Accelerating Energy renovation solution for Zero Energy buildings and Neighbourhoods

D9.5 Final Communication and Dissemination plan and report

Version number: *4.0*

Dissemination Level: Public

Lead Partner: ACE

Due date: 30/09/2021

Type of deliverable: R

STATUS: Final

Published in the framework of:

RenoZEB - Accelerating Energy renovation solution for Zero Energy buildings and Neighbourhoods

RenoZEB website: www.renozeb.eu

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 768718

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Revision and history chart:

VERSION	DATE	EDITORS	COMMENT
Version 0.1	2018-03-26	ACE	First version provided
Version 1.0	2018-03-29	ACE	Submitted to EC as D9.2
Version 1.1	2019-03-08	ACE	Up-dated version provided
Version 2.0	2019-03-25	ACE	Final version with input from reviewers (Tecnalia/ Balkanika) Submitted to EC as D9.3
Version 2.1	2020-02-27	ACE	Final version sent to coordinator and reviewers (Tecnalia/ Balkanika/UIPI)
Version 3.0	2020-03-23	ACE	Submitted to EC as D9.4
Version 3.1	2021-09-24	ACE	Final version sent to coordinator and reviewers
Version 4.0	2021-09-30	ACE	Submitted to EC as D9.5

Disclaimer:

The project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 680517.

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Executive summary

Dissemination, Communication and Training are vital for the RenoZEB project. They are the three pillars of the RenoZEB approach in terms of targeting different interest groups and presenting to them the project results. For every category of identified stakeholders, the communication and dissemination strategy differs. Nevertheless, the baseline message and brand remain transversal to all communication and dissemination activities.

This is the fourth and last version of the Dissemination and Communication Plan, which builds upon the first three versions. These were annual updates and allowed a continuous quality check for the strategy developed, and if needed adaptations.

The document sets out with the overall strategy for a successful dissemination and communication of project results. Thereafter it reports on undertaken dissemination activities during the project duration. This is followed by a social media report with statistics on the various chosen channels and further recommendations for their use after project completion. The dissemination material produced is shown in the appendix. Since a few activities are on-going/ will take place after project duration and hence after the due date of this deliverable, they cannot all be included in the Annex.

This Dissemination and Communication plan and report is aimed at the consortium partners to ensure their continuous involvement in all aspects of Dissemination and Communication beyond the project life, and the European Commission in order to communicate the consortium's strategy and report on undertaken dissemination activities.

The Communication and Dissemination plan comprises:

1. Dissemination and Communication strategy, including communication levels (EU/National/Regional) and the responsibilities/ roles attributed to each partner;
2. The dissemination content;
3. List of target stakeholders to be addressed;
4. Dissemination channels: specifying the various tools that will be used to reach each of the target audiences, including set and achieved KPIs;
5. Report on social media accounts;
6. Report on undertaken dissemination activities;
7. Appendices:
    a. Cooperate Identity
    b. Dissemination material;
    c. Publications;

1 Communication and Dissemination Strategy

The main goal is to promote the project, raise awareness and inform the identified main stakeholders about its achievements. Key priority has the scientific community, potential clients and end users, as well as the general public. Moreover, from the early stages of the project the aim was to pave the way for future exploitation, by performing trainings to professionals in the construction renovation value chain and by establishing synergies with other EU research projects and initiatives.

The project's communication strategy is focused on public and professional audiences. Activities focus on the transfer of knowledge and information towards key stakeholders, opinion leaders and multipliers (scientific community, technology platforms, networks and initiatives). It is important to note that the Communication and Dissemination strategy foresaw the design and implementation of different communication strategies, means and material to address dissemination (centred in scientific-technical, public agents and professional stakeholders), and communication (to a wider audience that includes a very important number of private building owners). The acceptance and feedback of all identified target groups are essential for the future market uptake of the RenoZEB results. The acceptance of RenoZEB within the private property owners as end-users is critical and was mainly addressed by activities of consortium partner UIPI, the EU umbrella organisation representing them.

Communication activities are complementary to dissemination and are intended as public communication, i.e. outreach activities targeting the general public (here including a wide number of targets: from citizens, to tenants/end-users and stakeholders at large) as well as "outsider" targets beyond peer-to-peer communication and information transfer.

Communication activities add public value to the achievements of the project by aiming at larger audiences. They focus on key headlines outlining the project's results with the objective to promote the project and enhance its visibility. These activities impact on larger audiences in terms of awareness raising on issues such as energy renovations, nZEB and the proposed RenoZEB solutions. As a result, they support reaching the EC climate change targets.

Finally, clustering with other European projects and cross-fertilization with other national and European initiatives were fostered by the project's communication strategy. Clustering activities were undertaken with the projects funded under the same call: HEART, RezBUILD, and ReCO2ST. These are very important to strengthen impacts, increase the outreach potential of the project concepts and raise awareness among different stakeholders and eventually the public at large. Synergies are found in joint exploitation of communication tools and services including among others: web mutual link exchange, organisation of common events, common outreach activities to local stakeholder groups, use of social media through common accounts and exchange of best practices and lessons learned.

Roles of all consortium partners supporting this work package:

The **ACE** is in charge of coordinating all dissemination and communication activities. Moreover, ACE is the mouthpiece to promote all project results towards all EU architects.

SOLINTEL's main role is to assure that all dissemination activities are fully aligned with the exploitation strategy and that the actions stimulate future markets and to not disclose confidential information. It has higher involvement in the training related to the RenoZEB business model, as WP leader of exploitation.

TECNALIA's main role is to ensure the scientific and technical quality of communication and dissemination activities. In addition, Tecnalia was involved in training activities related to the Platform and Durango demos-site.

FRAUNHOFER and **CSTB** have higher involvement in the scientific dissemination performed.

CYPE is leading the training and has higher involvement in it related to the RenoZEB open platform and CYPE tools.

FOCCHI and **BECK+HEUN** have high involvement in dissemination, communication and training activities related to the RenoZEB "plug and play" system.

USAL: the main role is to communicate and disseminate RenoZEB's methodology targeting the scientific public.

RINA has a higher involvement in dissemination, communication and training activities related to the RenoZEB methodology and the virtual demo cases, specially oriented towards the Real Estate Industry.

HYPERTECH has a higher involvement in training related to the RenoZEB Monitoring and Human-Centric Automated Control.

DURANGO led the Spanish national training and dissemination workshop around their demonstration building.

TREA: led the Estonian national training and dissemination workshop around their demonstration building.

VÖRU participated actively in communication and training activities.

UIPI: contributed to communication and training activities, spreading the new valorisation concept from RenoZEB to end users around Europe. This was especially done in the Renovation Tour in September and October 2021, splitting the final project event into three.

ALL partners had very active involvement in communication and dissemination by participating in the project's communication and dissemination activities and by spreading the key messages through their own dissemination networks, channels and collaborations.

2 Dissemination Content

The objective of the RenoZEB project is to unlock the nZEB renovation market by increasing property value through a new systemic approach to retrofitting. This included innovative components, processes and decision-making methodologies to guide all value chain actors in the nZEB building renovation process, along with integrated solutions with highest impact in the revalorization of the building.

The background is that nearly Zero Energy Buildings (nZEB) construction and renovation form a huge challenge for the construction industry. The simplest way to achieve a nZEB is to drastically reduce building energy use through efficiency, and to implement renewable energy systems to balance a building's energy consumption. Even though the technology to cost-effectively build new nZEB buildings exists, the strategy to apply the nZEB principles in the existing building stock can largely differ from one building to another. There are many barriers to effective implementation of energy use reduction and renewable energy installation strategies in existing buildings, which make owners and tenants reluctant to invest.

RenoZEB provides

- A value-based concept and methodology
- A knowledge-Based tool for supporting the decision-making process of RenoZEB-renovations in the real estate industry
- Cost-effective 'plug and play' solutions for a large-scale deep nZEB rehabilitation scheme, ensuring the integrate-ability of all its components, methodologies, training, guidelines, and demonstration cases
- The RenoZEB Collaborative Environment to support the whole renovation process
- Deep Renovation project set of tools (e.g. RenoZEB façade configurator)
- Monitoring and Human-Centric Automated Control
- Validation of the processes in three real and two virtual demonstration cases that show and ensure the replicability of the schemes and technical tools to appropriately address the valorisation of the building stock before and after nZEB renovation schemes are applied.

This will be achieved through:

1. Innovative holistic, cost-effective and fast deep retrofitting methodologies for nZEB and ICT tools to support the methodology for nZEB renovation;
2. Cost-effective and non-intrusive prefabricated multi-functional modular 'plug and play' systems for the renovation of buildings;
3. The transformation of existing buildings into active buildings in order to increase the post-retrofitting property value;
4. Energy Nodes through a smart control and monitoring system;
5. New collaborative multi-value, multi-stakeholder methodologies and decision-making process for selecting the best energy efficient renovation strategy for each project;
6. New drivers of change for the real estate industry creating fresh post-renovated property value schemes;
7. The demonstration of market replicability of the holistic methodology and new technologies through real and virtual demonstration sites;

8. Training and awareness of the value chain to boost the nZEB market, with special emphasis on the real estate industry.

The above 'key actions' of the project were used to develop the content of dissemination material in order to promote RenoZEB and raise awareness of the progress and results, such as project brochures, poster/ infographic or videos.

3 Target Audiences and Key Stakeholders

According to the Dissemination and Communication Strategy argued in section 1, the following groups of stakeholders were identified:

Key Clients of the RenoZEB solution

- Construction renovation companies
- Building managers
- ESCOs
- European SME ecosystem
- Facility management and maintenance companies and aggregators
- Real Estate Industry
- Building owners

End users

- Building occupants (energy consumers)
- Homeowner associations
- General public

Opinion leaders, Key stakeholders and Multipliers

- Architects
- Engineers
- Technology Platforms (NTPs and ECTP), networks and initiatives
- Scientific community (research and academic organisations, scientific journals etc.)
- Committees and other working groups in research fields related to the RenoZEB project scope

Some of these audiences are already represented in the consortium. Architects are represented by project partner ACE and building owners and homeowner

associations are represented by UIPI. The scientific community is represented by the participating universities USAL and UNIVPM, additionally to Fraunhofer and CSTB.

Table 1: Potential stakeholders, multipliers, and opinion leaders, identified for dissemination activities

	Type Institution	Relevant bodies
Construction	European & national construction Associations	FIEC***, ENCORD, Euroconstruct, ENBRI, SBCI, CIB, EBC*** and their network per country and other national associations
	Architect & Engineering Associations	Architects' Council of Europe (ACE)*, ARCHI-EUROPE, European Network of heads of schools of architecture (ENHSA), European federation of National Engineering Associations (FEANI) (Sara van Rompaey**, Architect expert in Cultural Heritage is Member of the RenoZEB Replication Advisory Board.), UIA, EAAE***
	Other EU building organisation	SB Alliance, EuroACE, ICLEI ** (Member of the RenoZEB Replication Advisory Board), RICS, REHVA***, EURIMA, EuroGypsum, ECCREDI***
Buildings and districts owners and managers	Large Construction promoters	ACCIONA, ACS, VINCI, HOTCHTIEF, BOUYGUES** (Member of the RenoZEB Replication Advisory Board), SAIPEM, SKANSKA
	Authorities on Public ownership / Public Owners	Ministries of Culture, Ministries of dwelling, municipalities and regional governments, and large public owners of buildings, e.g. Bilbao Viviendas** (Member of the RenoZEB Replication Advisory Board), Bilbao city public buildings owner supporting the project with a virtual demo building, Correos** (Member of the RenoZEB Replication Advisory Board) as Spanish public sector national postal service.
	Housing association of private owners	EU & National associations, e.g. UIPI*, Marketing initiative der Wohnungsbaugenossenschaften Deutschland e.V. Association of residential building cooperatives (FRAUNHOFER*** is member) Estonian Union of Cooperative Housing Association. Local associations as VORU* Apartment Association "Rannaliiva" member of the consortium providing demo building.
	Municipalities, assoc. and networks with energy, urban and env. Issues/Cities Platforms	At European and International level, e.g., Council of European Municipalities and Regions (CEMR), C40 Cities Climate Leadership Group ICLEI** (Member of the RenoZEB Replication Advisory Board). At national level, e.g. Tenerrdis: national cluster on energy (including building energy performances) (OPAC 38 is member), Austrian Association of Municipalities, the FEMP (Spanish Federation of Municipalities and Provinces, with more than 6,900 municipalities). At regional level, e.g. EUDEL: the Basque association of municipalities. The German Association for Housing, Urban and Spatial Development e. V. (FRAUNHOFER*** is member), Genova Smart City Association (RINA-C is member)
	Public and private promoters and associations on social housing	At European level: Housing Europe** (Member of the RenoZEB Replication Advisory Board) and national members (as USH where OPAC 38 is member) At National level: Federabitazione (IT), AVS (ES), USH (FR), LOSZ (HU), OEK (GR), FENACHE (PT), NHF (UK), NBBL (NO), (FR), Estonian Union of Co-operative Housing Associations, USH (National Federation for Social Housing).
	Buildings and Property Managers and Associations	At European level: EuroFM. At National level: Local associations. Local and national property manager professional associations, e.g. Estonian Association of Estonian Facilities Administrators and Maintainers (TREA closely collaborates)
Energy	Energy Agencies	At international level: International Energy Agency (TECNALIA is Spanish representative; FRAUNHOFER is an active partner in many Tasks and Annexes). At European Level: FEDARENE At National level: Deutsche Energie-Agentur (DE), Instituto para la Diversificación y Ahorro de la Energía (ES), Agenzia Nazionale per le Nuove tecnologie, l'Energia e lo Sviluppo Economico Sostenibile (IT), Energy Saving Trust (UK) At regional level: Aegean Energy Agency (GR), emma e.V.(DE), Észak-Alföldi Regionális Energia Ügynökség (HU), RomaEnergia(IT), Agence Locale de l'Énergie (FR),…
	Energy Efficiency systems providers	EREC, EGEC; EPIA; EREF; ESTIF; EUBIA; EUREC Agency, etc
Oth er	Tech. Platforms networks and other Initiatives	Technological Platforms networks and Initiatives listed above the table (among others) ECTP***

	National / regional Smart specialization authorities	All national/regional Smart specialization authorities in countries where the consortium partners will seek market uptake, including all partners' permanent contacts with their relevant national/regional Smart specialization authorities (Smart Specialization Platform, Eye@RIS3 will be used)

* Project partner

** Organization participating in RenoZEB Replication Advisory Board

*** Partners involved in the RenoZEB consortium actively participate in these organisations

4 Dissemination Channels

Various dissemination activities ensure a good visibility of the project towards the identified target groups and general public. These are based on a Dissemination and Communication strategy tailored to the various needs and expectations of the target groups. Ways of contacting actors differ in three main respects:

- Type of link established with each actor: from being informed to being involved;
- The number of actors being reached;
- The effectiveness in getting the outcomes of the project understood.

