

Energy efficient renovations in practice training series

Summary

Background

RetrofitHUB is an international project that aims to engage, encourage and equip condominium operators, community representatives and owners with the right knowledge in the process of energy efficiency renovation. As a first step of the project, an analysis of the situation in Hungary was carried out (literature, review of ongoing projects, online questionnaire, in-depth interviews, focus group discussions). The results of the analysis provided the basis for the development of a training series, which was held in the first half of 2023 by the Hungary Green Building Council (HuGBC). This summary reviews the main results of the training series.

Method

The content of the training programme has been developed based on the results of the situation analysis, incorporating the input from the focus group discussions with experts. The HuGBC Education Working Group was also involved in the development of the training.

The training focused on the three building types – buildings built before and after 1945 and buildings built with industrial technology. A half-day training session was organized for each building type. The three themes that emerged from the focus groups were also taken forward in the structuring of the training courses, i.e. technical, financial-legal and communication aspects.

Given the amount of information to be imparted and the wide interest, the format of the training was chosen to be online, in the form of frontal presentations, leaving the audience the possibility to answer questions. The online format (Zoom) enabled the reach of more people, which was further enhanced by the fact that the presentations were published on our organisation's YouTube channel.

We have invited experts in the fields concerned to give presentations. The speakers included:

- Dr. Zoltán Magyar (Associate Professor, heating and district heating engineer, mechanical engineer, Managing Director, Comfort Consulting Ltd.)
- Ilona Illésné Szécsi (professional associate, RenoPont project manager - Hungarian Institute for Energy Efficiency)
- Zoltán Varga (economist and mediator)

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- Czabarka Mihály (condominium renovation strategist, mechanical engineer, economist, condominium manager, investment manager, building energy certification, managing director-Projectdoctor Ltd.)

Participation in the training was free of charge, subject to pre-registration.



This project is part of the European Climate Initiative (EUKI) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

Content

In February and March 2023, three practical training sessions were organised, mainly for condominium managers and representatives. Participation was open to any professional interested in renovation management or decision making. The aim of the training is to provide practical knowledge and tools to help more and more efficient energy renovation in Hungary. The invited speakers presented the concrete tools available in the daily practice of energy renovation and decision making support. Many practical examples of technical solutions, savings and cooperation opportunities were presented.

Our trainings took place on the following dates, available at the link:

1. 24 February Friday 09.00-12.30 - Focus on traditional buildings built before 1945
2. 09 March Thursday 09:00-12:30 - Focus on traditional buildings built after 1945
3. Thursday 23 March 09:00-12:30 - Focus on buildings built with industrial technology

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**ENERGIAHATÉKONY ÉPÜLETFELÚJÍTÁS
A GYAKORLATBAN**

**FÓKUSZBAN
AZ 1945 UTÁN ÉPÜLT
HAGYOMÁNYOS
SZERKEZETŰ ÉPÜLETEK**

2023. március 9. csütörtök, 9:00 - 12:30

Műszaki kérdések
dr. Magyar Zoltán
egyetemi docens, fűtés- és
távfűtéstechikai szakmérnök,
okl. gépészmérnök, ügyvezető,
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Finanszírozás, pénzügyek
Illésné Szécsi Ilona
szakmai munkatárs,
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Magyar Energiahatékonysági Intézet
(MEHI)

Együttműködés, szervezés
Varga Zoltán
szakközgazdász,
mediátor

Technical aspects

From a technical point of view, the regulatory background, the relationship between comfort and energy savings, the characteristics of the domestic building stock, the concept and possible steps of deep renovation and the design of energy efficient renovations were discussed.

The current annual renovation rate is only 1%, which needs to be increased to 3% by 2030. According to statistical data, the domestic building stock includes nearly 600,000 small and large family houses built before 1944 and nearly 10,000 large apartment buildings. For pre-1944 buildings, most of the energy loss is through windows (40%), but there is also significant energy loss from heating through walls and roofs. In total, energy savings of around 60-70% could be achieved through renovation.

The presentations covered the different renovation options and their effectiveness. Significant savings could be made by renovating the building envelope, but the investment costs are usually quite high. Among the mechanical renovations, replacing outdated heat generators and increasing their operational efficiency could save large amounts of energy. The use of heat pumps is only worthwhile if the building envelope has been renovated beforehand.

