage. LORENTZ Global accounts for all of the information required to operate a water scheme that is financially, environmentally and socially sustainable.

Fits local operation models

Data is synchronized to LORENTZ Global - our management platform for all LORENTZ devices. For offline smartTAPs data is synchronized using the Assistant App, for connected devices this is done automatically.

Simple dashboards provide information quickly and effectively.



Sustainable water solutions



Improved access and waste reduction

Water schemes without any accountability for use often result in unfair water distribution and waste. By using a mixture of free water entitlement, for those that need it and affordable charges for other users, water is respected and fairly distributed.

Giving water a value reduces waste and provides a mechanism to include vulnerable community members

Cost recovery for maintenance and expansion

Economic sustainability is important to ensure that water solutions meet community needs. Without revenue for maintenance and expansion water schemes risk eventual failure.

Auditable, accountable and secure revenue collection allows for water scheme maintenance and expansion

Energy independence

Wherever there is piped water, a LORENTZ smartTAP water dispenser can be installed.

The supplied PV module charges the internal battery and gives the dispenser autonomy from grid power or external equipment.

Sustainable water solutions using solar power

Locally maintainable

Sustainable solutions need to be easy to maintain and repair in order to ensure longevity. The LORENTZ smartTAP water dispenser does not require any routine servicing. The innovative design means that any service requirements can be easily managed by local technicians.

LORENTZ smartTAP water dispensers are designed for simple servicing

The Solar Water Pumping Company

About LORENTZ

LORENTZ is the global market leader in solar powered water pumping solutions. Founded in Germany in 1993, LORENTZ has pioneered, innovated and excelled in the engineering and manufacturing of solar powered water pumping. Today LORENTZ is active in over 150 countries through a dedicated network of professional partners. LORENTZ technology uses the power of the sun to pump water, sustaining and enhancing the life of millions of people, their livestock and crops.

Simply – **Sun. Water. Life.**



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