Table 2 below summarizes the key performance indicators (KPIs) set out at the beginning. The last column on the right provides a quick overview of whether and how these KPIs were achieved. Chapter 5, 6 and the appendix elaborate more on the actual performed activities and materials produced.

Table 2: Dissemination activities and target groups

Type of dissemination	Type of audience	Channels	Number	Indicators	Contents	Achieved
Proactive Communication	General	Through newsletters every six months, one-to-one communication, emailing and invitation to events to relevant stakeholders and the European Commission.	8	500 people	Project progress, events and relevant news	Yes (3.301)
Social media	General	RenoZEB LinkedIn group, Facebook and Twitter, plus social media run by partners.	16	1.600 people	Project progress, events, relevant news, interaction with public	Yes (1.075 from direct RenoZEB social media accounts plus more through partners)

Video	General	RenoZEB YouTube channel and TV broadcast.	1	1.600 views	RenoZEB tools, trainings, and demonstration sites	Yes (1.840 views of all videos; final video added 09/2021)
Dedicated website	General	RenoZEB website: interactive environment that will give access to all the aspects related to the research activities and will permit to collaborate and actively participate in the methodology's development. The private part will be a collaborative working space for developing the project.	1 (6 years minimum)	4.000 sessions	RenoZEB objectives overview, partnership and public deliverables Latest news and feature	Yes (12.311 in the four-year project duration, website will be live for two more years)
Roll-up/ poster and brochure	General	Specific project Roll-up/ poster and brochure will be prepared for external communication, the brochure translated to 7 languages.	9	2.000 people	General information	Yes (e.g. leaflets were handed out at 53 events to 5.190 people)
Publications	Scientific community	RenoZEB partners will publish the results in the scientific literature, dedicated journals and magazines in the field of construction, energy and ICTs. Moreover, results are intended also to be published through EC channels.	10	500 readers	Publishable project results, specially devoted to WP2, WP3, WP4, WP5 and WP6	Partially (6 scientific publications reported to SEDIA, plus 8 suggested from OpenAIRE; plus several magazine articles available on the website)
Deep renovation demonstrations	Citizens, end users	Demonstrations cases will be disseminated to the citizens and end-users through panels placed on site.	2	500 people (250 people/demo)	RenoZEB solution applied to the buildings (WP7)	Yes, two panels informing about EU funding were installed at demo buildings
RenoZEB international disseminati on workshops	Targeted clients, end-users and stakeholders	International dissemination events in months 24 and 42. One along with bi-annual General Assembly of the ACE. One as final conference within the frame.	2	300 people	RenoZEB objectives overview and progress and RenoZEB results	Yes, ACE General Assembly 05/2019. At the end of the project UIPI 'Renovation

						Tour' instead of one final EU event, three national events in Hungary, Belgium and Spain.
Partners' disseminati on networks and channels	Targeted clients, end-users and stakeholde rs	e.g. ACE Newsletter: distributed by email to 3.500 direct contacts every 2 months and to the 43 Member of ACE, representing over 600.000 practicing architects from 33 countries. ACE Website and other web-based channels ACE Events: yearly Working Group meetings and biannual General Assembly, attended by around 100 delegates of the ACE member organisations.	-	4.000 people	Project progress, events and relevant materials	Yes (43.126 people reached through ACE and UIPI newsletters)
Participatio n in conference s, congresses and events	Scientific community , students, end-users	RenoZEB will be represented in a number of international relevant conferences to discuss specific research results and receive input and comments from outside the project, as well as to trigger new projects.	10	1.000 people	Publishable project results	Yes (41 conferences, workshops and other kind of events attended; 2.828 people from Scientific Community reached, 7.417 in total)
Commercial fairs	Targeted clients, end-users	The RenoZEB solution and its components will be represented in relevant commercial fairs towards the final stage of the project to make commercial contacts.	4	750 visitors	Exploitable commercial results (mostly WP8)	Yes (2.415)
Clustering Activities	EU projects and networks	With other HORIZON 2020 European ongoing related projects, European and National Technology Platforms and other networks and initiatives (already identified in the main targeted groups at the beginning of this draft communication and dissemination plan.)	8 initia tives	400 people	Informatio n on the project and its achieveme nts	Partially (316 people reached in 7 clustering events pre-COVID)

Training	Construction renovation companies, Architects, Engineers and building managers	2 specific training courses will be carried out in Estonia and Spain for professionals during the project, mostly linked with technical application works performed at the 2 demonstration buildings.	2	100 people	Project results requiring applicability training	Partially (due to COVID the trainings were online 13/07/2021 Estonian training with 11 participants, 77 views of online recordings; 10/09/2021 Spanish training, 2 participants and 10 views)
	Technical experts	One "train the trainers" course for 5 trainers.	2	5 (500 people indirectly)		Yes (07/10/2020, online training with 16 participants, recordings added to YouTube channel with 338 views)
	Target groups	E-learning platform.	2	500		Yes (3.622 students on Udemy, more info in D9.8)
Large scale communication	Citizens	Results will be communicated to the public at large scale via mass media communication: social networks, newspapers, magazines, TV. Press release announcing the start of the project.	6	2.000 people	General information. Relevant news	Yes (Three press releases 211 people reached; two articles 2.051 people reached); social media from above can be added here as well.

5 Report on Social Media Accounts

5.1 RenoZEB Website

Since its creation, the website counted 12,311 sessions of 02:02 min of average duration.

A session is defined as a group of interactions one user undertakes within a given time frame on the website.

In total, 28.962 pages were viewed (2.35 pages/sessions). 86.19% of the audience connected from desktop, 12.85% with a Smartphone and 0.96 % with a tablet.

The most viewed pages are:

1. Index
2. RenoZEB in a nutshell
3. Results > Real Demo Cases
4. About > Team
5. Project Timeline
6. Results > Plug & Play Facade
7. About > Work-plan
8. About > Related projects
9. Results > Real Demo Cases > Kubik
10. About > Methodology

<u>Recommendations:</u>

The target set in the first dissemination plan for the whole project life (4.000 sessions) was already achieved after two years. In order to further increase the website population, the website was continuously up-dates and improved, with new input from all consortium partners on the timeline, demonstration buildings, technology and methodology sections. In addition, a new website section with

several new pages was created for the training. Consortium partners were continuously requested to make suggestions for website improvements and to include the RenoZEB link in their websites, newsletters and social media in order to create even more traffic.

5.2 RenoZEB Newsletter

Thanks to the pop-up window on the project website, we were able to get more subscribers. The current mailing list consists of 3.301 contacts (September 2021), i.e. 2.418 more than last year. Due to GDPR it is rather difficult to obtain a large amount of email addresses. Therefore, we are very content with the achieved number.

Besides project partners, the four newsletters were sent to 58 contacts (March 2018), to 137 contacts (October 2018), to 160 contacts (March 2019), to 213 contacts (November 2019), to 304 (April 2020) and to 883 (October 2020). Yet, only a few people clicked on the links embedded in the newsletters (<10%), linking them back to content on the website. The last newsletter will be published at the end of the project/ end of September 2021.

The KPI for newsletters set in Chapter 4 above is 500, hence this number was already achieved.

Recommendations for the partners:

- Spread the newsletter through social media instead of just focusing to the subscribed audience.
- Consortium partners to spread social media posts notifying the release of each newsletter.
- Encourage colleagues and interested people in their networks to subscribe, emphasising this is only a biannual newsletter.

5.3 RenoZEB Twitter

In order to align the understanding of social media indicators, the definitions of all indicators used in this report are noted at the beginning of each social media channel.

Follower: the number of people, who opt in to receive the RenoZEB tweets.

Impressions: the number of times a user receives a tweet in the timeline or searches for results.

Engagement: the number of times a user interacts with a tweet.

Engagement rate: the number of engagements divided by the number of impressions.

The RenoZEB Twitter profile counts 446 followers, including: architects, energy efficiency experts, engineering companies, European Commission bodies and representatives, European construction stakeholders, research centres and project partners.

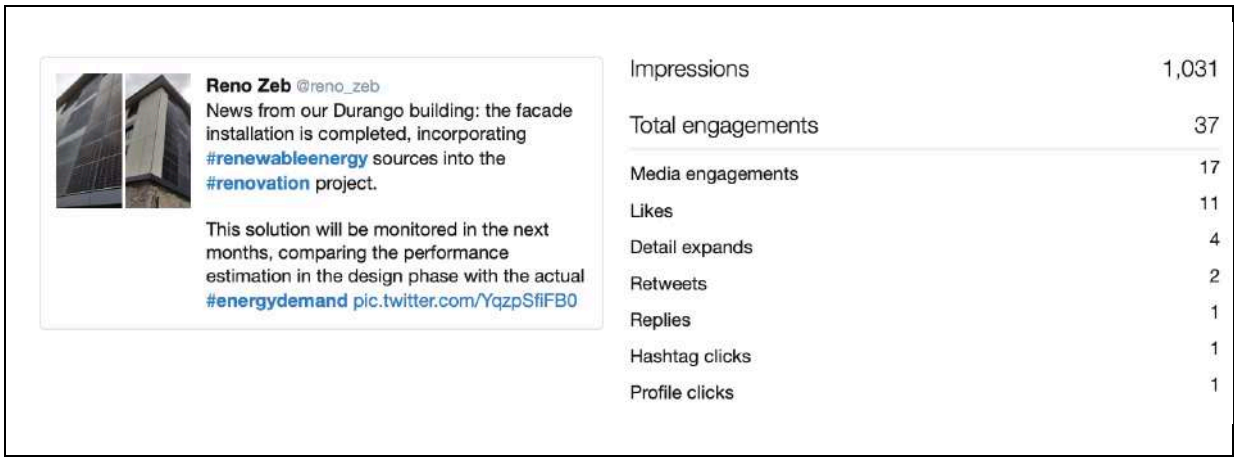
@reno_zeb has posted 276 tweets in total. Over the last month the account has had 1.2K impressions, 122 profile visits and was mentioned 2 times. In these last 28 days there were engagements, which leads to an engagement rate of 2%.

The KPI set in Chapter 4 for all social media channels is 1600 views. This has already been well overachieved just by Twitter.

Example of successful tweets:

Impressions times people saw this Tweet on Twitter	246
Total engagements times people interacted with this Tweet	4

Impressions times people saw this Tweet on Twitter	1,273
Total engagements times people interacted with this Tweet	17



Recommendations for partners:

- Follow the page from your professional and personal accounts
- Retweet posts from your professional and personal accounts
- Tag @renozeb in your posts and comments
- Use your company page to boost the spread of RenoZEB posts
- To achieve higher visibility, you can also tag relevant EU bodies in appropriate discussions, re-tweets and tweets

5.4 RenoZEB Facebook

Facebook

Reach: the number of people, who saw any content from your page or about your page (unique views).

Follower: the number of people, who receive RenoZEB news in their news feed but do not like the page.

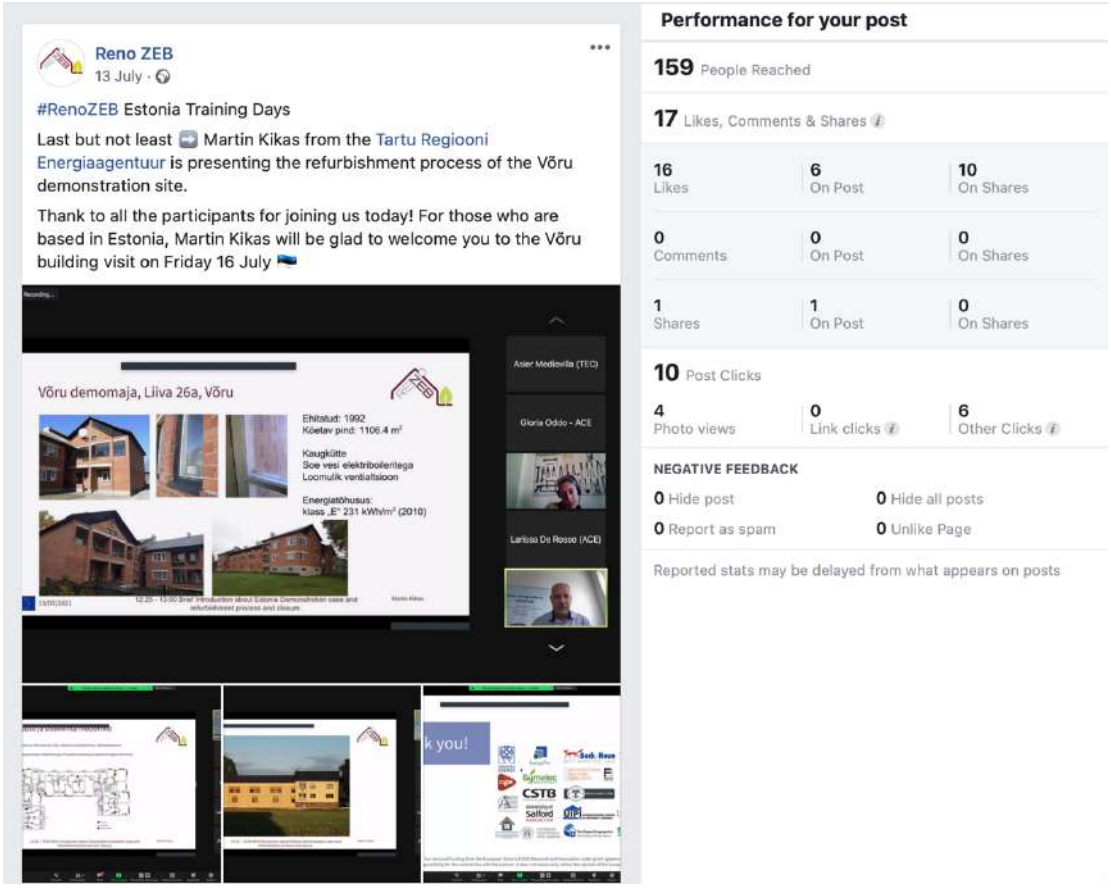
Fans: the number of people that like and follow the RenoZEB Facebook page.

