



Department for
Business, Energy
& Industrial Strategy



Energy Technology List

aM&T: Automatic monitoring and targeting equipment

A guide to energy efficient equipment on the Energy
Technology List (ETL)



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Introduction



Energy Technology List

The ETL is a government register of energy saving products. When you select products from the list you are choosing from amongst the most energy efficient products in the marketplace.

When replacing equipment, businesses are often tempted to opt for equipment with the lowest capital cost. However, such immediate cost savings may prove to be a false economy. Considering higher energy efficient products, means that life cycle costs are reduced, improving cash flow in the longer term.

Businesses can also claim accelerated tax relief through the Annual Investment Allowance (AIA) for investments in plant and machinery equipment. The AIA has been temporarily increased to £1 million from January 2019.

In the case of aM&T, two types of product are covered by the ETL:

- **Portable monitoring equipment:** listed individually on the ETL product list

https://etl.beis.gov.uk/engetl/fox/live/ETL_PUBLIC_PRODUCT_SEARCH

- **Sub-metering systems:** ‘Unlisted’ (see next page) products certified compliant by suppliers

When you select ETL compliant products, you are choosing from amongst the most energy efficient products in the marketplace.

This leaflet illustrates the benefits of investing in aM&T energy saving equipment which qualifies for the ETL.



Eligible Products

Energy Technology List

There are two types of **automatic monitoring and targeting equipment** covered by the ETL:

- **Portable energy monitoring equipment**
- **Automatic monitoring & targeting sub-metering systems**

If the product you are purchasing is one of these two types of equipment, you can check the green and blue boxes below to find out if a product is eligible.

Portable energy monitoring equipment is considered a **“listed” technology** which means that manufacturers must have products individually assessed as meeting the ETL criteria. Search the [ETL website](#) to see a full list of eligible equipment.

The technology category of “Automatic monitoring & targeting sub-metering systems” is considered an **“unlisted” technology** which means that products are not individually assessed. Instead businesses should ask their supplier or installer to confirm that the equipment & system meets the [ETL criteria](#) and provide supporting evidence. Installer, suppliers, and manufacturers can find more information on the evidence required in [the Manufacturer’s toolkit](#) and in the [aM&T sub-metering systems checklist and guidance note](#).

On the following slides you can find out more about portable energy monitoring equipment, aM&T systems, and examples of potential energy savings and cash flow benefits from the AIA.



Setting the scene



Background

For many organisations, energy use is a significant cost, and for some energy intensive industries it is actually the highest cost. Energy wastage does not just cost money, it also results in increased carbon emissions. As a result of energy price rises, customer demand and more stringent environmental legislation, there is continuing pressure on all businesses to reduce their consumption and emissions in order to remain competitive. Luckily, reducing energy use makes perfect business sense; it saves money, enhances an organisation's reputation and helps everyone in the fight against climate change.

Monitoring and targeting systems

The truism 'You cannot manage what you do not measure and monitor' applies to energy management, and the first step to any improvement plan should always be measuring current performance.

Monitoring and targeting systems are products that are specifically designed to measure energy consumption, record and distribute metered energy data, and analyse and report on energy consumption.

Monitoring and targeting technologies can be applied to any size of organisation, whether commercial, industrial, or public sector. However, the choice of equipment may vary to fit the needs of the organisation.



Setting the scene



Automatic monitoring and targeting equipment does not in itself save energy, rather it enables businesses to identify ways to reduce energy costs, to pinpoint energy wastage, to be made aware of instances of exceptionally high energy consumption, and to put in place robust and long-term energy management practices. It is estimated that this technology can help customers to identify energy savings of 4 – 20% or more, with average cost savings of 10-15%.

The potential benefits of automatic monitoring and targeting (aM&T) equipment:

- **Timing of data collection:** energy consumption data will be collected at the same time(s) each day.
- **No human error:** no (or minimal) human intervention.
- **Reliability:** systems can run uninterrupted for years.
- **Automatic analysis:** data will be automatically analysed.
- **Automatic reporting:** it will automatically generate reports at set periods and distribute them to the relevant personnel.
- **Exception reporting:** it will automatically sense any exception (or change from the norm) and will generate a report or send a message to the relevant personnel, enabling any remedial action to be taken quickly.
- **Efficient billing and use of staff time:** when systems are integrated with Electronic Data Interchange (EDI) and linked to billing and financial accounting systems, it will remove the need to key in data, using less staff time, ensuring that bills are paid on time, and being viewable on screen.



