

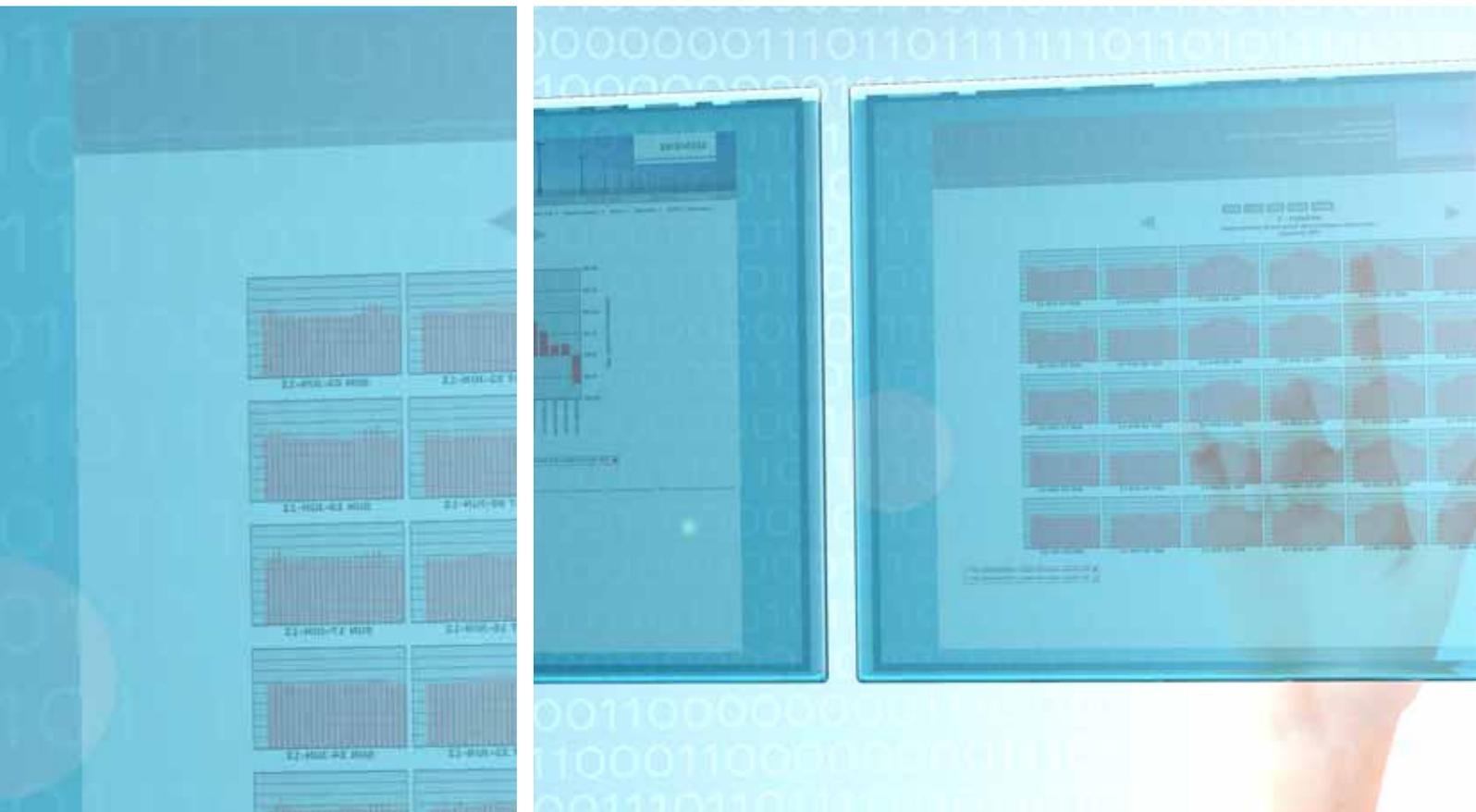
The background of the entire page is a wall made of large, metallic panels. Each panel has large, bold letters cut out of it, creating a grid of openings. The letters are arranged in a way that they appear to be part of a larger message, though some are partially obscured or cut off. The lighting is dramatic, with strong highlights and deep shadows, giving the wall a three-dimensional appearance. The colors of the light passing through the cut-outs range from bright white to deep red and orange.

SIEMENS

Energy Management for Business

Services for business, commercial and enterprise customers

www.siemens.co.uk/metering



Accepting the challenge

To improve your organisation's energy performance

So you've decided to invest in smart metering and use energy more efficiently across your business – now, what's the next step? The data achieved from smart metering only becomes truly 'smart' if it is then used to manage your energy. But what do we mean by energy management? Here is one definition:

"Energy management is the systematic use of management and technology to improve an organisation's energy performance." - The Carbon Trust ¹

This description gets to the heart of the issue. Yet the problem for many organisations is that they have the management will to improve their energy performance, but lack the technology to help them do so. Alternatively, they may simply lack the in-house expertise to gain most benefit from the technology, even if they have installed it.