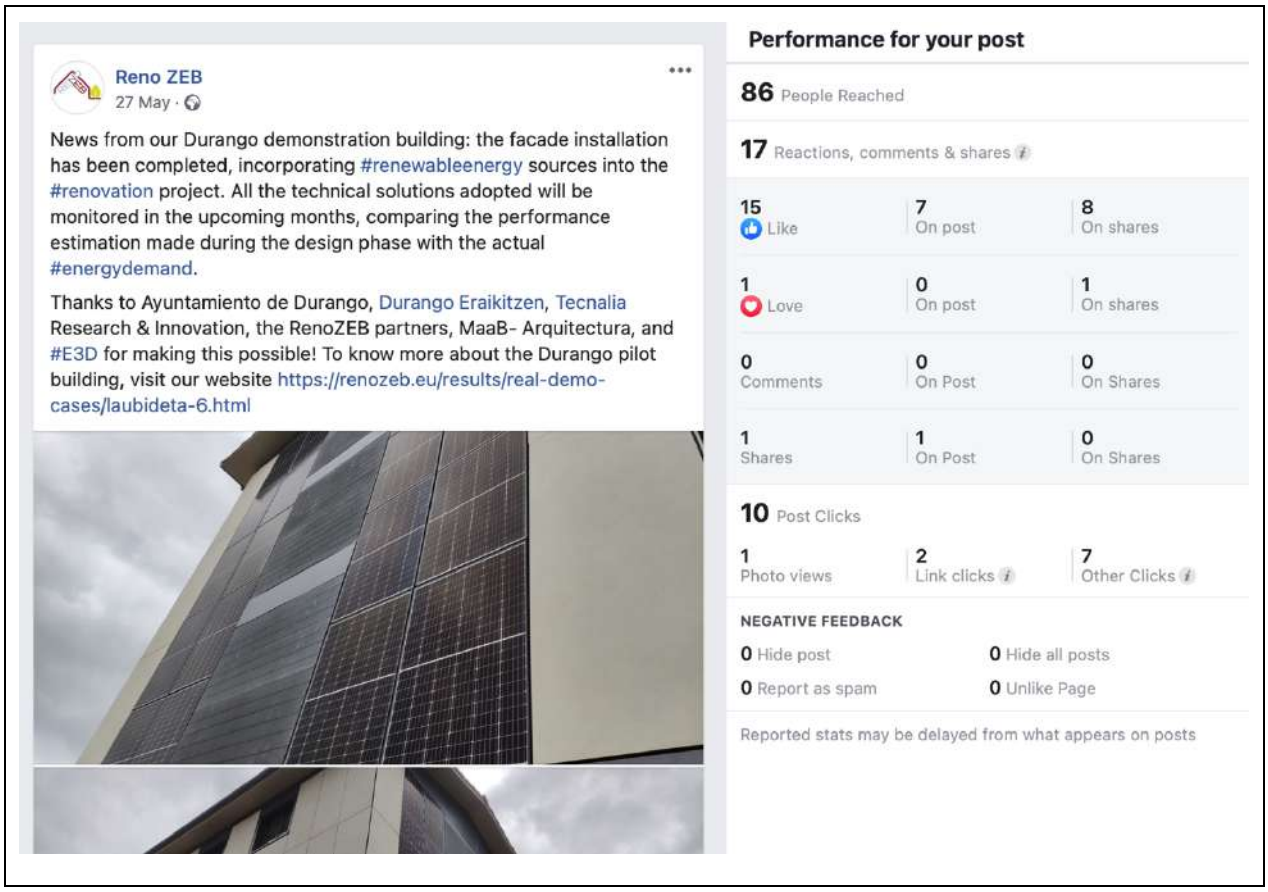
The RenoZEB Facebook has 178 followers and 165 likes (fans).

In the last month the post reach has been 80 with 22 engagements (commenting, liking, sharing, or clicking upon particular elements of the post).

The KPI set in Chapter 4 for all social media channels is 1.600 views. This has already been well overachieved just by Twitter, but Facebook adds to it.

Examples of successful posts:


Reno ZEB
13 July ·
#RenoZEB Estonia Training Days
Last but not least ➡ Martin Kikas from the Tartu Regiooni Energiaagentuur is presenting the refurbishment process of the Võru demonstration site.
Thank to all the participants for joining us today! For those who are based in Estonia, Martin Kikas will be glad to welcome you to the Võru building visit on Friday 16 July
Võru demomaja, Liiva 26a, Võru
Performance for your post
159 People Reached
17 Likes, Comments & Shares
16 Likes
6 On Post
10 On Shares
0 Comments
0 On Post
0 On Shares
1 Shares
1 On Post
0 On Shares
10 Post Clicks
4 Photo views
0 Link clicks
6 Other Clicks
NEGATIVE FEEDBACK
0 Hide post
0 Hide all posts
0 Report as spam
0 Unlike Page
Reported stats may be delayed from what appears on posts



Recommendations for partners:

- Like the RenoZEB Facebook page
- Share and like posts from the page
- Invite interested colleagues and friends to like the page
- Tag @renozeb in your posts and discussions
- To achieve higher visibility, you can also tag relevant EU bodies in appropriate discussions and posts

5.5 RenoZEB LinkedIn

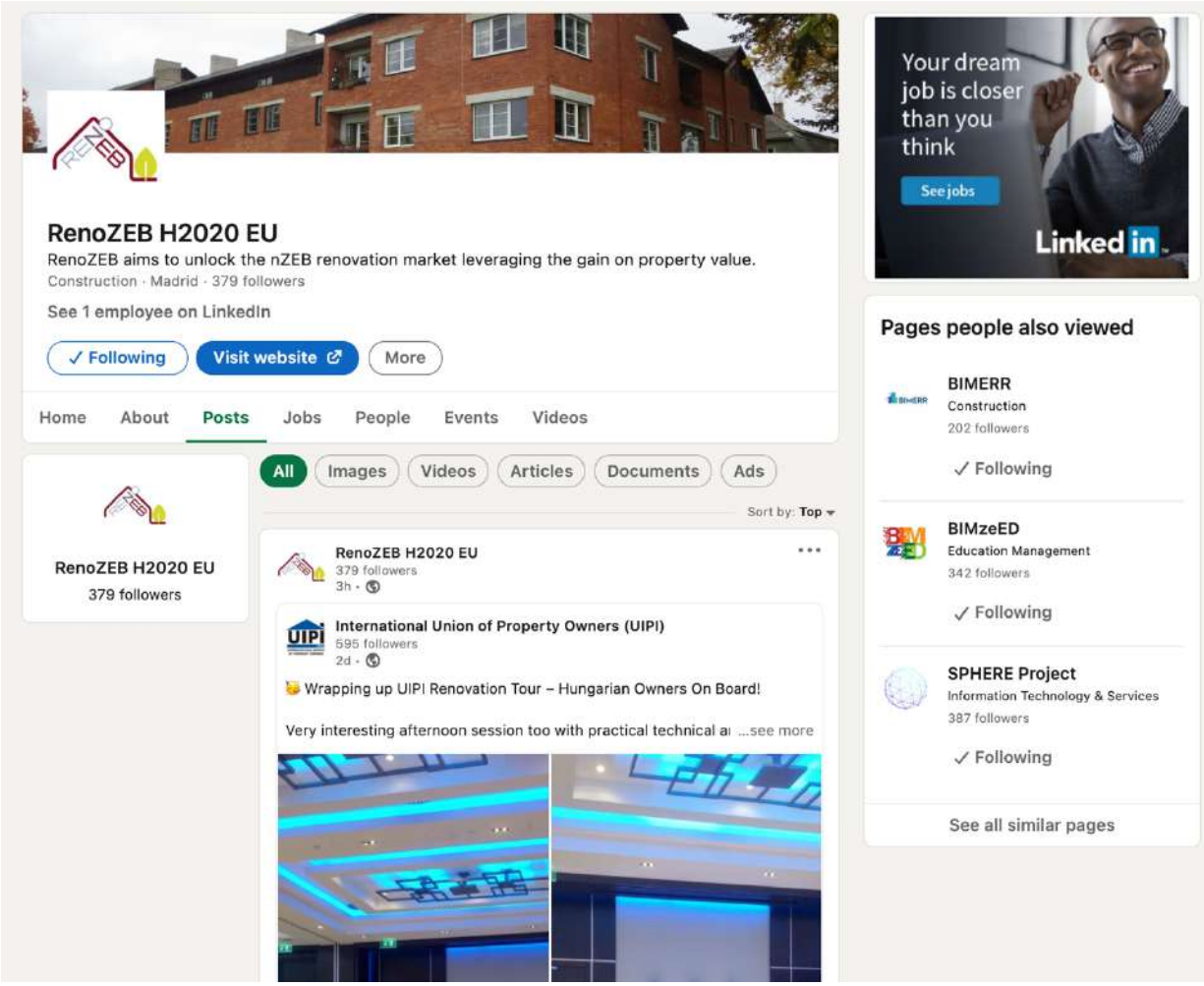
Group members: the number of people, who accepted to be a member on RenoZEB discussion group.

Company profile followers: the number of people, who receive RenoZEB LinkedIn post on their timeline.

Impressions: the number of people, who saw RenoZEB content (including revisits).

The *RenoZEB LinkedIn group*, which includes 43 members, mainly project partners, has proven to be unsuccessful. It contains only 11 posts and very limited reaction from the group. As a result, we have created a *LinkedIn company page* that eases the share of information with its followers and by the project partners' personal profiles. The company page has already gathered 379 followers (September 2021). It has regular posts that are widely shared by the followers. In the last 30 days the page had 6 unique visits, 3 new followers and 764 post impressions.

The KPI set in Chapter 4 for all social media channels is 1.600 followers. This has already been well overachieved just by Twitter, supported by Facebook. LinkedIn is further adding to it.



https://www.linkedin.com/company/renozeb

Recommendations for partners:

- Follow the LinkedIn company page with your personal profile
- Like and share posts coming from RenoZEB

5.6 RenoZEB YouTube Channel

YouTube

Channel subscribers: the number of people, who accept to receive RenoZEB videos updates on their YouTube timeline.

Views: the number of times a video was watched.

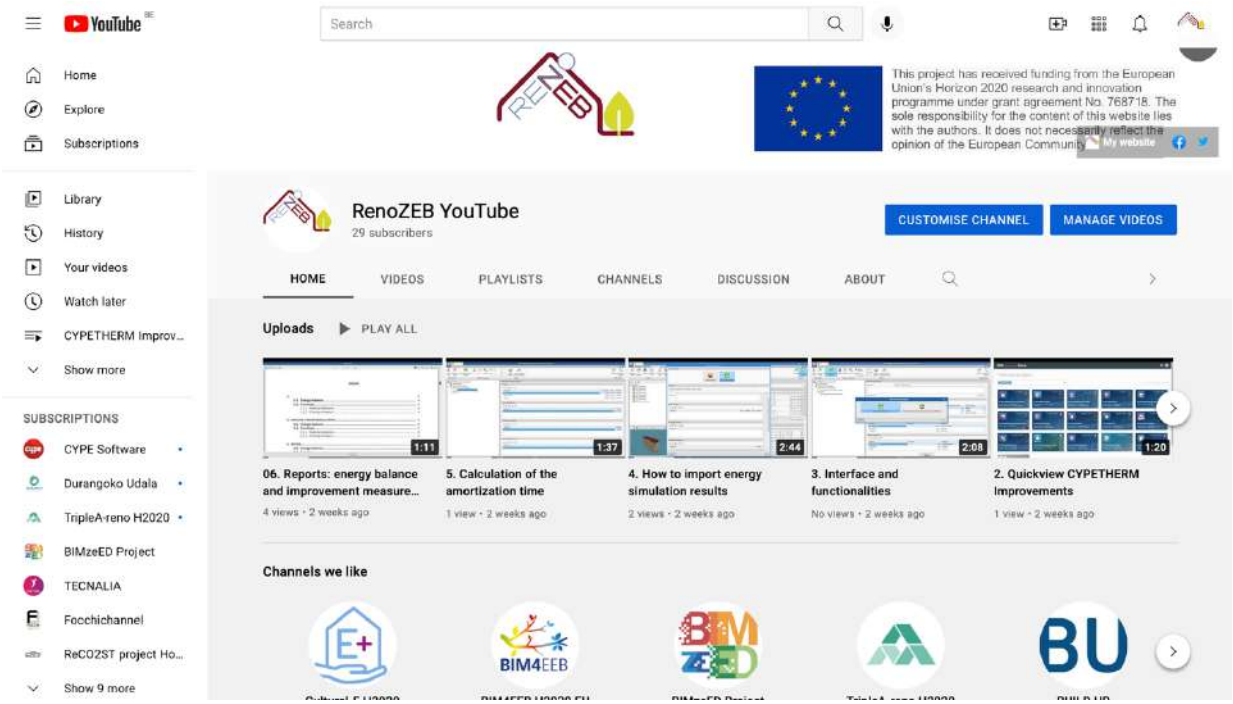
The YouTube page was created on 15 November 2019 but has only 29 subscribers so far. In order to subscribe to the YouTube channel, the user will have to have a Gmail address, thus this is restricting the number.

So far 59 videos were up-loaded: 10 about the Open BIM Focchi Façade tool; 8 about the Cypetherm Eplus tool; 16 about the IFC Builder tool; 5 about the Cypetherm Improvements Plus tool; 3 about the testing building Kubik; 3 about the demonstration buildings; 3 about the 'Train the trainers' session (October 2020); 2 about the Estonia Training Days (July 2021); 1 about the Spain Training Days (September 2021).

The final project video presenting an overview of the results was up-loaded at the end of the project, hence only viewed 33 times so far.

