



Saving Energy in Social
Housing with ICT

eSESH Project Status Report



March 2010 – February 2013



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Support Programme (ICT PSP) as part of the
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Saving Energy in Social Housing with ICT



Project Objectives

The prime objective of the eSESH consortium is to reduce energy consumption in European social housing and thus meet the European environmental goal of emissions reduction. By providing tools such as the user-friendly ICT-based advanced Energy Awareness Services (EAS), and Energy Management Services (EMS) directly to social housing tenants and staff, eSESH enables them to achieve a sustained reduction in energy and CO₂ emissions.

eSESH has conducted pilot services at 10 sites across France, Spain, Germany, Austria, Italy and Belgium. Encompassing 32 partners, eSESH is coordinated by *empirica*, and led by key government authorities and social housing providers. The consortium involved in this project comprises in addition major players in the supply of electricity, manufacturers of intelligent meters and home automation tools, experts in the creation of networks and internet portals for the tenants, in association with local consultants and specialists.

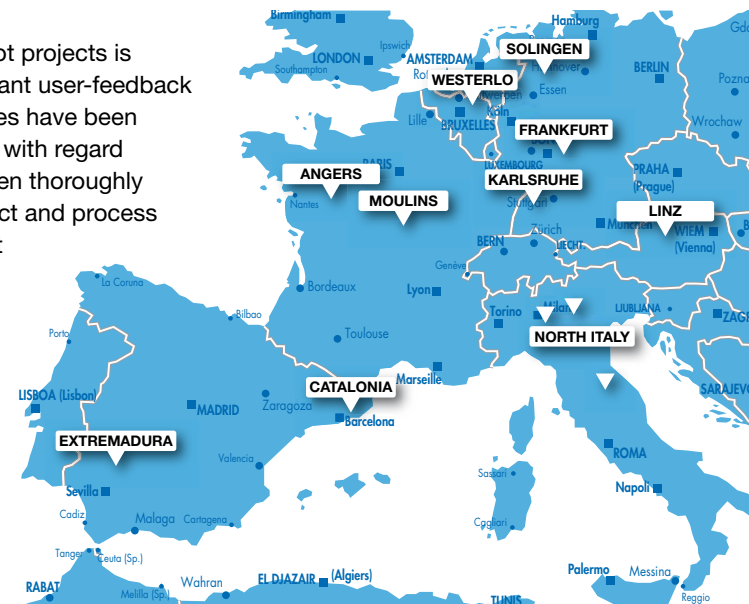
Energy Awareness Services (EAS) provide direct, timely and comprehensible feedback on energy consumption, enabling tenants to adapt their energy consumption behaviour.

Energy Management Services (EMS) help reduce consumption peaks and optimize timing of domestic consumption. Optimized timing of consumption can reduce generation capacity requirements and, with appropriate tariffs, tenant costs. EMS are also used to control delivery of locally generated, renewables-based heat and power.

Executive Summary

At all 10 eSESH pilot sites, services have been tested with tenants to optimize tenant behaviour with respect to energy consumption. Further, pilot services have also been tested with housing staff by providing them with the latest energy-monitoring and energy-management tools. The services will continue to be tested in situ over the next two years with the objective of market launch at the end of this period.

The current status on each of the ten pilot projects is described in the following pages. Important user-feedback has been gathered and new functionalities have been specified for the next phase. Challenges with regard to tenant uptake of the services have been thoroughly addressed and analyzed. Service, product and process innovation are at the forefront of the pilot projects, with the aim to offer viable and marketable solutions in the near term.



Main Objective

Reducing both electric consumption and peak consumption by more than 15% and CO₂ emissions by more than 20%.