Setting the scene



Assumptions and calculations

In this document, the baseline scenario below has been used to calculate the potential financial (£), energy (kWh) and carbon savings (tonnes CO₂) unless otherwise indicated:

- Assume energy usage is 24/7, 365 days a year
- aM&T devices can save an average of 10% of energy usage
- Price for electricity* 11.14p/kWh
- Carbon emissions* for electricity 0.35156 kgCO₂/kWh
- Price for gas* 2.61p/kWh
- Carbon emissions* for gas 0.18416 kgCO₂/kWh
- Devices have a 10 year lifetime

* BEIS 2017



Portable monitoring equipment

Portable Monitoring Equipment

Portable monitoring equipment allows temporary monitoring of energy use in different locations, generally via non-invasive measurement methods. It is ideal for smaller energy consuming equipment, and sites with extensive assets where individual sub-metering is too costly or complex. Portable monitoring studies can be used to review specific processes, provide a greater understanding of energy use, and to identify energy waste.

Most portable monitoring equipment clips directly onto pipework or cables, and measures electricity use, gas use and heat flows using non-invasive techniques. One of the main advantages is that portable meters can be set to save an enhanced granularity of data, for instance 1 second energy data (vs. half-hourly for most aM&T systems); this allows an in-depth understanding of energy use, and the opportunity to identify waste in complex processes.

Example: Assuming a purchase price of £1,550 and annual electricity consumption of 185,000 kWh, ETL compliant portable monitoring equipment, monitoring a 20kW system, could identify annual savings opportunities of:

- £2,060
- 18,500 kWh
- 6.5 tonnes CO₂e

With a typical capital cost of £1,550 and lifetime energy and AIA benefits of around £21,000 at today's prices, the financial benefit of choosing an ETL listed product is over 13 times the cost. Furthermore with a potential AIA of approximately £300 in year 1 plus additional energy savings, the capital cost is recovered within 1 year of purchase.



Portable monitoring equipment



Portable Monitoring Equipment

For products to be eligible for the ETL, portable measuring instrument packages must include:

- An 'energy use' metering device and associated measurement transducers
- A means of capturing and storing energy consumption data
- A way to transfer data to a computer, computer system, or device
- A software or hardware based means of analysing and displaying energy consumption data, and producing energy management reports.

Furthermore, products must be able to meter one or more of the following:

- Electricity usage
- Gas usage
- Heat flow

Such devices must also have a measurement accuracy of +/- 3%, or better, from a meter reading. This level of accuracy must hold across the entire measuring range of the device.



Portable monitoring equipment



Portable Monitoring Equipment

For portable monitoring equipment to be listed on the ETL, the equipment must also record, report and communicate the measured information to enable appropriate energy management actions to be taken.

Data storage and reporting methods:

There are numerous electronic methods for storing data and producing consumption reports using portable energy meters. Most portable monitoring equipment manufacturers will supply a software package that will allow stored data to be converted to commonly available spreadsheet tools to allow analysis and manipulation of the data. Others produce standard reports, and some portable monitoring equipment can also now transmit data via wireless or GPS technology.





Automatic monitoring & targeting sub-metering systems

aM&T sub-metering systems

Automatic monitoring & targeting (aM&T) sub-metering systems are products that are specifically designed to measure energy consumption, record and distribute metered energy data, and analyse and report on energy consumption. aM&T sub-metering systems are specifically designed to help businesses to manage their energy use, highlight unusual consumption patterns, and target energy waste. An aM&T sub-metering system will consist of:

- Multiple electricity, gas, or heat sub-meters that measure energy use.
- Equipment that automatically captures, retrieves and stores energy metering data electronically.
- Software to enable users to analyse the metering data and factors that influence energy use, and to produce reports on energy consumption.

