NorthQ

Reducing Electricity and Water Consumption for Schools by 88%.

By utilising the meter reading solutions from NorthQ for real time consumption data and their easy to use online platform, Suntricity has been able to monitor power and water consumption and to use the consumption visualisations to analyse and identify savings for schools in South Africa.

Client: Suntricity PTY (Ltd) (South Africa)
Location: Johannesburg, South Africa
Status: Complete

SUNTRICITY

*Executive **Summary***

*The project **"Reducing Electricity and Water Consumption for Schools"** took place in Johannesburg, South Africa, during 2015 and 2016 and was carried out in partnership with Suntricity (PTY) Ltd. The main goal of the project was to help schools in South Africa **reduce their water and electricity consumption**.*

The project went through two stages:

- ***Stage One (April - July 2015)** served as proof of concept. During this period, Suntricity used NorthQ equipment to measure and optimise the water consumption in one school. The realised savings were **more than 88%** of the consumption per month. All costs made to set up the water measuring systems were **paid back in only one month**.*

- ***Stage Two (August 2015 - 2016).** During this period Suntricity developed the FIRSTLOOK™ Platform with the aim of enabling a thorough understanding of both consumption and costs of electricity and water. The platform uses **API calls to pull data from the NorthQ's online platform HomeManager**. After significant savings in the first school, Suntricity quickly expanded the scope of the project. Today, Suntricity analyses the energy billing data of **more than 100 schools**. It advises a big part of them, as well as municipalities, on how to adjust and optimise their water and electricity consumption.*

"Without real time monitoring it is a bit like looking at a dark space not knowing where to go"

Ken Nunes

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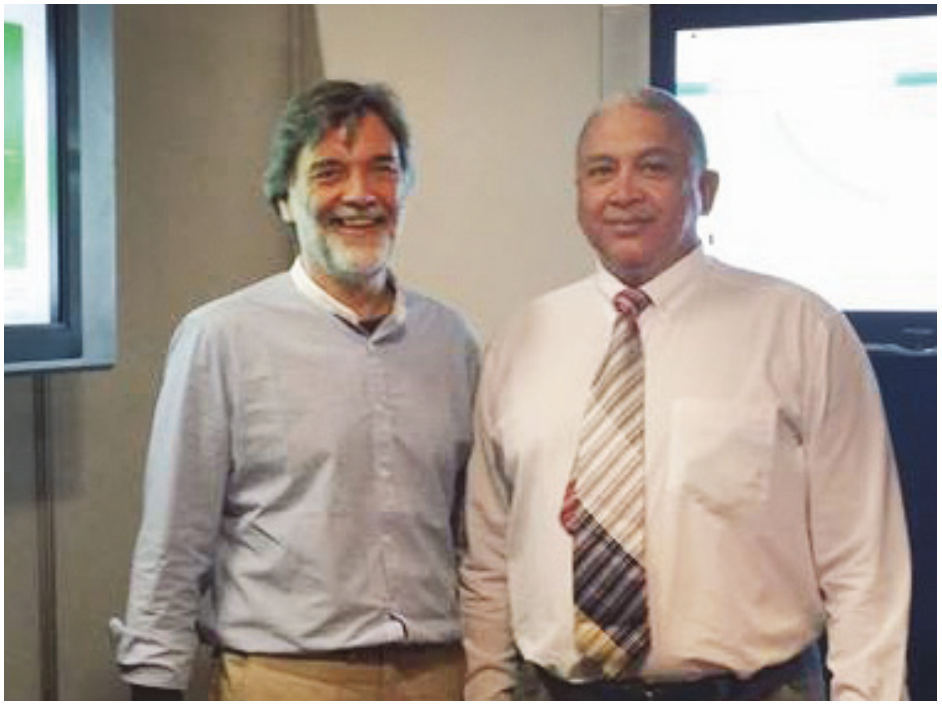
About

Suntricity (PTY) Ltd is a Johannesburg-based company founded by Hendry van Branden and Ken Nunes. It specialises in analysing billing data of Electricity and Water consumption, through a proprietary Online Platform First Look™ and onsite Real-Time Monitoring. By analysing detailed consumption data and verifying consumption patterns, the company aims to ***eliminate waste, reduce electricity and water consumption*** *and thereby identify* ***significant cost savings****.*

Suntricity provides a comprehensive service that monitors all aspects of electricity and water consumption in schools, with the aim of achieving significant savings, whilst simultaneously reducing operation and maintenance costs.

