



EMS Invirotel Energy Management Smart About Energy

The Rollout of Smart Metering Electricity in Roosenekal: Elias Motsoaledi Local Municipality (EMLM) – October 2012.

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Purpose

Purpose:

To present the integrated electricity smart metering technology implemented at rural town of Roosenekal in the Elias Motsoaledi Local Municipality (EMLM)



Background:

- The municipality decided to implement a smart metering solution and consequently published a tender to provide an end-to-end smart meter solution to Roossenekal
- The municipality appointed EMS Invirotel Energy Management (Pty) Ltd for the deployment of a smart metering solution on risk
- The project implementation was divided into two phases, namely;
 - Phase 1 was for the installation of an end-to-end solution in Roossenekal and
 - Phase 2 was for the implementation in the Groblersdal Town
- The rollout of Phase 2 was entirely dependent on the successful implementation of Phase 1



The summary of the project is outlined below:

- INVIROTEL was appointed in 2012 to implement Phase 1 of a two phased project
- Phase 1 was to implement an end-to-end smart metering solution in the Roosenekal area (530 meters)
- Phase 2 was to implement an end-to-end smart metering solution in the Groblersdal Town subject to the successful implementation of Phase 1
- Roosenekal town consists of approximately 80% of RDP houses
- Residents were illegally consuming electricity prior to the installation of the smart metering solution



Challenges in the implementation of Phase 1:

- Culture of non-payment in the Roosenekal area
- Cellular network coverage is highly irregular
- Community skepticism
- Tight deadlines for completion
- Work to be done on risk (payment to Invirotel was subjected to the successful implementation of Phase 1)



The following achievements were recorded:

- Phase 1 commenced on the 1st April 2012 and concluded on the 21st October 2012
- Site audits and preparations were done in less than 45days
- Installations of meters and data concentration units (DCU) were completed within 30days
- Installations of keypads and meter sealing were finalised in 15days



The following achievements were recorded:

- Commissioning and Training were completed within 31 days
- Vending tests and activation were done in 45days
- Stabilisation was completed within 30days
- Final troubleshooting and completion was finalised in 21days
- 530 meters were installed



- A PLC + GSM hybrid based communication infrastructure was implemented
- The installed meters communicate with the DCU using PLC
- The DCU's are equipped with SIM cards and communicate seamlessly with the cloud-based Meter Management and Revenue Management Systems
- The meter management system has empowered the municipal staff to manage the meters, customers, tariffs & energy management interventions
- The systems enable the municipal staff to monitor meter bypass attempts and meter tampering by sending real-time alerts



- The smart meters are providing accurate billing and the system is online 24/7
- There's an average of 98% recovery rate by the municipality
- The systems has made it possible for the municipality to have security of revenue
- The system has offered both the municipality and the customers the most reliable, accessible and simple to operate electricity metering platform
- The residents who were not used to paying for the past 5yrs are now happy customers – paying diligently
- Municipality prides itself for having the most effective and efficient world class Smart Metering infrastructure in Limpopo Province.



Key Services Offered

Field Services

Audit

- Thorough electricity and water assessments.

Installation

- Professional installation and commissioning.
- Issuing of Certificate Of Compliance (C.O.C).
- Compliance with SANS 10142.

Support

- 24/7 National call center.

Consulting

- Utility management.
- Vending, Billing and Tariff management.
- Energy efficiency management.

Advanced Meter infrastructure

- Meter management.
- Portfolio management.
- Savings and recovery.
- Fraud and fault alerts.
- Tenant empowerment.

Vending Management

- End to end vending solution.

Options

- Credit Card.
- Internet Purchase (EFT).
- Mobile Purchases (E-Wallet).
- Vouchers (STS).
- Over the counter (Cash).

Billing Management

- Comprehensive accurate billing schedules.

Tariff Management

- Supports all tariff structures.

Profiling

- Measure circuits and appliances every 5 seconds.
- Identify energy wasting circuit and appliances.

Analysis

- Powerful real time statistics.
- Load and demand control.