Installing heat emitters and controlling the optimum room temperature is also an excellent option. In pre-1945 buildings with high ceilings, surface heating can save a lot of energy. It is also possible to properly control the central heating system by the use of monitoring systems to measure the energy consumption of the apartments. The benefits of energy saving at night should also not be forgotten.

The speakers stressed that a complex mindset and the right order of measures are essential when planning energy-efficient renovations. Structural upgrades should always precede mechanical upgrades, as this would allow for lower boiler and heat exchanger capacities and

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lower investment costs. LED lighting and renewable energy can then follow. It is also possible to improve energy use through non-investment measures such as internal temperature adjustment and control, and heating system regulation. In terms of potential energy savings, reducing heating and cooling demand accounts for 24%, using efficient equipment for 39% and operating more efficiently for 37%.

Financial aspects

From a financial perspective, speakers presented the wide range of benefits of energy efficiency improvements, domestic financing options and the services provided by the One Stop Schop schemes.

The current housing stock leaves a lot of scope for energy savings, with only 220,000 properties qualifying as up-to-date buildings. Energy price rises are hitting family homes the hardest, but there is also a significant energy over-performance in condominiums built before 1944. The benefits of energy efficiency go well beyond overheads savings: a renovated building can have lower air pollution and emissions, quieter homes, healthier indoor air, energy security, independence; while increasing property values by 20-50%.

Presentations also looked at the demand and supply side of energy efficiency. The cheapest energy is that is not used, so it is only after reducing heat demand and modernising heating that renewable energy renovation can follow. There are many forms of financing available that can be used for renovation projects. It is worth knowing the conditions of these in detail. Both variable and fixed-rate loans are available, but it is always advantageous to build on the condominium's up-front core savings for the project. Innovative financing options such as ESCO can also provide a solution.

As the demand for funds is high, condominiums that take the preparation seriously and have the necessary documents ready in time will have an advantage.

In calculating the financial return, the primary consideration was life span (longer insulation), maintenance needs and additional benefits.

The speakers stressed the importance of renovation funds when applying for grants and loans. The figure of 12 Ft/m²/year in the legislation is very low. The experts suggested that 250-400 Ft/m²/year could already provide a level at which continuity of building renovation could be based.

Communication aspects

From a communication perspective, the methodology of community planning in condominiums and effective communication tools were discussed. Best practices with exceptional results were also mentioned. Several renovation projects were presented where the community was 100% involved in the project work, gave its full support and the whole community was satisfied at the end of the renovation project. Community planning and effective involvement of all stakeholders is essential for a successful renovation process. It starts with the development of a shared vision. If the real needs of the community are correctly reflected, success is ensured. In well-functioning projects, it is not just the professionals who plan, but the residents

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themselves. In this way, residents can identify with their own decisions and know the process. A frequent problem is that residents' opinions cannot be integrated into renovation projects. This can be overcome by bridging the gap between professionals and owners. According to the speakers, the right atmosphere, motivational techniques and facilitator skills are essential. The existence of consensus and balanced communication between the parties involved make the meetings effective.

The decision-making process of the community is one of the most sensitive areas of community planning. Pre-decision documentation helps ensure successful applications for tenders with short deadlines. One of the biggest problems for housing associations is finding resources. Possible sources of income could be, for example, an unused and unrentable area or the collection of arrears. It is not worth waiting, but starting the process early. Interesting information is that court enforcement is only 40% efficient, whereas timely managed but consensual dispute resolution (with payment scheduling) is 70% efficient.

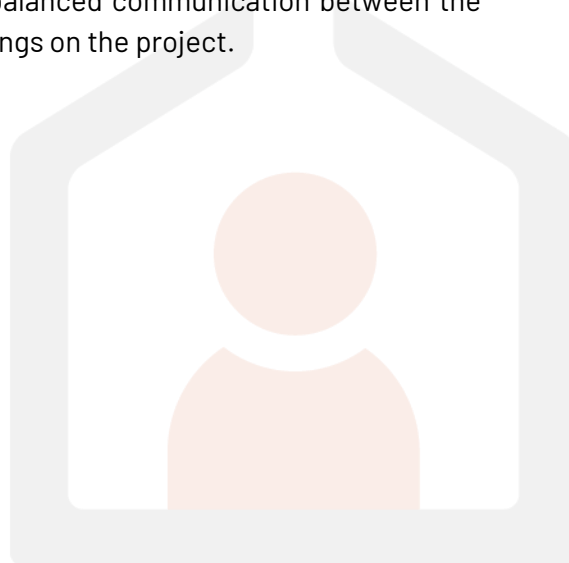
Main points and conclusions

Technical renovations offer a wide range of energy saving opportunities. Reducing heating and cooling demand is 24%, using efficient equipment 39% and operating more efficiently 37%. In the process, it is important to reduce energy demand first.

