Automatic Monitoring & Targeting Sub-metering Systems
(Formerly Automatic Monitoring & Targeting Systems; And before that Component Based AMT Systems)
Date added to ETL 2003 (Revised 2018).

1. Definition of Technology

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.

2. Technology Description

aM&T sub-metering systems help users to save energy by identifying energy wastage which they can then take steps to reduce. aM&T sub-metering systems generally comprise of three elements:

a) Sub-metering & sensors
b) Communication and data capture software, and;
  c) Monitoring software.

Fiscal metering and internet based software are outside the scope of this category (see section 4 for further details).

An aM&T sub-metering system captures energy consumption information automatically from which users can gain an understanding of their organisation's energy use. It consists of equipment components that measure, record, transmit, analyse, report and communicate the energy management information that an organisation needs to manage its energy use (i.e. through implementing an effective energy management system) and highlight any energy wastage.

A wide range of aM&T sub-metering systems are available. The Enhanced Capital Allowance Scheme (ECA) Scheme for energy saving technologies aims to encourage the installation of sub-metering systems that can facilitate the proactive management of energy use in organisations.

Investments in aM&T sub-metering systems can only qualify for an ECA if the installation meets the eligibility criteria set out below. The individual equipment components or products used in the system are not named on the Energy Technology List.

3. Eligibility Criteria

To be eligible, aM&T sub-metering systems shall

1. Include the following:
   a. One or more meters that measure energy use for metering purposes.
   b. Some means of automatically capturing, retrieving & storing energy metering data electronically.
   c. Software that enables the analysis of energy metering data and the key factors that influence energy use by means of visualising energy performance data.

2. Be able to meter at least one of the following:
a. Electricity use
b. Gas use
c. Heat use

The following sub metering equipment and sensors are eligible but only as part of an aM&T sub-metering system that directly measures at least one of the parameters in section 2a-c (above):

- Oil fuel flow meters
- Compressed air mass flow meters
- Steam meters

3. Additionally, for electricity, gas and heat meters, the system shall be able to:

- Automatically capture data from meters or sensors at regular intervals in order to provide energy performance indicators. The collection intervals may be user definable or configured for particular meter types.
- Store and process meter readings made on a half hourly basis (as a minimum). The metering data may be transferred into the data store in real-time or at scheduled times.
- Automatically identify and report data collection failures, missing metering data and the failure of communications with meters, transducers and any other system components.
- Distribute data with no loss of accuracy, except for pulse outputs from meters, where the transmitted metered data shall be within +/- 0.5% of the total variable measured.
- Present energy consumption data in graphical reporting formats (for example, histograms, line plots, etc.), and in user selectable time intervals / divisions / bases.
- Export the collected energy data in a standard format for use in other applications (for example, ASCII files or other formats commonly used by standard office applications).
- Retain a minimum of 2 complete years of metering data without loss of data resolution or accuracy, in a date/time stamped format, suitable for analysis of trends and patterns.

4. For electricity, gas and heat meters, the system shall provide facilities to enable the user to:

- Select datasets from individual meters and manipulate them by combining, comparing and calculating in order to analyse, identify and evaluate instances of energy waste.
- Undertake regression analysis using two variables in whatever frequency the dataset was obtained, and to display the results in graphical form with a correlation coefficient.
- Set up automatic exception reporting functions that are capable of basing exception reports on the raw data profile. The frequency capability of notifications should be kept at a minimum.
- Set up standard management reports that enable total energy consumption to be benchmarked against performance standards during a user selectable
period. It may also be beneficial to compare energy consumption with the corresponding period in the previous year, including an analysis of energy use by meter, fuel type or energy accounting centre.

In addition where new meters are being installed, they shall comply with the following requirements:

5. Electricity meters shall meet the accuracy requirements of one of the following:
   - BS EN62053-21:2003, “Electricity metering equipment (ac) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)”.

6. Gas meters shall meet the accuracy requirements of one of the following standards:
   - BS EN12480:2015, Gas Meters - Rotary displacement gas meters.

7. Heat meters shall meet the requirements of:
   - BS EN 1434-4: 2015, Heat meters. Pattern approval tests
   - BS EN 1434-5: 2015, Heat meters. Initial verification tests

8. Oil fuel flow meters shall conform to the following requirements:
   - Be installed on the same aM&T submetering system as either an electricity, gas or heat meter.
   - Possess a minimum flow rate range of 4:1, where the flow rate range is defined as the range between the minimum flow rate \( Q_{\text{min}} \) and the maximum flow rate \( Q_{\text{max}} \).

9. Compressed air mass flow meters shall conform to the following requirements:
   - Be installed on the same aM&T submetering system as either an electricity, gas or heat meter.

10. Steam meters shall conform to the following requirements:
    - Be installed on the same aM&T submetering system as either an electricity, gas or heat meter.
    - Be capable of displaying the measured steam pressure and temperature, and the current mass flow rate and cumulative mass of steam
• Shall have, as a minimum, the following components continuously measuring the steam properties and calculating the cumulative steam energy that has passed through the measuring system as shown on the system’s schematic diagram:
  • A flow meter - which determines how much fluid (steam) has passed through a pipe over a given time period
  • A pressure sensor - to measure the pressure of steam flowing through the pipe
  • A temperature sensor - to measure the temperature of steam flowing through the pipe
  • A calculator/digital integrator - which uses the information provided by the flow meter, temperature and pressure sensors to calculate the cumulative heat energy transferred through the pipe.
• Conformity with the requirements of the appropriate BS EN ISO 5167 series of standards, if relevant for the steam meter

11. Instrument transformers used to measure energy use for metering purposes shall conform to the Class 1 accuracy requirements of one of the following:
  • BS EN 61869-3:2011, “Instrument transformers. Additional requirements for inductive voltage transformers”.

Meters offering equivalent or better levels of accuracy to those specified above will be accepted, provided they meet the accuracy requirements of applicable British or European Standards. Please note that this includes all electricity, gas and heat meters conforming to the specific accuracy requirements of the EU Measuring Instruments Directive (MID) 2014/32/EC.

4. Scope of Claim

An Enhanced Capital Allowance (ECA) can only be claimed where the installation of an aM&T submetering equipment results in a system that complies with the eligibility criteria. In some instances, only part of the aM&T submetering system may be eligible for an ECA:

• An ECA cannot be claimed on any component that is not part of an installation used to monitor energy use for energy management purposes. For example, if data collection is done as part of a BMS, IT network or process control system, then an ECA cannot be claimed on these components.
• An ECA can only be claimed on a single purchase software license that is purchased outright. An ECA cannot be claimed on software that is leased or subject to ongoing license or sub-license payments.
• An ECA can only be claimed on the specific types of energy meter mentioned in the eligibility criteria. Fiscal billing meters and analysis through internet based software is not permitted (an ECA may also be claimed on water meters listed under the Water Technology List as part of the ECA water scheme).
• An ECA cannot be claimed on components installed in any tax years prior to the creation of a complete automatic monitoring & targeting system that complies with the eligibility criteria.
• An ECA can be claimed on parts of an aM&T submetering system should those parts be owned outright by the purchaser and priced individually. For example, this could include parts 1a) and 1b) of the aM&T submetering system, as defined above, within the eligibility criteria.
Expenditure on the provision of plant and machinery can include not only the actual costs of buying the equipment, but other direct costs such as the transport of the equipment to site, and the direct costs of installation. Clarity on the eligibility of direct costs is available from HMRC.