

aFTER

NEWSLETTER

COST OPTIMUM AND STANDARD SOLUTIONS
FOR MAINTENANCE AND MANAGEMENT
OF THE SOCIAL HOUSING STOCK



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afterproject
.eu

THE PROJECT



WHY AFTER?

Buildings account for around 40% of EU energy requirements.

In the last five years, **Social Housing Organizations have played an exemplary role in improving the energy efficiency of the housing sector.** They have anticipated forthcoming national legislation and have punctually experimented with the construction of low-energy buildings and innovative energy refurbishment.

AFTER aims to promote and continue this effort especially in light of the obstacles and challenges presented by the current economic situation.

The AFTER project aims to enable participating and non-participating Social Housing Institutions and Organizations all over Europe to improve the energy efficiency of their housing stock with cost optimal solutions. Its goal is **to promote and develop existing European knowledge in the areas of energy saving strategies** and encourage their implementation by companies in the housing sector.

Social Housing Organizations in 6 different countries (Czech Republic, Denmark, France, Germany, Italy, and Slovenia) and their partners -including National Housing Associations, Scientific Committee and National Tenants Associations- are cooperating to highlight and evaluate the most efficient and adaptable energy saving measures.

AFTER asserts the importance of establishing energy efficiency as a major goal even after construction of the building. The project promotes measures adapted to a variety of investments and situations. A special emphasis is placed on **the important contributions of operation maintenance and management in the energy performance of buildings.**

AFTER will participate directly to this effort in improving energy efficiency by 20% according to the target set for 2020 by the European Commission.

SUMMARY

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AFTER IN SLOVENIA: FOCUS ON THE NATIONAL LEVEL

The Newsletter #5 offers a special focus on the actions implemented in Slovenia in the context of the AFTER Project.

In the framework of the AFTER Project, 3 Pilot Energy Saving Measures are implemented in Trbovlje within the social housing stock of the non profit housing operator SPEKTER, manager of 1900 living units, rents apartments for non profit rent, in highly degraded environment which is a result of many years of mining and excessive pollution (thermal power plant, cement and chemical factory...). These measures and their impacts in terms of Energy Savings are assessed and optimized thanks to the help of the Scientific partners Gradbeni inštitut ZRMK (ZRMK) and SPL Ljubljana D.D. Poslovanje Z Nepremicninami In Inženiring (SPL), also in charge of dissemination activities.

PARTNERS

SPEKTER d.o.o. Trbovlje (SPEKTER)



SPEKTER is one of two companies – manager of the housing stock in Slovenia, a non-profit housing organization, owner of 1900 living units, rents apartments for non profit rent, in highly degraded environment which is a result of many years of mining and excessive pollution (thermal power plant, cement and chemical factory...).

Housing is rented mostly to socially weak people. SPEKTER is interested in lowering energy consumption because this reduces living cost and consequentially decreased also environmental pressures.

Gradbeni inštitut ZRMK (ZRMK)



ZRMK acts as an R&D and consultancy company in the building and civil engineering sector. The company focuses on several fields as buildings and civil engineering including rational use of energy (RUE) and renewable energy sources (RES) in new construction and refurbishment, energy audits and concepts, energy-efficient and environment-conscious building materials,

products, and technologies, and also other relevant fields: green labelling, green procurement, climate protection and sustainable development... The company is active on local, regional, national and European level.

SPL Ljubljana D.D. Poslovanje Z Nepremicninami In Inženiring (SPL)



SPL is a leading Property Management company in Slovenia distinguished by a 40-year tradition in administering, managing and renovating residential and commercial buildings. Labeled ISO 900A, SPL d.d. operates in the central Slovenian region, covering capital city Ljubljana as well as other towns near capital city, e.g. Domžale, Kamnik, Kocevje, Medvode, Mengeš, Ribnica and Trzin and Postojna. SPL provides services to ministries, housing funds and some major

corporate clients throughout Slovenia. As a housing facility management company, SPL is in charge, in the frame of AFTER, of reporting energy saving measures and testing new optimized measures.

PILOT SITES

TR16



ADDRESS
Trg Revolucije 16,
TRBOVLJE

NUMBER OF APARTMENTS
52

YEAR OF CONSTRUCTION
1970

Original Energy Saving Measure

Connecting valves on return flow line, balancing valves (adjustable differential pressure regulators, adjustable shutter valves and metering valves) were installed on the heating network. In all apartments radiator valves were switched for thermostatic valves with additional fine regulation. Complete system was balanced and regulated.

Optimization: Conversion to low temperature heating was made, instead of 80/65 (dT 52,5°C) regime 50/40 (dT 25°C) was implemented reducing heating power of radiators to 1/3.

