

aM&T

The Ultimate Tool for Utilities Management



Introduction

What is aM&T?

aM&T stands for “automatic Monitoring and Targeting”. Installed and utilised correctly, an aM&T system allows automatic utilities auditing, an audit, typically, every 30 minutes of consumptions, costs and associated carbon emissions. Just like a financial audit, aM&T will identify savings due to wastage and inefficient usage.

When the famous Lord Kelvin was around (circa 1900) he made the profound statement “if you can’t measure it, you can’t manage it”. In those days, indeed up until the 1970’s, utilities were cheap and efficiency of use relatively unimportant; to provide what was very expensive metering was not affordable for the then very basic utility management needs.

Now utility prices have rocketed but, more importantly the consequences of usage has been identified as having a major impact on the ecological balance of our planet. Thanks however to the microprocessor revolution, meters and automatic meter reading systems are getting cheaper and cleverer by the day! On the back of this aM&T has evolved to provide the ultimate tool for utilities and carbon management.

As well as utilities auditing, aM&T software has evolved, and continues to evolve, to provide the management hub and data base for your ongoing utility saving and carbon mitigation programmes and your internal and mandatory utility reporting. Whilst providing these utilities management facilities, aM&T will itself identify utility wastage and usage inefficiency. Indeed by the early identification of wastage it will save directly. The Carbon Trust state that an average of 12% savings can be made by the application of aM&T.

The 4 Steps of aM&T

aM&T Systems Comprise 4 Main, Key Elements:

- 1 Meters** typically gas, water, electricity, heat, steam etc - normally simple modern meters with an interface capability, the most common being a simple pulse output.
- 2 Sensors** to Measure the “driver” of utility consumption – production measurement, newspapers printed, tonnes of material produced etc. but where use if for space heating/cooling, the outside temperature converted normally into degree hours or days is the monitored variable.
- 3 AMRS** Automatic Meter Reading System - these are systems that interface to the meters to automatically read the consumption past the meters, typically, every 30 minutes and store the data in a central location ready to be analysed, typically a hosted server. Where on site it is practically or economically prohibitive to run hard cables between the meters and the AMRS, low power radio options with ranges up to 10 kilometres can be provided. Most AMR systems have WAN via the cloud to allow simple comms via the Internet.
- 4 Meter Data Analyses Software** There is a variety of meter data analysis software in the market place with varying depths and sophistication. All those purporting to be aM&T software will carry, as standard, some minimal meter data analyses; there are Carbon Trust published guides that show these common meter analyses techniques. Many aM&T software companies have also developed their own special analyses features, some to address ever changing government requirements e.g. CRC, DEC production etc. and/or will write special bespoke analyses as requested by their customers. Depending on the sophistication of the system, most of the available software sits in the cloud and is accessible via the WEB hence requiring the user to only require an Internet enabled PC. Sophistication means complexity and it is important to chose a program that suits the level of analyses you need.

Coherent aM&T Systems

A true coherent aM&T system is achieved when all four elements are permanently installed and integrated to both automate reading the meters and analyses of meter data. Originally,

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the whole concept was to finely audit utilities, typically every 30 minutes, “on the fly” and mostly automatically to take the chore out of consumption analyses for the busy Utility Manager. However, over the last few years many additional features have been added by aM&T software suppliers which make the software a one stop shop for collating data and information for all the utility manager’s needs.

aM&T Systems

Economical aM&T Systems – Multi-Utility AMR and Common Meter Data Analysis Software

Analyse consumptions of different utilities e.g. electricity and water meter data, is to some extent very similar. So the optimum economics of aM&T systems will be when you have a common AMR system and meter data analyses software for all your utility meter data and fiscal meters and sub-meters alike. You want to learn and master one piece of software and avoid disparate systems.

Turn Key aM&T Provision

Some companies offer turn key services to supply and install all the aM&T components, meters, AMR systems and software; others just provide single components and the customer pieces the aM&T system together. aM&T requires a wide range of engineering and IT expertise, engaging a turn key aM&T provider minimises responsibility demarcation issues – i.e. the performance of the whole system is down to the aM&T provider.