The two founders of Suntricity are also supported in their efforts by experts within technology, environment, finance, marketing, as well as legal and social advisors who all add significant value to each and every step Suntricity takes. Bringing together the best skills and minds, adapting the best available technologies, creating jobs and transferring skills to the needs of South Africa are all intrinsic values that contribute to Suntricity's vision: Towards Sustainability.



Ken Nunes & Hendry van Branden, Suntricity Founders

*Suntricity's goal is to help optimise and reduce energy consumption and to limit waste in schools and churches. According to their calculations in Gauteng, South Africa, there are 1,614 primary schools and 1,117 secondary/high schools. The majority of these schools were built 30-40 years ago. Due to the water, sanitation and political challenges in South Africa in the past decades, only little or no modernisation has been carried out on their energy infrastructure. As a result, schools often have very high rates of water and electricity consumption. According to the billing data captured by Suntricity in the Gauteng Province, the combined cost of electricity and water in schools is approximately **R2 000 000 000 per year (€ 123 901 600)**. Suntricity estimated that this cost could be **"reduced by at least 50%"** or almost **€ 62 000 000 per year** by eliminating the waste.*

*Ken Nunes explains: "it is clear that **most schools do not sufficiently understand their electricity and water invoices**, because they focus almost exclusively on costs. Schools must first understand their consumption to take responsibility for the consumption. We have seen examples of 50% of water usage taking place outside school hours due to water leakages that no one was able to measure. That is highly critical, since water is a scarce resource in South Africa. And that is why we are trying to implement the water solution first, to eliminate the leaks and waste."*

To reach its goals Suntricity had to overcome several challenges by:

- ***Setting up effective and affordable hardware and software solutions**. Existing metering solutions on the market are too expensive and complicated to use.*
- ***Establishing stable and affordable connectivity**. Many of the schools do not have a stable internet connection and in these cases Suntricity had to use 3G routers. Mobile networks are however often very expensive and offer poor quality.*
- ***Collaborating with institutions and getting access to consumption data**. An area that could improve from increased political awareness in South Africa.*
- ***Getting detailed real time consumption data** to analyse and understand unusually high energy consumptions.*

NorthQ ***Solution***

Your Device | HomeManager | 3G Router | Q-Stick | Q-Water | Water Meter

Suntricity has partnered with the Danish based company NorthQ who has developed internationally renowned software and hardware solutions that provide data sets to improve energy efficiency and lead to significant costs savings.

Ken Nunes explains: "Through our partnership with NorthQ, we are able to provide a comprehensive service that offers monitoring of all aspects of energy consumption in the schools. The unique aim is to achieve significant savings in electricity and water costs, whilst simultaneously reducing operation and maintenance costs. That will in turn also reduce the environmental impact."

By utilising the ***meter reading solutions*** *from NorthQ for real time consumption data and their easy to use* ***online platform****, Suntricity has been able to monitor power and water consumption and to use the consumption visualisations to analyse and identify savings.*

"The electricity usage in South Africa has increased by 200% over the past 10 years. With the significant rise of electricity and water costs over such short period of time, there is an urgent need for more energy efficiency and elimination of waste. That is why we need companies like NorthQ and their solutions to get access to real time consumption data at affordable prices", Ken Nunes from Suntricity explains.

To overcome the special needs of the South African market NorthQ developed a customised water reader that obtains consumption data from the water meters in the market (Sensus iPERL, Sensus MeiStream Plus, Hydrus DN 15 - 20).

For measuring electricity consumption Q-Power readers from NorthQ were used on mechanical and electronic meters.

Results

The project went through two development stages over a period of 2.5 years.

