

Energy Savings from Intelligent Metering and Behavioural Change

Contract N°: EIE/04/107/SO7.38635

Progress report 1 (January-June 2005)

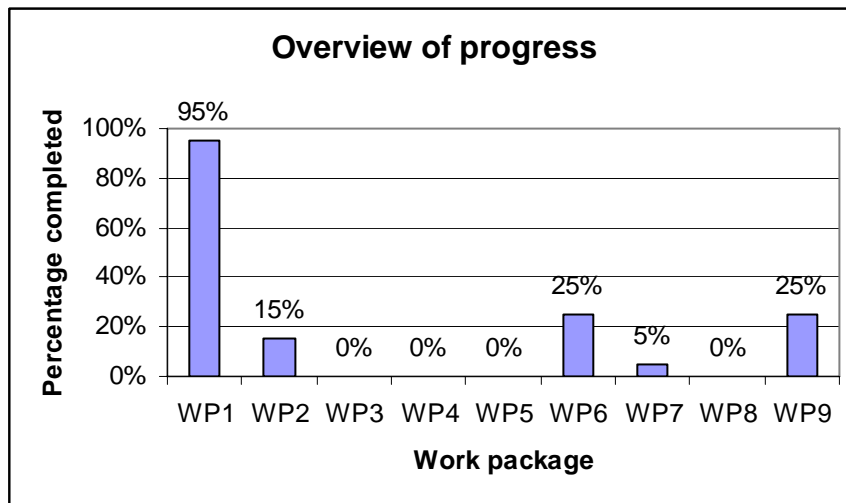
Date: July 2005

Summary

This report is an update on progress with the European Commission funded Intelligent Metering project for approximately the first six months of the project (January – June 2005). While there has been a slight delay with the project, with the project currently about a month or so behind the original workplan, the stages in the workplan have been followed with a number of deliverables completed or being worked on currently.

Much of the work on the project so far has involved Work Package 1 ‘Monitoring Specification’, led by Energy Agency Waldviertel. This has included the preparation of the following deliverables; a Summary of monitoring needs, a Monitoring Specification, a Report on comparisons of existing monitoring systems, and a list of individual buildings to be monitored in the project. Work Package 2 ‘Collection of data, monitoring and analysis’ has been led by Esbensen. Work on the deliverable ‘Tools for energy performance analysis’ has taken place. They have prepared the SQL database for receiving energy data from the selected buildings. Partners have been undertaking work to set up intelligent metering equipment for the monitoring of the buildings in the different countries. Work Package 3 ‘Training building occupants’ was discussed at the second project meeting, in June. In Work Package 6 ‘Development of project website’, an internal project website has been prepared by Esbensen helping with communication between the partners (Deliverable 18). Sonnenplatz have been leading Work Package 7 ‘Dissemination and training’, and have drafted a logo for the project and templates for presentations and the project bulletin. 2 presentations on intelligent metering have been delivered. Work Package 9 ‘Management’ has been led by the Leicester Energy Agency, with individual work packages being led by individual partners.

An overview of progress in the first six months of the project for each workpackage is given in the chart below:



An introduction to the project, information on the status of implementation of the project by work package, progress in achieving the deliverables, an overview of the state of advancement of budget expenditure, a project summary and summary slides are given below.

1. Details of the status of implementation by work package

1.1 Introduction

The European Commission, through its Energy Intelligent Europe programme, is providing support for the project 'Energy Savings from Intelligent Metering and Behavioural Change' (Contract ref. EIE/04/107/SO7.38635, Intelligent Metering), involving partners in Austria, Denmark, Germany and the United Kingdom. The project runs from January 2005 to December 2006.

Aims and objectives

The project aims to demonstrate and promote the savings available from the use of intelligent metering and training occupants in public buildings and to show that these savings can be achieved at little, or no, additional cost.

The overall objective of the project is to maximise the energy savings available across Europe through the use of intelligent metering and behavioural changes of building occupants.