Angers (France)

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Partners



Le Toit Angevin is a French social housing company based in Angers. It was created in 1949 by a group of employers for re-construction.
www.letoitangevin.com



Effineo SA is a spin-off of the EDF (Electricité de France) Group, an operator of energy-efficiency services in multi-dwelling units for mainly social housing.
www.effineo.com



Voltalis SA is the leading European operator of demand-response power plants. www.voltalis.com

Achievement Targets

- Develop an interface between two technologies – *EFFINEO*, that offers an internet portal displaying water consumption and temperatures in real time with optimization of the heating, and *VOLTALIS*, that offers electricity load shedding, details of electricity consumption for equipment; also, subscriber optimization.
- Using an “energy coach” to monitor and motivate tenants
- Documentation, an internet portal, and campaign communication are used to inform tenants with the objective of increasing awareness and changing consumption habits.

Implementation

The technical infra-structure required the installation and implementation of the following components:

- 1- Fiber optical network
- 2- New electric and water meters in certain dwellings, and sensors to measure hot and cold water and electricity in other dwellings, depending on building characteristics
- 3- Gateway to fetch data via radio waves
- 4- Bluepod¹ devices on electric meters to obtain electricity data for each type of equipment

Services Offered

Portal functionalities include:

- Real time monitoring of hot and cold water consumption, electricity and room temperatures
- Historical consumption (dating from the new installations)
- Alerts on the portal, via SMS and email when targets set are exceeded
- In case of a water leak, an alert is sent by SMS or email
- Comparison with other tenants in the same building and living in similar dwellings
- Self-assessment tool
- Detailed electricity consumption per components measured

Example of Service Use Case

Through the use of the portal, and with the help of an energy coach, one tenant was able to determine ways to save up to €150 in energy costs per year. As a result, the tenant now carefully studies documentation, participates in meetings, reviews consumption on the portal, and uses the self-assessment tool. *It is noted that this particular tenant thought he was already doing everything he could to save energy and keep costs down!*

Next Steps

Actions are ongoing to continue to motivate tenants to save energy, use the portal, and read the energy consumption documents. It has become apparent that tenants must be educated about how “load shedding” works; also, about how they can adjust electricity subscriptions based on real consumption to save on costs. Additional tenant meetings will be held to present the data and functionalities for energy awareness and management services available on the portal.

1. BluePod is a small device installed on electrical panels in households. It measures real-time electricity consumption via the internet for energy optimization purposes.



Catalonia (Spain)

Achievement Targets

- Testing and comparing different levels of instrumentation by interaction with tenants and monitoring system in order to choose the optimal solutions for replication in Catalan social housing.
- Demonstrating the feasibility of reducing 15% of energy costs for tenants and the consumption of energy by using innovative ICT while maintaining a similar level of comfort.
- Increasing the awareness and the interest of social housing tenants in saving energy and reducing CO₂ emissions.

Implementation

Monitoring equipment has been installed for 77 dwellings to provide three levels of detail for the energy consumption:

- Monitoring electric and natural gas consumption.
- Detailed monitoring with sub-metering of electric and natural gas consumption and comfort parameters.
- Detailed monitoring (as with 2nd level), and additional measurement of the useful energy supply derived from the heating, DHW and solar system.

The three levels of monitoring provided each require different ICT equipment costs; by this means tenants are able to choose the service that best fits their needs and budget.

Services Offered

Tenants testing the services have access to an energy web portal that provides the following information, and does it with clearly labeled tabs:

Dashboard: Tenants can review consumption of electricity and gas on a monthly, weekly, daily, and hourly basis, which lets them compare consumption with previous periods. Consumption can be shown in kWh and can also be translated into cost in Euros based on average utility prices.

Comparison: Tenants can compare their energy consumption with that of other tenants and also compare the average consumption of dwellings in the same building.

Objectives: Tenants can fix their energy consumption objectives for gas and electricity separately for the month.

Occupation: Users can fill in and modify their weekly occupation profile.

Mailbox: Automatic tips and advice generated from the system are offered as well as messages to tenants from the energy manager.