TFF2a



ADDRESS
Trg Franca Fakina 2a,
TRBOVLJE

NUMBER OF APARTMENTS
31

YEAR OF CONSTRUCTION
1990

Original Energy Saving Measure

The building with 6 cm EPS was additionally thermally insulated with 7 cm EPS for a total of 13 cm thermal insulation.

Optimization: Tenant awareness was implemented by an expert visit. Information about proper energy use in the apartments, appropriate use of thermostatic valves and adequate ventilation for successful prevention of condensation and mold formation were handed.

SC9b



ADDRESS
Savinjska cesta 9b,
TRBOVLJE

NUMBER OF APARTMENTS
13

YEAR OF CONSTRUCTION
2006

Original Energy Saving Measure

Recent low-energy building with 10cm EPS shell insulation, min. 10cm EPS roof/ceiling insulation and 8cm EPS basement floor insulation. Double glazed windows. Natural ventilation systems. Building is connected to district heating network through a heating substation located outside the building itself, under the parking lot, basement level.

Optimization: Conversion to low temperature heating was made from 90/70 (dT 60°C) regime to 50/40 (dT 25°C), reducing heating power of radiators to 1/2.

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EDITORIAL

INTERVIEW WITH MR. DEJAN PAPEŽ, DIRECTOR OF THE REAL ESTATE ASSOCIATION



Gospodarska
zbornica
Slovenije
Zbornica za poslovanje
z nepremičninami

As an effective economic lobby, the Chamber of Commerce and Industry of Slovenia has been operating for over 160 years, representing the interests of companies in relation to the state and the unions in matters of creating working conditions, business, and providing conditions for economic development. Its members are provided with new opportunities for development, competitiveness, and foreign market penetration. The real Estate association is one of the many branches of the Chamber of Commerce. It represents the majority of companies and the sole proprietors dealing in real estate. The chamber provides for the reputation of the profession. It represents and protects the interests of its members in their field of expertise, as well as business matters. Operating in the framework of the Real Estate Association are Association of Real Estate Agencies, Association of Evaluations Companies, Association of Property Management Companies and Association of Housing Funds.

Mr Dejan Papež, Director of the Real estate Association answers our questions :

What is your role in the After project?

As the director of the Real Estate Association, I take part in the National Advisory Board workshops. In Ljubljana alone, there are over 100 000 apartments, mostly within multi-owner buildings. We join powers with the most prominent managers who are members of the Association and with common efforts we reach a large percentage of the target population of owners. We have already presented the project at an event organized by the Real Estate Association. The final findings will be presented at the next real estate consultation in Portorož, which is attended by all prominent managers, public housing funds and real estate service providers from all over

Slovenia.

Where do you see the possibility of implementing the results of the project?

We are all coming to the conclusion that it is necessary to put more effort into raising awareness among residents. That is why we welcome the opportunity to inform managers, first and foremost, who, in turn, familiarize floor owners with the possibility of implementing cost saving measures. The After project brings about an analysis of successful practices, which we can use as proof to make residents realize the importance of their active participation and proper use of living quarters.

What is your take on the aspirations to reach the target reduction of energy consumption in Slovenia by 2020?

Simple solutions for big issues. In recent years, the country has been dealing with resolving the crisis and austerity measures. National programmes give special attention to energy saving, with the intent to reduce costs for individuals. By the beginning of the 2011/2012 heating season, floor owners were obliged to install heat dividers, and the results are already showing. The After Project puts forth results which offer the basis for our suggestions of simple solutions with low investment to consumers. With a technical basis we can, based on the chosen technical solutions, display the savings and return on investments, so that owners find it easier to opt for procedures that entail substantial investments.

Foto: Roman Šipic/Delo

INTERVIEW WITH BRANKO ARNŠEK, TECHNICAL MANAGER OF SPEKTER



For project AFTER, SPEKTER has been testing an **energy saving measure of external shell insulation**. External shell insulation is **one of the most popular energy saving measure connected to investment in Slovenia** as their

efficiency is widely known, and combined with the non-refundable subsidies of the Eco Fund, Slovenian Environmental Public Fund, the number of implementations of external shell insulation increases annually as the price of heating energy is becoming more and more expensive.

Since just **the implementation of external insulation itself leads to saving more than 20 per cent of heating energy** and like the recent unofficial results of the pilot testing activities show, **together with raising tenant awareness of a refurbished building, energy saving can raise by another 15% to a combined 38% heating energy saving.** Coaching tenants personally with a home visit instead of organising a meeting or simply leaving printed materials in tenants' mailboxes proved to be the correct decision (as impersonal methods tend to be less efficient, e.g. tenant meetings of such nature are rarely attended more than 50% and a lot of leaflets wander straight to the wastepaper bin).