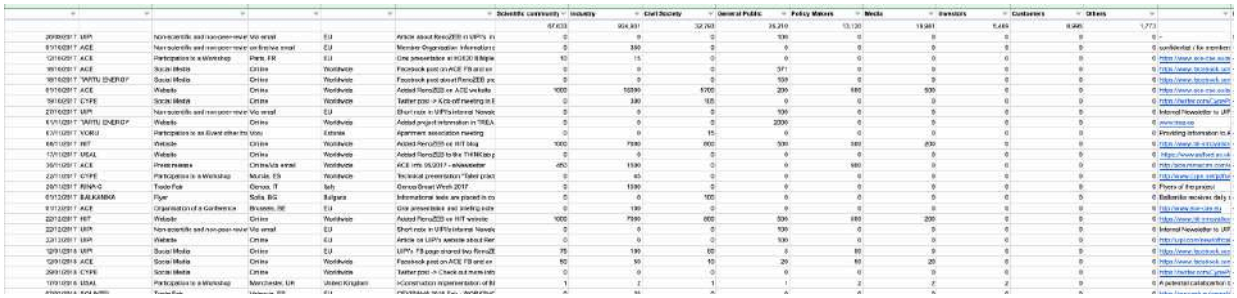
In total they were viewed 1.870 times. In Chapter 4 the KPI was set at 1.600 views of the videos, hence this target is reached.

https://www.youtube.com/channel/UC0QVap_Ny_yKU6r38rd3miA

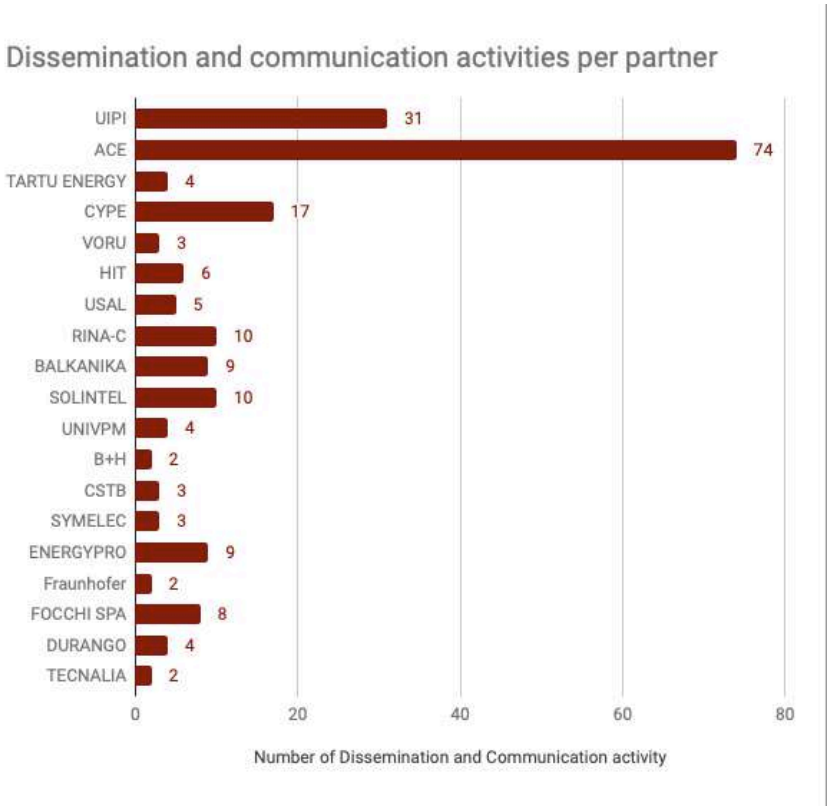


6 Report on undertaken Dissemination Activities

Regular reporting on undertaken dissemination activities of each consortium partner took place every six months. This was done using a google form, which can be found using this link. The reported activities can be viewed using this link. This will provide you with the possibility to view the details of all dissemination and communication activities, as below in the example.



Additionally, figures were created of all activities performed by partner, which you can view using this link and also below.



Thereafter all activities have been reported in the SEDIA portal dissemination continuous reporting. A screenshot of the final numbers is included below.

Organisation of a Conference	2
Organisation of a Workshop	3
Press release	17
Non-scientific and non-peer-reviewed publication (popularised publication)	9
Exhibition	2
Flyer	53
Training	9
Social Media	37
Website	25
Communication Campaign (e.g. Radio, TV)	0
Participation to a Conference	14
Participation to a Workshop	11
Participation to an Event other than a Conference or a Workshop	11
Video/Film	4
Brokerage Event	0
Pitch Event	0
Trade Fair	3
Participation in activities organised jointly with other EU project(s)	4
Other	7

Scientific Community (Higher Education, Research)	67633
Industry	924759
Civil Society	32793
General Public	26210
Policy Makers	13120
Media	18941
Investors	5469
Customers	8985
Other	1773

The screen shots from the continuous reporting on SEDIA provide a good overview of what dissemination efforts the consortium has performed. With 211 dissemination activities in total the consortium managed to reach a vast number and variety of audiences. Every consortium partner has contributed to this, as it was a continuous team effort. Please note that for sure in COVID times not every social media post etc. was reported.

In addition to this, all consortium partners were requested to share any proof of the undertaken activities, such as publications or photos of events. A selection of these is included in the annex.

7 Conclusion

This report set out with the overall strategy and planned activities for the successful dissemination of the RenoZEB project progress and results. As communication and dissemination is a continuous process and not a one-time effort at the end of the project, activities took place at all stages of the project, also beyond its lifespan. As a result, this document was constantly updated throughout the project lifespan with reports of the partners on their dissemination activities.

All performed activities by the consortium until Mid-September 2021 have been included in this report. More might be reported to SEDIA in the coming month. Furthermore, the various dissemination materials and channels so far established,

seven newsletters, as well as the six of the scientific publications have been presented.

Table 2 presents the set key performance indicators (KPIs) versus the achieved ones of each dissemination and communication channel.

In order to ensure project recognisability and successful dissemination it is important that all partners use the cooperate identity of D9.1 when disseminating RenoZEB project results and follow the strategy developed in D9.2 and further improved in D9.3, D9.4 and D9.5. This includes the proper use of the project name, logo, colour pallet, template as well as acknowledgment of EU funding. Whenever a project partner would like to conduct any RenoZEB related training, please consult D9.8 – the final training plan.

8 Appendix

8.1 Appendix 1: Cooperate Identity

LOGO COLOURS

The main logo is in three colours: red #711b24 / blue #7788be en green #d3d742 on white #ffffff.
Do not use the logo in any other color than the specified identity colors.

PRINT PAPER references

WEB references

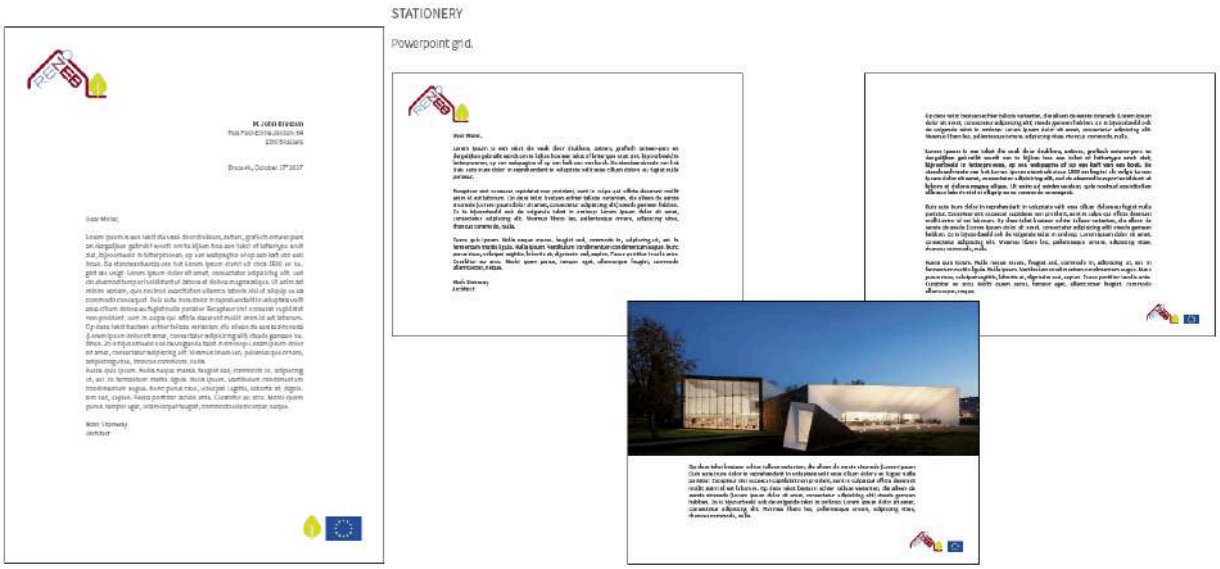
C=25 M=100 J=80 N=40 — #711b24

C=60 M=40 J=0 N=5 — #7788be

C=25 M=0 J=90 N=0 — #d3d742

STATIONERY

Powerpoint grid.



8.2 Appendix 2: Dissemination material

All dissemination material is available on the project website: https://renozeb.eu/new-media/promotion-material.html

The A0 Poster available in English, Estonian, French, German, Spanish. While the roll-up poster is only available in English.

Estonian, French, German, Spanish versions of the A0 poster

The English roll-up poster used for international fairs, conferences and events.

The RenoZEB brochure is available on the project website in Bulgarian, English, Estonian, French, German, Greek, Italian, Spanish. https://renozeb.eu/new-media/promotion-material.html

The RenoZEB brochure in English

The RenoZEB brochure in Bulgarian

The RenoZEB brochure in Estonian

Hoogustame hoonete renoveerimist liginullenergia lahendustega

Projekti väärtuspõhine käsitlus kätkeb endas tervet hulka uusi lähenemisviise ja tegevusi elamute täisrenoveerimiseks. Tulemuseks on terviklik, kogu renoveerimisprojekti elutsüklit hõlmav metoodika, mis pakub välja parimaid võimalusi vara väärtuse tõstmiseks ning energiatõhususe optimeerimiseks.

Enne renoveerimist		Renoveerimise ajal	Pärast renoveerimist
Planeerimine	Projekteerimine	Ehitamine	Haldamine
Projekti ideekontseptsioon ja eelkalkulatsioon koostus	Lahenduste leidmine (hoonest)	Elumine	Kasutajahoolitus
Energiaaudit ja energiatõhususe hindamine	Lahenduste leidmine (piirkonnast)		Ehitusjäägne säte
	Kulutõhusate analüüs		

Arendatakse välja modulaarne terviklik mitmefunktsioonline hoonete välispiirete lahendus, kus vajalikud tehnilised seadmed on valmismoodulitesse sisse ehitatud. Uudne välispiirete süsteem peaks asendama traditsioonilisi fassaadi uuendamise meetodeid ning lihtsustama hoonete renoveerimist.

Solintel www.solintel.eu
Focchi www.focchi.it
Beck-Heun www.beck-heun.de
RINA www.rina.org
cype www.cype.com
tecnalia www.tecnalia.com
HIT www.hit-innovations.com
Fraunhofer www.ise.fraunhofer.de
Salford www.salford.ac.uk
www.univpm.it
www.balkanikaenergy.eu
www.durango-udala.net
Home-owners association Rannaliiva
www.trea.ee
CSTB www.cstb.fr
www.ace-cae.eu
Symelec www.symelec-renovables.com
EnergyPro www.energyproltd.com
www.uipi.com

Toetab sau eest vastavad tähel näärad selle autorid. Euroopa Liit ei vastuta tõlkes sisaldune teabe mistahes mõel kasutamisest.

Hoogustame hoonete renoveerimist liginullenergia lahendustega

RenoZEB on Euroopa Liidu poolt rahastatud projekt, mis kestab 2017. aasta oktoobrist kuni 2021. aasta märtsini. Projekti eesmärk on arendada kulutõhusaid valmislahendusi, mis tõstavad kinnisvara väärtust liginullenergia (nZEB) renoveerimisturul. Soovime olla abiks sellis protsessi kõikidele osapoolsistele innovatiivsete lahenduste, otsustusprotsessi metoodika, koolituse ja juhendmaterjalidega, mida demonstreerime reaalsel ehitusplatsil.

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Projekti rahastab Euroopa Liidu teadusuuringute ja innovatsiooni raamprogramm Horisont 2020 (lepingu nr 768718).

Eesmärgid ja esimesed tulemused

Eesmärk on olemasolevate ehitiste renoveerimine kõrgtehnoloogiliste ja energiatõhusate fassaadielementidega, mida kasutades on elanike segamine ehitustööde ajal minimaalne. Eeldatavasti vähenevad ka paigaldiskulud ja lüheneb ehituse aeg ning kinnisvara väärtus tõuseb tänu paranenud energiatõhususele.

Et renoveerimine oleks tõhus ja terviklik, arendatakse välja ehitise informudeli (ingl k Building Information Modeling – BIM) põhinev koostööplatvorm. Tegu on keskse andmekogugu, kus sidusrühmad saavad tutvuda vajaliku teabega ning teha omavahel koostöö – see aitab ühetada ehitustöödele iseloomulikku killustatust.

Tasuta tehnilistel koolitustel, töötubades ja veebikoosolekutel osaledes saab tutvuda teiste parimate kogemustega, panna paika otstarbekaima töövoo ning kindlustada oma renoveerimisprojektile parimad tulemused.

Efektiivsem koostöö tänu BIM-põhisele koostööplatvormile

BIM-põhine koostööplatvorm teeb otsustusprotsessi lihtsamaks, pakkudes veebis 3D BIM-visualiseerijat. Selle abil saab jälgida muutusi ehitusperioodi jooksul ning teha rõhtavaks projekti peamised näitajad. Platvorm põhineb OPEN BIM-i standarditel ja toimib erinevate tarkvarakenduste koostöös.

Et võimaldada erinevate väliste rakenduste (projekteerimine, simulatsioon, teadmispõhised vahendid) ühendamist platvormiga, töötatakse välja avatud liidesed. Seda tõendab simulatsiooni tööriist, millele abil täisrenoveerimise lahendusi projekteerida ja optimeerida. Erinevateks simulatsioonideks vajalikku tehnilist info saadakse renoveerimislahenduste andmeaidast.