Work programme

The steps being followed in the project are summarised in the table below, which lists the work packages in the project:

Work packages (WP)	Work overview
WP1: Monitoring specification	Assessment of needs for a monitoring system. Outline specification for intelligent metering systems – half hourly metering in real time. Identification of buildings to be monitored.
WP2 Collection of data, analysis and monitoring	Data is recorded every half hour in real time and put through data analysis software, to produce results and identify savings and actions.
WP3 Training of building occupants	Training is provided to the building occupants on changing their usage patterns to save energy.
WP4 Analysis of results of training	Information on the savings will be disseminated to the building occupants and an analysis carried out to identify the most effective changes/training.
WP5: Best practice methodology	Based on the experiences of the project and monitored savings, a best practice methodology will be prepared. It will enable other organisations across Europe to replicate the project and the savings.
WP6: Project website	Website design, establishment and maintenance. Used for up-dating monitoring information
WP7 Dissemination and training	Workshops, training of agencies, etc.
WP8 Common dissemination activities	Common project dissemination activities
WP9 Management	Project management

Expected results

In the short term the expected results are:

- Intelligent metering of at least 80 public buildings – including office space, and schools
- 30% energy savings in buildings being monitored.
- Building occupants trained in each of the monitored buildings.

- Development of a best practice methodology for intelligent metering.
- Widespread understanding and knowledge of the intelligent metering approach.
- Development of a framework for on-going training.

Through the demonstration, training and dissemination elements of the project the expected results of the project in the longer term will include:

- Increased take-up of intelligent metering in every EU country
- Significant energy savings in public buildings through behavioural change
- Established training programmes for building occupants

Partners

The partners in the project are as follows:

- City of Graz (Austria),
- County of South Jutland (Denmark),
- Energieagentur Waldviertel (Austria),
- ENERGIE 2000 e.V.(Germany),
- Esbensen (Denmark)
- IT Power Ltd (UK),
- Leicester City Council (UK),
- Sonnenplatz Großschönau GmbH (Austria).

1.2 Work Package 1 Monitoring Specification – EAW4

The Project leader of Work package 1 is the Energy agency Waldviertel (EAW4), Austria.

In February, they started preparing aspects for monitoring for the kick-off meeting, held on March 10th to 11th 2005 in Leicester, England.

Energy Agency Waldviertel have made considerable use of the common website, which has been set up by the partner Esbensen in Denmark as a tool to help with communication and working together. They have made a significant amount of information available for contributions by partners and have added many comments to discussions related to the project work.

EAW4 presented the project at some different institutions in the federal administration. After a period of time to receive decisions on which buildings should be monitored, in June 2005 they received the names of the 8 buildings to monitor, as described in Deliverable 3. The EAW4 carried out planning for the adapting of the counters in the buildings to use them in the intelligent metering project. It has been intended that the federal government administration would carry out the tendering and adapting of the sensors.

EAW4 have been writing the following deliverables as part of Workpackage 1:

- Deliverable 1 – Monitoring needs
- Deliverable 2 – Monitoring specification
- Deliverable 3 – Final list of buildings to be monitored (with 25 objects from the UK, 22 objects from Austria, 20 objects from Germany, 16 objects from Denmark)
- Deliverable 4 – Comparison of existing monitoring systems

Information on the dynamat configuration has been made available to the project partners. Some details of activities by other project partners in this work package are given below:

ENERGIE 2000 e.V.

Twelve buildings have heat meters installed, which are connected to ENERGIE 2000's database at senger&partner. Although there have been some technical problems with these meters work has been underway to solve these. Also, they can use the data from the electricity meters of the utility company (eam) in these buildings. It has been found that some work is necessary to ensure that the data is available in a format which can be used by the DYNAMAT software which it is intended to use in the project.

Another 9 heat meters will be installed in another nine buildings (such as secondary school, gymnasium, Kindergarten, private company, sports-club and so on). In these buildings ENERGIE 2000 will also use the data from the electricity meters delivered by the utility company.