The experience of WP6 pilot site will help SPEKTER gain a greater perspective on actual energy efficiency of external shell insulation combined with proper tenants' behaviour regarding heating energy usage and ventilating habits. **With this information, based on experience of project AFTER, SPEKTER will be able to advise this energy saving measure to flat owners with a greater detail supported by the results of pilot testing. As SPEKTER is managing a majority of housing stock in the municipality, this measure could vastly improve energy efficiency of the housing stock in Trbovlje area, starting in spring 2014** when Eco Fund will publish the new public call for Non-refundable financial incentives to citizens for new investments in renewable energy use and increasing energy performance of multi-apartment buildings.



Trg Franca Fakina 2a, Trbovlje



REPORT: AFTER AT... 53rd International Home Fair Ljubljana, 11-16 March 2014



The International Home Fair is the **largest specialized fair event covering the domain of civil engineering in Slovenia.** Apart from product exhibitions and services, there are experts that will offer the right solutions concerning renovation, remediation, energy consulting, prefabricated wood house construction, etc. The Fair lasts for six days and comprises 585 companies from 33 countries. 50 000 visitors are expected. The fair is a major Slovene event and one of the most visited event in the country

On the 11th of March a workshop was organized under the IEE AFTER project, called "How to Act in Residential Building Renovation," where representatives of the Building and Civil Engineering Institute ZRMK, alongside two respective representatives of managers of SPL Ljubljana and SPEKTER Trbovlje, presented the measures that can be taken, supported by examples of energy efficient residential building improvements. The workshop was attended by residents, landlords, managers, maintenance technicians, and others who are interested in energy efficiency. Special emphasis was put on

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the analysis of energy savings in optimizing the operation, maintenance and managing of the building stock. The Slovenian national television reported on the After project workshop in its news programme.

Many topics of discussion, regarding sustainable use of energy and its environmental aspects were debated.

For instance: the consequences of poor quality or deficient installation of thermal insulation (such as algae, mould and moisture). Another topic was error detection in the building wrap, using thermography and airtightness testing. The criteria for choosing product and services was also discussed: how to choose between low prices, local craftsmanship and aspects of sustainability?

The round table saw a lively discussion on the problematic of planning and monitoring the functioning of a building from the moment of moving in. Interest in the contents was shown by designer engineers, maintenance technicians and contractors.

So far, in our meetings, we have mostly reached the same conclusions regarding the implementation of measures in multi-owner buildings: special attention and extra effort must be put into raising awareness among fieldwork managers. They are the one that have face-to-face contact with building owners due to the specific ownership structure: 80% apartment owner, 10% rented accommodation. Decisions about substantial maintenance work are made with the consent of a great number of owners in a particular building (in order to carry out individual measures, 50% of owners must agree to it, and 75% if an upgrade is in question). That is why it is that much more important to have well-educated managers, who will establish a personal relation with the owners and hand them relevant and expert information. Under the Fair, SPL prepared the presentation of the project in the form of a leaflet. They are successfully spreading the information at their exhibition area, with the interest being high.

This year, as well, **visitors have the opportunity to take advantage of free counselling and lectures at the consultancy and exhibition area in the GI ZRMK organization.** They organize events pertaining to building energy, remediation, sustainable construction, energy performance certificates, and the like. Citizens can partake in individual expert and free-of-charge energy

consultation. Lectures and workshops welcome investors, managers, experts, real estate agents, local community representatives, and national bodies alike. Presentations include sustainable construction and planning, energy efficiency of household appliances, energy efficient construction and renovation of residential buildings, energy performance certificates, networking and training experts in producing energy performance certificates, carrying out energy audits, and environmental and sustainable building assessment, with emphasis on green public procurement and taking into consideration the LCA and LCC methods, low-energy buildings, improvements in earthquake resistance and the possibilities of financing in the field of energy.



Presentation of SPEKTER during the Slovenian Home Fair 2014.

REVIEW OF CURRENT WORK

AFTER project is based on a several steps approach. Before the summer and the beginning of the heating season, AFTER partners mainly focused on the validation of the scientific documents and the identification of relevant Pilot ESMs and Pilot Sites to implement optimization solutions.


Data collection


Factsheets


Pilot Sites


Retro-Commissioning


Typologies


Handbook


Pilot Measures


Evaluation Protocol


Factsheets v2.0



End of the testing phase

The testing phase on finished at the end of the year 2013. Results and outputs about costs for investment, energy consumptions and tenants survey have been collected by the SHOs staff and analyzed by the Scientific leaders. The requested data figures have been included in the Evaluation protocol reporting. All the tests on Pilot Sites included a tenants information process that has also been reported.