RenoZEB-i koostöömudelit täiendab inimkeskne automaatika, mis võimaldab energiatõhusust hoone tegeliku kasutuse ajal veelgi parandada. See juhib automaatselt hoone juhtsõlmedes ja fassaadi energiasüsteemides asjakohaseid kontrolliseadmeid, mis arvestavad nii elanike mugavuse kui nuumide sisekliima kvaliteediga.

RenoZEB-i täisrenoveerimise lahendust rakendatakse kolmes korteriolamus kahes erinevas kliimavöötmes (Hispaanias ja Eestis) ning testitakse kolmel virtuaalsel ehitisel (Bulgaarias, Itaalias ja Kreekas).

Neid hooneid jälgitakse kogu renoveerimisprotsessi jooksul, sh nii enne kui pärast ehitustöid. Mõõdetakse energiatõhusust ning tervise ja mugavusega seotud näitajaid, kulusid ja väärtust (sh kinnisvara väärtuse muutumist) ning keskkonnaseisundit.

KUBIK
Bilbao, Hispaania
Täisrenoveeritud teadus- ja arendusüksikhoone

Rannaliiva
Võru, Eesti
ehitatud 1980-te lõpus

Laubidata
Durango, Hispaania
ehitatud 1965. aastal

Et tagada RenoZEB-i lahenduse kasutamine erinevates kliimavöötmetes ja turgudel EL-is, koostatakse teisendamise reeglid, millies kasutatakse virtuaalseid näidisobjekte ning ulatuslikku turuteavet.

The RenoZEB brochure in French

Accélérer les solutions de rénovations énergétiques pour les bâtiments et quartiers zéro énergie

Le concept de RenoZEB est basé sur un ensemble de nouvelles approches et procédures pour la rénovation en profondeur (Deep Retrofitting - DR). Le résultat consistera en une méthodologie globale couvrant la totalité du cycle de vie d'un projet de rénovation en prenant en compte différents scénarios permettant d'augmenter la valeur immobilière et d'optimiser la performance énergétique.

Pre-Rénovation		Rénovation	Post-Rénovation
Phase de Planification	Phase de Design	Phase de Construction	Phase de Gestion
Configuration du projet et étude de pré-rénovation	Définition de solutions (au niveau du bâtiment)	Réalisation sur site	Opération et maintenance
Audit énergétique et évaluation de la performance	Définition de solutions (au niveau du district)		Post-rénovation surveillance
	Analyse coûts-bénéfices		

Un système d'enveloppe intégrale, modulaire, multifonctionnelle et prête à l'emploi sera développé incluant des composants technologiques dans des éléments préfabriqués. Ce nouveau système d'enveloppe a pour but de se substituer aux méthodes traditionnelles de remplacement de façades et à simplifier le processus de rénovation.

Solintel	www.solintel.eu
Focchi	www.focchi.it
Beck-Heun	www.beck-heun.de
RINA	www.rina.org
cype	www.cype.com
tecnalia	www.tecnalia.com
HIT Hypertech Innovations	www.hit-innovations.com
Fraunhofer	www.ise.Fraunhofer.de
University of Salford	www.salford.ac.uk
	www.univpm.it
	www.balkanikaenergy.eu
Durango Udala Bilbao	www.durango-udala.net
	Home-owners association Rannaliiva
Tallinn Regional Energy Agency	www.trea.ee
CSTB	www.cstb.fr
ACE	www.ace-cae.eu
Symelec	www.symelec-renovables.com
EnergyPro	www.energyproltd.com
UIPI	www.uipi.com

Les auteurs de ce document sont les seuls responsables pour son contenu. L'Union européenne n'est pas responsable d'une quelconque utilisation des informations qu'il contient.

Accélérer les solutions de rénovations énergétiques pour les bâtiments et quartiers zéro énergie

RenoZEB est un projet financé par l'Union européenne, qui durera d'octobre 2017 à mars 2021. Le but du projet est de développer des solutions prêtes à l'emploi qui soient économiquement viables et qui permettent une augmentation de la valeur immobilière pour le marché de la rénovation énergétique à grande échelle vers des bâtiments dont la consommation d'énergie est quasi nulle. Son objectif est aussi d'accompagner les acteurs de la rénovation en leur proposant des processus innovants, des outils d'aide à la décision, des formations et des guides pratiques, qui seront testés sur des sites de démonstration.

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Ce projet a bénéficié d'un financement de l'Union européenne dans le cadre du programme de recherche et d'innovation Horizon 2020 (n° 768718).

Objectifs et premiers résultats

Le but est de rénover des bâtiments existants en utilisant des éléments de structure high-tech et économes en énergie grâce à un système peu intrusif afin de déranger au minimum l'occupant. L'objectif poursuivi est de réduire le coût global d'installation et le temps de construction et de contribuer de façon significative à la revalorisation du bâtiment en conformité avec les normes sur l'efficacité énergétique.

De plus, une plateforme collaborative basée sur la modélisation des données du bâtiment (BIM - Building Information Modelling) va être développée pour accompagner du début jusqu'à la fin l'ensemble du processus de rénovation d'un bâtiment. Elle servira de base de données centralisée où les différents acteurs du secteur pourront trouver les informations nécessaires et travailler ensemble dépassant ainsi la fragmentation traditionnelle du secteur du bâtiment.

En participant gratuitement à nos formations, ateliers et réunions virtuelles vous pourrez découvrir des bonnes pratiques, optimiser le déroulement des opérations et obtenir les meilleurs résultats pour vos projets de rénovation.

Un environnement plus collaboratif grâce à une plateforme de collaboration fondée sur la modélisation des données du bâtiment (BIM - Building Information Modelling)

La plateforme collaborative fondée sur le BIM facilitera le processus de décision en offrant une visualisation BIM 3D en ligne pour suivre les changements tout au long de la période de construction et prendre connaissance des principaux indicateurs du projet. La plateforme sera basée sur les standards OPEN BIM assurant l'interopérabilité entre différents outils logiciels.

Des interfaces publiques seront développées pour permettre de connecter à la plateforme des outils externes de conception, de simulation ou encore de mobilisation des connaissances de manière standardisée. L'offre sera accompagnée d'une boîte à outils permettant la simulation, la conception et l'optimisation des solutions de rénovation profonde. Une base de données de solutions de rénovation sera intégrée de manière à faciliter l'exploitation des données techniques et physiques nécessaires aux simulations.

L'environnement collaboratif développé dans le cadre de RenoZEB sera également associé à une interface de contrôle et de gestion de l'énergie. Conçue pour l'occupant, celle-ci permettra la maîtrise des performances durant l'exploitation des bâtiments en proposant des actions correctrices automatisées sur les consommations du bâtiment et des systèmes énergétiques intégrés dans la façade, respectant tant le confort des occupants que la qualité de l'environnement intérieur.

L'approche RenoZEB sera mise en œuvre et analysée sur trois bâtiments résidentiels, situés dans deux zones climatiques distinctes (Espagne et Estonie) ainsi que sur trois bâtiments virtuels (Bulgarie, Italie et Grèce).

Ces bâtiments vont faire l'objet d'une surveillance tout au long du processus de rénovation, tant avant qu'après travaux, de manière à évaluer les performances énergétiques, le confort et l'impact sur la santé, ainsi que les coûts, la valeur immobilière et le bilan environnemental.

KUBIK
Bilbao, Espagne
Test R&D grandeur nature

Rannaliiva
Võru, Estonie
construit vers la fin des années 80

Laubideta
Durango, Espagne
construites 1965

Un cadre d'évaluation sera développé pour permettre une réplicabilité des solutions RenoZEB dans différents marchés et zones climatiques de l'Union européenne, en utilisant des sites de démonstration virtuels et une bonne connaissance des marchés.

The RenoZEB brochure in German

Forcieren von energetischen Sanierungslösungen für Nullenergiegebäude und Wohngebiete

Das wertorientierte RenoZEB Konzept, beinhaltet eine Reihe neuer Ansätze und Vorgehensweisen für Deep Retrofitting (DR). Das Ergebnis wird eine ganzheitliche Methodik sein, die den gesamten Lebenszyklus eines Sanierungsprojekts abdeckt und die besten alternativen Szenarien (Pläne) implementiert, um den Immobilienwert zu erhöhen und die Energieeffizienz zu optimieren.

Vor der Sanierung		Sanierung	Nach der Sanierung
Planungs phase	Design Phase	Bauphase	Management phase
Projektauf bau & Vorannoti ierung	Lösungsdef inition auf Gebäudee bene	Implementierung vor Ort	Betrieb und Instandhaltung
Energieeffizie nzprüfung & Leistungsbeu rteilung	Lösungsdefin ition auf Bauteilebene; Kosten/ Nutzen-Analyse		Überwachung nach Sanierung

Es wird eine integrale, modulare und multifunktionale Plug-and-Play-Gebäudehülle entwickelt, die eine Reihe von technologischen Komponenten in vorgefertigte Einheiten integriert. Das neue Gebäudehüllensystem zielt darauf ab, traditionelle Fassaden-Sanierungsmethoden zu ersetzen und den Sanierungsprozess zu vereinfachen.

Solintel	www.solintel.eu
Focchi	www.focchi.it
Beck-Heun	www.beck-heun.de
RINA	www.rina.org
cype	www.cype.com
tecnalia	www.tecnalia.com
HIT	www.hit-innovations.com
Fraunhofer	www.ise.fraunhofer.de
Salford	www.salford.ac.uk
	www.univpm.it
	www.balkanikaenergy.eu
	www.durango-udala.net
	Home-owners association Rannaliiva
	www.trea.ee
CSTB	www.cstb.fr
	www.ace-cae.eu
Symelec	www.symelec-renovables.com
EnergyPro	www.energyproltd.com
UTPI	www.utpi.com

Forcieren von energetischen Sanierungslösungen für Nullenergiegebäude und Wohngebiete

RenoZEB ist ein EU-finanziertes Projekt, welches von Oktober 2017 bis März 2021 läuft. Das Projekt zielt darauf ab, wirtschaftliche „Plug-and-Play" Lösungen zu entwickeln, die den Immobilienwert in einem umfassenden Nearly-Zero-Energy-Building (nZEB) Sanierungsmarkt steigern und alle Projektbeteiligten durch die Sanierungsmaßnahmen mit innovativen Prozessen, Entscheidungsmethoden, Schulungen und Richtlinien führen, welche an realen Demonstrationsgebäuden präsentiert werden.

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Die alleinige Verantwortung für den Inhalt dieser Broschüre liegt bei den Autoren. Die Europäische Union ist nicht verantwortlich für die Verwendung der darin enthaltenen Informationen.

Dieses Projekt hat im Rahmen des europäischen Forschungs- und Innovationsprogramm Horizon 2020 unter dem Subventionierungsvertrag Nr. 768718 Förderungen erhalten.

Ziele und erste Ergebnisse

Das Ziel ist die Sanierung bestehender Gebäude mit einem minimalinvasives System, durch die Verwendung von hochtechnisierten, energieeffizienten Strukturelementen, um die Beeinträchtigung der Nutzer zu minimieren. Es ist zu erwarten, dass die Gesamtkosten für die Installation und die Bauzeit reduziert werden und wesentlich zur Aufwertung der Immobilie im Einklang mit den Energieeffizienzstandards beitragen.

Darüber hinaus wird eine auf dem Building Information Modeling (BIM) basierende Kollaborationsplattform entwickelt, die den gesamten Lebenszyklus eines Gebäudesanierungsprozesses unterstützt. Diese wird als zentrale Datenbank dienen, in der die Projektbeteiligten auf die erforderlichen Informationen zugreifen und miteinander zusammenarbeiten können. Hierdurch wird die traditionelle Fragmentierung der Bauindustrie überwunden.

Durch die Teilnahme an kostenlosen technischen Schulungen, Workshops und web-Meetings können Sie bewährte Methoden und Arbeitsabläufe entdecken und die besten Ergebnisse für Ihre Renovierungsprojekte erzielen.

Eine kollaborativere Umgebung durch eine auf Building Information Modeling (BIM) basierende Kollaborationsplattform

Die BIM-basierte Kollaborationsplattform wird den Entscheidungsprozess erleichtern, indem ein Online-3D-BIM-Modell-Viewer zur Verfügung gestellt wird, um Änderungen während der Bauphase zu verfolgen und die wichtigsten Projektindikatoren zu visualisieren. Die Plattform wird auf OPEN BIM-Standards und der Kompatibilität heterogener Software-Tools basieren.

Es werden öffentliche Schnittstellen entwickelt, die es ermöglichen, externe Applikationen, wie z. B. Design, Simulation oder wissensbasierte Applikationen mit der Plattform in einer standardisierten Weise zu verbinden. Dies wird durch ein Simulationswerkzeug zur Entwicklung und Optimierung der umfassenden Sanierungslösung komplettiert. Es wird eine Datenbank für Renovierungslösungen integriert, um die für die verschiedenen Simulationen benötigten technischen Informationen bereitzustellen.

Die kollaborative Umgebung der RenoZEB-Lösung wird durch ein auf den Menschen ausgerichtetes Steuerungs- und Automatisierungs-System ergänzt, das eine Leistungsverbesserung während des tatsächlichen Betriebs des Gebäudes und die Anwendung korrektiver automatisierter Steuerungsmaßnahmen über Hauptgebäudelasten und Fassadenenergiesysteme ermöglicht, und dabei den Komfort der Bewohner und die Umweltqualität im Innenraum beachtet.

Der RenoZEB-Ansatz zur umfassenden Sanierung wird an drei realen Wohngebäuden in zwei verschiedenen Klimazonen (Spanien und Estland) und drei virtuellen Gebäuden (Bulgarien, Italien und Griechenland) überprüft.

Diese Gebäude werden während des gesamten Sanierungsprozesses sowohl vor als auch nach den Renovierungsarbeiten überwacht. Dabei werden die Energieeffizienz, die Gesundheits- und Komfortbedingungen, die Kosten und der Wert, einschließlich der Aufwertung der Objekte und die Umweltbilanz ermittelt.

KUBIK
Bilbao, Spain
full-scale R&D test facility

Rannaliiva
Võru, Estonia
built in the late 80's

Laebideta
Durango, Spain
built in 1965

Ein Bewertungsrahmen wird entwickelt, um die Reproduzierbarkeit der RenoZEB-Lösung in verschiedenen EU-Klimazonen und -Märkten unter Verwendung der virtuellen Demonstrationsgebäuden und umfangreicher Marktinformationen sicherzustellen..