They have been looking for other objects where they can install meters for heat, electricity and water. It is intended that eventually, when the technical conditions have been realised, they also will receive data from the gas meters.

They have found there has been no additional finance available at the district council or cities to install metering equipment. Confirmation of approval of the project had not been received in time to propose additional funding in the budget which was set at the end of 2004. However, there will be a supplement to the budget in autumn, so if it is approved at that time ENERGIE2000 will be able to install more meters.

The County of South Jutland

The County has established the necessary building 'mass' for monitoring energy and water consumption. As a large number of Danish public buildings and their users already have been undergoing some form of behavioural change, it has been considered to be of utmost importance to find buildings where no/little monitoring has taken place so far and where the users are concerned about their energy consumption. The County has been able to establish a building mass of 14-16 public buildings with a varied functionality, which is in need of occupant behavioural change.

Based on the above, the budget for installing hardware and software, necessary to send monitored data from the selected buildings automatically to the Esbensen SQL database, has been established.

The County expects to be able to send monitored data to the Esbensen SQL database from the first buildings by 1st August 2005 with the last buildings being up and running no later than 1st September, 2005.

Esbensen

Esbensen has assisted the County of South Jutland in establishing the technical requirements for being able to collect monitored data and send it to the SQL database.

Leicester Energy Agency (Leicester City Council)

25 of Leicester City Council's properties have been identified as suitable for inclusion in the project. These buildings are of different types and are used for a range of purposes, and should be useful for comparison with buildings selected by other partners in the project. For example, these include office buildings, primary and secondary schools, sports centres, community centres, an entertainment venue, and a library.

There has been discussion with Energy Metering Technology, who have been installing intelligent metering in Leicester City Council properties, over the specification for the intelligent metering system being used in the project.

Sonnenplatz Großschönau

EAW4 was their proxy at the Kick-Off-Meeting in Leicester and gave them the necessary information to fulfil their tasks until June.

Sonnenplatz Großschönau have specified their buildings to be included in the project as follows:

1. elementary school of Großschönau
705,56 m² heating area; four classrooms, offices and storage rooms
2. gymnastic hall of Großschönau
379,62 m² heating area; gymnastic hall and supplementary rooms
3. kindergarten of Großschönau
395,07 m² heating area, two groups, office and a small kitchen
4. town hall of Großschönau
543,19 m² heating area; offices of the mayor, public toilets, training rooms for the local music group, and a CD-store.

They consider that these four buildings are a typical sample of public buildings for rural municipalities.

City of Graz

Agreement on the buildings to be monitored in the project has been obtained and details have been made available to the project partners.

1.3 Work Package 2 Collection of data, monitoring and analysis – Esbensen

The leader of work package 2 has been Esbensen, Denmark.

Esbensen has prepared the SQL database for receiving measured data from the selected buildings. A part of this work has been to develop a Building Registration Tool, where each partner can enter the chosen buildings and their meters via the web. This way, it is ensured that each partner can enter the accurate data for each building locally and make sure that the data is always updated locally via the web, which is much more dynamic than letting someone else enter data on behalf of the partner. The tool is not meant for viewing the incoming measured data, but merely as a registration tool for entering the formal building specifications.

Energy Agency Waldviertel

They have had to change and adapt their energy accounting system so it is possible to use the energy accounting as they had done previously and also work with the intelligent metering (IM) system (Esbensen database and Dynamat software). Their new software will manipulate the data information so that the necessary data can be delivered to the IM-system. They have been in negotiations with software companies and have chosen an appropriate programme, the energy accounting software EMC from the company Siemens.

Sonnenplatz Großschönau

For WP 2 – the data acquisition within intelligent metering – they have closely interacted with the mayor of Großschönau who ordered the necessary meters. Großschönau is the first municipality in Lower Austria with fibre optic to the end-user and they will use this infrastructure for the

metering. The data of the meters will be sent to their server via the software of EAW4 or via the software of their local infrastructure partner WVNET.