Preparation of the WP8 deliverables

Partners are preparing the deliverables that will present the results of the projects. These deliverables are divided into three parts:

- **step 1:** presenting an exhaustive restitution of the testing led in one Pilot Site using the iPMVP framework.
- **step 2:** proposing a systematic process to reproduce the implementation of the optimized ESM in the the future.

- **step 3:** proposing a model to include the optimized ESM in the books of specifications and procedures of the SHOs.

Dissemination

A guide of the AFTER dissemination activities will be prepared by the responsible of the project communication.

Next coordination activities

AFTER PROJECT MEETING #5
Prague, Czech Republic - 22nd-23rd of March 2014
hosted by STU-K at Hotel Constans, Prague.

MEETING WITH PROJECT OFFICER
Brussels, Belgium - 4th of April 2014

END OF THE PROJECT
5th of May 2014

DELIVERABLES ON AFTER WEBSITE
5th of July 2014

AFTER



DELPHIS
HABITAT & INNOVATION

INTERVIEW WITH JULIEN BONNET - DELPHIS

DELPHIS is coordinating the AFTER project since May 2011. As the project is ending in May 2014, after 36 months of action, the coordinator provides us a general overview of the project and its main results.

All the conclusions of the project will be delivered on the 5th of July 2014 on the AFTER website (afterproject.eu). Julien Bonnet, coordinator of the AFTER project, presents the main lessons learnt highlighted by the 18 partners after more than 3 years of action.



Julien Bonnet is coordinating the AFTER project since December 2011. He is also in charge of issues concerning the sustainable development at DELPHIS.

Mr Bonnet, Can you tell us more about DELPHIS and yourself.

DELPHIS is a research and development institute based in Paris and focusing on the social housing sector. Our network is gathering 27 Social Housing Organizations. We are leading for them activities aiming at identifying and disseminating best practices and quality processes. Our activities cover various topics such as energy performance, corporate social responsibility, ageing and social integration.

DELPHIS also carries out and participate to several European projects concerning issues related to the social housing management. DELPHIS has been involved in 2013 in 3 European projects.

My work at DELPHIS focuses on the technical aspects related to the social housing stock including energy efficiency, indoor comfort and urban integration. As a part of these activities, I am leading coordination aspects of the AFTER project.

Why did you (and DELPHIS) decide to take part in the AFTER project?

The AFTER project is targeting relevant stakes for both European and French Social Housing Companies. Research and Development activities about energy often focus on high-profile innovations concerning new constructions. Interesting impacts and efficient energy saving measures are often highlighted in these buildings.

Nevertheless, the proportion of the total housing stock concerned is limited. **The objective of the AFTER project is to extend our research activities to 100% of the existing housing stock focusing on measures related to its management and maintenance.**

The post-investment phase is, for us, a major challenge as it still contains unexplored potentials for energy savings. **AFTER is an ambitious and down-to-earth project.** Its strengths: **a large scale of the housing stock concerned by AFTER energy saving measures, low-cost investment interventions, simple actions to ensure the energy performance of efficient buildings and their equipment.**

Due to the economic context and the growing complexity of the new systems and design, Social housing need to be concentrated on pragmatic solutions and knowledge in order to reach ambitious European objectives concerning energy.

What are the main objectives of the project ?

As the name of the project might suggest, **we are looking for energy solutions to be implemented «after» the design and construction phases.**

The challenge aims at finding adjustments and corrections to bring the building up to its energy and economic performance and to optimize it.

As a matter of fact, **AFTER is covering a large range of actions related to the energy performance.** This includes technical interventions on heating, ventilation or domestic hot water systems but also measures related to the contracts and tenants awareness. Managing and highlighting this variety of approaches is one key issue for the project.

What were your expectations at the beginning of the project? Do you think they have been reached?

The AFTER results correspond to the original objectives mentioned in our original agenda. **An exhaustive inventory of existing energy saving measures has been delivered by the partners. 18 Pilot Sites have been involved in the project including more than 1000 dwellings in 6 different countries. 3 to 7% of additional savings have been achieved concerning these Pilot Sites.**

These savings are related to already implemented investments such as global refurbishments, replacement of boilers or construction of low-energy buildings.

The project was intended to create a methodological framework to assess and guide these measures. A complete scientific methodology for the project is existing and has been disseminated on the website.

What have been the main challenges during the project?

The data collection has been one of the main challenges of the project. Figures about energy consumptions and costs are often difficult to collect within social housing organizations. The diversity of measurements and legislation don't make this task easy and this task can be quite time-consuming ! SHOs have been very involved in collecting the requested data (sometimes implementing complementary monitoring systems) using the templates provided by the Scientific Committee of the project.

