

SECURE'S SMART GAS METER Journey in the UK

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Introduction

This article describes the journey of Secure Meters in the UK market for smart metering products (electricity and gas meters) and offered system solutions. More than 35 retailers in the UK have deployed Secure's smart metering solution as per the UK specifications (SMETS - Smart Metering Equipment Technical Specification) with GPRS WAN (comms Hub) and Zigbee 2.4 GHz HAN (comms hub and gas meter). Secure's smart metering system solution has been in operation for more than eight years in the UK market.

Background

When the company entered the UK market with its smart gas meter, only a few pre-payment systems prevailed. Most of the metering solutions were based on the legacy post-paid system, which were not even smart. Systems were working on the actual keys and cards. These cards were used to top up the gas meter and carried all the information, like



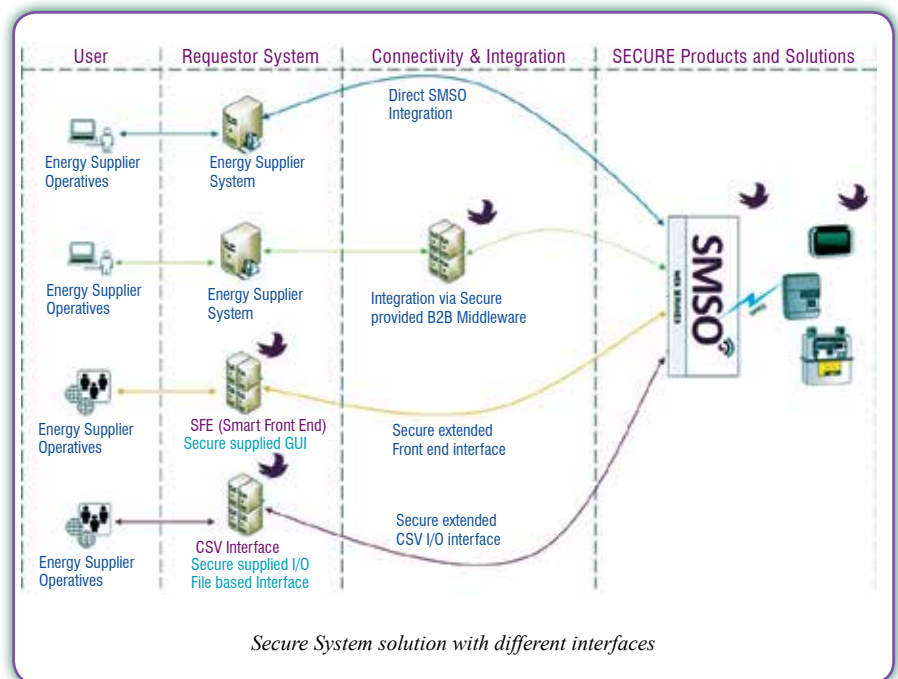
a bank card that has a chip in it and keys were programmed specifically for the consumer. If the keys got misplaced by consumers, or they moved to a new property, the utility had to issue new keys to them. The cost of issuing the keys was very high since these were physical keys holding device-related information.

Secure's smart system solution components

Deliverables of the first smart metering platform in the UK included the following components:

- GPRS 2.5G WAN, Zigbee 1.1b HAN enabled modular comms hub
- Single-phase, single-element electricity meter
- G4 diaphragm gas meter

- In Home Display unit (IHD)
 - SMSO (Smart Meter System Operator) hosted services - SMSO is a server application that runs in the background. It communicates via web services at one end (utility side) and with communication hub over GPRS at another end.
 - Smart Front End (SFE) - It is a web-based front-end application. Utility can use this to operate smart devices.
 - Sub-contracted Communication Service Provider (CSP) services
- The below architecture diagram shows different interfaces provided by Secure's smart system solution:
- The supplier system is integrated directly with our system solution using web-based services.





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and utilities, increased operational efficiency and integration of increasing flows of renewable energy into the grid, contributing to climate change objectives, were the key drivers

- SMSO acts as a bridge between the supplier business system and smart devices. Using SMSO hosted Web services, utility systems can operate smart devices.
- Middleware between the utility CRM system and SMSO
- Middleware between utility business systems and SMSO system provided by Secure is used to connect utility business system with SMSO to operate smart devices.
- SFE (Smart Front End) provided to utilities to operate our smart meters
- Secure provides Smart Front End (SFE) which has web-based client to operate smart devices.
- Supplier system integrated with our system solution using CSV interface.
- SFE provides file interface where requests and responses from smart devices are available at FTP location. This approach is used where supplier system is integrated with SFE system using the CSV file-based interface.

