



ENERGY MANAGEMENT FOR SMES BEST PRACTICES FROM ENERGY EXPERTS

HOW ESCOS AND SMES CAN BUILD ON THEIR ENERGY
PRODUCTIVITY POTENTIAL — AND REAP MULTIPLE BENEFITS
BEYOND COST SAVINGS

DEXMA
BY SPACEWELL

Contents

Part 1: Energy Management is for SMEs, too!	3
What are SMEs?	4
Top 10 Energy Management Pain Points for SMEs	6
 Part 2: The Ultimate Energy Management Glossary (SME Lexicon)	 13
 Part 3: Integrative Energy Management: Best Practices for SMEs	 27
Commitment	28
Organisation	29
Training	32
Benchmarking	33
Planning your Project	34
What Are SMART Goals?	34
Financing your Project	37
Communicate and Celebrate!	40
 Additional Resources Worth a Look	 41
 About DEXMA	 43

PART 1:

Energy Management is for SMEs, too!

What are SMEs?

The OECD defines an SME as a non-subsidiary, independent company that employs less than a certain number of workers. This number can vary depending on the country: in the US, the upper limit is 500 while in the EU the limit is 250. SMEs can be broken down into micro, small- and medium-sized enterprises.

SMEs represent a large but often overlooked part of the energy consumption landscape. For starters, they are important drivers of the global economy: **SMEs make up 99% of ALL businesses and provide about 60% of jobs on Earth.** SMEs in Europe generate EUR 3.7 trillion, employ almost 90 million people and **create about 1.1 million new jobs each year.** In the European building sector, **SMEs contribute more than 70% of added value.** They also drive innovation by carrying out more than 20% of research & development activities, patent applications and new product output globally.

On their own, SMEs don't consume huge amounts of energy. But collectively, their energy demand is a different story. The **IEA estimates** indicate that **around 13% of total global energy demand** (that's 74 exajoules for those keeping track) **is consumed by SMEs.** About 30% of SME energy demand could be eliminated by cost-effective energy efficiency measures, such as energy management software – that would save more energy than Japan and Korea consume in a year.

Energy efficiency can really help SMEs in big ways, too: not only by cutting costs to free up resources to invest in more productive activities, but it can also help them become more resilient, competitive and innovative. According to the IEA, *“energy efficiency can deliver a wide range of other growth benefits [...] for example by improving productivity and product quality. Energy efficiency in SMEs can also contribute to [...] reducing reliance on energy imports and the need for investments in additional generation capacity, and lowering environmental impacts, such as GHG emissions and local air pollution.”*

So it's clear that with thousands of industrial processes, millions of SMEs and countless ways in which energy efficiency projects can be designed and implemented – SMEs should logically be winning the energy management game... right?

Not exactly. SME managers themselves face **numerous barriers** preventing them from adopting energy efficiency measures. According to the Observatory of European SMEs, fewer than 30% of them in Europe have implemented any measures for conserving energy, and only 4% have a comprehensive approach to energy efficiency. This is despite the fact that Article 8 of the European Energy Efficiency Directive (EED) requires Member States to “safeguard the availability of audits” for SMEs.

One contributing factor to these dismal statistics is that **SMEs are often overlooked** by ESCOs who tend to chase big projects in bigger buildings in the biggest markets. This leads to a huge energy services gap for SMEs, because the largest buildings in the largest markets have typically already committed significant resources to energy efficiency.

That’s why this guide aims not only to help SMEs understand their energy saving potential, but also to **show how ESCOs are instrumental in supporting SMEs** in achieving their energy-saving potential.

To do this, **ESCOs need to prove the same value proposition of energy efficiency applies to businesses of all shapes and sizes** and get beyond using giant skyscrapers or massive multinationals as the primary case studies for what’s possible. They need to do a better job of recognising and treating these pain points in order to serve SMEs more effectively. While the costs of delivering energy efficiency programmes to SMEs might be higher than for large enterprises, the SME segment typically offers more untapped energy efficiency potential.

So whether you are a small business owner or an ESCO that is ready to tailor your services to SME customers, let’s get started with **the 10 most common energy management obstacles preventing SMEs from controlling their energy costs**.

Top 10 Energy Management Pain Points for SMEs

Energy efficiency and savings for SMEs sounds nice on paper, but can be much more complicated in practice. Only 5 years ago nearly 40% of European SMEs (more than 7.5 million companies) had not implemented any energy saving or efficiency actions.

The **European Commission's Winter Package** and the 2018 review of the EU energy efficiency directive have increased the target energy efficiency improvement to at least 32.5% by 2030. As such, energy audits targeting SMEs could unlock incredible energy savings potential in Europe. Unfortunately, due to their small size, sectoral variation, and the low returns per customer, ESCOs have a particularly difficult time reaching the SME market in order to reach these targets. Yet, if SMEs implemented energy efficiency measures to their full potential, they could shave more than 20% off their energy bills. And that is something SMEs in Europe and beyond simply can't afford NOT to do.

Most importantly, **SMEs have very specific needs when it comes to energy efficiency**. ESCOs need to do a better job of recognising and addressing these pain points. To help with that, here is a list of the top energy efficiency challenges faced by small and medium-sized enterprises:

1. Lack of Awareness due to Limited or Inaccessible Information on Energy Savings Potential

Being able to turn the lights on and power up our computer and office equipment are things we all take for granted when at work. A lot of small to medium-sized businesses are simply too focused on their day-to-day to realise or care how much energy consumption is actually costing them. Or, they lack information about where and how energy is used in their companies. The result? Energy is something SMEs blindly pay for yet feel no real sense of control over.

How ESCOs can help:

- Tailor information to SME needs and deliver them in a convenient form that fits into the day-to-day tasks of their core business.
- Incorporate SME training, help develop professional networks and practical guidance material.

2. Ain't Nobody got Time for That!

SMEs are horrendously overburdened. Since small business owners and executives have so many hats to wear and roles to fill every day, **they rarely work “normal” 9-to-5 business hours** like the rest of us mere mortals.