Tenants awareness is also a major stake for the AFTER project. Participating organizations have tried to inform all the tenants about our works. This task is very interesting as efficient information and sustainable behaviors are requested to guarantee energy performance of buildings. AFTER sometimes focus on very technical measures. Finding the relevant level of information was an ambitious challenge. General information has been disseminated to the tenants on the major part of our Pilot Sites. Feedback from tenants is globally positive as savings have been achieved without degrading comfort..

In your opinion, will services like the one developed in AFTER be widely replicated in the future, and if so why?

AFTER is covering different types of energy saving measures. Interesting results have been raised concerning interventions such as intelligent monitoring solutions for heating, hybrid ventilation, balancing of oversized heating systems, control of the domestic hot water consumptions in low energy buildings or tenants campaigns.

Efficient impacts have been achieved with limited investments. All the results will impact the future routines of our participating Social Housing Organizations and can be used as recommendations and toolbox for the other European Social Housing Companies.

The deliverables of the project try to be as practical as possible and are directly targeting practitioners of the social housing sector.



Focus on... a new EU project coordinated by DELPHIS:

The European Responsible Housing Initiative

Confronted to growing economic, social and environmental issues, the social housing sector is undergoing significant transformation across Europe. Corporate Social Responsibility (CSR) can be a powerful tool to support this transition and help public, social and cooperative housing providers address current and upcoming challenges, in cooperation with their stakeholders.

Through the European Responsible Housing Initiative (ERHIN), co-funded by the European Commission (DG Enterprise), CECODHAS, the International Union of Tenants (IUT) and DELPHIS have joined forces to support the development of CSR within the affordable housing sector.

Among the various deliverables, a dedicated Website was set-up as a lasting "toolbox" and resource center, to be progressively developed and enriched through housing organisations' and partners' contributions: CSR reports, publications, documents or examples of good practices...

To do so, send us an email: contact@responsiblehousing.eu

Visit our Website: www.responsiblehousing.eu



AFTER



AFTER: ENERGY PERFORMANCE AND TENANTS' INVOLVEMENT

by Iris Behr, IWU - Institut Wohnen und Umwelt, Darmstadt.

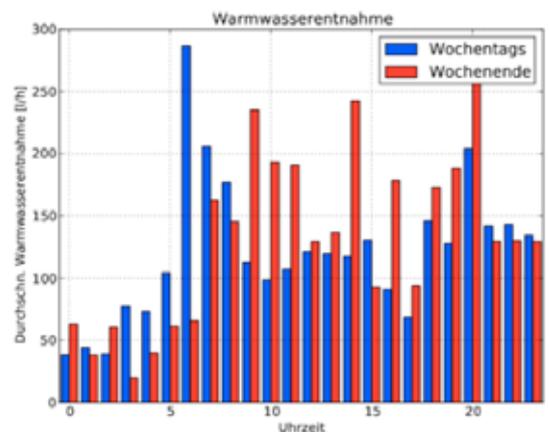
Tenants awareness is an important aspect of the AFTER project. IWU has been involved in face-to-face actions with tenants of recent low-energy buildings. The article presents the process implemented in Darmstadt with the social housing organization bauverein AG. The campaign concerns the passive building WOHNART 3 (44 dwellings) and focus on the optimization of energy consumptions for domestic hot water.

Tenants' involvement regarding the energy savings is essential to tackle the energy efficiency topic in a building. The technical and financial aspects of optimization potentials have to be coupled with the optimization potentials geared by the tenants. An energy saving measure that is poorly understood or that is not well managed by the concerned tenants or even not accepted by the tenants will be inefficient and costly. As nearly all optimization measures of AFTER executed in the social housing organizations (SHOs) affect the tenants it was a must to address the tenants. Tenants of a passive house in Darmstadt/Germany had been interviewed on their energy related behavior, i. e. their heating habits, the way of hot water consumption and the use of electricity. Next to this the tenants had been asked on their present satisfaction with the issues mentioned. Their expectations on energy saving potentials in general and in respect to the particular optimization measure as well as their overall environmental protection attitudes had been investigated. Their ideas and wishes in respect to information on energy saving had been of relevance in the surveys.

What had been done in Darmstadt?

Passive houses by definition show little additional saving potentials. The German example, a 4 storey-passive house with 44 families addressed the hot water delivery. **Hot water production and the needed energy equals to nearly 50 % of the whole energy consumption in a passive house.** Even if the absolute saving figures will be small the assumption was that some 7 % savings will be achieved. **While the technical intervention was small – stopping the circulation pump for several hours during the night, the legal and tenants' impact was important:** German court rulings demand hot water delivery with very little delay

(not more than 3 liters in order to reach 55 °C hot water). New health standards (2013) demand 55 °C in order to prevent the breed of legionella. **It is this prerequisite that limited the stop of the circulation pump to 6 hours between 11 - 5 instead of the planned 8 hours per night.** Tenants' acceptance of the optimization measure was not only desirable but a must in order to avoid complaints in front of the courts. Therefore a manifold tenants' approach was chosen.