Drivers for the UK market rollout

- In 2013, the UK government released an ambitious Smart Meter Implementation Program (SMIP) that aimed to install smart meters in every UK home by 2020.
- Reduced costs for households

- for using smart meters.
- Benefit to utilities, consumers and the energy network:

Innovations introduced by Secure (gas metering)

Pre-payment: Pre-payment allowed customers to recharge online, without going to pay points or terminals. Traditional pre-payment systems used a physical card that required to be scanned in the machine to load the top up information; our system eliminated this need. Customers had to carry the top up cards or remember the long card number when they visited the pay points, which was a hassle in itself

Automatic meter reading and billing: Through the smart devices, suppliers can provide accurate billing information to the consumer. Consumers can tally the billing information since it is available on their smart devices. Billing system relied on the information which were directly sourced from the meters back to their business system, rather than any estimation or phone calls to customers to get meter readings. There was no need of a meter reader which substantially lowered the cost to serve.

Reduction in carbon footprints: Energy suppliers were able to train and educate the end consumer about how best they can use energy. Con-



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Shri Sunil Singhvi has worked at Secure since 1991. While most of his time has been spent growing

business in India, SE Asia and Africa, he has worked in many areas of the business and has a deep understanding of metering, its applications and markets. He was the head of IEEMA's metering division for four years and a member of the governing board for the India Smart Grid Forum. Presently, Sunil is a member of IEEMA's Executive Council.

Natural Gas Society welcomes Secure Meters Limited as its Non Voting Member

sumers had complete control and could see their usage and its cost. Consumer became more aware of their energy consumption, which helped them to optimise their usage. Overall, it was beneficial for the whole nation because the grid, supplier and end consumer became smarter to reduce unnecessary gas consumption.

Tariff and pricing: Energy suppliers were able to offer reduced rates during off peak hours. For peak time, like evening or a cold day, suppliers could introduce increased price so that people use energy sensibly. Intelligent energy suppliers came into the market and introduced more innovative and intelligent tariff pricing using Secure's smart gas meter.

Calorific Value (CV) update: Using Secure's smart gas meters, suppliers were able to keep the devices

MEMBERS' COLUMN

up-to-date with the new CV values as and when published in the market by the gas transporters and they can bill the customer up to the decimal places of accuracy. There was no estimation, no discount required at the end of the year. It benefitted the consumer as he was paying for the exact consumption, rather than overpaying monthly and getting discount at the year end.

No bulky billing system: Secure's gas meters provided both m³ and kWh readings. It enabled suppliers to get rid of the bulky IT business system in the background. Suppliers got both m³ and kWh values from the device and the same readings were available at the consumer's end via the in-home unit or from the meter display. Smart readings removed extensive calculation done by the suppliers' billing system, which used to run in the background overnight to bill thousands of consumers.

Enriched feature set: Secure's smart gas meters provided meter reading every half-an-hour, and even less than that at times. This enabled suppliers' system to have accurate readings from the gas meters on almost real-time basis.

Challenges for a cost-effective gas metering system solution

Following cost drivers were the key requirement analysis and design focus areas to achieve this 'lowest cost to serve' objective:

- Reducing customer complaints for the retailer.
- Reducing the number of site visits for the retailer. One site visit can



Pipit 500

undercut a year's worth of margin from the site.

- Reducing customer communication cost (number of calls to the call centre) without introducing customer dissatisfaction.
- Enabling better cash flow management - adjustments months after the actual purchase date were typical, leaving a huge scope of improvement.

Critical success factors

For delivering a successful smart metering rollout in the UK energy retailing landscape, below were the critical success factors:

- Supplier must not need to visit the site again before product design-life is over
- Fast and efficient installation experience for the installer, regardless of the network availability on the site; enabling maximum number of installs per day.
- Easily accessible and understandable data for the consumer to drive the call centre cost down.
- Low IT integration cost
- Low recurring operating cost:
 - Optimised and compressed WAN protocol
 - Provide end-to-end packaged solution to supplier to keep the costs

down by bespoke B2B integration with supplier CRM system.

Achievements

Below are some of the areas where Secure has shown improved customer engagement in the UK smart metering market:

- New customer acquisition rate increased for the utilities due to low operating cost offered by Secure's smart system solution. Utilities were able to offer slightly lesser prices and discounts to the consumers as compared to competitors.
- Up to 35+ utilities have Secure's smart system devices and solution
- Increased customer retention due to superior services
- >2.7 million gas meters installed
- >3.4 million communication Hub and electricity meters installed
- Customer satisfaction index improved at all fronts
- Multiple choices for tariff options and value-added services
- The 12-key keypad on gas meters is an add-on benefit over competitors' meters. It also acts as a backup in case the primary option (via In-home unit or WAN) fails for token transfer or data reading. By pressing different keys of the keypad, consumers can easily access various parameters on the display. Other competing meters only had one or two keys, and the consumer had to press those keys multiple times to view any specific parameter.



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