They have made a first investigation within the buildings to collect the data of the installed systems, the number of users, the user behaviour, etc. It has been intended that the meters will be installed so that their first data can be sent by the end of July at the latest.

Leicester Energy Agency

While half hourly data for some buildings is available for use in the project, also work has been underway to obtain half hourly data from other buildings included in the project.

1.4 Work Package 3 Training building occupants – LEA

Work Package 3 runs from July 2005 until December 2006, and is led by the Leicester Energy Agency. The work package was discussed by partners at the second project meeting in Kassel and also some information on the training workpackage was presented. This is one of the next main areas of activities for the project partners.

1.5 Work Package 4 Analysis of results of training – EAW4

Work Package 4 runs from September 2005 until December 2006, and is to be led by EAW4.

1.6 Work Package 5 Best practice methodology for replication – IT Power

The fifth work package is lead by IT Power. It has been proposed that the start of this work package be brought forward from its scheduled start in the original workplan so that a case study is available to help with ongoing promotion of the project and intelligent metering.

1.7 Work Package 6 Development of web site- Esbensen

Work package 6 is led by Esbensen.

For communication between partners during the project period, Esbensen has, at the very beginning of the project period, set up a Project Management Site that works as a local storage, communication and project overview-website. Only authorised project partners can enter The Management Site, and it works as storage for all the documents and information shared throughout the project period. Instead of sending documents via normal mailbox, it can be placed on the Management Site for all partners to see.

During the first six months of the project, the Management Site has, amongst other things, been used between partners for establishing the technical specifications needed for implementing the data transmission from each partner via the SQL database, (data bank), to the analysing software and on to the website for viewing.

The official website has now reached a stage in the development where Esbensen feels, the layout can be presented and commented on by the group. During the development of the website, Esbensen has focused on structuring the website to be easily accessible, i.e. the information needed from the website should be easy to locate.

IT Power have provided a possible structure for the external website for the project, and the Leicester Energy Agency have provided some information which can be used with the website.

1.8 Work Package 7 Dissemination and training –Sonnenplatz

As Sonnenplatz Großschönau are leaders of WP 7 they have made a logo for the project, a template for project presentations and a template for the project bulletin. They have drawn up a work plan to fulfil the tasks of the work package and they will coordinate the work of the project partners to get all deliverables of this work package. For the first project presentation they enabled EAW4 to present intelligent metering during the annual environmental fair BIOEM on the 27th of May. With the help of the other project partners they have been working to produce the first of the six monthly bulletins.

Two presentations on Intelligent Metering which have been given by project partners are:

- EAW4 presented the intelligent metering project to professionals at the environmental fair, BIOEM (27 May 2005).
- The Director of the Leicester Energy Agency gave a presentation on Intelligent Metering at a Sustainable City Development Conference in Malmö, Sweden (14-15 June 2005).

1.9 Work Package 8 Common dissemination activities – LEA

This work package is for common dissemination activities at the request of the European Commission. It is led by the Leicester Energy Agency.

1.10 Work Package 9 Management – LEA

The Leicester Energy Agency has been coordinating the project, with individual work packages being led by different project partners, as outlined above.

The Leicester Energy Agency produced some initial summary slides on the project and sent them to the European Commission. Some updated slides, using comments received, and adapted by Sonnenplatz are given later.

The Leicester Energy Agency arranged the first project meeting, held on the 10th and 11th March 2005 in Leicester, UK. All the partners were represented either in person or were represented by another partner. The meeting enabled the work packages in the project to be presented and discussed. Project partners were able to obtain information from the other partners, and gain a clearer understanding of the stages in the project.

The second project meeting was organised by ENERGIE2000 and took place in Kassel, Germany on the 22nd and 23rd June 2005. Progress with the project to date was reviewed and the next project activities were discussed. The project officer from the European Commission attended and provided feedback on the project.