Not only do these extra hours drive up energy costs, but it also prevents SMEs from having enough time to explore their energy productivity options. Plus, SMEs rarely view efficiency as a priority, especially during the early development phase. While it's true that they must maximise efficiency to save money and grow – it's next to impossible when time is such a scarce resource

How ESCOs can help:

- Make it easy for SMEs to access assistance that is tailored to their needs.
- Make it fast: combine programmes that provide information, expertise and financing for an integrated “one-stop-shop” approach to make rollout efficient and effective.

3. No Money to Save Money

Despite their big plans to become the Uber of [insert industry here], **small business owners rarely have big capital** to make their dreams a reality. According to Forbes, only about 32% of respondents from a small business survey were able to satisfy their needs when it came to borrowing capital. This might seem like a double-edged sword for SMEs that are desperately trying to optimise for efficiency.

This limited access to capital is usually caused by an SME's insufficient capacity to develop “bankable” projects with a ROI that is comfortable enough for financial institutions to lend them money. Or, banks might lack financial products or capacity to deal with SME energy efficiency.

It's no wonder that energy management is often dismissed as too big a strain on SME resources. Without adequate financial support, any available capital is considered better spent on expanding or improving the business the old-fashioned way, rather than energy management projects. Instead of a double-edged sword, ESCOs need to help their SME clients see that these are actually 2 sides of the same coin. With so many no- or low-cost efficiency measures, convincing an SME to start with energy management is often a no-brainer.

How ESCOs can help:

- Be the interlocutor or bridge between the SME and their financial institution.
- Help your SME clients with collateral and record-keeping issues that might prevent them from acquiring capital.

4. The SME Invisibility Cloak

While large, energy-intensive industries tend to benefit significantly from government energy efficiency programs, SMEs tend to receive very limited support. Their energy use and energy savings potential goes largely unnoticed by ESCOs and governments alike.

Although **some government programmes are in operation** to help SMEs realise energy efficiency savings, they tend to be small in scope and have a very limited duration. When changes of governments happen, these programmes are hardly ever continued, replicated or scaled up to assist larger numbers of SMEs. The pace of change can be dizzying, and SMEs simply do not have time or resources to keep up with legislative changes. ESCOs therefore have a unique role to play in helping SMEs navigate this dynamic landscape. They can also assist governments with the challenge of reaching more SMEs with diverse energy needs, operating in **different sectors**.

How ESCOs can help:

- Provide technical guidance to shape government programmes and mechanisms
- Get a sense of the extent to which your SME customers are accessing these programmes and communicate this information to the appropriate authorities

5. Lack of Trust When it Comes to Energy Services Procurement

That means trust in a company that always offers the better price, and can demonstrate it. “There is a long arc to build trust in this industry”, says Jessica Stromback, Chairman of financial services company Joule Assets Europe and coordinator of SmartEn, a European business association for digital energy solutions. Antonio Ciccarelli, former CEO of Italian energy services company Servizi Energia Ambiente, agrees: “The most complicated thing is trust. [ESCOs] are selling savings, but how does the customer know if they can trust you to deliver on them?” **says Ciccarelli.**

ESCOs have to go the extra mile to build a trust-based relationship with their SME clients, who are wary of being taken advantage of. Transparency of energy-relevant data is the key to raise awareness and build the trust needed to generate real energy savings. Energy efficiency actions can only be motivated by SME if transaction costs for collecting such data are reduced to nearly zero. Gaining trust of SMEs is a long process, so be patient!

How ESCOs can help:

- Identify benefits beyond energy savings – your service offering as an ESCO will be more compelling for SMEs if they see multiple benefits, such as enhanced productivity, product quality and/or EHS/occupational health and safety.
- According to a **2015 EEFIG survey**, key decision makers’ confidence in energy efficiency resources is a much more significant issue for small and mid-sized companies than for larger companies – so focus on building that confidence and trust from the get-go.
- Act as a guide focused on educating your SME clients, not a salesperson. When SMEs are guided through the energy management implementation process, they are more willing to implement energy management.



6. Understanding Consumption

Hardly anyone can understand their electricity bill, but you can't manage what you can't measure! It's essential for SMEs to understand how they consume energy before they can start saving it. Plus, a **study** by Inenco found that 1 in 5 energy bills have errors in them that businesses frequently overlook. In fact, 80% of businesses (in the UK) do not conduct regular invoice validation and bill audits – resulting in a collective loss of £500m.

How ESCOs can help:

- Act as the “translation” service for your customers’ utility bills. A useful tool to help you do this is **DEXMA Detect** – the Google Translate of energy bills!
- If you are dealing with a more hands-on SME, **DEXMA Detect** provides a clear and concise PDF report that your client can read themselves, and is sure to understand quickly and easily.

Understanding your consumption and potential is easier with a customised DEXMA Detect report.



7. Doubts Around Actual Savings Potential

It is to be expected that SMEs will have doubts when it comes to their savings potential. Questions like “How much can I actually save?” or “Is it REALLY worth it to invest in saving energy?” or “Am I more or less efficient compared to businesses like mine?” are bound to come up.

A trustworthy ESCO must be prepared to answer these questions with clear, concise responses – and the data to back them up. But where do you get this data if the SME asking questions isn't your client or can't afford an audit?

How ESCOs can help:

- Again, DEXMA Detect is one tool you can use to help generate a data-driven savings potential estimate for any building (or portfolio of buildings). That way you don't have to pass this consultation cost on to SME prospects that can't afford to spend time and money on audits.
- Use a trusted energy management software with a demonstrable track record to back up your credibility. When your clients can visualise their consumption and get timely, data-driven updates, a rapport of trust is gradually built up between you.
- Include productivity outcomes in your audit or assessment framework to reduce the payback period for energy efficiency investments.
- If you can show your SME prospects that their competitor has a much lower energy consumption, they are more likely to be interested in knowing possibilities to decrease their own energy consumption as well.