Reporting

- In depth secure reporting.
- Automated scenario planning and budgeting.





Technology Deployed

INVIROTEL is an integrated technology that incorporates smart meters for electricity, water, gas as well as proprietary software to provide:

- comprehensive utility, energy and revenue management solutions for Utilities, Municipalities, Commercial Properties and Light Industrial Clients.

All INVIROTEL products are managed, maintained and controlled from a centralized digital hub accessible over any internet connection 24/7.

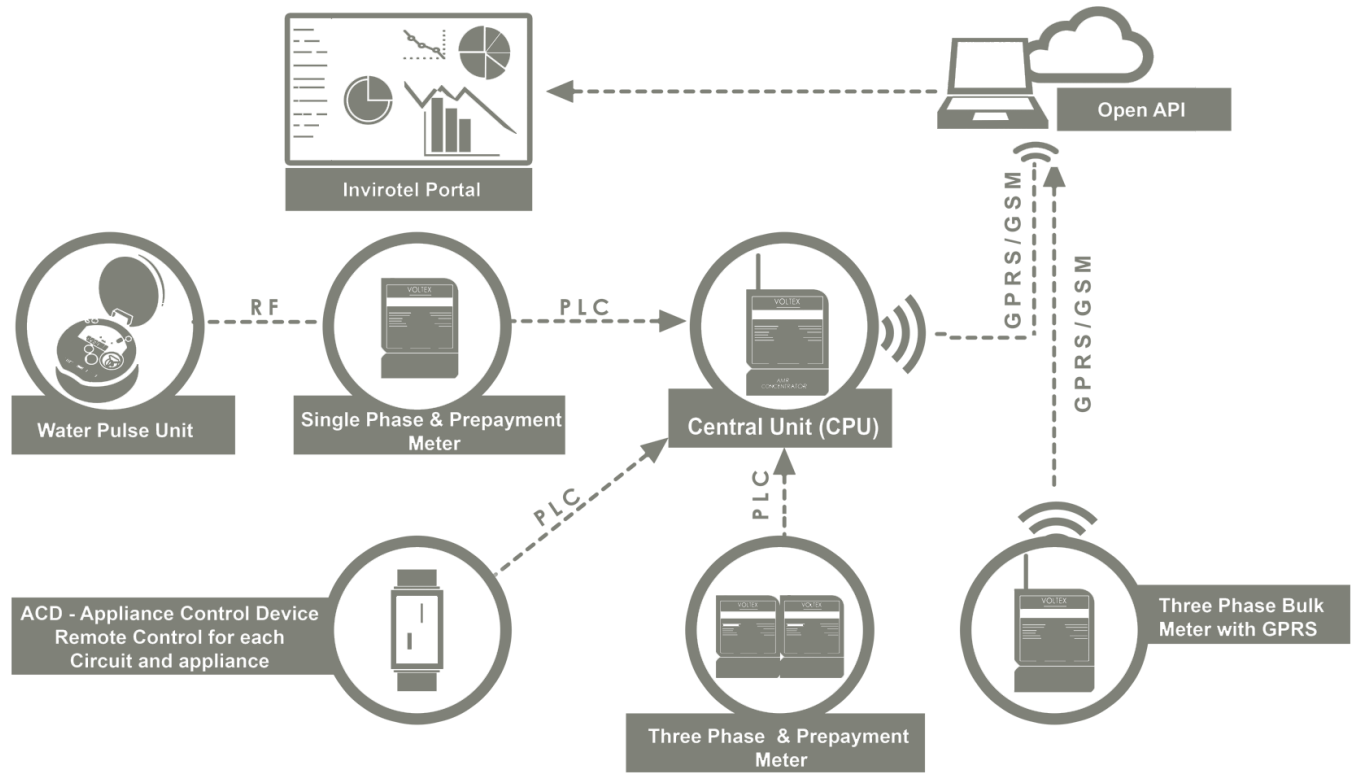
Access is simple, secure, fast and mobile giving all clients and their clients' real time information over their utility consumption, energy saving, tariffs, billing and revenue collection.



