![gemalto security to be free]

CASE STUDY:

SOLARKIOSK, Gemalto and INSYS icom Power Up Off Grid Communities

The Challenge of Living "Off The Grid"
The ability to harness energy is crucial to human well-being. We need power to provide clean water, sanitation and healthcare as well as for lighting, heating, cooking, transportation and telecommunications services - an increasingly important element in today's connected world.

However, approximately 1.3 billion people - 18 percent of the world population - are off the grid and lack access to power for basic human services and communications[1]. In developing nations such as Africa, simply charging a mobile device can require a two-day walk to a nearby village. Africans in rural areas spend up to 40% of their annual income, nearly $30 billion, on power for basic services. However, in developed nations with reliable power grids, only $20 billion is spent annually on power – far less than the third world[2].

When natural disasters strike in communities on the grid, power lines can be down for days or weeks, making a desperate situation even worse. For instance, power outages following Hurricanes Sandy and Katrina in the U.S. made world news headlines as citizens struggled for basic services. Sadly, for hundreds of millions of people, 600 million in Africa alone, this is status quo in regions without consistent access to electricity[2].

Building a traditional electricity infrastructure is a Herculean task. In rural areas and developing nations, it is simply too costly to build roads, lay cables and develop the infrastructure necessary for traditional power grids. And in the case of disaster and power outages, replacing destroyed cables can take weeks – weeks without power. The solution to this challenge is written in the stars – our very own Sun to be precise, which provides a sustainable, clean source of renewable power for everyone.

SOLARKIOSK

Gemalto Powers Up Solar Power

Berlin-based SOLARKIOSK GmbH is dedicated to empowering Base-of-the-Pyramid (BoP) communities by enabling sustainable energy and local entrepreneurship through the provision of energy services, solar products, and quality consumer goods. SOLARKIOSK has developed a solar-powered business hub that is tailor-made for the energy needs of BoP communities and includes components from technology providers Gemalto and INSYS. The company's namesake SOLARKIOSK is a compact, modular power and business hub that can be quickly deployed anywhere to provide sustainable energy without traditional cables and grid infrastructure. The SOLARKIOSK was designed by the internationally renowned architecture firm GRAFT who have received multiple awards for the SOLARKIOSK design. Covered with advanced solar photovoltaic (PV) modules, SOLARKIOSKs transform energy from the sun into easy to access electricity. Gemalto Cinterion® M2M modules provide rugged wireless connectivity and together with an INSYS mobile router, the solution monitors and manages rooftop PV solar modules while tracking energy input and output through a user friendly web interface.

SOLARKIOSKs provide clean, renewable solar power producing up to 1800 kWh annually. That's a lot of power – enough to charge approximately 220 cell phones every day in addition to small appliances and laptops while running a refrigerator 24/7 to store perishable supplies and medicines. A dedicated SOLARKIOSK can generate enough energy to power a cell tower, which can improve cellular communications in remote villages. Several kiosks together can create enough energy to form a local power company. Initially launched in in July 2012, SOLARKIOSK pilot projects were first deployed across Ethiopia, and later also in Kenya and Botswana. By the end of 2014, SOLARKIOSK has established six country subsidiaries and implemented a total of 45 units across three continents.

In addition to providing vital services (such as phone charging, internet connectivity, copy/print/scan services, among others), SOLARKIOSKs are also rejuvenating village life by providing a venue for people to gather, listen to music, enjoy a cold, refreshing drink and visit with neighbors, friends and relatives. SOLARKIOSK always works with local entrepreneurs, especially with local women who are encouraged to become SOLARKIOSK operators.

Solar Power and Always-On Gemalto M2M Connectivity
An INSYS icom mobile router uses Gemalto's Cinterion® BGS2-W M2M module for connectivity and constant monitoring of PV modules, power generation, consumption and sales. Data from the kiosk is encrypted and securely transmitted to a user friendly online portal that can be assessed securely by authorized operators. The solution can send immediate alarms for system failure or when critical thresholds are reached via SMS, mobile phone or email alerts. Gemalto's high performance power management system extends battery life by up to 10 times so less energy is used by the device itself and more power is available to consumers. Built-in remote maintenance updates ensure that the technology is always up to date and functioning at peak levels. The Gemalto solution's future-proof design makes it easy for integrators to evolve to next generation technologies without equipment overhauls and expensive design revision. This makes adding new services including mobile WiFi hotspots and other 4G capabilities easy and cost effective.

Mobile and Locally Sourced
Framework and components of the kiosks are made of lightweight, rugged materials and delivered in modular packaging allowing easy transport in adverse terrain. To support local economic growth and maintain cost efficiency, the kiosks are assembled onsite using locally sourced building supplies. The entire roof of each kiosk is covered in solar PV modules and the unit is secured to the ground using special anchors. The style and size of the kiosks are flexible and can be adjusted modularly to fit varying terrains and power needs.

A Sunny Future
Recognized by the Carl Duisberg Society as a company committed to "development in emerging countries that benefits the local people," and honored with the "Empowering People Award" by the Siemens Foundation, the simple, flexible SOLARKIOSK can provide much more than clean energy. Access to power means more reliable and robust wireless communications and as connected living and the "Internet of Things" comes of age, this means expanded access to the Internet, healthcare, government services, information and education. With SOLARKIOSK, solar energy goes a long way.

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1. International Energy Outlook, World Energy Outlook 2013.
   http://www.worldenergyoutlook.org/resources/energydevelopment/
   http://www.worldenergyoutlook.org/resources/energydevelopment/
   energyaccessdatabase/#d.en.8609
2. SOLARKIOSK, Lars Krückeberg, TEDxBerlin, July 2012,
   https://www.youtube.com/watch?v=Z7uNaFL-UAk

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