8. Uncertainty About How to Start Investing

Some SMEs are actually ready and willing to start energy efficiency projects – which is great news for ESCOs! But most have no idea where to start looking for financing.

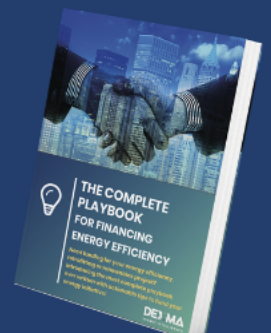
Reluctant (or unable) to use their own resources, SMEs are the perfect candidates for third party financing... if only they knew where to look or had time to apply! That's where you come in, dear ESCO.

How ESCOs can help:

- Become an expert in third-party financing for SMEs. You are part engineer, part financial advisor – time to act like it! First, take advantage of existing policies and programmes and form partnerships that build on existing efforts and resources.
- Knowing about financial programmes that fit SME needs are essential – look for grants, dedicated credit lines and creative approaches such as leasing options for energy efficient equipment. Flip to the [Financing your Project](#) section for more resources to get you started.

FIND OUT HOW TO FINANCE YOUR ENERGY
EFFICIENCY PROJECTS WITH
THE ULTIMATE GUIDE

DOWNLOAD GUIDE



9. SMEs Rarely Own their Own Buildings

The majority of SMEs **rent their work spaces**, meaning it is more difficult for them to drive behavioural change. For these SMEs, it's doubly important to focus on detecting and monitoring their consumption and focus on aspects of energy efficiency within their control.

How ESCOs can help:

- ESCOs can play an important role by helping building owners and landlords see the benefits of investing in energy efficiency for their SME tenants. Similar to the previous point about liaising with financial advisors, it's helpful if you can speak the language of property managers too, on behalf of your SME clients.

10. The “Energy Management” Language Barrier

SMEs can pat themselves on the back for having actually taken the step to seek professional help with energy management ... only to find their ESCO might as well have been speaking Ancient Greek. That's because **the energy world is mind-bendingly complex**, and full of mathematical and scientific terms you haven't seen since your final year of high school ... until now!

Onwards, dear reader!

ENERGY PRODUCTIVITY FOR SME

A WEBINAR WITH
DR. STEVEN FAWKES

WATCH NOW

FREE WEBINAR



PART 2:

The Ultimate Energy Management Glossary (SME Lexicon)

Let's face it: the energy world is ultra technical, and fundamentally complex. While borrowing terms from a wide variety of disciplines (physics, economics, finance, mathematics...), energy management also has its own set of complicated terms and jargon that are likely to come up in any conversation about energy efficiency.

As if that wasn't complicated enough, the list of acronyms associated with energy management keeps getting longer (IoT, EMS, aM&T, oh my...). To add to the confusion, lots of common terms sound very similar, or are used interchangeably even when they shouldn't be.

Whether you're a seasoned energy professional or brand new to the energy management game, you need to be prepared – so here's a list of helpful terms to know.

10% Rule

A useful way to estimate how much your company or (SME) client should invest in energy efficiency – either 10% of their annual energy spend, or the equivalent of 1 monthly energy bill. [Learn more.](#)

Automatic Monitoring and Targeting (aM&T)

The automated process of collecting energy usage data, setting a consumption target, and then comparing usage to the target figure. This process enables on-going management of energy as well as identification of high-spending areas that may provide investment opportunities. [Try it here!](#)

Baseline

Level of energy consumption used as reference when calculating savings on energy efficiency projects. It is established by collecting data on buildings' energy performance in a period of 12–36 months. A baseline is the theoretical consumption of a company which reflects a complete operating cycle with its maximum and minimum consumption. There are several ways to calculate your baseline – [learn more here.](#)

BMS – Building Management System

Controls the mechanical and electrical equipment of a building, such as the HVAC system, security system or lighting.

When these systems come with predefined event triggers, they are referred to as Building Automation Systems (BAS). Although these are great for overall operational oversight, they lack granular diagnostic insights typically provided by an EMS.

You might also come across acronyms like BEMIS (Building Energy Management Information Systems) and BMIS (Building Management Information Systems). The latter includes BEMIS, as well as everything else that needs to be connected in a building (security, elevators, water, etc.).

Carbon Footprint

Total amount of greenhouse gases (such as carbon dioxide and methane) produced to support human activities directly or indirectly. It is expressed in equivalent tons of carbon dioxide.

Data Logger

Also known as data recorders or gateways, these are small devices that integrate into your building's MODBUS or other communications network to gather readings and send the aggregated data to your EMS. Think of it like an energy "modem" that connects your building to the outside world. Using a data logger means you can get your cloud-based EMS up and running in just a few hours. If you're curious about how to set one up, [**read this article**](#).

Data Point

A data point is a single string of data sent by any device, meter or sensor in your building. The best way to understand a data point is to think about it as a "variable" in a mathematical or scientific way. When you're managing energy data, there are a bunch of different variables that you are likely interested in tracking. For example, you may want to get active and reactive electricity readings from two different meters.

That's two variables per meter, which means you'll end up with four data points. So, your first important takeaway with data points: one meter does not automatically equal one data point. To calculate some examples for yourself, [**here's a free template that can help you**](#).

Demand Response

Generally used to refer to mechanisms that encourage consumers to reduce electricity demand during peak times in order to avoid system emergencies and outages. More specifically, demand response is the change in power consumption of an electricity consumer to better match the demand for power with supply. This is a different concept from [**energy efficiency**](#), which means using less power to perform the same tasks, on a continuous basis or whenever that task is performed.

DRMS (Demand Response Management System)

Allows energy managers to analyse and control energy use through demand response programs.

ECM (Energy Conservation Measures)

Any type of project carried out to reduce the amount of energy used by a given process, technology or facility.

EMIS (Energy Management Information System)

Performance management system that allows organisations to plan, make decisions and take action to manage energy use and cost. The system makes its energy performance visible to different levels of the organisation by using energy and utility data. An EMIS is part of a complete EMS.