- The concentrator is a Central Processing Unit (CPU) for remote reading of electricity and water meters.
- The CPU communicates via Power Line Communication (PLC) to the electricity meters and via Radio Frequency (RF) to the water meters.
- The concentrator allows two-way communication access to all meters and can have up to 600 meters connected to it



Technology Deployed





- Two Way Communication
- Remote Disconnection
- Ability to limit power
- Credit or prepayment meter remotely changed
- Time of Use



- Anti-tamper
- Anti-bypass
- Customer Interface Unit (CIU) for house display
- Remote reading and programming
- Two way instant messaging between the customer and distribution company.



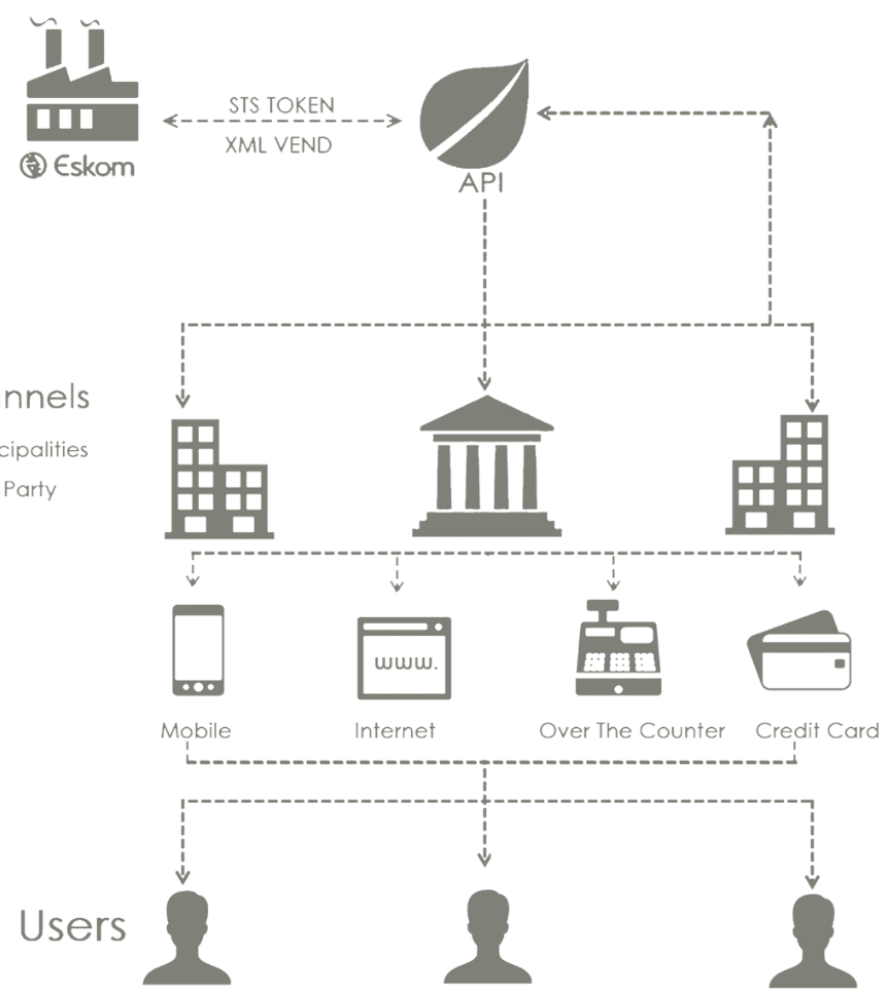
Vending

Vending

- End-to end solution
- Real time
- Comprehensive set of reporting
- Automatic remote or manual recharging
- XML Vend (If Required)

Vending options include:

- Credit card.
- Internet purchases (EFT).
- Mobile purchase (E-wallet).
- Vouchers (STS).
- Over the counter (Cash).