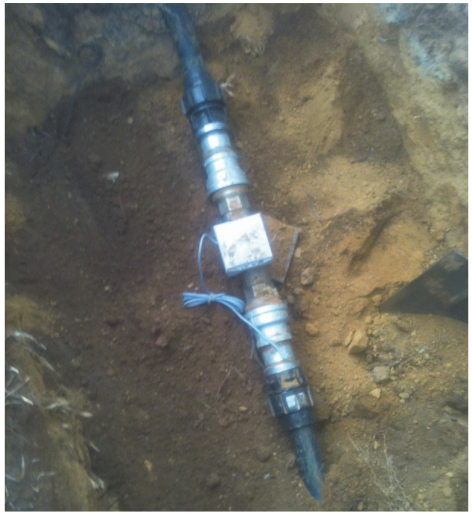
1. Stage one - proof of concept (April - July 2015)

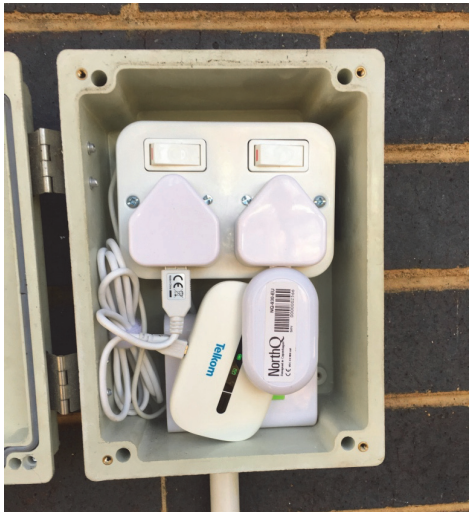
A school with high water consumption was selected for proof of concept. Since the billing data did not provide enough information to provide a fulfilling analysis, Suntricity installed a NorthQ water reader which reported data every 15 minutes. The reader was installed on the main water meter and provided ***detailed real time consumption data****. This data showed that the school had a constant consumption of 800 liters per 15 minutes – also after school hours where there were no students. Further, through analysing the consumption data and with the help of the school staff, three major underground leaks were found. After the leaks were repaired, the water consumption dropped from* ***79.27 KL (79,270 litres) to 9.28 KL (9,280 litres), equivalent to a drop of 88.29% or 69,990 litres per month****. The consumption was measured on May 1, 2015 and again on July 1, 2015 after the leaks had been repaired. During both measuring days the school was closed.*

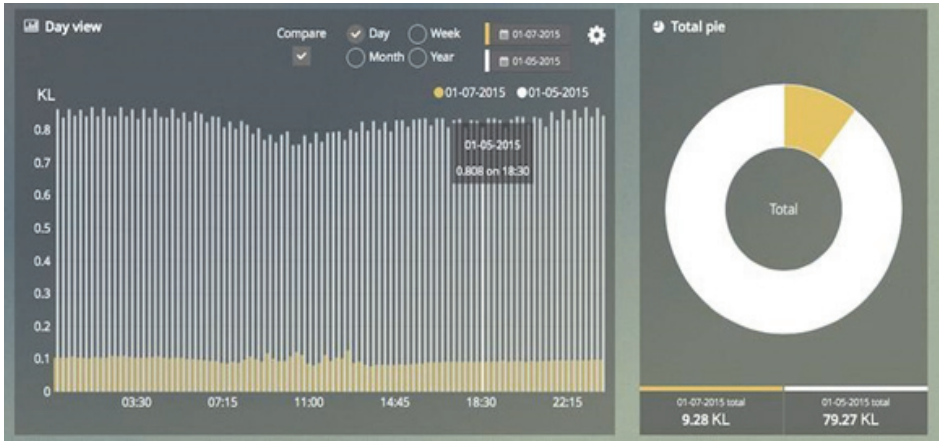
Ken Nunes from Suntricity summarises: "As a result of getting access to this real time consumption data, we were able to pay back the ***costs of installing the water measuring systems in just one month.****"*

Used technology:

- *1 x NorthQ Q-Water reader*
- *1 x NorthQ Q-Stick gateway*
- *1 x 3G router*
- *NorthQ HomeManager platform*







2. Stage two (August 2015 - 2016)

During this stage, Suntricity developed the FIRSTLOOK™ Platform, which is an online database platform tailored specifically to schools to enable a thorough understanding of consumption as well as costs of electricity and water. With this online platform, Suntricity is able to compare schools based on the cost paid for water and electricity per student. The purpose is to be able to compare the energy costs of different schools (primary and secondary), to better understand the average energy costs and to provide data that will help identify schools that may be in greater need of intervention, starting with those schools with the highest consumption costs per student. The platform also illustrates an "efficiency league table" that rates the schools based on their energy consumption costs. Ken Nunes from Suntricity adds:

"One of the major benefits of the efficiency league table is that school administrators can speak to each other – i.e. those from schools with a higher energy efficiency can share their insights about why the costs at their school are lower than other schools and vice versa. The platform enables a profound information sharing system between the schools that eventually will help more schools to lower their consumption."