Energy

Lots of meanings but fundamentally the ability to do work. The more energy you have the more work you can do. Measured in many units but most familiarly in kWh (kilowatt hours), and for larger amounts, MWh (megawatt hours), GWh (gigawatt hours) and TWh (terawatt hours). NB correct use of kWh, not KWH or kWhrs or any other variation.

Energy Consumption in a Year for Comparison

- Typical UK fridge about 160 kilowatt hours
- Typical TV/DVD/set top box about 460 kilowatt hours
- Typical primary school about 200,000 kilowatt hours (200 megawatt hours)
- Typical convenience store 560 megawatt hours
- Typical supermarket 7,000 megawatt hours (7 gigawatt hours)
- Entire British Telecom network 2,300 gigawatt hours (2.3 terawatt hours)

- Output of Sizewell B nuclear power station 9.7 terawatt hours
- Output of all UK renewables (2011) 34 terawatt hours
- Output of all UK generating stations (2011) 358 terawatt hours
- Total UK primary energy consumption (2019) 2,177 terawatt hours
- Total US primary energy consumption (2019) 26.3 terawatt hours
- Total global primary energy consumption (2019) 162 terawatt hours

Energy Consumption

Quantity of applied energy measured in kilowatt hours (kWh), or 1000 watts of electricity being used for 1 hour.

Energy Efficiency

Doing the same work with less use of energy. Not the same as energy conservation which is more about doing less work.

Energy Management

An umbrella term that covers anything related to how energy use is tracked, managed, reported on and optimised.

EMS (Energy Management System)

A platform used to improve energy performance by detecting, monitoring and controlling energy consumption and costs. A good Energy Management System improves operational efficiency, decreases energy consumption and diminishes environmental impacts.

Many tools are used within an EMS to gather data, detect inefficiencies, track energy use, monitor peaks and pinpoint anomalies. **Learn more.**

Energy Monitoring

An essential component of energy management that refers to the processes and technologies used to track energy consumption. Monitoring is key to evaluating operational performance, detecting equipment malfunctions and identifying savings opportunities.

EPC (Energy Performance Contract)

Contract form in which a supplier (usually called an ESCO) undertakes energy efficiency projects in a customer's building or facility and guarantees that a set level of savings will be achieved. Often, but not exclusively, associated with the use of third party finance.

EnPIs (Energy Performance Indicators)

Indicators defined by an organisation that measure energy performance.

Energy Productivity

Energy productivity is defined as GDP per unit of energy. In other words: how much value we create from every unit of energy. For businesses, adopting an energy productivity target also drives activity in 3 areas; retrofit, refurbishment and new build – and helps to balance them within a coherent, and strategic policy.

Energy management is usually only concerned with retrofits and is consigned to the boiler room rather than the boardroom – making it part of a strategic policy keeps it in the boardroom too. **[Learn more.](#)**

ESCO (Energy Service Company)

Entity that delivers an extensive range of energy services, typically with a guaranteed savings level. These services might include: implementation of energy efficiency projects, energy conservation and energy supply, among others. To find an ESCO near you, use our handy [**search tool**](#).

According to energy efficiency expert Dr. Steven Fawkes, there is much confusion between the term ESCO and the business models employed by ESCOs. The basic idea behind the ESCO model is that after the projects have been implemented the energy bills should be reduced by a sufficient amount to cover repayment of capital expenditure and other costs such as ongoing monitoring.

The ESCO provides some form of guarantee that energy cost savings will exceed the repayments of capital, thus providing net savings to the project host from the beginning of the contract. ESCOs offer Energy Performance Contracts (EPC) sometimes called Energy Savings Performance Contracts (ESPC) which can be funded by the client or by a third party investor.

The ESCO / EPC model originated in the USA and has been widely used in the US public sector (the 'MUSH' market – Municipalities, Universities, Schools and Hospitals) but has not yet been widely replicated outside the public sector. The EPC has been widely copied around the world with various modifications but due to various problems, not the least of which is that the MUSH market in the US is largely funded by cheap public sector capital, has never really taken off to the extent that its enthusiastic supporters believe it should.

Europe 2020

10-year growth strategy of the European Union proposed in 2010. It aims for the EU to become a smart, sustainable and inclusive economy by setting 5 objectives to be reached by 2020. The objectives, over which each member state has adopted its own targets, are related to: employment, innovation, education, social inclusion and climate/energy.

The related research and innovation programme has evolved over time and it is now called Horizon Europe. It covers the 2021 – 2027 period and has a strong focus on sustainability and energy efficiency for Europe to be climate neutral.

ESOS (Energy Savings Opportunity Scheme)

A mandatory requirement set by the Energy Institute, requiring large businesses in the UK to submit an overall strategy and specific measures to manage energy. These businesses must undergo an energy audit every 4 years. To read more about similar programmes, **[check out this guide](#)**.

Fossil Fuels

Fuels derived from the decomposition of ancient life forms such as coal, oil and gas. Burning fossil fuels to create energy emits carbon dioxide. At current rates, humans are burning about double the amount of carbon dioxide than can be absorbed by natural processes, thereby contributing to global warming.

Gateway

Device, sometimes also referred to as a data logger above in this list, that by means of a connection to the Internet links two different networks. These devices collect data periodically and send it over the connected network. Learn more about how gateways work **[here](#)**.

Green Deal

The UK government created this programme that seeks to improve the energy efficiency of Britain's housing stock. Consumers can borrow money to install energy saving measures and the repayments are added to the energy bills and tied to the house, not the owner. You will also hear the term Green Deal to refer to the EU's strategy to tackle climate change and to become climate neutral by 2050. **To read more about similar programmes, [check out this guide](#)**.

Greenhouse Gases (GHGs)

Atmospheric gases that trap the sun's heat preventing the Earth from freezing. The ones present in the Earth's atmosphere are carbon dioxide, methane, nitrous oxide, ozone and water vapor. Human activities like the burning of fossil fuels are increasing the amount of greenhouse gases, especially carbon dioxide, in the Earth's atmosphere, contributing to the greenhouse effect.