- Pre-paid vending of electricity to INVIROTEL pre-paid meters is facilitated either by automatic remote charging of the meters by the vended amount or by the generation of STS compliant tokens
- The Invirotel Smart Metering System has provided the municipality with the following direct benefits in the Roosenekal area:
 - Accurate bills
 - Billing schedules
 - Penalties, levies and connection fees are included in the bills
 - Bills can be viewed 24/7



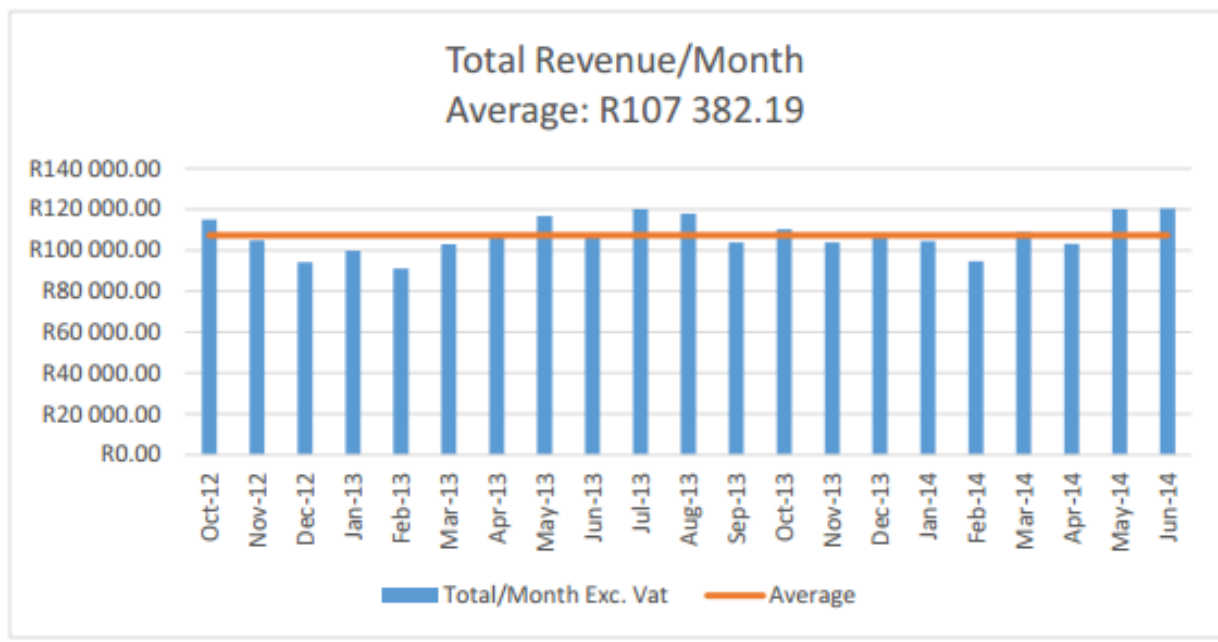
- Supports manual meter readings where manual readings are uploaded
- Supports all tariffs-standard, block, spot, straight and time of use
- All South African Municipal tariffs are catered for
- All Eskom tariffs are catered for
- Customised tariffs



- The most important goal of the municipality in deploying a smart meter solution was to recover the cost of electricity it was previously supplying to the residents at a nominal charge.
- The deployment of Phase 1 has created possibilities of a 100% recovery rate by the municipality
- The municipality is now recovering the cost of electricity supplied to customers
- Tampering and by-passing efforts have been detected and culprits were apprehended in time
- **Based on the monthly vending figures, the Smart Meter Phase 1 project has already paid for itself.**