Example of Service Use Case

A tenant web portal has been developed in order to provide energy awareness services to the tenants aiming to increase their consciousness about the energy use in their homes and promoting energy savings. The services have been developed over three different levels of monitoring and include detailed energy consumption information, benchmarking, self-assessment tools and personalized energy saving tips according to their particular consumption pattern. The tenants will be taught how they can easily save energy and money by reducing temperatures, programming home thermostats, turning off appliances at night, among other steps. Electrical consumption is expected to be reduced by up to 15%, and gas consumption up to 20%. The web portal includes also services for the housing company that permit the on-time maintenance management of the centralized solar system for domestic hot water.

Next Steps

The services have been tested in two steps with operational prototypes V.1 and V.2 involving the participation of users from the service provider, the housing company and the tenants. The users particularly appreciated the tips for reducing the energy consumption and showed interest in receiving monthly reports about their consumption. In order to ensure larger uptake of the services, an energy coach is required to initially explain the service and data to the tenants. An information campaign will be launched for tenants including meetings, brochures and posters that will start on October, 2011. The services to tenants will start on January 2012 with 77 families and will be provided in pilot site operation for a period of 14 months.

Main Objective

Reduce energy costs and consumption for tenants using the more sustainable Information and Communication Technologies.

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Partners



The Environment and Housing Department of the Government of Catalonia is responsible for preparing and executing environmental policies.
<http://www20.gencat.cat>



The International Center for Numerical Methods in Engineering (CIMNE) was created as a consortium between the Generalitat de Catalunya and the Universitat Politècnica (UPC) de Catalunya with the collaboration of UNESCO. www.cimne.upc.es

RSM Gassó

Gasso Auditores SLP is one of the main national auditing and business consulting firms, established by professionals with extensive experience.
www.gassorsm.com



Main Objective

Efficiency and energy savings which contribute to environmental improvement and reduction of pollutant emissions.

Extremadura (Spain)

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Partners

JUNTA DE EXTREMADURA

The **Extremadura Regional Government** (Junta de Extremadura) is the body that exercises the function of governance of the region. www.juntaex.es

The Regional **Ministry for Infrastructure, Housing, Spatial Planning and Tourism** and the **Regional Ministry for Employment, Business and Innovation** of Extremadura participate in the project.



CIDE Sociedad Cooperativa is the main association of enterprises that distribute, commercialize and produce electric energy in Spain. www.cide.es

Achievement Targets

- Changing consumption habits to optimize energy management in social housing (according to peak demand times and fluctuations in network).
- Determining the influence of dwelling characteristics, and use of efficient lighting and efficient air conditioning systems with regard to energy consumption.
- Increasing energy savings while guaranteeing tenant thermal comfort.
- Adapting and implementing proposed improvements.

Implementation

Space heating, air conditioning and hot water are all provided through electricity. Smart meters have been installed in 41 buildings for energy use measurement. Data are collected by the electricity trading company for display on the EAS portal; also, the data provides for an understanding of user consumption in relation to dwelling type. The service allows users to observe the accumulated energy consumption every 15 minutes every day, as well as to compare the consumption with other dwellings with similar characteristics.

Services Offered

Users are offered daily figures on energy consumption via the Extremadura Regional Government's EAS web portal. Also every 6 months a technician analyzes the energy consumption and produces a report summarizing the conclusions and proposing forms of savings in each of the dwellings.

Example of Service Use Case

The smart meters enabled the management housing staff to assist users on how to save on energy consumption. During the summer months, one tenant received an electricity bill that exceeded the family's budget. The tenant, after reading the brochures of the project, decided to take a look at the EAS online portal. He could read some tips and advices, and immediately realized what was being done in error– the air conditioning was set too low, and in addition, the blinds were not closed during the day to keep the hot sun from heating up the house. These and other energy-reduction tips were learned, and the web portal was continually consulted by the tenant to further reduce energy consumption costs.

Next Steps

A pilot site requires continuous improvement. Additional users will be recruited to participate in the service evaluation process, and several means of dissemination (posters, leaflets, press releases, contacts for consultations, mailings with username and password to access the web portal, etc.) have been launched for this purpose.