Siemens Metering, Communications and Services can assist you with both technology and expertise. We will not only help you gain a detailed understanding of where and when energy is being consumed, but also help you move from simply measuring your energy use to seriously managing it.

¹ 'Energy Management – a comprehensive guide to controlling energy use': The Carbon Trust, September 2011

The cover image shows an area within 'The Crystal', Siemens' new landmark global urban sustainability centre in London, which deploys a wide range of sustainable technologies, including energy management. www.thecrystal.org



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Energy management is the systematic use of management and technology to improve an organisation's energy performance.

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The Carbon Trust

Agreeing your starting point

Why take action at all?

The first step is to agree the rationale for an energy management strategy. All of us increasingly understand the sustainable principles of using energy more efficiently and reducing our carbon footprint. But there are also two very sound business drivers:

- **Government energy and carbon reduction initiatives.** The Carbon Reduction Commitment (CRC) Energy Efficiency Scheme is just the start of the Government's drive to reduce energy consumption. In July 2012, it was announced that all London Stock Exchange listed businesses will have to report their carbon footprint from April 2012 – and increasing focus is now likely on the target to reduce UK carbon emissions by 50% by the year 2025. Financial penalties will be imposed for non-compliance, and negative media coverage can have a serious impact on an organisation's reputation.
- **Financial incentives.** The most compelling business reason for saving energy is reducing costs. Saving money on your gas and electricity bills is often easier than you expect, simply by managing your energy use more efficiently. The FTSE Carbon Disclosure Project has already noted the increasing profitability of companies that report carbon emissions in line with the

Government's 2009 reporting guidelines. The logic is simple: manage your energy – and you manage your bottom line.

Understanding your metering data

Once you have decided to implement an energy management strategy, the pre-requisite for everything that follows is to understand your metering data. ^{Note} Whether or not this includes data from sub-metering as well, the data that the meters produce can help you understand where there are unusual consumption patterns and where wastage may be occurring.

You may decide, however, that you need practical and commercial advice on how you can analyse and interpret the data and the consumption reduction opportunities that are available. Siemens can help you identify the most appropriate actions and savings options. We can also show you where you can do things differently, as well as help you forecast future energy use more accurately.

^{Note} See our 'Smart Metering' brochure for more information on metering services from Siemens



Building a business case

Step 1: a site assessment

From the initial analysis of the data, the next step that Siemens can help you with is a site assessment, which will investigate a wide range of opportunities for improving efficiency and reducing consumption, whatever your industry sector.

Also known as Energy Audits, these are delivered by our in-house energy management staff. They will visit your site to collect asset data on your buildings, services, plant and equipment. The outcomes will be two-fold:

(i) A performance benchmark of your buildings against industry standard metrics.

Benchmarks tend to be subjective and generic and fail to take into consideration some of the more complex factors that affect your building energy consumption.

Accordingly, a range of benchmarking methods will be used, including three specific tools:

- ECON19: Energy Consumption Guide 19 – Energy Use in Offices
- EN15232: Effect of Automation on Building Efficiency
- DEC: Display Energy Certificate

(ii) A range of fully priced energy efficiency options, focused on a positive return on investment.

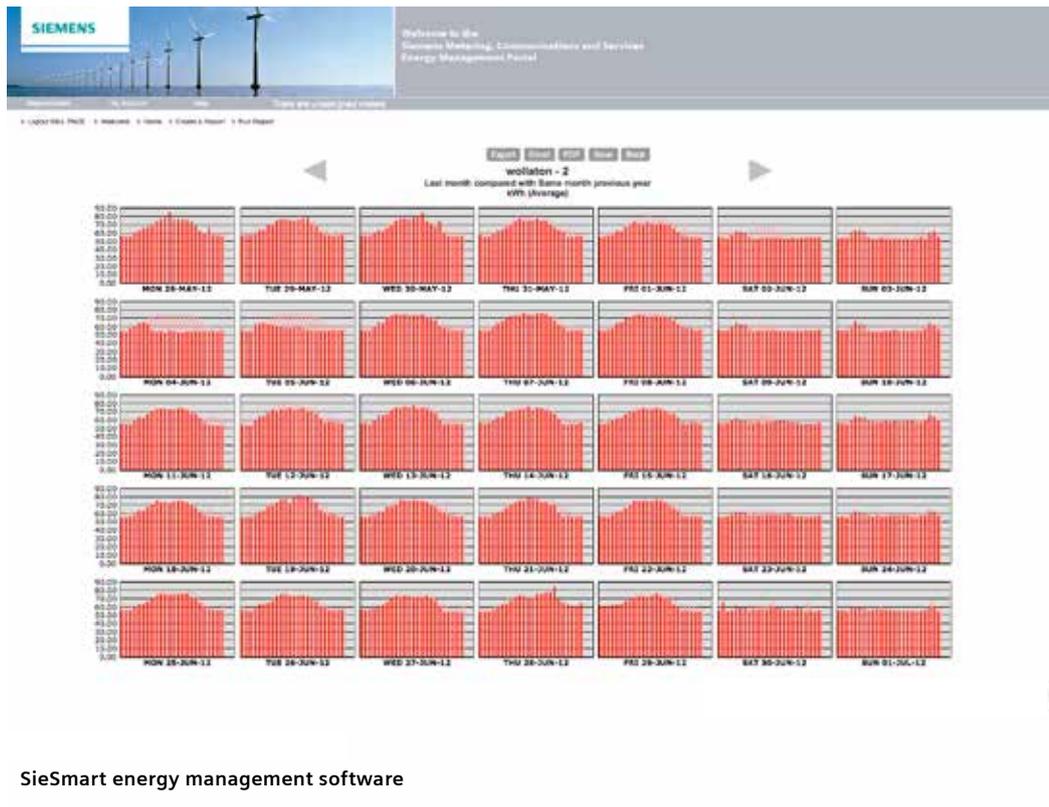
In particular, the service will examine options and solutions around areas such as:

- Automatic monitoring and targeting: metering, sub-metering, gas, water, electricity, heat and oil
- Power Quality: power factor correction, voltage optimisation
- Building Control: your building management system
- HVAC: heating, cooling, motor control
- Lighting: lamps and lighting control
- Renewables: solar PV, solar heat, wind

Step 2: a plan for action

From this analysis, Siemens puts together a structured business case. This identifies the scope of opportunities, the investment required and a return on investment model. Siemens also reports on opportunities which are unsuitable or which do not provide a sufficient return on investment.

Our objective is to recommend energy cost saving opportunities that will become apparent within weeks, with a full return on investment typically within 12 months but no longer than 18 months.



SieSmart energy management software

Managing the detail

Sub-Metering options from Siemens

One of the recommendations for action may well be to consider sub-metering, to inform you of problems where they arise, in any area of your operation. Sub-metering enables the measurement of energy consumption from specific areas, equipment or operations within a site: both gas and electricity. Energy management data is collected in either Day +1 or real-time frequency formats, depending on the user's specific requirements. The following sections explore both options.

Smart sub-metering solution (Day +1)

Sub meters allow you to understand your consumption in greater detail than the main fiscal meter used for billing. You can meter specific areas within your facility to understand how they contribute to the overall load of the site and identify opportunities for saving.

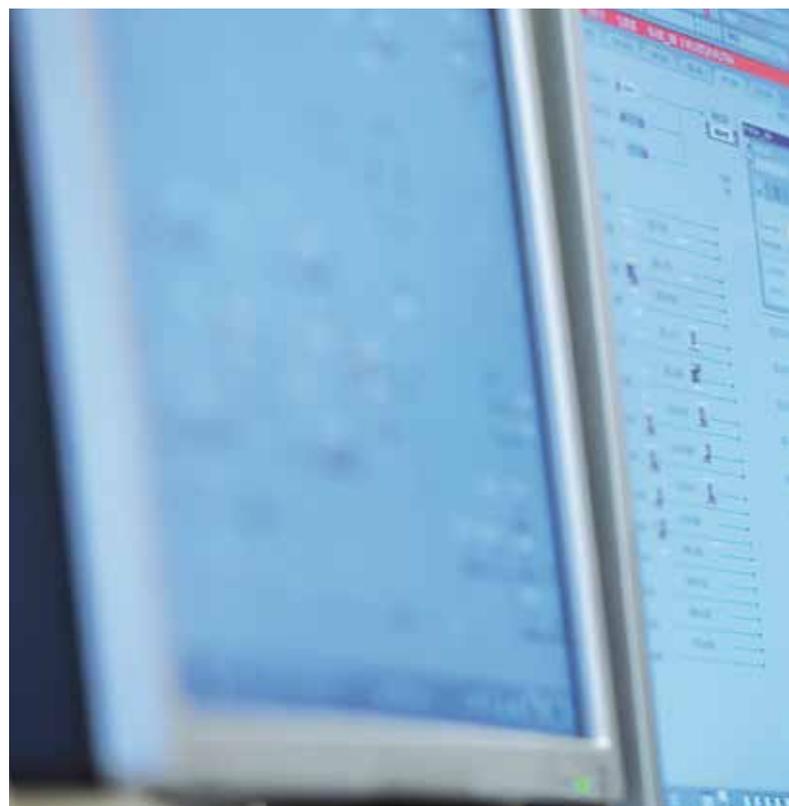
Consumption data is collected every 30 minutes from your smart sub-meters and logged locally within the meter or gas data logger, then transmitted overnight to the **SieSmart Energy Information platform**, a load profile energy management software solution that is very easy to use and displayed through the same display portal in which the overall site consumption is displayed. This enables you to view your energy consumption in a straightforward graphic format on the day after consumption has been recorded, making it easy to define your own 'trigger points' to flag an alarm on specific areas of consumption. It also allows customised reporting and more complex analysis as required.