Head-end System (HES)

A head-end system is hardware and software that receives the stream of meter data brought back to the utility through the advanced metering infrastructure (AMI). Head-end systems may perform a limited amount of data validation before either making the data available for other systems to request or pushing the data out to other systems.

HVAC (Heating, Ventilating, and Air Conditioning)

A system that provides good indoor air quality by means of adequate ventilation and thermal comfort.

IPMVP (International Performance Measurement and Verification Protocol)

Internationally recognised protocol that assists in validating savings when deploying energy reduction projects. The protocol allows the quantification of energy savings performance of energy conservation measures (ECMs).

ISO 50001

The first internationally-recognised standard to set out an integrated set of processes and tools to help organisations to implement an energy management system. The standard is voluntary and based on ISO's Plan, Do, Check, and Act approach. Requirements include setting and meeting energy efficiency targets, using data to make informed decisions about energy use and committing to continuous improvement. **Learn more about how to get certified.**

Jevons Paradox

Also known as the "rebound effect", in which the technological process that increases the efficiency with which energy is used tends to increase, rather than decrease, the rate of consumption of that resource. Sometimes this "paradox" is used to argue that increasing efforts to improve energy efficiency is futile. **Here's why that's not exactly true.**

Joule (J)

Standard unit of energy or work, equal to the work done by the force of one newton when its point of application moves through a distance of one meter in the direction of the force.

Load

A component or portion of a circuit that consumes electric power, such as appliances or lights. This is opposed to a power source, such as a battery or generator, which produces power. The term may also refer to the power consumed by a circuit.

Load Curve

Graphical representation of the variation in energy demand over a period of time.

Megawatt

One million watts.

Managed Energy Services Agreement (MESA)

Contract form growing in popularity in the USA in which the service provider undertakes to pay their clients' energy bills and implements energy efficiency measures (often with an EPC contractor) and profits from the savings produced.

MDM (Meter Data Management)

It refers to software that performs long-term data storage and management for the vast quantities of data delivered by **smart metering systems**. This data consists primarily of usage data and events that are imported from the head-end servers managing the data collection in **advanced metering infrastructure (AMI)** or **automatic meter reading (AMR) systems**. MDM is a component in the smart grid infrastructure promoted by utility companies.

Measurement and Verification (M&V)

M&V is a systematic way of assessing actual energy savings from energy efficiency projects. It grew out of the International Performance and Measurement Protocol (IPMVP) originally supported by the US Department of Energy in the 1990s and is now operated by EVO, an international not-for-profit organisation.

Modbus

A serial communications protocol (language) that enables communication among industrial electronic devices connected to the same network, such as a system that measures temperature and humidity in a factory and communicates the results to an EMS.

Negawatt

Unit of power representing an amount of energy saved (in watt-hours), which is the result of energy conservation or increased energy efficiency.

Pareto Principle

The Pareto Principle, or 80/20 rule, says that 20% of any portfolio of buildings, or 20% of the equipment or processes within a facility, will account for 80% of the energy usage. That means it's best to focus attention on that 20%. Even though the exact numbers are unlikely to be 80/20 for every particular situation, the principle still holds as a general rule, so focusing on those areas is likely to yield the biggest result. This is particularly true in large property portfolios.

Passive Consumption

Energy consumed during non-productive hours or throughout the day due to passive loads.

Peak Energy Times

Hours of the day when the demand on the electric grid is higher. The times vary by location and season and usually, electricity is more expensive at these hours.

Power

The rate at which energy is transferred, used or transformed. Power is the rate of doing work. If you walk up a flight of stairs carrying a weight you will use the same amount of energy as if you run up the same stairs carrying the same weight. The power expended, however, will be greater when running because the same amount of work is done in a shorter time. Power can be measured in many units including horsepower (hp) but most often in watts (W), kilowatts (kW), megawatts (MW) or gigawatts (GW).

Power Outputs for Comparison

- A typical electric kettle uses between 2 and 3 kilowatts
- The average UK photovoltaic solar installation can deliver 3 kilowatts at peak
- A VW Golf Mark 5, 1.6 litre petrol engine can deliver 75 kilowatts at 5,600 revs per minute
- A Formula 1 car engine can deliver about 550 kilowatts at 19,000 revs per minutes
- A single large on-shore wind turbine can deliver up to 3 megawatts
- A single large, modern off-shore wind turbine can deliver up to 6 megawatts
- An industrial generator driven by a Rolls Royce RB211 gas turbine can produce 25 to 30 megawatts
- A typical combined cycle (gas turbine and steam turbine) generating station can produce 400 megawatts. This may not be “set” in a power station. A typical UK power station can deliver between 600 and 1,000 megawatts (1 gigawatt). The nuclear power station Sizewell B can deliver 1,100 megawatts (1.1 gigawatts)
- Drax, the UK’s largest power station which runs on coal and biomass can produce up to 3,900 megawatts (3.9 gigawatts)
- A space shuttle on lift off produces 11,700 megawatts (11.7 gigawatts)
- The capacity of all the power stations in the UK is about 80,000 megawatts (80 gigawatts)
- The Saturn V rocket that took man to the moon produced about 190 gigawatts on lift off
- The capacity of all the power stations in the US is about 1,000 gigawatts

Power Factor

An indicator of the efficiency of the power being used. A power factor of 1 means 100% of the supply is being used efficiently. A 0.5 power factor means the use of the power is being wasteful.

Primary Energy

The ultimate sources of the energy that we use. Includes; coal, oil, gas, solar energy, wind energy, biomass, geothermal and the energy in nuclear fuels. Primary energy is converted to energy carriers such as petrol, diesel, heating oil, natural gas and electricity.

Reactive Power

The power generated by machines or appliances when voltage and current are not synchronised. This power represents nothing useful and should be reduced.

Reactive Penalties

A reactive power charge that electricity supply companies add to the bill whenever the power factor falls below a previously set figure.

Renewables

Energy sources that are naturally replenished, such as solar, wind, hydro or geothermal.