Power consumption costs will be estimated in detail to provide effective measurement of power consumption. Both energy and housing providers will continue making an effort to offer simple tips as well as more comprehensive advice, all with the worthy goal of achieving greater energy savings.

Frankfurt (Germany)

Main Objective

To encourage energy-conscious behavior of tenants and to implement and pilot EMS for local generation management.

Achievement Targets

- Optimization in producing, distributing and consuming heat alone is estimated to make possible savings of more than 15% of primary energy, with an associated reduction in CO₂ emissions.
- Monitor and analyze losses in the energy supply chain with the goal of identifying measures to improve efficiency.
- Provide heating energy consumption behavior feedback to tenants.

Implementation

Tenants will have access to an EAS comprised of a tenant portal that shows consumption data on heating at monthly intervals. Heat and water metering equipment has been installed at two properties for a total of 242 dwellings.

Services Offered

A web portal is offered to the tenants for checking and controlling their energy consumption for heating and warm water. It is available in German as well as Turkish. The portal also offers advice and tips for energy saving.

EMS are directed towards monitoring and controlling domestic hot water and heating systems for early fault detection and maintenance management. Energy losses resulting from transport from the place of production to the tenant can lead to higher energy consumption and costs for tenants. Better management in this area can save energy and reduce costs.

Example of Service Use Case

One of the tenants that tested the service was worried about energy costs rising with the approach of winter. He reviewed the website with his son, who pointed out that the language on the site could be changed to Turkish. As a result, the tenant is now very interested in energy reduction tips, and continues to check the website regularly and take the advice given, as he has seen a positive reduction of his energy costs.

Next Steps

Information to be added includes more energy saving tips and alarms or monthly update notifications by email. Benchmarking information, comparisons enabling tenants to identify possible energy savings, and forecasts of energy consumption and costs will also be implemented.

Additional actions are scheduled to acquire a greater number of users for evaluation of the services. Such measures include regular tenant meetings, the provision of tenant consultation hours, and energy coaches making door-to-door visits.

Other features will be added as experience with the system grows.

Services will be launched for all tenants in October 2011.

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Partners



UNTERNEHMENSGRUPPE
NASSAUISCHE HEIMSTÄTTE
WOHNSTADT

Nassauische Heimstätte/Wohnstadt
offers services for living, building and
development. www.naheimst.de



DomData AG Sp. z o.o. has been
engaged in activities related to the
benchmarking of running costs for
housing companies. www.domdata.de



ista Deutschland GmbH is the world's
leading company in metering and billing
of energy, water and ancillary costs
(entire process chain). www.ista.de



Main Objective

To encourage energy-conscious behavior of tenants as well as overall energy savings for electricity and heating energy.

Karlsruhe (Germany)

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Partners



Volkswohnung GmbH is a housing company of the municipality of Karlsruhe. www.volkswohnung.com



Stadtwerke Karlsruhe GmbH (SWK) is the supplier of energy and fresh water for the region of the City of Karlsruhe. The main shareholder is the municipality of Karlsruhe. www.stadtwerke-karlsruhe.de



Achievement Targets

- Implement EMS for continuous monitoring and optimization of the heat transfer stations, including heating and DHW supply and local solar collector panels.
- Implement an ICT-based energy portal for tenants that includes transparent information about their heating, DHW, and electricity consumption.
- Support and monitor energy-conscious behavior of tenants with regard to heating, DHW, and household electricity.

Implementation

For both EAS and EMS purposes, and in the initial prototype phase, smart metering has been installed to measure heat, domestic hot water and electricity consumption in XX buildings for a total of 533 dwellings.

Services Offered

Tenants have access to an EAS comprised of an energy portal that shows energy-consumption data on heating, DHW, and fresh water on a monthly basis, as well as electricity consumption at hourly intervals. Comparison data is provided for previous years and for other dwellings in the same building (anonymous). For more detailed information about his electricity consumption, the user will be linked with the customer energy portal provided by SWK.