Ongoing Maintenance/AMR Service Contracts

To maintain good meter data integrity, the aM&T system needs to be kept in order. To provide Wider Area comms to the cloud, hosted server services and AMR as well as meter breakdown cover you should expect to pay an annual service charge to your aM&T provider.

aM&T/Meter Data Analyses Software Licences & On-going Support

Most companies offering aM&T/meter data analyses software continually updating their software to both incorporate new reporting e.g. changes in statutory reporting, and to better their proprietary offerings. These updates cost money and need paying for. The different companies have different regimes to offer you the latest updates and software support, this usually via an annual software licence/support charge.

aM&T Systems

Other aM&T Associated Services

Off the back of aM&T other peripheral add-ons are available including:

Dynamic Foyer Display Screens – typically installed in the foyer of an organisation and are dynamic, they continuously update with current utility consumption, cost and carbon emission information. They are designed to impart information about the utility consumption to viewers of the screens, typically employees/occupants/public, to make them aware of energy and related carbon emissions in an attempt to influence their behaviour.

Bureau Service Provision – this is where “arm chair” consultancy can be offered to C&I and SME utility consumers by experts in some central location without the necessity to travel to site and burn carbon tyre miles. The experts can virtually see the utility consumption patterns and automatically, look for dynamic changes where energy wastage is occurring or specific patterns where plant/building inefficient use can be identified and assessed. All this is facilitated on the back of aM&T.

Billing Service Provision – with high frequency meter readings being collected and collated by AMR, back office billing services can be provided both for the C&I market (e.g. Airport franchise billing, commercial letting) and for domestic consumers. Billing Services can include producing and dispatching the bills to the consumer.

How do you Start?

Establishing a Metering/aM&T Strategy

A metering strategy needs to be drawn up and taken to management for funding. This is best drawn up by someone who knows their meters and AMR. Developing an aM&T will always start with a site plan and the knowledge and location of existing metering and utility services infrastructures. The strategy should identify the strategic location on the services where knowledge of consumption would help to identify wastage and inefficiency. aM&T providers can provide these services for a small consultancy charge.

The first stage in the aM&T strategy is to install aM&T on the meters by which you are charged i.e. the fiscal meters that monitor consumption coming across your boundary. This is best done by interfacing to the same meter that the utility suppliers base their charges on since, in any disputes with them, arguments on meter accuracy can mainly be dismissed. There are invariable mistakes made by suppliers for a whole host of different reasons, so as well as knowing the amount of utility that comes across your boundary, getting meter data from the fiscal allows you to check your bills.

It may be for a smaller premises/works (e.g. small infants school, small retail premises etc) just monitoring the fiscal meters is as far as aM&T may need to go. However, on larger premises the premises needs to be dived into Energy Accountable Centres(EAC) . On a C&I buildings estate this would be on a building by building and/or floor by floor bases. On industrial sites this would be on a process by process machine by machine basis. The logic is to meter all significant utilities that enter into the UAC and continuously compare them with the "driver" for the consumption. Sometimes, however, to incorporate meters economically in existing services infrastructures is difficult, for example, it is far more economical to meter electricity where it is distributed (e.g. distribution panels) than where it is used as meter clustering and multichannel AMR will minimise costs.

Once the metering strategy is drawn up and you have an idea of your budget, you should obtain quotations for the supply of an aM&T system from competitive aM&T suppliers. The main thing here is to keep it simple and only install a system that you are confident will be a tool not a chore. Remember most aM&T systems are very modular; you can start with a small system and grow it as you get to see what it can do for you.

How do you Start?

Choice of Meter Types and Manufacture

Simple meters with a simple output are all that is needed for aM&T. There are a myriad of meter types and manufacturer for all utilities with significant price ranges and complexity when it comes to AMR. The important thing here is again “keep it simple” do not use meters that are too sophisticated for your intended use. To choose the most appropriate meter for each application, the best option here is to see advise of an aM&T consultant who is independent of any meter manufacturer.

With fluid flow in pipes, gas, compressed air, water, hot water, steam etc., metering technology advances have been significant and non-moving part meters, some clamping on the outside of a pipe, are becoming more and more economical to install, and of course, maintain.

Also it is important to remember that electricity meters are the lowest cost for all utility meters yet generally electricity will be the highest cost primary energy used on your site.

Don't Forget Water!

Water prices are creeping up faster than energy in many cases and water should not be forgotten. It is often where low hanging fruit simple savings can be made when aM&T is applied. In many cases the water savings immediately identified when multi-utility aM&T is applied go a long way to paying for the whole installation.