SCADA (Supervisory Control and Data Acquisition)

A control system architecture that uses networked data communications and graphical user interfaces to analyse real time data. It is used to automate or monitor industrial processes to assist in making decisions by providing real time operational data. Learn more about the difference between SCADA and EMS [here](#).

SEU (Significant Energy User)

Indicates the equipment that has been identified as consuming a significant proportion of an organisation's total energy demand.

Smart Grid

Any electrical grid that includes a combination of operational and intelligent energy measures including smart meters, smart appliances, renewable energy resources, and/or energy efficient resources.

Sub-metering

Allows you to monitor individual loads to account for the actual energy consumption. Sometimes referred to as energy meters, submeters track energy use or consumption of a particular building, complex or individual appliance.

Utility Meter

Metering device used to measure either electricity usage, the volume of consumed fuel gases, water usage, or heat.

Virtual Audit

A software tool that analyses energy data, weather data and other geographical information to estimate the opportunity for energy savings without ever physically touching a building. Learn more [here](#).

Watt (W)

Derived unit of power (Joule per second). A Watt expresses the rate of energy conversion with respect to time.

Ready to put your newfound energy management vocabulary to good use? **[Click here to book a FREE consultation with our energy software specialist >>](#)**

PART 3:

Integrating Energy Management: Best Practices for SMEs

Instead of telling SMEs for the “n”th time “to turn the lights off when nobody is in the room”, this section is about how to make energy management an integral part of their business. ESCOs should also pay attention here in order to deal with their SME clients better, and to understand where and how their services fit.



Commitment

Commitment to energy management is crucial to its success. Once senior management has formally committed to the process, you've got the green light to plan and secure the resources you need. Forging ahead without this support means accepting that your actions will probably be less effective.

- Draft a formal energy policy for your organisation and have it endorsed by senior management. This is more than just a statement of commitment: your energy policy defines what you are trying to achieve and how you will achieve it. The policy should be clear to staff at all levels and your Energy Team should explain how each staff role can get involved.
- Your Energy Policy should:
 - Include a commitment to continual improvement in energy performance, with a framework to set and renew energy objectives and targets.
 - Ensure the availability of information (data) and resources needed to achieve objectives and targets.
 - Commit to compliance with legal requirements and other energy requirements subscribed to by your organisation.
 - Be documented, published online and communicated to all employees.
 - Be signed and dated by a member of senior management.
- Here are some sample energy policies that you can use for inspiration:
 - **Bank of Ireland Energy Policy**
 - **University College Cork Energy Policy**



Organisation

Effective energy management requires a holistic approach that takes both the organisational structure and the technical aspects of your business into account.

- While a smaller organisational chart may mean fewer resources dedicated to seeking out energy efficiency projects, it also means fewer layers of hierarchy are required to approve any individual project. Use your small size to your advantage!
- Leadership is important here. It helps to clearly define the role and mandate of the energy manager and/or energy team. Here's what kind of skills you need to look for when hiring a professional or deciding who to choose internally: **10 Professional Skills required for energy management**

Need to hire an energy manager? Get started writing a great **job description**

Lastly, we also recommend this infographic on how energy management fits into your business. You can access the full version **here**.

Plugging ENERGY MANAGEMENT Into Your Business

Does your business have or need an energy manager?

Should you rely on internal resources?
Or seek help from an ESCO?

Discover how energy management fits into
your business model!

Your Company



Facility Manager

Energy intensive or larger companies usually have a facility manager or in-house energy manager

Check that your energy manager is certified by:
Association of Energy Engineers (AEE) or the
Energy Management Association (EMA)



Total: \$\$\$

Are you a startup or SME with limited resources?

It might be best to ask an ESCO for help with energy management!

ESCO

Energy Services Company

Energy Manager Duties

1. Detect & implement energy-saving opportunities and technologies
2. Plan & review energy-related initiatives
3. Evaluate energy use & costs via audit
4. Support certification (ISO 50001, 140001)
5. Identify funding sources for projects and manage application process

What does an ESCO do?

- ▶ 1. Conduct on-site energy audits
- ▶ 2. Install monitoring hardware (meters, gateways, sensors, etc.)
- ▶ 3. Manage energy projects and leverage financing (sometimes via performance guarantee contracts)

Energy Management Software (EMS)

Whether you decide to pursue energy management on your own or with an ESCO, a holistic analytics platform (EMS) should be your foundation!



What does an EMS do?

- ✓ virtual auditing & benchmarking
- ✓ auto-detects inefficiencies & peaks
- ✓ verifies energy savings
- ✓ generates beautiful data visuals, reports

Choose the energy management technology that's right for you!

FREE GUIDE

HOW TO CHOOSE THE PERFECT ENERGY TECHNOLOGY FOR YOUR PROJECT

If you make a wrong decision it will affect not only your everyday work, but also your company's profit and the value that energy management means internally. Use this guide



DEXMA
ENERGY INTELLIGENCE
BY SPACEWELL



Training

Decide the target areas for training and who needs to be trained. This may include specialist training in a particular process, equipment or energy management systems such as an **aM&T software**. Managers may also need to be trained in aspects such as including energy in purchasing criteria, and even external contractors may require training.

- Contact your local business association, chamber of commerce, trade or government association for extra institutional support and training programme materials.
- Certifications for Energy Managers – to become experts in energy monitoring and analytics, the DEXMA Energy Academy is available for members of our Partner Program. **Learn more** about the benefits of partnering with us:





Benchmarking

Once you have secured commitment and the internal resources necessary to manage energy use in your SME, it's time to understand the factors driving consumption. Benchmarking using real data (at least 12 months if possible) will help your Energy Team focus attention and resources where they can have the greatest impact.

To benchmark properly, you need to identify what the main energy users are, the drivers of energy use (e.g. weather, production), and identify energy saving opportunities (or **try a software platform** that does all of this for you). Once you have identified the energy saving opportunities, you are ready to start planning your energy-saving project.