EMS is directed to staff members with the intention to improve the performance of the building's embedded energy conversion system in order to reduce energy consumption and energy costs at building level. With access to a web portal, staff members will see charts depicting the consumption of heating energy and domestic hot water on an hourly basis. Other graphs demonstrate the ambient temperature and the forward and return temperatures of the heat supply mains. Comparing end energy input with usable energy output, an instantaneous and an average (monthly) performance factor can be calculated.

Example of Service Use Case

One of the tenants that tested the service did so because he realized that his energy bills had risen sharply, and the increase in cost could not be explained. Thanks to energy coaching, and use of the EAS portal, it became apparent to the tenant that electricity consumption during the night was high because standby devices such as the PC were not turned off. The tenant now checks the site regularly, and after making adjustments, has noticed that consumption is now 10% below the same month in the previous year, and the forecast for the coming months is much closer to what he expects his energy bill should be.

Next Steps

Tenants who have computers and internet access find the service (Energy portal: with heating energy) to be functional. A second prototype (Energy Portal including electricity data) has been specified and will be launched in autumn 2011.

A main challenge will be to motivate the tenants to use the service regularly.

In parallel EMS is installed since January 2011 and staff members of Volkswohnung have access to the web-portal.

Linz (Austria)

Main Objective

Raising energy awareness for tenants using ICT.

Achievement Targets

- Energy awareness service (EAS) that provides energy consumption information for tenants in a user-friendly way via a web portal.
- Energy management service (EMS) that enables tenants to manage their energy consumption via a mobile device (iPod).

Implementation

An integrated EA/EM system has been installed at the pilot site in Linz. The system not only provides information to the end customer by using a web-based information platform, but it also enables the delivery of measured data to customers in real time. Electronic meters for electricity and district heating have been installed in six buildings for a total installation into 361 dwellings.

Services Offered

Tenants have access to an EAS and EMS comprised of a web-based tenant portal, and a mobile device displaying heating and energy consumption at daily and monthly intervals. Using the mobile device, consumption values can be read in real time. In addition, tenants can install special adaptor plugs in every room to measure temperatures, energy consumption or humidity to manage different equipment.

Two levels of service are offered:

- The basic service (EAS portal) offers a graphical display of daily electricity and heating consumption, a comparison showing previous year's consumption as well as a comparison with other dwellings of similar size and occupancy.
- The enhanced service (EMS) enables users to actively manage energy consumption in real time with mobile devices that display data and adaptor plugs for each appliance with the objective of reducing energy and heating costs.

Example of Service Use Case

As the weather gets colder, a tenant decides to log onto the new EAS web-based service. To his surprise, he learns his energy consumption has nearly doubled since the previous year. He checks the data, and also looks at the suggestions and tips that are offered on the site, but nothing explains the increase in consumption. The tenant has a lot of electrical equipment in his home, but he cannot determine which component could be responsible for the increase in energy consumption. He decided to subscribe to the enhanced EMS service based on the special adaptor plugs. Once the plugs were installed, in just two hours, he was able to identify the electrical component that was causing the problem and thus proactively manage the household's energy consumption.

Next Steps

EA/EM service tool enhancements include providing the capability to configure and switch off equipment in real time if a specific tariff is available, if a threshold has been defined, or if set power consumption has been exceeded. Self-assessment tools will also enable tenants to export and print carbon footprint reports and define objectives to reduce consumption for different energy sources. The enhanced web portal is still running and being tested as a prototype. Initial tests are also ongoing for the mobile applications. Recruitment of new tenants to test the services is underway for the next phase.