Comparison of domestic hot water consumption peaks during working days (blue) and weekend (red) [0-24 h]

Tenants' interventions

A first tenants' meeting at the premises of the pilot site WohnArt3 the overall information of the AFTER project, the results of the water consumption data and the intended optimization was introduced. The prepared tenants' survey was pretested together with the participating tenants. There were valuable recommendations to improve the questionnaire. The tenants took the chance to present other recommendations and complaints going beyond



View of the WOHNART 3 building and tenants awareness meeting raised by IWU and bauverein AG.

the hot water issue. **The recommendations mainly addressed the existing handbook “Leben im Passivhaus” (living in a passive house) which had been handed out to all tenants while they moved in in the year 2010.** All issues touched (heating and shading, air dryness, doors and window insulation, maintenance of particular passive house technical equipment) are of high interest for the SHOs and useful for the retro commissioning process.

Results

The questionnaire asked for satisfaction, awareness and knowledge as well as behavior of the tenants. Out of the 44 households 27 households participated in the survey. The overall satisfaction with the “living situation” is very good: 80 % of the households are satisfied with their present living situation. The passive house standard and the expected low heating costs had been a motive for renting a flat in the passive house. For 77 % of the households the passive house standard was a reason to choose such a flat. Putting the questions slightly different and asking for low heating costs in the passive house, 40 % focus on the savings in heat costs, 35 % stress the contribution to climate protection while 16 % appreciate the high comfort going along with the passive house.

The awareness and knowledge on the passive house technologies is very high. More than 77 % are well informed on the particular passive house technology. Means of information are broadly spread – the handbook is one amongst many. It was suggested to publish an English version of the handbook. Additional information is requested in respect to water saving, proper heating and shading in particular addressing the controlled heating system. The indoor climate is seen as a difficult issue for 54 % of the inhabitants. An amazing high proportion of 91 % is interested in energy-cost-saving and even more inhabitants (96

%) are well aware of the environment. Looking at the particular issue of hot water delivery and saving there is a very high satisfaction (73 %) with the present hot water delivery. A huge majority would accept 40° temperature for rinsing the dishes (82 %) and hot water for showering (72%). A majority of 91 % finds a hot water delay during the night very acceptable. In order to save energy costs 78 % would accept a comfort reduction.

The described opinions and expectations are in line with the tenants’ habits in respect to water consumption. **81 % of the households use water saving appliances like toilet flushes, warm water connection for dishwasher and washing machine, water saving shower appliances and water saving taps. The tenants report that they take a shower instead of a bath and use cold water for hand washing instead of warm water.** The dishwasher and the washing machine run only while the machine is fully loaded at 90 % of the households.)

Next steps

In February 2014 a second tenants’ meeting had taken place where the above described results had been discussed and the personal opinion of the participating tenants were exchanged. **The new water regime is well received and no real complaints had been expressed.** In order to verify these results additional questions will be asked and a third tenants’ meeting will be convened. It will then come to the test whether the consumption measurement will show the expected savings of energy, CO2 and costs.

1. Besides the net rent of 10 EUR per month and m2 tenants of WohnArt3 have to pay 2,16 EUR per m2 and month additional costs out of which heating stands with 0,30 EUR/m2/month, hot domestic water 0,28 EUR/m2/month and cold domestic water 0,36EUR/m2/month.
2. The project eSESH which is a little ahead of the After findings showed that the water heating reduction leads to 9 % savings in some 358 dwellings.

AFTER



FOCUS ON...

Optimizing the profits after a global refurbishment in the subscription for a district heating network (FR).

“L’Aiguillade” is a building from the 60’s, recently refurbished by Auvergne Habitat in order to improve its energy performance and comfort. However, former French legislation did not allow to take fully into account the energy savings generated and to decrease the energy bills of the tenants to its full extend. Auvergne Habitat has renegotiated the pricing for its district heating subscription after implementing an energy saving refurbishment. Assessment and impact of the measure.

L’Aiguillade (126 dwellings) is connected to the district heating system «La Gauthière». The new subscription contract has been updated by the municipality of Clermont Ferrand (owner of the district heating network) in 2010.

In November 2012, a new boiler has been installed supporting a new energy mix (20% gas, 80% wood) for this district heating system.