How the system works

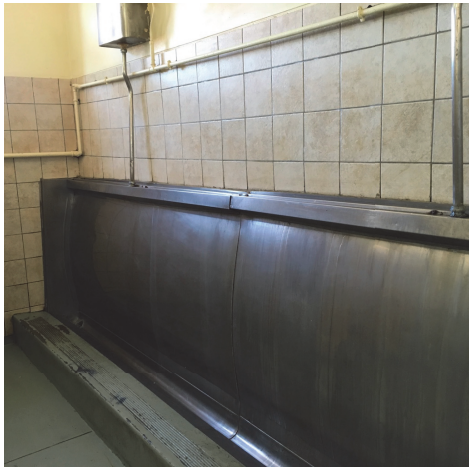
Via NorthQ's HomeManager API, the FIRSTLOOK™ Platform gets real time consumption data from NorthQ readers and combines it with the billing data of the schools monitored. By constantly analysing the data on the platform, Suntricity is able to advise their clients on how to further optimise their electricity and water consumption.

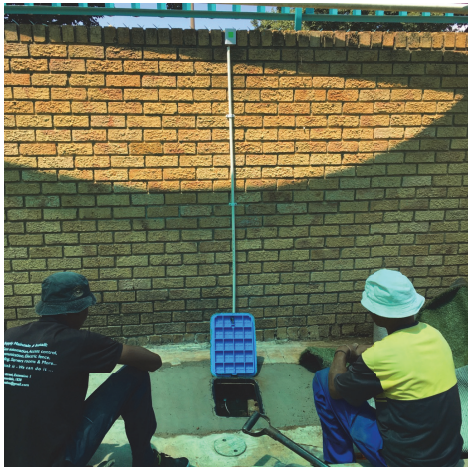
In one of the schools in Johannesburg where the FIRSTLOOK™ Platform was applied, the initiative resulted in significant savings of the water consumption. The billing analysis showed high water consumption compared to other schools. The school management was contacted, and consequently the school had NorthQ energy monitoring devices installed.

The real-time monitoring data indicated a constant consumption of approximately ***300 litres of water used every 15 minutes outside school hours****. A survey was carried out in cooperation with the caretaker of the school. Subsequently, it was found that six out of the school's 36 toilets had running leaks. It was estimated that each leak (essentially leaking cisterns) accounted for* ***3 litres of water per cistern per minute. That amounted to 180 litres of water wasted per hour – a total of 4,320 litres of wasted water per cistern every day. In total, six running toilet cisterns x 4,320 litres resulted in 25,920 litres of water wasted on a daily basis.***

"Without real time monitoring, the magnitude of these kinds of leaks goes undetected"

Ken Nunes





NorthQ

"If people don't take action in terms of the datasets they have, then the data means nothing"

Suntricity

*The project was **successfully completed** at the end of 2016. Using the collected data and experience **Suntricity further developed services** like:*

- *Energy monitoring*
- *Energy report*
- *Lighting Audit*
- *Budget recommendations*
- *Consultancy regarding implementation of solar energy*
- *Consultancy to maintenance staff*
- *Legal support*

*In November 2017, the company collected and analysed the real time data of **21 NorthQ water and electricity readers installed in 10 different schools**. The schools principals are advised on a regular basis about the steps they are advised to take to reduce the energy consumption in their schools.*

*Besides schools, Suntricity also consults municipalities about the **benefits of long term maintenance of their energy infrastructure**. Moreover, the Suntricity has demonstrated the benefits of real time monitoring and continues to provide advice and suggestions on how the regulatory framework can be adjusted to support energy efficiency initiatives.*

NorthQ

A New Way of Living

Learn more about us and our solutions or order a test sample of our products!

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