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Partners



Gemeinnützige

Wohnungsgesellschaft der Stadt

Linz GmbH is a non-profit organization providing public housing, owned by the City of Linz. www.gwg-linz.at

LINZ AG

LINZ STROM GmbH, which is a subsidiary of LINZ AG, is active in the fields of energy production and distribution and telecommunications. www.linzag.at



Ubitronix System Solutions GmbH

supports utilities in tackling the growing challenges of liberalized energy markets with its unified IEM approach. www.ubitronix.com



Main Objective

To help our tenants manage their costs and improve their energy consumption behavior to save money.

Moulins (France)

Achievement Targets

- Changing consumption habits for optimizing energy management in social housing according to peak demand and network fluctuations.
- Enabling the social housing companies to manage the overall energy use of their buildings.
- Using ICT and free web access as an easy-to-use tool.
- Providing for the measurement of energy saving costs/benefits; that is, cost comparisons before and after retrofitting.

Implementation

Monitoring equipment has been installed for 80 dwellings. Energy consumption data are monitored in real time, and three types of data transport and communication technologies have been implemented to provide energy-consumption data by means of:

- Fiber optic
- TV network through copper wires
- Land lines between the monitoring device sensors and the energy consumption display systems.

A TV Energy Display System (EcoDis) has been developed to provide tenants with nearly real-time energy consumption data (60 dwellings for the first test phase and then implemented on the 399 "Résidence des Chartreux" dwellings). The system is based on sensors which transmit the consumption data to a server. The data is then displayed from HTML to the TV with the use of set-top boxes that provide a dedicated channel (TV cabled channel network) connected via HDMI or SCART plugs.

Services Offered

Most TV screens have an automatic system that switches to the AV channel (that is plugged in to a decoder, for example). When tenants turn on the TV, the Energy Consumption channel is displayed to provide overall, quick, and daily information about energy consumption. A simple easy-to-read screen is displayed using colors (green, yellow and red), and large numbers, enabling the tenants to understand the information in just a few seconds. Tenants can supervise their energy use for electricity, and hot and cold water.

Example of Service Use Case

The tenants that tested the services (80 families) became aware of how they can save money on energy bills. One family in particular understood - through energy coaching provided by Moulin Habitat - that two family members were taking costly hot baths daily. Reducing the number of baths, or taking showers instead, made an enormous difference in the charges they would have to pay. In addition, the family now realizes the value of the Energy Consumption channel. The family now regularly controls its energy consumption by means of the dedicated TV channel.

Next Steps

In the next phase, the smart metering infrastructure will be extended to electricity with new sensors to reach more dwellings. In addition, a final agreement has been made with the gas distribution provider to use its meters. Early experience has shown that additional energy coaching and education of the tenants is required. Tenants tend not to adopt the service unless they are first shown the benefits through real cost savings. Throughout the next phase, a single person will be assigned to field actions for the dwellings and assist consumers with high energy consumption.

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Partners



Moulins Habitat is a public office of development and building in the town of Moulins. It is active in social housing and development. www.moulinshabitat.fr



Created in 1985, Vizelia is a major software vendor for maintenance and real estate management using WEB 2.0 solutions. www.vizelia.com



Celium SAS Energy was founded as a successor to an installation company that specialized in the area of environmental engineering. www.celium.fr



Real Project Partner Sarl was founded by two former directors of major telecom companies. RPP is a key industry player in PowerLine Communication and has developed a digital TV portal to display energy consumption through the TV screens and also access web based services.. www.rpp.fr

North Italy (*Italy*)

Achievement Targets / Target Achievements

A web application has been created in order to systematically collect the information from the meters and automatically extract the data in the form of Key Performance Indicators.

- Identify priorities for the improvement in the energy efficiency of the cooperative buildings.
- Verify the effectiveness of energy efficiency and renewable energy measures adopted, both in retrofitting and in new buildings.
- Define mid- to long-term policies for energy efficiency; that is, accurately divide energy costs among the consumers on the basis of actual consumption (in the case of centralized systems)
- Encourage household participation and adoption of a more sustainable and sound energy-saving life style.