The RenoZEB brochure in Greek

Επιτάχυνση λύσεων ενεργειακής αναβάθμισης για κτίρια και γειτονιές μηδενικής ενεργειακής κατανάλωσης

Η έννοια του RenoZEB περιλαμβάνει μια σειρά από νέες προσεγγίσεις και διαδικασίες για ριζικές μετασκευές (Deep Retrofitting- DR). Το αποτέλεσμα θα είναι μια ολιστική μεθοδολογία που θα καλύπτει ολόκληρο τον κύκλο ζωής ενός έργου ανακαίνισης και θα εφαρμόζει τα καλύτερα εναλλακτικά σενάρια αποσκοπώντας στην αύξηση της αξίας των ακινήτων και τη βελτιστοποίηση της ενεργειακής τους απόδοσης.

Προ- μετασκευής		Μετασκευή	Μετά τη μετασκευή
Φάση προγραμματισμού	Φάση σχεδιασμού	Φάση κατάσκευής	Φάση Διεχείρισης
Ενεργή και επικύρωση έργου	Επίλυση (επίπεδο κτιρίου)	Υλοποίηση	Λειτουργία και συντήρηση
	Επίλυση (επίπεδο γειτονιας)		
Έλεγχος ενεργειακής απόδοσης κτιρίου	Ανάλυση κόστους/ οφέλους		Παρακολούθηση

Θα αναπτυχθεί ένα ενιαίο, αρθρωτό, πολύ-λειτουργικό και άμεσα εφαρμόσιμο (plug and play) σύστημα κελύφους , το οποίο θα ενσωματώνει ένα σύνολο τεχνολογιών μέσα σε προκατασκευασμένα δομικά στοιχεία. Το νέο σύστημα κελύφους έχει ως στόχο να υποκαταστήσει τις παραδοσιακές μεθόδους αντικατάστασης κτιριακών προσόψεων και να απλοποιήσει τη διαδικασία μετασκευής.

Solintel www.solintel.eu
Focchi www.focchi.it
Beck+Heun www.beck-heun.de
RINA www.rina.org
cype www.cype.com
tecnalia www.tecnalia.com
HIT www.hit-innovations.com
Fraunhofer www.ise.Fraunhofer.de
Salford www.salford.ac.uk
www.univpm.it
www.balkanikaenergy.eu
www.durango-udala.net
Home-owners association Rannaliva
www.trea.ee
CSTB www.cstb.fr
www.ace-cae.eu
Symelec www.symelec-renovables.com
EnergyPro www.energyproltd.com
UIPI www.uipi.com

Επιτάχυνση λύσεων ενεργειακής αναβάθμισης για κτίρια και γειτονιές μηδενικής ενεργειακής κατανάλωσης

Το RenoZEB είναι έργο χρηματοδοτούμενο από την ΕΕ, με διάρκεια από τον Οκτώβριο του 2017 έως τον Μάρτιο του 2021. Αποσκοπεί στην ανάπτυξη οικονομικά αποδοτικών άμεσα εφαρμόσιμων λύσεων που αυξάνουν την αξία των ακινήτων και στοχεύουν στη διεύρυνση της αγοράς των Κτιρίων Σχεδόν Μηδενικής Κατανάλωσης Ενέργειας (nZEB) και στην καθοδήγηση όλων των εμπλεκόμενων φορέων μέσω δράσεων ανακαίνισης, κάνοντας χρήση καινοτόμων διαδικασιών, μεθοδολογιών λήψης αποφάσεων, επιμόρφωσης και χάραξη κατευθύνσεων, όπως και επιδείξεις σε πραγματικές συνθήκες.

/RenoZEBproject
@reno_zeb
/groups/12079225

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Η αποκλειστική ευθύνη για το περιεχόμενο αυτού του φυλλαδίου ανήκει στους συγγραφείς. Η Ευρωπαϊκή Ένωση δεν είναι υπεύθυνη για οποιαδήποτε χρήση των πληροφοριών που περιέχονται σε αυτήν.

Το έργο αυτό έλαβε χρηματοδότηση από το πρόγραμμα έρευνας και καινοτομίας της Ευρωπαϊκής Ένωσης Ορίζοντας 2020 Horizon 2020 βάσει της συμφωνίας επιχορήγησης αριθ. 768718

Στόχοι και αρχικά αποτελέσματα

Ο στόχος είναι η ανακαίνιση των υφιστάμενων κτιρίων χρησιμοποιώντας υψηλής τεχνολογίας και υψηλής ενεργειακής απόδοσης δομικά στοιχεία. Το σύστημα που εφαρμόζεται εξασφαλίζει περιορισμένη παρεμβατικότητα και ελαχιστοποιεί την όχληση των χρηστών του κτιρίου. Αυτό αναμένεται να μειώσει το συνολικό κόστος εγκατάστασης και το χρόνο κατασκευής, συμβάλλοντας σημαντικά στην αναβάθμιση της αξίας του ακινήτου και σύμφωνα με τα πρότυπα ενεργειακής απόδοσης.

Επιπλέον, θα αναπτυχθεί μια πλατφόρμα συνεργασίας βασισμένη στη Μοντελοποίηση Κτιριακής Πληροφορίας (BIM), που θα υποστηρίζει τη διαδικασία της ανακαίνισης καθ' όλη τη διάρκεια του έργου. Θα χρησιμεύσει ως κεντρικό αποθετήριο δεδομένων, όπου οι ενδιαφερόμενοι θα μπορούν να συνεργάζονται μεταξύ τους και να έχουν πρόσβαση στις απαραίτητες πληροφορίες, εμπερνώντας τον παραδοσιακό κατακερματισμό του κατασκευαστικού κλάδου.

Συμμετέχοντας στα δωρεάν μαθήματα τεχνικής κατάρτισης, εργαστήρια και εικονικές συναντήσεις, μπορείτε να ανακαλύψετε τις βέλτιστες πρακτικές και να βελτιστοποιήσετε τη ροή εργασίας σας ώστε να εξασφαλίσετε καλύτερα αποτελέσματα στα δικά σας έργα ανακαίνισης.

Ένα πιο συνεργατικό περιβάλλον μέσω μιας πλατφόρμας συνεργασίας βασισμένης στην Μοντελοποίηση Κτιριακής Πληροφορίας (BIM)

Η BIM πλατφόρμα συνεργασίας θα διευκολύνει τη διαδικασία λήψης αποφάσεων παρέχοντας ένα τριοδιάστατο μοντέλο προβολής BIM για την παρακολούθηση πρόοδου των εργασιών και την απεικόνιση των βασικών δεικτών απόδοσης του έργου. Η πλατφόρμα θα βασίζεται στα πρότυπα OPEN BIM και στη διολειτουργικότητα ετερογενών εργαλείων λογισμικού.

Δημόσιες διεπαφές θα αναπτυχθούν ώστε να επιτρέπουν μια τυποποιημένη σύνδεση της πλατφόρμας με εξωτερικά εργαλεία, όπως εργαλεία σχεδιασμού, προσομοίωσης ή εργαλεία γνώσης. Αυτές οι διεπαφές θα εμπλουτιστούν με ένα εργαλείο προσομοίωσης για τον σχεδιασμό και τη βελτιστοποίηση των λύσεων για ριζικές ανακαινίσεις. Σε ένα αποθετήριο δεδομένων θα αποθηκεύονται οι διάφορες πρακτικές ανακαίνισης που θα τροφοδοτούν την πλατφόρμα με τεχνικές πληροφορίες χρήσιμες για τις διάφορες προσομοιώσεις.

Το περιβάλλον συνεργασίας των λύσεων του RenoZEB θα ενισχυθεί περαιτέρω από ένα πλαίσιο ελέγχου και αυτοματισμού που θα δίνει τη δυνατότητα βελτίωσης της απόδοσης του κτιρίου κατά τη διάρκεια λειτουργίας του και την εφαρμογή κατάλληλων διορθωτικών αυτοματοποιημένων ελέγχων πάνω στα κύρια φορτία του κτιρίου και τα ενεργειακά συστήματα των προσόψεων, δίνοντας ιδιαίτερη έμφαση στην ποιότητα του εσωτερικού περιβάλλοντος, και της θερμικής άνεσης των ενοίκων.

Η προσέγγιση RenoZEB για ριζική ανακαίνιση θα δοκιμαστεί σε τρία πραγματικά κτίρια κατοικιών, σε δύο διαφορετικές κλιματολογικές ζώνες (Ισπανία και Εσθονία) και τρία εικονικά κτίρια (Βουλγαρία, Ιταλία και Ελλάδα).

Τα κτίρια αυτά θα παρακολουθούνται καθ' όλη τη διάρκεια της ριζικής μετασκευής τους, τόσο πριν όσο και μετά τις εργασίες ανακαίνισης, μετρώντας τις ενεργειακές τους επιδόσεις, τις συνθήκες υγιεινής και άνεσης, το κόστος των εργασιών αλλά και την αύξηση της αξίας τους όπως και το περιβαλλοντικό τους αποτύπωμα.

KUBIK
Μπιλμπάο, Ισπανία
Πλήρους κλίμακας δοκιμαστική εγκατάσταση E&A

Rannaliiva
Βόρευ, Εσθονία
Κτισμένο στα τέλη της δεκαετίας του 80

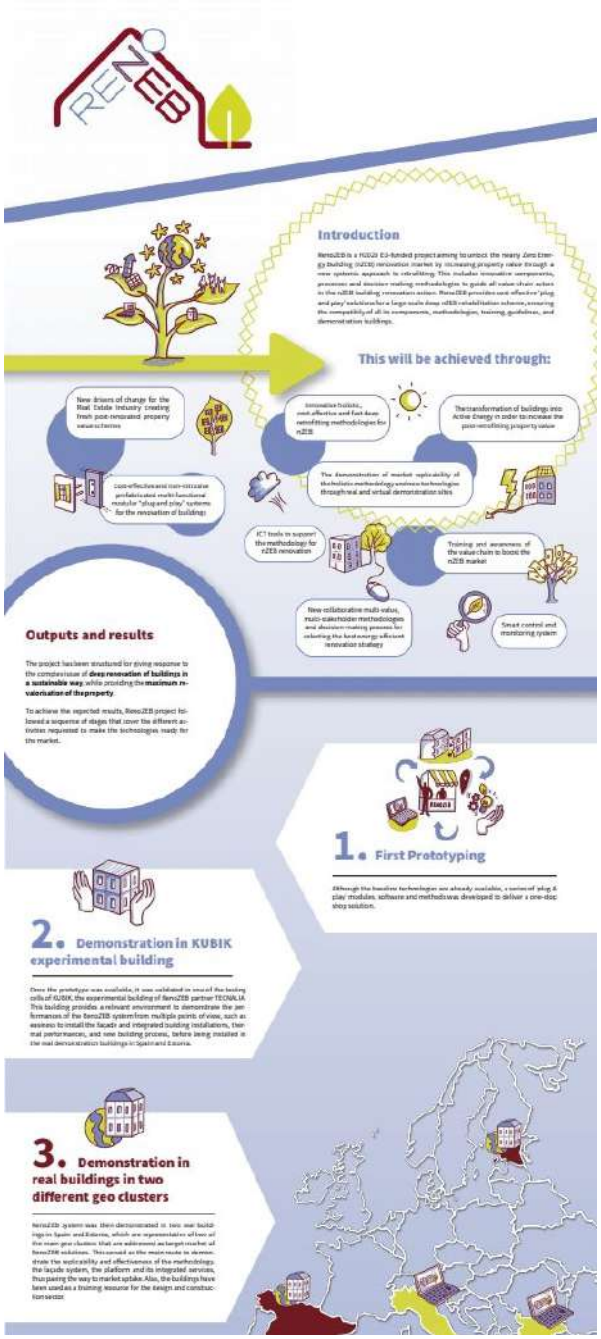
Lsubideta
Ντουράνγκο, Ισπανία
Κτισμένο το 1965

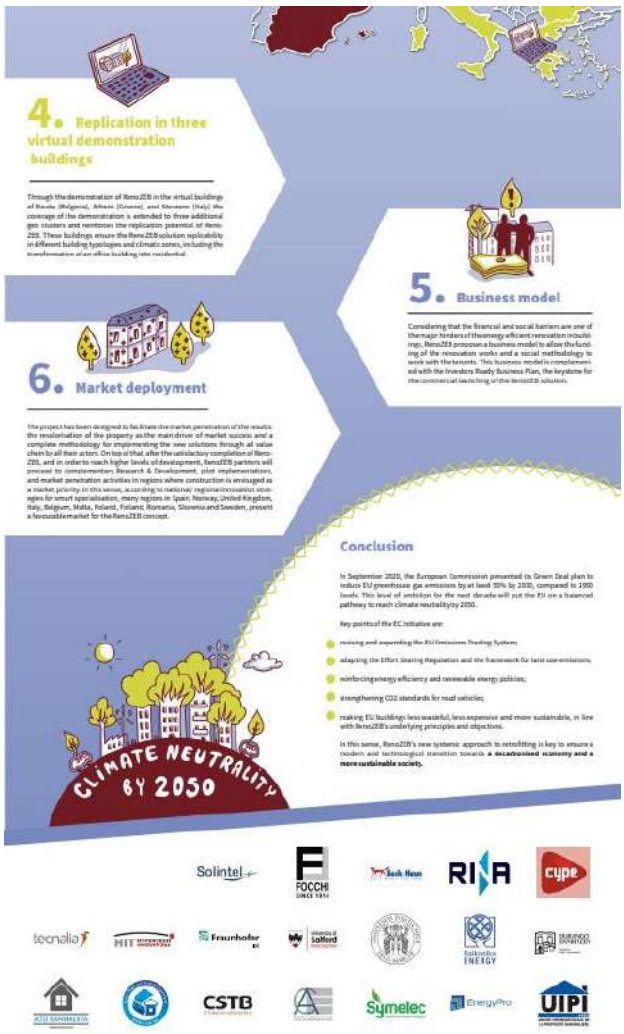
Θα αναπτυχθεί ένα πλαίσιο αξιολόγησης της λύσης RenoZEB προκειμένου να διασφαλισθεί η δυνατότητα αναπαραγωγής της σε διαφορετικά κλίματα και αγορές εντός της ΕΕ, χρησιμοποιώντας τους εικονικούς χώρους επίδειξης και εκτεταμένες δραστηριότητες γνώσης και αγοράς.