In 2012, «L’Aiguillade» has also been completely refurbished by Auvergne Habitat in order to improve the energy performance and the indoor comfort in the building. The main improvements included :

- Refurbishment of the roof insulation (Thermic insulation FOAM glass / $R=3,33 \text{ m}^2.\text{kw}$),
- Improvement of the ventilation system (hybrid ventilation),
- External thermic insulation (no insulation to façade: thermic insulation polystyrene expanse tightness : $120 \text{ mm} / R = 2,43 \text{ m}^2.\text{kw}$)
- Windows replacement (wood simple-glazing to PVC carpentries with double-glazing with a thermic performance: $UW=1,4 \text{ W}/\text{m}^2.\text{K}$).



The pricing for a district heating subscription is divided in two parts:

- a **proportional part (identified as R1)** based on the quantity of calories consumed by the building. R1 is obtained reading the energy meter of the building substation (difference between the value for the end of the heating season and the beginning of the heating season).
- a **fix part (identified as R2)** covering the subscription to the heating network. **R2 is calculated using the «average power demand» as a basis.** The APD is based on the needs of energy for the building (for both heating and domestic hot water). The final APD is calculated for a year (8760 hours) and is adjusted using a fixed average heating period (2516 Heating Degree Days).

This price calculation for R2 is a new element included in the updated district heating contract. Before 2010, the R2 was calculated using the surface of the building. This new calculation formula is interesting as it will allow the SHO to have a new figure for APD when investments linked with energy savings are implemented. This opportunity was not possible before as the surface was not modified. As a consequence, energy investments will now have concrete economic results on the district heating subscription.

As Auvergne Habitat has implemented a global refurbishment in 2012, the APD of the building has been modified. This is a major opportunity for Auvergne Habitat to take advantage of its new contract. The objective of Auvergne Habitat in AFTER aims at identifying the energy savings obtained thanks to the refurbishment (including the CO2 impacts induced by the new energy mix) in order to update the part R2 of its district heating subscription regarding the 2009 figures.



New COMPTE wood boiler of the «La Gauthière» district heating system (7,7 MW) and photo of the refurbished Aiguillade building.

Results before and after the ESM

| Year | | 2009 | 2013 |
|---|------------------------------|-----------|-----------|
| Heating Degree Days | | 2317 | 2575 |
| Energy Consumptions | heating | 1 255 000 | 800 620 |
| | domestic hot water (average) | 410 000 | 410 000 |
| Energy Consumptions for heating and domestic hot water updated on the contractual basis | | 1 772 788 | 1 192 276 |
| Average Power Demand | | 202 | 136 |

Energy savings related to the heating calculated on the contractual basis:

42% thanks to the refurbishment.

Savings for heating calculated in EUR regarding the price for energy included in the district heating subscription contract for R1 (38,825 EUR/mWh):

22 518 EUR.

Impact of the modification of APD due to the heating savings (2/3) regarding the price for energy included in the district heating subscription contract for R2 (279,90 EUR/mWh):

12 315 EUR.

The heating is fully reported in the bills of the tenants. The final average yearly energy savings for everyone of the 126 dwellings is about 276, 45 EUR. The optimization of the district heating contract has allowed to report directly this impact of the refurbishment on the tenants' bills. At the same time, an energy awareness campaign has been raised by the SHO to inform tenants. Their behaviors will be a performance factor for the refurbishment.

Focus on the district heating subscription mentioned in the new law for energy savings in France.

Similar type of calculation regarding the fixed part of the contract has been included in the new law «Grenelle II» (2010) implementing a general strategy for the sustainable development and the energy savings in France.

The Grenelle II implies very important refurbishment investments for the SHOs in order to reach ambitious energy objectives. This investment is a financial weight for the SHOs. As a consequence, the investment has to be deferred on the pricing of the contracts in order to be amortized with district heating providers. After a refurbishment, a building will need less contract power but how can we justify this investment if the savings are not translated into economic profits.

The article 87 of the law mentions the following statement regarding the district heating systems: "Art. 21-1: Concerning the refurbished buildings connected to a district heating system, the contract power included in the existing contracts can be revised at the request of the subscribers after some works, according to modalities set by rules and regulations."

The objective of the article 87 is to permit this process. The R2 variable (cost for the subscription) will be reduced, so will be the R1 part (consumptions) and the economic savings will be allowed in order to amortize the costs. In the social housing organization this economic savings can be transferred and discussed with the tenants as the article 21-II of the Grenelle II implement a cost reduction system after the energy refurbishments.

The SHOs will have the obligation to reduce the rents regarding the energy savings obtained (at least 25% of the savings will have to be reported on the rents).



COMMUNICATION AND DISSEMINATION EVENTS

AFTER outputs have been presented and discussed thanks to several interventions directed toward a professional public. Overview of some of our last dissemination activities.