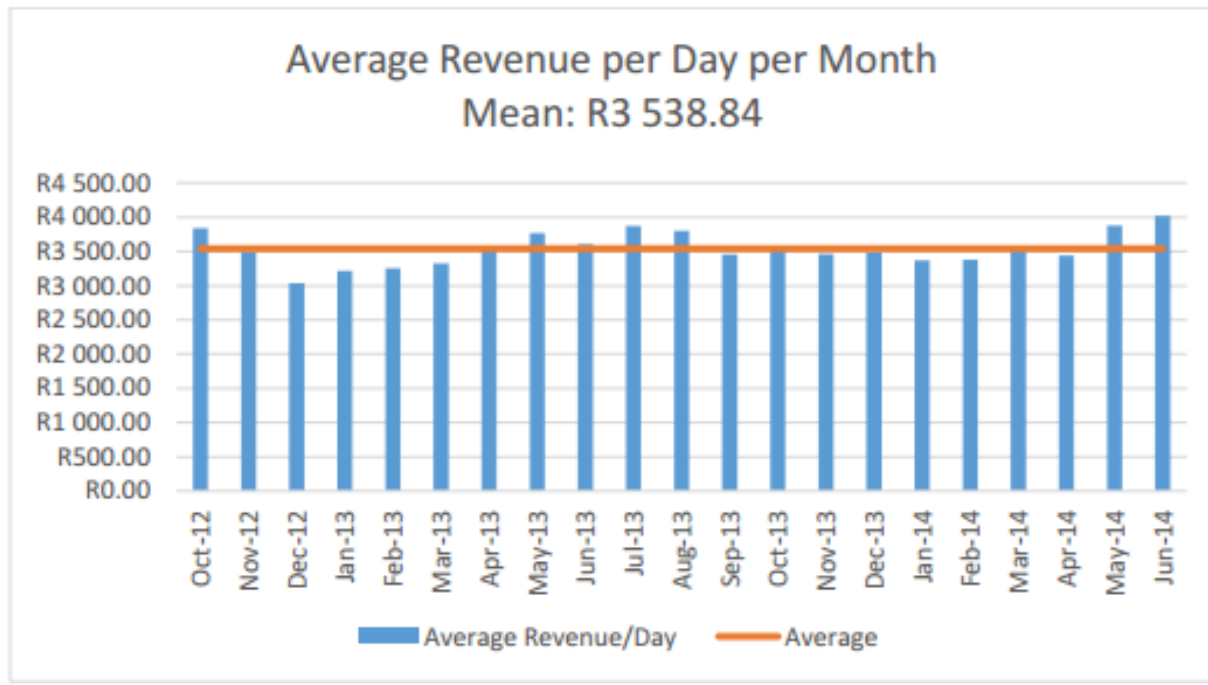


Roosenekal Monthly Sales Report Analysis from October 2012 to June 2014





Roosenekal Monthly Sales Report Analysis from October 2012 to June 2014





- The project has enhanced local empowerment in the following ways among others:
- Students from the Sekhukhune FET College were trained and used during the house to house electricity infrastructure audits and for meter installation under the supervision of qualified electricians
- Invirotel has provided employment to some of the students from FET Colleges
- Locally qualified electricians are exposed to Invirotel's Installation Programme
- Municipal staff in both Finance and Electricity Departments were adequately trained to manage both the Revenue Management and Meter Management Systems respectively
- Consumers are empowered to budget and plan for their electricity consumption.



- Developmental Communication to be prioritized in order to have a Buy-in from key stakeholders prior to implementation
- Clarity of the scope of work is a critical success factor (SLA)
- Budget approval in line with the Project Plan
- Correct tariff structure
- Correct timing of the rollout to avoid missing key deadlines
- Proper record keeping (Customers & Meters)
- Absent customers
- “Access Denied”
- Elimination of data capturing errors (so-called finger errors)



- The municipality is now in a position to know how many meters have been installed and which customers are linked to those meters.
- the municipality has been provided with factual recorded information/data where meters are not linked to any customers but consumption is taking place.
- the municipality has an updated record of the physical state of its mini-substations, kiosks and meters.
- the municipality is now able to be proactive when it comes to the maintenance of its infrastructure.
- The municipality consequently signed off Phase 1 and Invirotel has just completed the Meter Audits/Survey on the 22nd May 2014 in preparation for the rollout Phase 2.
- Elias Motsoaledi Local Municipality has one the most advanced electricity metering infrastructure in Limpopo Province to date.



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THANK YOU