- Start by doing a walk through survey and note low- or no-cost, reliable, low-risk actions that your Energy Team can take.
- Baseline, benchmark, and start saving right away! Don't be one of the 80% of businesses that are not undertaking any form of bill validation or checking for incorrect charges. It's an easy and cost-effective step that can save you thousands!
- Use the **benchmarking tools like DEXMA Detect** to track your building's energy use and identify energy savings opportunities. The PDF benchmark report will help you understand your bill and find out if you are paying too much for your energy.



Planning your Project

Having drawn up your Energy Policy and identified your energy savings potential, it's time to plan how you and your Energy Team will transform these objectives and opportunities into action. The first step is to set clear objectives and targets, followed by an Energy Action plan that will spell out how you are going to achieve them.

What are SMART Goals?

SMART is an acronym for Specific, Measurable, Assignable, Realistic and Time-Bound. It's widely used in business environments to define plans, strategies, and specially, objectives to achieve them.

Here are a few examples of what a SMART energy management goal could look like:

"In Q1 2022, I will save €1,000 of electricity in our main building."

"By June 2022, we will have the gas metering and analysis implemented with 10 new meters installed and the goal to save 5% on gas by the end of the year."

- Research shows that projects such as energy management, lighting, heating and metering can save around 25% on business energy costs. But these projects need to be well-planned and executed. To achieve optimal results, you might want to hire a professional energy services company to look into this for you. Their energy managers bring subject-matter expertise, as well as **a whole range of benefits. Find one near you.**
- If you choose to go it alone, make sure your energy project is based on assessment or (virtual) audit results. Set SMART goals.
- Use the **SMART template** to determine the scope of your goals: SMART goals checklist/template or access a **free training session** to develop your SMART goals for energy management.



SMART OBJECTIVES

for Energy Efficiency Projects

DOWNLOAD THE FREE TEMPLATE

- You can focus on a single site, or even specific company equipment and/or a just section of the property for your efficiency project.
- If you have more than one planned, don't forget to prioritise your projects!
- For inspiration on what your sector can achieve, check out these deep dives into specific sectors:

Hotels

Like most tertiary sectors, the hospitality industry is undergoing a huge transformation, both green and digital, to meet changing customer demands. An **E.ON survey** of 2,000 guests found that 50% actually prefer a sustainable stay – all while admitting to using more energy than ever.

Typically, energy consumption accounts for up to 10% of the total operating costs of hotels, and 60% of a property's carbon footprint. Maybe you want to retrofit your current facility or are planning to build an entirely new property and want to make it as eco-efficient as possible. Why not start by learning best hotel energy management practices from the greenest hotel in the UK? Check out their story **here**.

Retail

Remember a few pages back when we mentioned that 1 in 5 energy bills in the UK are wrong? Well, the highest volume of errors were identified in the retail and hospitality sectors, due to complex portfolios of buildings with multiple meters and a constant rotation of tenants. Shops, restaurants and pubs are allegedly losing £200m of potential revenue, according to Inenco, which revealed that **one major supermarket had been overcharged £700,000 in duplicate charges.**

Restaurants

Most commercial kitchen appliances, like industrial dishwashers, fryers and ovens, are highly energy intensive. The average electric deep fryer, for instance, uses more than 11,000 kWh of energy annually. And **most fryers sit idle for up to 75% of the time**, even in fast food restaurants. That translates to nearly £1,000 in electricity every year just to not fry stuff! **Learn how one fast-food franchise beat these challenges.**

Supermarkets

Without a doubt, refrigeration is the biggest energy vampire in grocery stores, taking up more than half of all consumption, followed closely by lighting. Combined, these guys eat up nearly 80% of all supermarket electricity consumption – but repeat after me: this is a good thing. Why? Because lighting and refrigeration systems tend to be the easiest and cheapest places to start generating serious energy efficiency savings!

Since grocery store profit margins are so thin (around 1%), a 10% reduction in energy costs can boost net profit margins by as much as 16%. One of the leading grocery chains in the Basque region of Spain, Berriak Supermarkets, reduced their electricity bill by a **whopping 37% to save more than €20,000 annually.**



Financing your Project

There is a long way to go from “here is a good energy management project idea” and “here is a fully developed bankable project” – so again, we need to re-iterate the value of bringing in energy services companies to take care of this for you.

If you decide to finance your project internally, make sure your Energy Action plan is backed up with sufficient resources approved by top management.

- To quickly figure out how much financing you’ll need, try using the **10% Rule**.
- For a more concrete budget planning, here’s a **free Excel template** that can help.
- Set specific criteria for investing in energy projects
- Use verified savings from initial projects to pay for future projects
- Consider an energy performance contract (EPC)
- Explore utility and government incentive programs and resources specifically designed for SMEs. Yes, that means they are very low-cost, low-interest or even free! Here’s a (by no means exhaustive) list to get you started on your quest:

The 10% RULE for ENERGY EFFICIENCY

HOW MUCH DO I INVEST IN SAVING ENERGY?

The majority of business owners or corporate decision-makers only understand one word when it comes to energy efficiency:

COST.

Here is our quick & dirty way to estimate how much your company or client should spend on energy efficiency:

1 MONTHLY ENERGY BILL

How much are you paying every month for your energy?*

Check your bill - your monthly charge is roughly equal to the amount you should re-invest in energy efficiency measures.

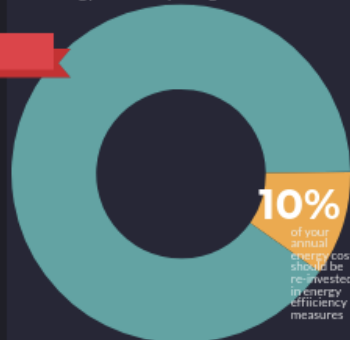


OR

10% of ANNUAL ENERGY SPEND

How much does your business spend on energy every year?

Take 10% of that amount, and you've got your recommended energy efficiency budget.



WHERE DOES THE 10% GO?

Your initial investment will be divided into 3 main areas: hardware, software and services.