Example: Assuming a purchase price of £30,000 and annual energy consumption of 5,000 MWh (75% electricity, 25% gas), ETL compliant aM&T sub-metering systems could identify potential annual savings of:

- £45,000
- 500 MWh
- 155 tonnes CO₂e

With a typical capital cost of £30,000 and lifetime energy and AIA benefits of around £425,000 at today's prices, the financial benefit of choosing an ETL listed product is over 14 times the additional cost. Furthermore with a potential AIA of £5,700 in year 1 plus additional energy savings, the capital cost is recovered within 1 year of purchase.



Automatic monitoring & targeting sub-metering systems



To check if an aM&T sub-metering system is eligible for the ETL, you should ask your supplier or manufacturer to confirm that the system meets the ETL criteria requirements.

aM&T sub-metering systems

To be listed on the ETL, aM&T sub-metering systems must be able to meter at least one of the following:

- Electricity usage
- Gas usage
- Heat usage

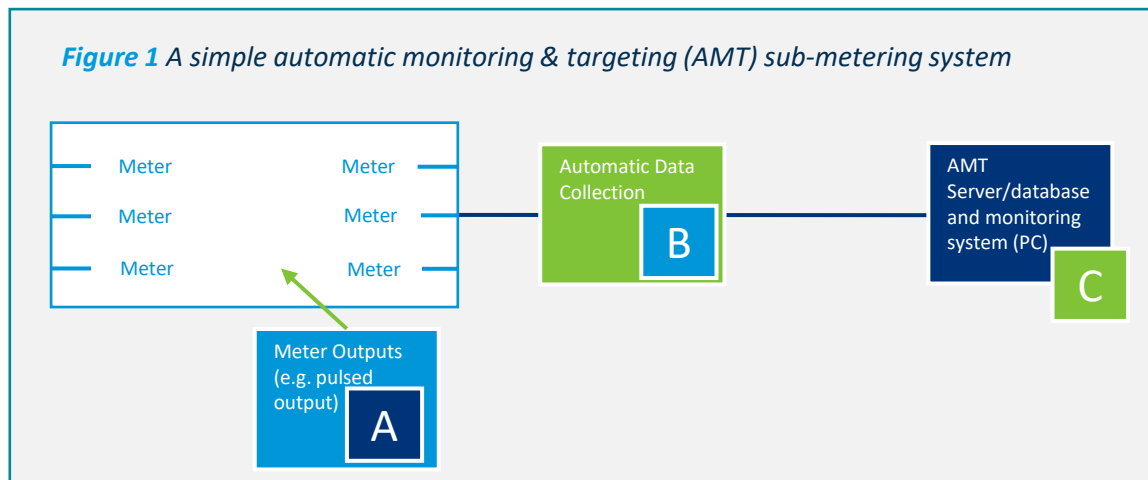
Energy monitoring software is used to visualise energy data. Energy data is automatically updated, and the software allows monitoring of consumption trends and targeting of areas of poor performance. The software is considered the most important element in terms of delivering energy savings via aM&T; it can either be cloud (internet) based, site PC/server based, or integrated into a BMS/BEMS. Common features of aM&T software include:

- Energy consumption quantification and dashboard reporting
- Meter by meter comparison
- Energy trends display, regression analysis, SEC analysis and data export
- Virtual monitoring
- Energy alarming



A note on Eligible Products

For both aM&T sub-metering systems and portable monitoring equipment to be eligible for the ETL, the systems must not only measure and record the energy consumption, but also communicate and report this information. In the system in the figure below, this is represented by components **A**, **B**, and **C**.





Where can I find more information?

Energy Technology List



For information about the ETL please visit: <https://www.gov.uk/guidance/energy-technology-list> and see our [Information for Purchasers](#) factsheet. Or contact the ETL Help Line on 0300 330 0657; email ETLQuestions@carbontrust.com



For more information on the ETL:

To search for a product on the ETL please visit:

https://etl.beis.gov.uk/engetl/fox/live/ETL_PUBLIC_PRODUCT_SEARCH



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