Implementation

Monitoring equipment has been installed in 27 buildings for a total of 500 dwellings in three different provinces. Data collected includes consumption of natural gas, electricity, district heating and water.

Three service levels are offered for EAS and EMS:

- Energy and Water consumption webportal: a web database to monitor all energy and water consumption.
- Renewable Energy Sources (RES) production webportal: a web database to monitor the performance of renewable energy systems.
- Smart TV appliances to visualize heating and hot water consumption.

Services Offered

A web service provides the following information for tenants concerning energy consumption per household, comparison of historical data of the same household, and comparison with other households in the same building. The web service for *building management* provides information on energy consumption in the building, comparison with historical data of the same building, and comparison with other buildings listed in the database.

The services offered will integrate security with secure data transport protocols and authentication.

Example of Service Use Case

The tenants that tested the services use both the web service and energy-coaching services to optimize energy consumption for their households. For example a tenant became aware that a misuse of a mechanical ventilation system led to higher energy costs compared to its neighbors. Another tenant was able to comprehend how to save energy by using the washing machine at a certain time, and another one to improve internal comfort by programming the home thermostat.

Next Steps

Users now will be motivated to connect to the energy portal to know more about their consumption profile. Next step is the finalization of the prototype and the launch of the services in autumn 2011.

Main Objective

FINABITA, with 3 housing cooperatives will implement and pilot services, for encouraging energy conscious behavior of tenants, and overall energy saving for electricity, gas, heating and water.

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Partners



FINABITA SPA is Legacoop Abitanti's (National Association of Cooperatives of Inhabitants) national service agency. www.legacoopabitanti.coop



Coop Casa was founded in 1972 in Brescia as a Cooperative of inhabitants. www.coopcasa.coop



Indacoo is a Cooperative of inhabitants established in 2011.



Villaggio dell'Amicizia is a Cooperative of inhabitants established in 1973. www.coopvillaggiodelamicizia.it



Greenenergy SRL is an EScO established in 2008. The company is active in the field of energy saving and efficiency to improve the quality of the residences. www.greenenergy.it

Main Objective

Maintain economical operation of a district heating system adding renewable energy, and engage tenants with success stories.

Solingen (Germany)

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Partners



With a housing supply of approximately 7,300 housing units **Spar- und Bauverein Solingen eG** is one of the largest housing cooperatives in Germany. www.sbv-solingen.de



The **envi-GmbH** Engineer and Consulting GmbH is an innovative engineering office located in Witten, Germany. www.envi-gmbh.de



Achievement Targets

- A reduction in CO₂ emissions of nearly 90% for the reconstructed housing district, as compared to the previous emission status.
- A 15% reduction in tenant energy consumption while raising their comfort level with innovative ICT.
- Minimizing heat losses from the district heating system by operating the system relevant to demand. Demand is detected by hourly readings of heat meters in the dwellings, and the data is delivered over the internet.

Implementation

The following measurements are implemented at the pilot site:

- Heating energy consumption
- Inside and outside temperatures
- Temperature of heating pipes
- Status of motor-valve actuation (for the dwelling)
- State of room controller in the dwelling

Services Offered

A web portal is offered to the tenants to check:

- Thermal energy consumption (heating)
- Comfort parameters (temperature)
- Comparison of total energy consumption per day, week, month, and year with similar dwellings in the residence, and compared with previous consumption as billed
- Specific energy consumption to show changes in behaviour
- Operating times of heating for the dwelling.

The portal is designed to display mostly images – a red bar is used as a boundary value, and if the bar goes above the line, the tenant can see his energy consumption is greater than theoretically necessary.

Example of Service Use Case

At the site under study, many of the tenants are retired, and some of them do not have internet access. One of the tenants that tested the service received a hands-on introduction course to use the portal. He initially changed the heating set-point times. It was agreed that he would continue to review his consumption patterns to minimize heating demands and adjust room temperature. However, he forgot about the web portal and did not achieve further improvements. After a second review of the portal services, the results were more conclusive, and the tenant now regularly consults the portal as a guide to follow and to adjust heating consumption.