The RenoZEB brochure in Italian

The RenoZEB brochure in Spanish

The RenoZEB Infographic developed at the end of the project to showcase the results of the action.





Two information plates were produced for the two demonstration buildings, informing occupants and their visitors about the participation in the project and the EU funding.

Here as an example the plate in the Estonian demonstration buildings.

8.3 Appendix 3: Project Newsletters

The four newsletters are available in English on the project website: https://renozeb.eu/new-media/newsletter.html

The 1st RenoZEB Newsletter was sent in March 2018.

RenoZEB Newsletter 1 - March 2018

Welcome to the first issue of RenoZEB's newsletter!

Dear readers,
This edition is the first biannual newsletter that will be sent in the framework of RenoZEB EU project. It aims at updating you about the progress of this project and share with you news and events from all around Europe on nearly Zero Energy Buildings (nZEB).

Why do I get this newsletter?
You receive this newsletter, because you have either subscribed online on our project page or you have been considered a relevant stakeholder.
You can unsubscribe at any time here

RenoZEB in a Nutshell

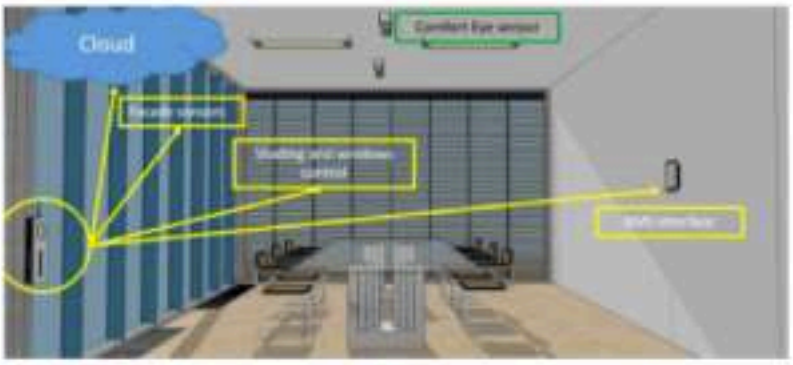
RenoZEB is a new Horizon 2020 project with a three-and-a-half year duration (October 2017 - March 2021). 19 partners from nine countries will work together to unlock the nearly Zero Energy Building (nZEB) renovation market by increasing property value through a new systemic approach to retrofitting. This will include innovative components and processes and decision-making methodologies to guide all value chain actors in the nZEB building renovation action.

The RenoZEB project will develop **a holistic, cost efficient and fast deep renovation process supported by ICT tools and low-disturbance technological solutions.** It will cover the four phases of a renovation (planning, design, construction and management) and be guided by three main drivers: **cost reduction, time reduction and net primary energy use reduction.**

Through two real and three virtual demonstration cases the project will demonstrate and ensure the replicability of the schemes and technical tools to appropriately address the valorisation of the building stock before and after nZEB renovation schemes are applied.

Why RenoZEB?

Nearly Zero Energy Buildings' (nZEB) construction and renovation is a big challenge for the construction industry. The simplest way to achieve a nZEB is to drastically reduce building energy use through efficiency, and to directly implement renewable energy systems to balance a building's energy consumption. Even though the technology to cost effectively build new nZEB buildings exists, the strategy to apply the nZEB principles in the existing building stock can largely differ from one building to another. There are many barriers to effective implementation of energy use reduction and renewable energy installation strategies in existing buildings, which make owners and tenants reluctant to invest.



Through a holistic methodology, RenoZEB will propose solutions to overcome these barriers, and develop and demonstrate a new multifunctional modular "plug and play" system with enhanced replicability and adaptability to capture a large-scale renovation market. This system will be able to integrate the most innovative ICT technologies that will interact with the different building components such as windows, ventilation, monitoring and control systems and Renewable Energy Sources (RES) technologies to enable a promising nZEB renovation market.

RenoZEB is online

Visit RenoZEB website under: www.renozeb.eu to find out more about the project, including goals, project partners and timelines as well as links and relevant information about EU and national platforms on energy efficiency buildings. All news, information about upcoming events, public information relative to RenoZEB and public project deliverables will be published here. You can also use our website to contact us or sign up for our newsletter.

RenoZEB energy efficient and value-based concept and mapping

A first step in the project has been to design the RenoZEB value framework - a tool to be used as a guide by real-estates investors. The value framework considers and defines all the assets arising from Deep Retrofitting (DR) and dividing them into three categories:

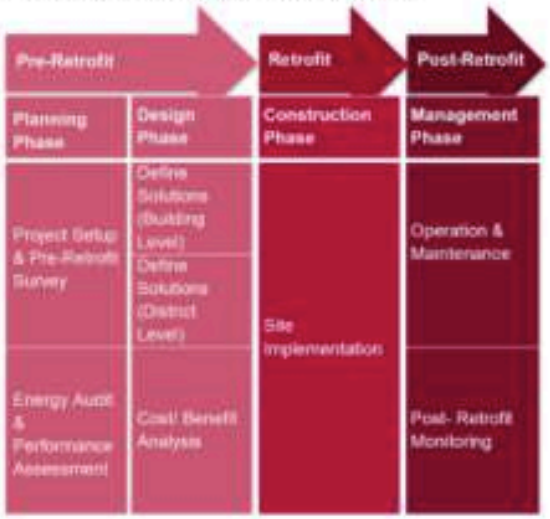
- Energy cost saving
- Additional cost reductions
- Additional values

The RenoZEB value framework:

Energy cost saving	Heating cost Cooling cost Lighting cost
Additional cost reductions	Taxes reduction Financial subsides Higher rent and sale prices Maintenance cost Water cost Insurance cost
Additional values	Risk management mitigation Sales potential Eco labelling Compliance with legislation Company's reputation Vacancy periods Space optimization Residents' health Residents' comfort CO_2 and other pollutant emissions Building lifetime Building aesthetics

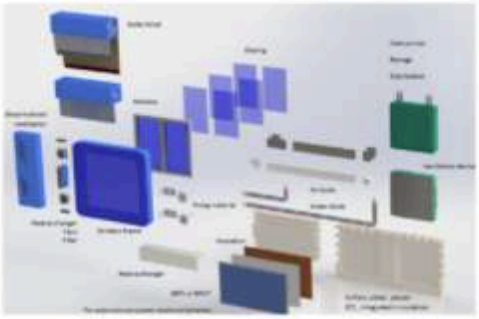
The RenoZEB concept is defined as a holistic approach to Deep Renovation. It explains the workflow of activities within each one of the project's life cycles covering planning, design, construction and management, including a selection of environmental and social Key Performance Indicators (KPI) along with the financial and energy ones. In addition, the framework defines the actors involved in performing these activities, the input/output to these activities, and the output visualisation.

The RenoZEB Deep Retrofitting life cycle process:



"Plug and Play" Envelope systems within the RenoZEB concept

Currently, the research is focused on defining the most valuable components to be used for the RenoZEB plug and play facade system. These technological components are presently under evaluation to identify the best solution in line with RenoZEB requirements and final output expectations. The life cycle and carbon footprint analysis methods are also introduced, while a general architecture for the facade concept is proposed. The next step will be the definition of the concept design and the following system design.



The technological components investigated are:

- Prefabricated window modules and roller shutters
- Multifunctional insulation boards
- Ventilation devices
- Facade controllers
- Facade-integrated sensors
- Fixing mechanisms
- Building Integrated Solar Thermal
- Building Integrated Photovoltaics (BIPV) and batteries

Upcoming events: RenoZEB @ Tartu, Estonia 2018

On 11 and 12 April, the RenoZEB team will meet in Tartu, Estonia. This will be the first occasion to visit one of the real demonstration buildings, which will be renovated with the RenoZEB technologies.

The building is a two-floor construction with sixteen dwellings owned by the apartment association "Rannaliiva". Currently, the energy performance class of the building is E with 231 kWh/m2 per year and the expected performance after renovation is 120 kWh/m2, with a significant improvement of indoor climate.

The demo case visit is an opportunity for project partners to better grasp and understand the characteristics of the building, the climatic conditions as well as user needs.

This project has received funding from the European Union's Horizon 2020 research and
innovation programme under grant agreement No. 649473.

The sole responsibility of this publication lies with the author.
The European Union is not responsible for any use that may be made of the information contained therein.

Project coordinator

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The 2nd RenoZEB Newsletter published in October 2018.

RenoZEB Newsletter 2 - October 2018

Welcome to the second issue of RenoZEB's newsletter!

Dear readers,
This edition is the second biannual newsletter that will be sent in the framework of the RenoZEB EU project. It aims at updating you about the progress of this project and share with you news and events from all around Europe on nearly Zero Energy Buildings (nZEB).

Why do I get this newsletter?
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You can unsubscribe at any time here

RenoZEB in a Nutshell

RenoZEB aims to unlock the nearly Zero Energy Building (nZEB) renovation market by increasing property value through a new systemic approach to retrofitting. This includes innovative components, and processes and decision making methodologies to guide all value-chain actors in the nZEB building renovation action. RenoZEB will provide cost-effective 'plug and play' solutions for a large-scale deep nZEB rehabilitation schemes, ensuring the integrate-ability of all its components, methodologies, training, guidelines, and demonstration cases. The real and virtual demonstration cases will show and ensure the replicability of the schemes and technical tools to appropriately address the valorisation of the building stock before and after nZEB renovation schemes are applied.
For more information visit our website http://renozeb.eu/

Energy Performance Certificates' (EPCs) impact on property value

Real estate is a very complex and diverse sector. Considerable differences, trends and rules exist between the different segments of the sector, and the national or local markets. Understanding the market landscape and its functioning is crucial to optimise market uptake for the solutions tested in the framework of the RenoZEB project. In the past six months a team of the RenoZEB partners have tried to understand more about the various market incentives that trigger renovation decisions such as, for example, the impact of energy efficiency renovation on the property value.

Particular attention was paid to the relationship between Energy Performance Certificates' (EPCs) rating and their influence on the perceived value of property by market professionals, owners and tenants. The extensive research conducted in the framework of two EU funded projects, REVALUE and EeMAP, have proven to be very useful in that respect. Here are some of the key findings of those analyses:

- it is difficult to capture the "big picture" of real estate markets, since there is a general acknowledgement that each market has its own unique characteristics and conclusions made for one particular national or regional market cannot be conveyed to another. As such, there are various local specificities to consider when quantifying the relationship between energy efficiency and property value, and local market intelligence is an essential element of this process. Local experts in several EU countries underline the fact that although in some particular sub-markets there is evidence that a high EPC rating can increase property value, in principle, EPCs *"do not measure the efficiency at the asset level"*.

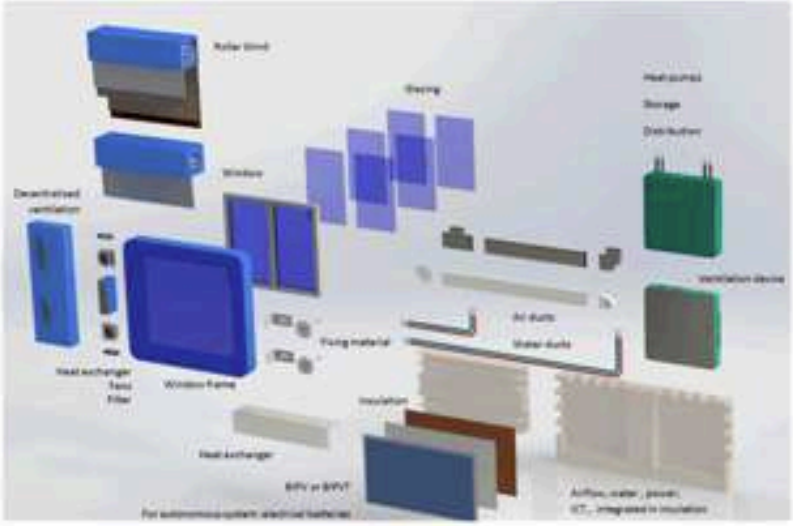
- Market insights can provide a more comprehensive view on whether energy efficiency is ranked by buyers as an added-value factor per se or if other features associated with energy efficiency (e.g. comfort) are what potential buyers would value more. Research indicates that characteristics like location, size, quality, age and comfort of a building seem to make the top of the list, while energy efficiency is rarely considered as a crucial parameter when purchasing a property. If energy efficiency features are considered, property valuers agree that most buyers care more about attributes that are readily available and visible like double-glazed windows, energy efficient heating systems etc. They describe it as a blend of economic and emotional factors that seem to be the most relevant drivers in the decision to purchase property, while energy savings and financial gains are far less considered. Even though economic factors like available budget may determine the range of the sought property, final decisions are mainly driven by non-economic drivers.

- Buyers' perceptions and expectations of energy efficient components can vary also across countries with different climatic conditions. For instance, in EU countries with colder climates, a property may face a price decrease in the absence of double-glazed windows, as it is an expected feature in the market. The case might not be the same in a country with warmer climate where double-glazed windows may be perceived as a less necessary component.

So far, the broad conclusion of the analyses conducted in these two projects is that currently - and apart from some niche cases - EPCs per se do not seem to impact property value, as energy efficiency is not a widely sought-after attribute. However, buildings with higher EPC ratings provide a better indoor environment, increased comfort and possibly lower electricity bills, features for which potential buyers would be willing to dip into their pockets. As experts conclude, energy efficiency has the potential to contribute to long term value creation.

The plug-and-play multifunctional façade for retrofitting buildings

The RenoZEB project will deliver a plug-and-play multifunctional façade module for retrofitting buildings.
This module will integrate several subsystems and technologies, such as, a prefabricated window module with shading device, multi-functional insulation boards, ventilation units with heat recovery, building integrated solar systems, and façade-integrated sensors and control.



The team is currently busy to analyse the requirements and specifications of each of these technologies to be integrated in the façade module and the identification of available systems through a market screening. More to come soon.