If funds are limited, it is best to build the project in phases in a sensible sequence:

- always paying attention to the technological sequence,
- ensuring a balance of monthly cash flows - savings and payments,
- based on the cost optimum,
- the type and the invoiced amount of energy used,
- speed of return on interventions,
- preventing the negative effects of price increases.

Successful renovation projects are based on community planning and effective involvement of all stakeholders. It is important to bridge the gap between professionals and owners. The right atmosphere, motivational techniques and facilitation skills are essential for effective housing meetings. The existence of a common consensus and balanced communication between the parties involved make effective partnership-based meetings on the project.



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Appendixes

Appendix I. Pictures

Előadók





dr. Magyar Zoltán
 egyetemi docens, fűtés- és
 távfűtéstechnikai szakmérnök,
 okl. gépészmérnök, ügyvezető,
 Comfort Consulting Kft.





Illésné Szécsi Ilona
 szakmai munkatárs,
 RenoPont projektmenedzser,
 Magyar Energiahatékonysági Intézet
 (MEHI)



Varga Zoltán
 szakközgazdász,
 mediátor

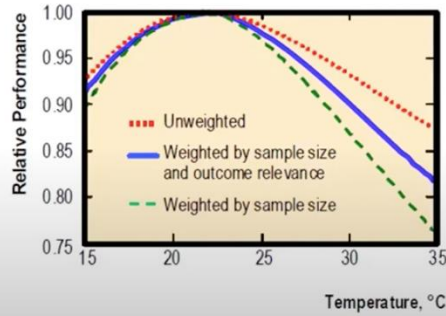



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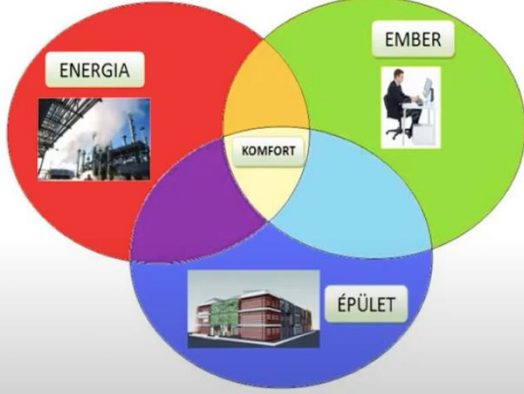




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Épületek komfortja



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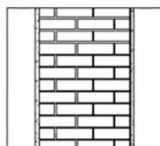


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1945 előtti épületek épületszerkezetei

Forrás: Energiegerechtes Bauen, Bundesarchitektenkammer & Birkhäuser Verlag



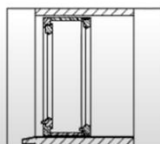
Külső fal

Téglafalazat kétoldalt vakolva

$U=0,9 \text{ W/m}^2, \text{K}$



Zárt építészeti stílus, a külső falak masszív téglafalazatból készülnek, a falak vastagsága 40 – 60 cm, az utcai oldalon gipszstukkó díszítés



Ablak

Gerébtokos ablak 2 x üvegezés

$U=2,5 \text{ W/m}^2, \text{K}$



Faablak egyszerű- vagy kazettás kivitel, többszárnyú ablak, profilozással, nagy ablakfelületek

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Forrás: EUREM képzés

Partnerség vs. közgyűlés

- A jellege és atmoszférája tájékoztatás/ tájékoztatás/ visszacsatolás/döntés
- Facilitátor készségek használata
- Figyelem felkeltés már a meghívásnál
- Helyszín és időpont
- Berendezés
- Időtartam
- A Tét nem a döntés hanem a közös konszenzus



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Appendix II. Participants list

1. Friday 24 February 09.00-12.30 - Focus on traditional buildings built before 1945

128 registrants, 96 participants

2. Thursday 09 March 09:00-12:30 - Focus on traditional buildings built after 1945

101 registrants, 50 participants

3. Thursday 23 March 09:00-12:30 - Focus on industrial buildings

81 registrants, 32 participants

Participants were drawn from the following groups:

- municipalities
- representatives of government bodies
- representatives from governmental authorities
- representatives of professional organisations
- architects
- manufacturers and distributors of building materials, components and engineering products



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