Next Steps

It has been observed throughout the testing period that it is important to demonstrate the energy savings that can be gained with a well-adjusted heating system. The tenants will then be able to experiment with their own settings, and share the results with others. It is essential that the tenants exchange information as to how they have reduced heat consumption and costs. This is the key to tenant uptake of the services, and meetings are set up to encourage these exchanges.

Westerlo (Belgium)

Achievement Targets

- Developing a measuring system for both tenants and landlords that makes it possible for them to control energy consumption and to optimize installation performances.
- Comparing energy use between buildings that have different energy and technical parameters.
- Guiding and encouraging tenants to use less energy.
- Setting up guidelines for creating a lively and fruitful energy-saving dialogue with the tenants.

Implementation

In the prototype phase, a smart metering system that collects individual and collective heating data was implemented and tested. The final equipment will be installed in eight buildings for a total of 67 dwellings.

Services Offered

Smart meters for gas and electricity are installed in the apartment of a tenant, in combination with a central monitoring system for the collective heating installations. Based on the results, the consumption data for gas and electricity is automatically generated in digital format. This digitizing replaced the annual system of sight-meter reading by the energy grid manager. The smart meters also communicate with the EAS tool, providing the tenant with updated and detailed information on energy use.

A web platform is being implemented which allows tenants to keep track of their energy consumption and its history. One of the greatest benefits of the tool is that it generates standard energy patterns and benchmark data. This enables users to set realistic targets for lower energy consumption.

Example of Service Use Case

One tenant decided to test the services when she became aware that her energy cost had increased 6% from the previous year. Thanks to the web service, the tenant soon learned the cause of the additional energy consumption. She also compared her family's consumption with similar dwellings, and similar household profiles, and determined that her own family was using 8% more energy than the others. So her objective is to lower energy consumption by 8% in the coming year. She will continue to use the tools to monitor energy use.

Next Steps

Meter reading intervals will take place more frequently to provide users with data more often so that consumption can be adjusted in near real-time. The graphical displays will also be simplified to appeal to a larger audience, and to ensure better understanding of the data. More attention will be paid to the visual aspects of the software. In the second prototype, a complete and easy-to-use software environment will be provided for both staff and tenants. Experience has shown that reaching the tenants and "incentivizing" them is key to the success of the project. Rather than "pulling" tenants to the data, the information needs to be "pushed" to the tenants.

It has been decided to create a competitive environment wherein those who save the most energy will win a prize and thus receive a measure of recognition for their energy-saving success. It is also believed that involving children in the campaign will encourage the parents to join the challenge. Finally, it was found that repeated contact with the tenants is required to achieve the lower-energy-use goals.

Main Objective

Provide a picture of energy use by tenants by means of ICT. Based on this information, the tenants will be guided to get the lowest possible energy bill without any loss of comfort.

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CV Zonnige Kempen is one of the youngest social housing companies in Flanders and distinguishes itself with its focus on sustainable building. For more information, take a look at the website: www.zonnigekempen.be



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Some final remarks

The live prototype testing for the ten pilot sites has enabled the consortium to gather valuable data to finalize service design and tenant acquisition actions for the second prototype. Results vary according to social housing populations and nationalities, regions, building characteristics, and technologies, and most importantly, tenant uptake of the services.

The results described in this brochure show tangible value-add for this European-wide project. The feedback and lessons learned for each pilot are shared with the entire consortium. eSESH project members are developing an unprecedented and innovative array of energy cost-saving and ecologically-minded services. The services are adapted to a large panel of end-users, and they can easily be adapted to global markets.

The services will be enhanced and tested in real life situations over the next two years with the participation of a large number of social housing dwellings in Europe. The large scale and depth of the eSESH project opens up new markets worldwide for the worthy and valuable cause of saving energy.



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Disclaimer

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