Utility Systems product overview

Utility Systems WMD, Bulk WMD, Aquadata and ancillary products form the basis of a configurable smart water metering system and prepayment water metering system.

The components of our metering system are the following:

The Utility Systems WMD

The Utility Systems WMD:

- Must be coupled to a pulse output water meter
- Is the core product of our domestic and smaller bore smart metering systems
- Monitors and manages water consumption
- Communicates with the user interface device, data collectors and field service terminal used in STS, AMR and AMI systems by radio frequency (RF) on the ISM band
- Has an inbuilt data log that collects, stores and transmits consumption data in metric or imperial measurement which can be collected and integrated into municipal billing systems
- Detects and warns of possible leaks and tamper

The WMD is available in DN15, DN20 and DN25 sizes.

The Utility Systems Bulk WMD

The Utility Systems Bulk WMD is the solution for bulk water supply management.

Coupled with a larger bore pulse output water meter and external valve it:

- Is able to provide larger bore prepayment metering and AMI/ AMR
- Offers leak and tamper detection
- Is also suitable for managing zonal meters in suburban areas and housing estates, schools, offices, factories, hospitals and state departments

The Bulk WMD, pictured here with a large bore meter, third party valve and box, is available in DN40 and DN50 sizes.

The Utility Systems user interface unit (UIU)

The UIU is a remote display unit installed in the customer's home. It provides the gateway to the WMD installed outside the premises in a water meter box.

The function of the UIU, which is paired with the WMD during set-up, is to:

- Display the meter reading as reflected by the WMD
- Display remaining allocation available to the consumer
- Allow for top up/prepayment credit token entry
- Provide leak and tamper alarms for the consumer
- Display the WMD serial number required when purchasing a top up/prepayment credit token

The UIU can be wall mounted or hand held and is available as litres or gallons display.

Token

The top up or prepayment option enables the municipality to provide the consumer with the ability to purchase credit without having to have the meter read and a bill sent out.

This feature is incorporated into the WMD and the UIU and is based on the STS standard.

This standard allows for a 20-digit token to be issued on request by numerous vending outlets depending on what vending system has been chosen. The digits represent the quantity of water that has been purchased in a format encrypted for the consumer's own WMD.

Utility Systems does not provide its own proprietary vending solution. Vending is provided by numerous third party vendor service providers. This gives the water service provider more choice in terms of vending options, thereby providing the consumer with appropriate purchase opportunities including utility hall, internet and cell phone based vending and third party vending points of sale in places such as banks, supermarkets and gas stations.

Utility Systems will facilitate the implementation of the vending service provider and infrastructure as determined by the water service provider.

Data collectors

The data collector forms the second tier in the Utility Systems AMI infrastructure.

The data collector can be either:
- An ever present mains or solar powered fixed network
- In a periodic walk/drive by network

The mobile or fixed data collector receives the message from the WMD.

The data collected is then transferred via a secondary communication link to either a local computer or a server. This secondary link includes USB, GSM and Wi-Fi type connectivity.

Field service terminal

The FST enables the meter reader to perform electronic infield meter testing, interrogation and Configuration of the WMD.

The Utility Systems Field Service Terminal (FST) is a software package designed for the use with the WMD, Bulk WMD and Aquadata. The application is available as a pre-installed package on a Windows platform notebook, together with other relevant Utility Systems software, or for installation onto Windows based PC's/ Notebooks supplied by Utility Systems.

System server

The Utility Systems smart metering infrastructure has been designed to optimise the use of existing infrastructure such as existing GSM and Wi-Fi networks.
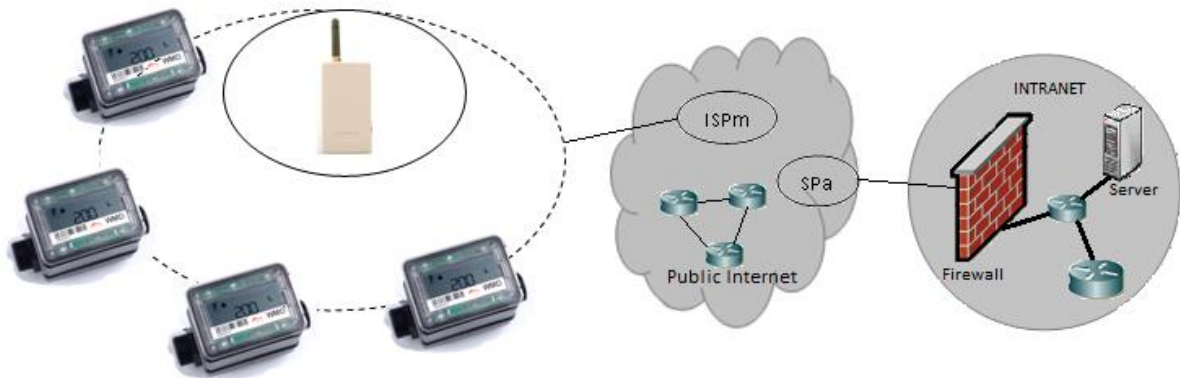
The Utility Systems server implementation has not been developed with the intention of being implemented as a full scale municipality billing system but as a repository for data uploaded from the WMD.

The data collected by the various data collectors from the WMD's that they have read can be downloaded either directly into a local data base via a USB connection, into the server's data base via a time scheduled GPRS link, or in real time via a Wi-Fi network. The USB and GPRS implementations have been developed in-house by Utility Systems.

The data downloaded to the server is made available on the web for retrieval, or to be viewed and analysed directly by a web application. The web applications are implementation specific, and would need to be developed on a project-by-project basis.

The protocol and implementation allows for a wide variety of system configurations to be supported, ranging from localised gated communities, through urban municipalities and even wide spread rural systems.

A typical representation of an implementation is given below.

The Aquadata is used to provide AMR is where there is no need for controlling water flow or for municipal level post billing.

The Aquadata does not require a meter box and is best suited for AMR use in closed communities and housing estates.

The Aquadata collects, stores and transmits consumption data and communicates with the data collectors and field service terminal.

Product quality standards

The system has the following certificates of approval, all issued by the South African National Regulator for Compulsory Specifications (NRCS):

- SA 842
- SA 1453
- SA 1490
- SA 1491
- ICASA

and complies with the Standard Transfer Specification as defined by IEC 62055-5.

Utility Systems has ISO 9001:2008 certification in respect of the design, manufacture, sale and provision of after sales support .The products are also approved by the Independent Communications Authority of South Africa (ICASA).

Boxing examples

Utility Systems WMD's can be housed in a number of different meter boxes. These are some examples of widely used meter box installations :