NATIONAL FRENCH SOCIAL HOUSING CONGRESS

Lille, France – October 2013

Number of participants: approx. 100
Type of participants: All the actors of the Social Housing sector in France

The European project AFTER has been showcased during a workshop at the Pavilion of Sustainable Development during the Congress organized by Union sociale pour l'habitat in Lille between the 24th and 26th of September, 2013. This 3 days conference is the major event for Social Housing in France, with the participation of the French Housing Minister. The Congress in Lille has been gathering 4492 professionals of the SHOs, 2224 service providers, 939 regional and national guest, 86 journalists and more than 4000 national and regional visitors.

The first feedbacks on the three energy saving measures implemented by Auvergne Habitat have been presented and discussed with representatives of tenants, energy companies and other stakeholders in the sector. DELPHIS has presented the stakes and methodology of the project. The Newsletter #4 has been translated and printed in order to be largely widespread during the Congress. The access to the final deliverables has been detailed to the participants. The Minutes for this events are available on the French Social Housing Association Union Sociale pour l'Habitat (AFTER partner): <http://pro.union-habitat.org/ecom/ecom2013.nsf/Id/405>



AFTER workshop at the French National Congress for Social Housing (Julien Bonnet - DELPHIS, Alain Goraguer - Auvergne Habitat, Laure Bourguoin - CLCV and Pierre Guyard - Cofely).



NATIONAL WORKSHOP Prague, Czech Republic – 28th of February 2014

Number of participants: 11
Type of participants: Social Housing Organizations, refurbishment professionals, scientific institutes, municipalities technicians.

The workshop included presentation of the project AFTER – general information about the project AFTER and presentation of the pilot sites, followed by a discussion on Global refurbishments issues and fair distribution of heating costs among the apartments of the house.



Forthcoming events

DENMARK

30 April 2014

National Advisory Board meeting and Workshop: Energy saving potentials in management, operation and maintenance of buildings - Results in focus: Discussion of Results and dissemination on the Agenda.

FRANCE

4 April 2014

3rd National Advisory Board Meeting, organised by USH. The objectives are to present the results of the experimentation. The participants will give their feedback and additional information.

23th to the 25th September 2014

75th French Congress for the Social Housing - Workshop / AFTER : Résultats et Conclusions Workshop at the main Social Housing event in France on the DELPHIS' stand.

GERMANY

9 April 2014

2nd National Advisory Board Meeting, organised by IWU. The results of the AFTER optimisation will be presented. The joint activities for 2014 will be discussed and decided. The participants will give their feedback and additional information.

Summer 2014

AFTER Konferenz in the framework of Bauverein AG 150 anniversary celebration taking place in summer 2014

ITALY

Rome, 10 April 2014

Seminar Horizon 2020: The seminar that will explain the objectives and organization of the new European research program for the 2014 - 2020 Horizon 2020 will also present the first results of the project AFTER facing an audience composed of representatives of exceeding 100 agencies of social housing Members of Federcasa.

Rome, 11 April 2014

3rd National Advisory Board Meeting: the meeting, at which are invited the most representative stakeholders in the field of Italian social housing and construction, in addition to tenants' unions, will discuss the results of the project AFTER and its possibilities of implementation and dissemination to other providers.

CZECH REPUBLIC

Prague, April 2014

AFTER Final seminar: Final presentation of AFTER project, results and transferability, addressed to the members of NAB and of association of the Czech municipality housing companies.



Outputs

Value-added Construction Progress (Værdibyg)

is the result of an initiative by building leading organizations. The initiative wants BAT Cartel , Client Association , the Danish Construction Association , Danish Architectural Firms , Association of Consulting Engineers and TEKNIQ to address the problems and challenges in construction and building processes .

Værdibyg will develop a new common practice in the construction process across the building sector players focusing on :

- Maintaining the values in construction throughout the construction project - from building program for the operation of the completed building .
- Finding and sharing of best practices in the handling of building value through guides.

The experience from the AFTER project, in Aarhus, made the Danish AFTER partners aware of commissioning long before this process was activated. This made the AFTER partners able to review it better; arguing for a more simple manual/ process for commissioning.

This is a work still in progress; the new legislation in Denmark regarding the use of information technology, 3d models and general communication in the building proces (IKT-bekendtgørelserne) when building for public money need to be incorporated.



Covers of the guidelines

「 AFTER 」

FACTS AND FIGURES

- * Started on May 2011 for a duration of 3 years.
- * 2,7M budget granted for 75 % by the European Commission.
- * 18 partners and 6 Social national housing organisations managing 103 000 housing units.
- * 200 professionals participating in 3 National workshops and final seminars
- * 3 pre-tested standard energy saving measures per country targeting an immediate energy reduction of 3 to 7,5%.
- * 3 pilot sites per country to demonstrate the feasibility and efficiency of well-developed energy saving measures.
- * Promoting low-cost innovations: under 500 EUR/housing unit.

COORDINATION AND CONTACT

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