

TokenTap

Prepaid water technologies are essential tools for fair and reliable revenue collection. They contribute to sustainable management of water provision assets.

For it to work in rural settings the hardware needs to be reliable, robust, easy to install and maintain with a basic technical skillset and should come at low operational costs.

Practica developed a mechanical prepaid device, called TokenTap, to ensure these conditions are met. It is simple, easy to understand, install and operate while still having all the critical functionalities. Including a tracking device to monitor water sales.

Business case & management

The TokenTap ensures that water is paid for by consumers, so costs related to construction, operation and maintenance can be covered for. This concept is not new. Several pre-paid water solutions are available on the market. These are all expensive and complex to maintain electronical devices, and therefore less suitable for rural or poor peri-urban settings. Profit margins on rural piped systems are small–if existing at all Long and expensive supply chains for spare parts and limited trained technicians complicate their installation and maintenance even further.

To support a business case in a rural setting, a dedicated prepaid device is needed with minimal capital investment and operational costs. Furthermore, it should be simple to maintain by local technicians.

The TokenTap provides just that. It serves as a management support tool at minimal cost and with limited complexity. The actual management setup can be chosen depending on the local situation. Both commercial entities, utilities and water user committees can use this device to optimize and validate their income from water sales. The chosen management structure should only ensure that the tokens –that operate this device - are collected and sold.



Technical design

Operation

The TokenTap is operated by using a dedicated token, a simple plastic or RVS coin. By inserting it and turning a handle down, one can open the tap. This empties a vessel that this located at the back of the device. The vessel contains a predefined volume of water (generally the size of one jerry can). By moving the handle up the vessel will fill again. A simple gauge at the font allows to track the water level in the tank. Without the token the tap will not open.

A small recording device registers when the tap is opened. Via Bluetooth this data can be uploaded to a telephone and then transmitted to the cloud. An update of the consumption data can be send via email. The device contains a rechargeable battery that will need to be charged approximately once a year.

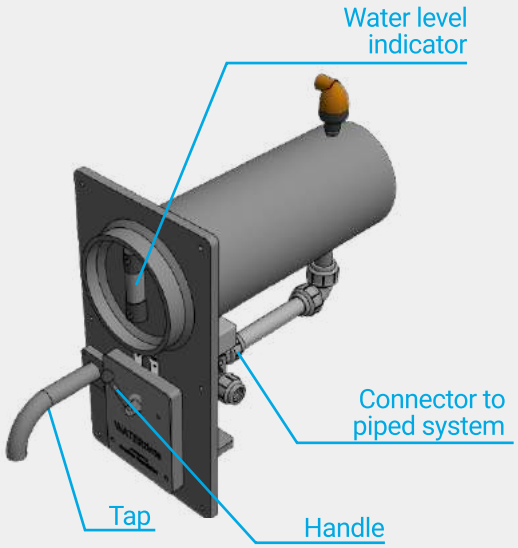
Speed of operation

The speed of the operation depends on the sum of 2 factors: the filling time AND emptying time of the vessel. Emptying a vessel of 22 litres takes about 35 seconds. The filling time depends on the technical setup of the water supply system. When directly installed under a tank with a large diameter pipe attached, the complete cycle takes less than one minute. Resulting in a potential to dispense more than 1 m^3/hr.

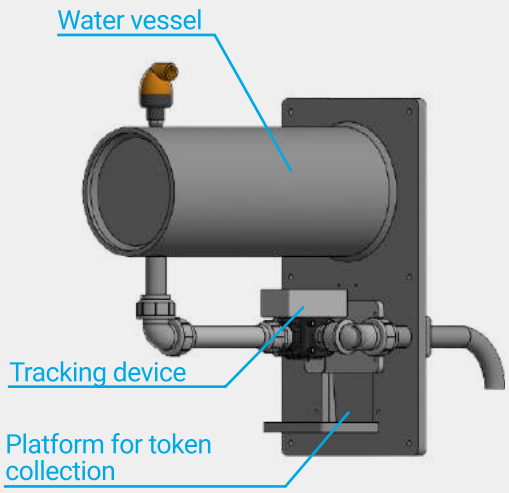
Configurations

The TokenTap can be installed in different setups. The most common ones are at a water kiosk or as a standalone tap stand. The device is tested up to 2 bars, so it will fit directly on most piped systems.

The device is supplied with the prepaid unit only, but can be delivered with pre-printed boxes to be fitted at water kiosks or tap stands.



Front view of the TokenTap



Back view of the TokenTap

Development stage - June 2021

The latest version of the TokenTap is currently being pilot tested as part of projects in Mali, Ghana and Mozambique. The outcomes of these projects will yield valuable information to feed back into the design process. Insights from field tests will contribute to product iterations and steps towards commercialization and potential production. Whether the production should be arranged for at one location configured as a cost-effective total package, or rather combined with local assemblage and fitting, is yet to be investigated.

The current cost of the pilot hardware are still relatively high – about 1.5 times the aimed retail price. Once the pilot phase is over – and full scale production is in place - we aim to have an market introduction of the TokenTap below the price level of 1000 euro/pc.

What is PRACTICA Foundation ?

PRACTICA is a non-profit organization. We work in over 10 countries to support its partners like NGO's, governments, local entrepreneurs and farmer organisations with technical know-how on small scale technologies in the field of water, agriculture and sanitation.
We are not an implementing organization, but guide and train partners in the use, uptake and knowledge of various technologies. Research and development is a core part of our work at our head office in the Netherlands where we develop & test new products that could improve the lives of the poor. As an example, we have developed one of the first solar pumps on the African market, which is now being marketed by one of our partners Futurepump.

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