HARDWARE



SOFTWARE



SERVICES

HOW WILL THE COSTS CHANGE?



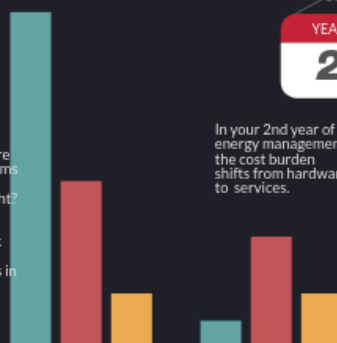
YEAR 1

The hardware cost seems steep at first, right?

But look what happens in Year 2...

YEAR 2

In your 2nd year of energy management, the cost burden shifts from hardware to services.



- EU: Around €275 billion is needed per year to meet the EU's 2030 energy and climate objectives. The **EU has several support schemes and initiatives** to accelerate energy efficiency investments, such as:
 - **START2ACT** – a programme offering free energy efficiency training and mentoring for startups and young SMEs (defined as a company with fewer than 50 employees that has been operating for under 5 years).
 - **EEEF** – European Energy Efficiency Fund – If you are working with a European municipality on energy-related issues or clean public transport, you might be eligible for funding. **Check your eligibility here.**
- Australia: A range of grants and training programs are available to assist SMEs with funding energy efficiency projects. Find out more **here.**
- Canada: Many provinces have grant or rebate programs for improving energy efficiency of small business operations, such as converting to renewable power, changing to energy-efficient appliances, retrofitting and more. Learn about the options available in your province **here.**
- Germany: the **German SME Energy Consulting Program** provides up to 80% funding and a maximum of EUR 8,000 for energy audits and implementation support.
- Ireland: For companies spending more than 250,000 per year on energy bills, the Sustainable Energy Authority of Ireland has a project assistance programme to help cut running costs. **Apply online here.**
- Scotland: Resource Efficient Scotland offers interest-free, unsecured loans of up to £100,000 specifically to SMEs through the **SME Loan Scheme.** Check out their **Funding page** to see other programs SMEs can apply for, or contact one of their advisers for personalised assistance.
- Sweden: SMEs may obtain a subsidy of 50% of the cost of an energy audit, including the cost of their own staff effort up to a value of approximately EUR 5,500.
- UK: **The Carbon Trust Green Business Fund** has now closed and the government is working through a consultation round for what an updated scheme might look like, now that the UK is no longer a member of the European Union.
- USA: **ENERGY STAR for small business.**

FIND OUT HOW TO FINANCE YOUR ENERGY EFFICIENCY PROJECTS WITH **THE ULTIMATE GUIDE**

DOWNLOAD GUIDE





Communicate and Celebrate!

Now that you are on your way to realising some energy savings, you'll want to maintain the momentum! It's crucial to get feedback from all staff, including management.

- Tracking financial savings and other non-monetary benefits will help maintain the support of senior management, and keep up the enthusiasm of your energy team, and the rest of your colleagues.
- Run online & offline campaigns to encourage energy-saving behaviour throughout your organisation – let people know how to save energy! Most of your colleagues are willing to contribute to saving energy if they know what to do, but not many are aware of all savings opportunities.
- Recognise and reward staff members who have helped you reach energy management goals! Here are some **energy-friendly gift ideas** to give you some prize inspiration ;)
- If you have an energy management platform, use & publish custom progress reports to keep up motivation. If not, you can work with an ESCO using a tool like DEXMA Detect to see a summary report, and periodically check your progress.

Examples of custom reports that you can share with different colleagues to help them understand why energy management is important for SMEs.



Additional Resources Worth a Look

- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/417410/DECC_advice_guide.pdf
- <https://c2e2.unepdtu.org/wp-content/uploads/sites/3/2016/03/sme-2015.pdf>

Online Energy Management Resources for SMEs:

Name & link	<u>Energy management & benchmarking</u> (Energiemanagement & benchmarking)
Institution	Austrian Energy Agency
Language	German
Description	An online learning platform for energy management according to ISO 50001 and energy benchmarking activities.

Name & link	<u>Guideline for integrated energy management</u> (Handlungshilfe Integriertes Energiemanagement) Energiemanagementsystems in KMU)
Institution	Energy Agency of Saxony
Language	German
Description	A guidance document that aims to help small and medium-sized companies with the introduction of a basic energy management system.

Name & link	<u>Selfscan for SMEs</u> (Zelfscan voor KMOs)
Institution	Flemish Energy Agency
Language	Dutch
Description	A self-scan tool related to energy savings in SMEs.

Name & link	<u>EnergySTAR Action Workbook for Small Business</u>
Institution	EPA (USA)
Language	English
Description	Resource and planning guide for owners, operators, and employees of small businesses needing step-by-step guidance on ways to increase energy efficiency in facilities by implementing realistic and cost-effective energy improvement projects.

Your Energy Analytics Ally

- + Hundreds of hardware devices from all manufacturers already integrated
- + Automated reporting, M&V tools, alerts...
- + Take control of your energy management plan with data-driven decision

**LOOKING FOR AN
ADVANCED ENERGY
MANAGEMENT SOLUTION**

Try the DEXMA Platform

**Request Your
Personalised DEMO**



About DEXMA

DEXMA provides an energy analytics platform for companies that need to measure, analyse, understand and reduce their energy consumption. The platform is a set of powerful cloud-based tools with which companies can make the right decisions to reduce the energy they consume without affecting their productivity or business.

DEXMA was founded in 2007 in Barcelona and was acquired by Spacewell | A Nemetschek Company in 2020. DEXMA already serves over 4.000 organisations in 30 countries after consolidating its expansion through a comprehensive network of partners.

After more than thirteen years working in the energy sector, DEXMA is leading its own initiative to share knowledge on energy efficiency, to promote best practice and educate energy professionals. Check out our free learning resources [here](#).





Carrer de Nàpols 189, Bajos D

08013 Barcelona

+34 93 181 01 95

marketing@dexma.com

www.dexma.com