Real-time high-density sub metering

Using this method, consumption data can be logged every minute and updated to the reporting package every 15 minutes: alerting you to problems when or even before they happen – and avoiding peak tariff penalties. If the site already has existing Day +1 metering, this data can also be imported into the real-time solution, so that all metering information can be incorporated in one system.

You can meter individual assets for condition monitoring, receive power quality data, assess the potential for savings through voltage optimisation and view reporting on a minute-by-minute level if needed. Large amounts of real-time data, from up to 36 data points, can be captured via a single box. The data is then analysed via a web-based management console (accessible both to Siemens engineers and the client). Alarms can be set to reveal unusual consumption patterns and prompt maintenance activities on plant and equipment: helping minimise both expenditure and unscheduled repairs.

The simple-to-understand dashboard shows all a customer's sites: enabling the user to display, compare and report energy use in both graphical and tabular format. In summary, the system offers greater granularity of data for little extra cost – and may even be cheaper if there are multiple points to monitor. Installation is also straightforward and can usually be accomplished without a power outage, minimising site disruption.



Realising the benefits

We can help you develop practical, business-focused strategies to make Energy Management a realistic and viable prospect, whatever the size of your business. Our recommendations will be configured to suit your particular requirements. The benefits you should expect from a coherent, unified and interactive energy management system are wide-ranging and include:

Increased efficiency and savings

Understanding the energy consumption of a single or multi-site portfolio enables a clear view of performance, both positive and negative. In particular, if you choose to implement real-time reporting of energy performance, the automated alarms, dashboard animations of equipment performance and historical monitoring of all energy-related feeds all combine to ensure a significantly more accurate view of your operation than ever before. This allows you to take swift corrective action and also plan energy efficiency into future development or expansion. For example:

- **Maintenance and condition monitoring**
Early warning of maintenance issues with individual motors, chillers and refrigeration equipment enables early corrective action: minimising energy use – and avoiding the downtime that results from equipment failure.
- **Tariff cost avoidance**
Management of cost avoidance during triad periods, through an understanding of the impact of non-essential loads, avoids penalties.

Siemens will also help you identify the savings achievable through the introduction of energy-efficient technologies and/or the output from local generation and compare it with business case expectations. **In our experience, savings typically range from 5 to 15%, with the findings normally revealing improvements that can be addressed by the building services contractor.**

Revenue generation

The National Grid's Short Term Operating Reserve (STOR) is a service for the provision of additional active power from generation and/or demand reduction – whereby service providers offer generation or demand reduction (this can be from more than one site) during unforecast load peaks. Businesses can benefit from substantial revenues by participating in this programme. Siemens sub-metering solutions are approved for the STOR programme.

Reputation

Increasingly, businesses that are seen to have efficient and effective strategies for energy management and carbon reduction enjoy reputational benefit with their customers, shareholders and investors; as well as differentiation from their competitors and brand leadership in their particular markets.



Choosing a partner

On-going support – where and when you need it

With the best will in the world, the challenges of running your business may mean that you do not have the resources or expertise to analyse your consumption data, or decide on the best course of action from the information that you have available.

In short, you may need a partner who can help lighten the load. If so, Siemens can provide a full end to end service.

So as well as the survey, business case and implementation of recommendations, we can provide continuing reports, support and maintenance where needed. Updates will be provided on a monthly or quarterly basis through a mix of focused reports and live conference call meetings, discussing the exact energy saving opportunities and potential energy savings identified within that period. We can make specific recommendations – and even go one step further and liaise directly with your building maintainer.

Why choose Siemens?

Siemens is the largest independent provider of energy services in the UK. It is ideally placed to analyse your energy data and provide assessments and solutions based upon sound engineering principles, good practice and a common sense approach to the financial returns on investment.

Siemens Metering, Communications and Services currently services over a quarter of the commercial and industrial sector in the UK. It also delivers critical energy management information at over 10,000 customer locations in all industry sectors. This helps customers increase efficiency whilst reducing energy consumption and costs. Our experts will provide practical and commercial advice on legislative compliance as well as on how to reduce energy usage and carbon emissions.

Next steps

Most organisations are making at least some moves towards greater energy efficiency, but not all would claim that they yet have integrated their various remedial activities into a unified energy management strategy. Are you ready to take that step? Contact us for more information to discuss how we can help you move on to the next stage of your energy management journey.

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