A Collaboration Framework for the whole renovation value chain

Another part of the RenoZEB team is working on a Collaboration Framework for the whole renovation value chain, taking into account the RenoZEB methodology developed in the beginning of the project. It presents a conceptual platform, which enables the creation of scalable and reusable software applications.

Based on a conceptual description, the "physical view" is presented in the figure above. This technology stack intends to enforce an alignment with the RenoZEB exploitation strategy in terms of openness, connectivity and interoperability with the external tools that will eventually implement the Open Public API of the nD Collaboration Platform. The final selection of technologies will be carried out during the next software development tasks. We will share updates on our website

The "Common Data Model": a more visual approach to the BIM-driven renovation processes

One of the outputs of the RenoZEB project will be the **Common Data Model**, which captures the information and human interaction needs of the whole BIM-driven renovation process defined in the RenoZEB methodology. The considered information domain (comprising users, projects, products and scenarios) was driven by the end-user's needs, which were captured in the methodology and described as formal requirements. Among them, the functional requirements deal with the capabilities offered to the end user, how the software/hardware performance aspects should be designed to comply with security, privacy, extensibility and availability standards. To ensure that the functionalities are evenly understood and shared by the RenoZEB stakeholders, these formal requirements were translated into **visual mock-ups.**

The **Common Data Model** will be leveraged by a workflow-aware capability, which will enable the RenoZEB stakeholders to collaborate and have access to the required data at the right time. This collaborative approach will streamline the comparison of deep renovation scenarios comprising combinations of feasible products / technologies contained in the RenoZEB e-catalogue.

To support the decision-making process, the Collaboration Platform dashboard will provide a **3D BIM viewer** that will allow, for instance, the visualization of different retrofitting alternatives.

Innovative data reporsitory for nZEB solutions

One of the main goals of the RenoZEB project is to create an E-Catalogue of nZEB solutions, as one of the key steps of an holistic methodological approach for deep renovation of residential buildings. It will facilitate for end-users the selection of solutions for deep renovation in an easy and understandable way. The solutions will be selected thanks to a filtering according to price, location and CO2 emissions, that will make choosing the different materials easier.

This catalogue provides solutions for the main issues detected during building renovation; problems in constructive elements: floors, facades, roofs (i.e. bad or inexistent insulation); problems with bad performing HVAC systems (usually due to old equipment) and problems with aperture elements (as single glass windows or without breakage of thermal bridge). Also solutions of Photovoltaic panels for electricity generation had been included in the catalogue which will allow the buildings to create its own energy and to be closer of a Net Zero Energy Building.

Visit our website to stay up to date.

This project has received funding from the European Union's Horizon 2020 research and
innovation programme under grant agreement No. 649473.

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The European Union is not responsible for any use that may be made of the information contained therein.

Project coordinator

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The 3rd RenoZEB Newsletter, March 2019:

RenoZEB Newsletter 3 - March 2019

Welcome to the third issue of RenoZEB's newsletter!

Dear readers

This edition is the third bi-annual newsletter from the EU funded project RenoZEB. We like to keep you up-to-date on cutting edge research on renovation to nearly Zero Energy Building (nZEB) standards from all around Europe. Currently the project team is working hard on plug and play façades for a fast and undisturbed renovation process. We hope you enjoy the reading.
Let's keep in touch for future news and events!

Michele Vavallo
RenoZEB Coordinator

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RenoZEB in a Nutshell

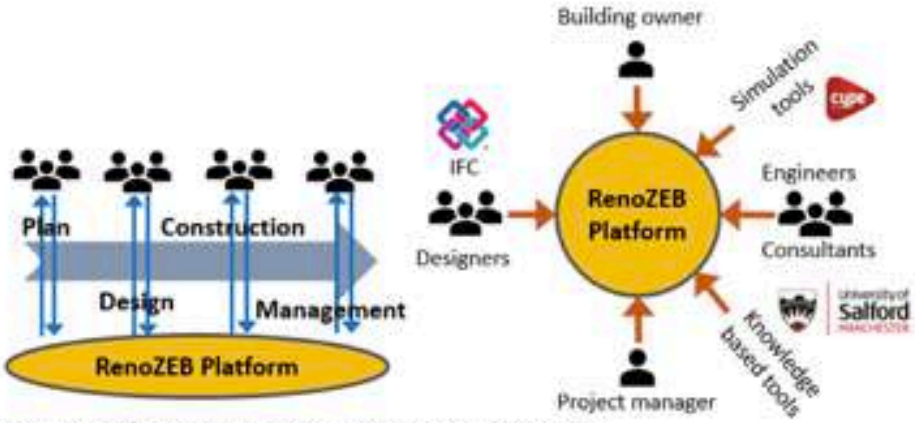
The RenoZEB consortium is developing a new systemic approach to retrofitting. This includes innovative components, and processes and decision-making methodologies to guide all value-chain actors in the nZEB building renovation action. RenoZEB provides cost-effective 'plug and play' solutions for large-scale deep nZEB rehabilitation schemes, ensuring the integrate-ability of all its components, methodologies, training, guidelines, and demonstration cases. The real (ES, EE) and virtual demonstration cases (IT, EL, BG) will show and ensure the replicability of the schemes to different building types and climates. The technical tools appropriately address the valorisation of the building stock before and after nZEB renovation schemes are applied.
For more information visit our website http://renozeb.eu/

The RenoZeb team in front of the demonstration building in Durango (Spain)

First developments of the RenoZEB Platform

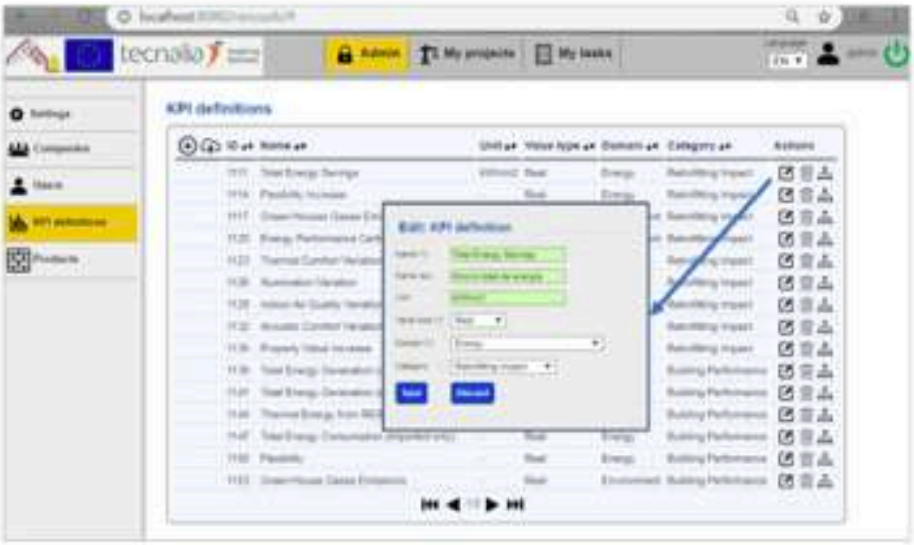
The first step in the implementation of the RenoZEB Platform has already been achieved. It allows the collaboration of the project team during all phases of a renovation process, sharing information, setting targets, managing and visualizing renovation scenarios and comparing KPI results.

An open web service layer enables the connection of external tools for requesting and uploading data. During the project, knowledge-based tools (by University of Salford) and simulation tools (by CYPE) will be integrated.



RenoZEB Platform: workflow view (left) vs collaboration view (right)

At this stage the core API (Application Programming Interface) is almost finished, and the initial prototypes have been created: project and user management, KPI management and a product repository. An IFC viewer is also being developed using WebGL technologies (three.js libraries). Next stages will include adding semantic edition capabilities to the viewer and thematic representations (e.g. KPI results).



KPI management

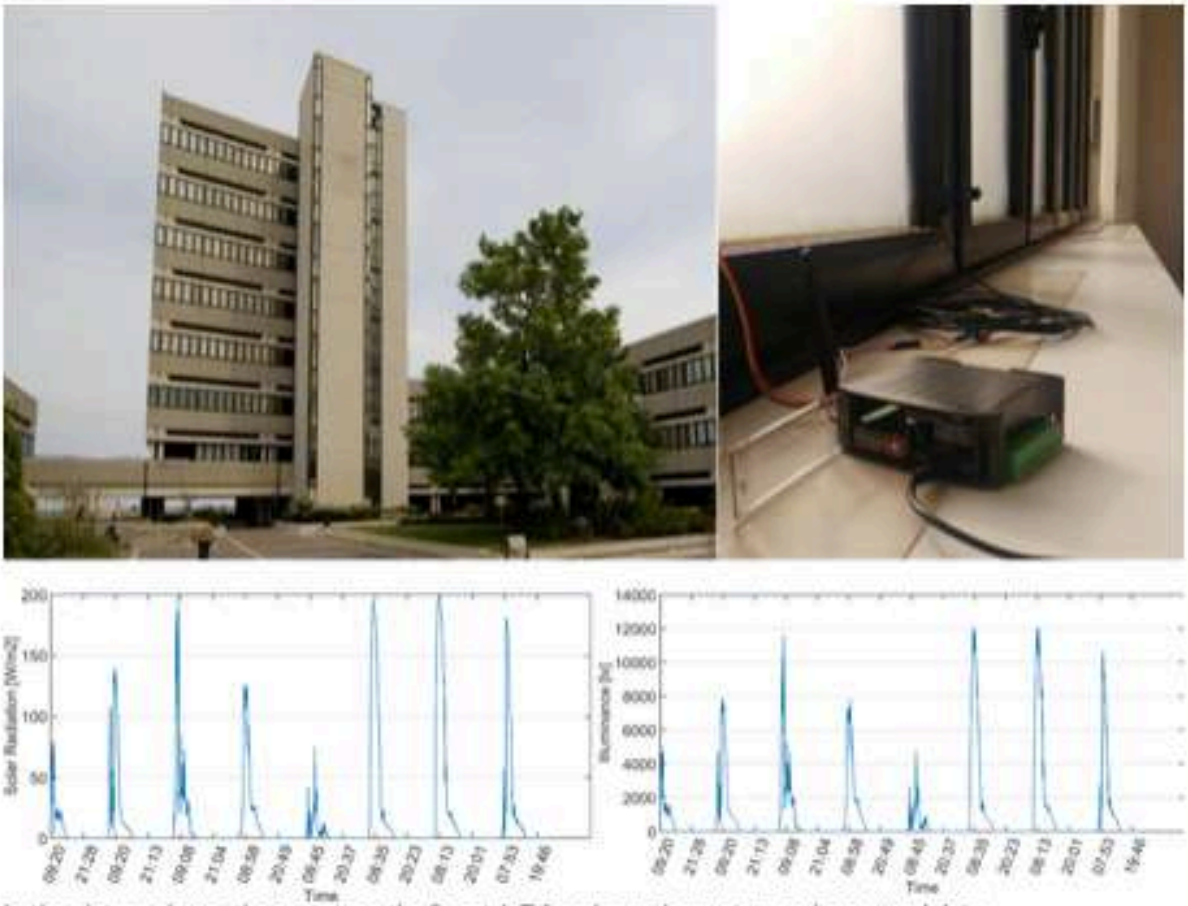
RenoZEB released the design of the Smart-IoT façade

The Smart-IoT (Internet of Things) façade is based on the concept of façade elements with embedded sensors and actuators, converting the building envelope into an intelligent component, interoperable with building management systems and other third-party systems.
This concept is functional to:

- Comfort and IAQ management: increased knowledge of building conditions by indoor/outdoor interface data for improved usage of outdoor air, light and solar conditions.
- Building operation and energy management: optimized HVAC and lighting operation routines by improved availability of data and capability of actuate façade elements.
- Maintenance: enlarged database on outdoor conditions and comparison with reference conditions on in/out building exchanges.

With RenoZEB, the façade becomes a building element capable of communicating with the other building components (e.g. controllers, BMS etc.), providing measured data from the envelope and accepting commands to regulate the operable elements (windows and shadings).

The first prototype the Smart-IoT façade sensing system has been realized and tested in a building of the Università Politecnica delle Marche (Italy). The monitoring system was installed on a real façade and, given the wireless connection capabilities, connected to an IoT cloud platform to collect and to visualize measured data (outdoor solar radiation and illuminance).



In the picture above, the prototype the Smart-IoT façade sensing system and measured data

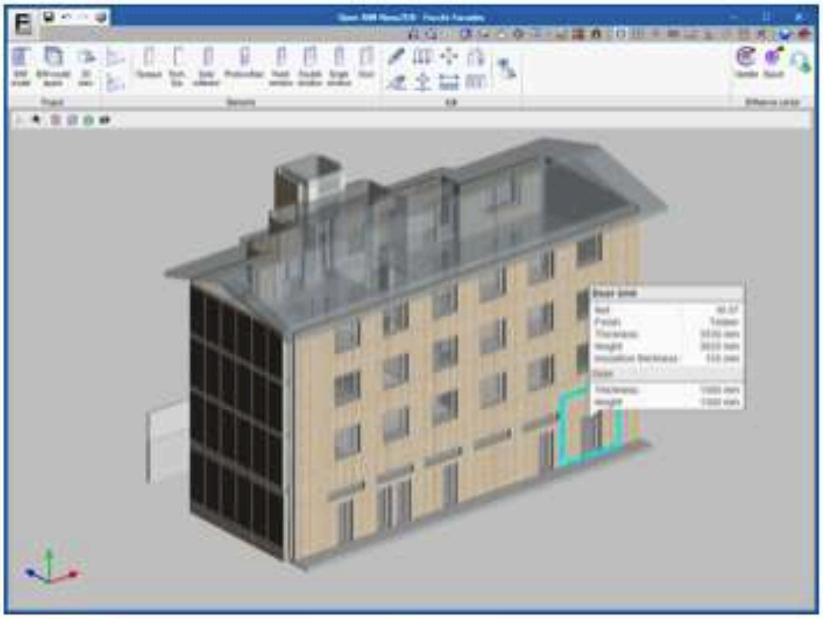
The RenoZEB team is now working on the construction of the first full-scale prototype: a façade unit with embedded sensors and actuators to be installed in the laboratory building Kubik, in Bilbao. The next step is to complete development of the advanced shadings controller as part of the Smart-IoT façade.

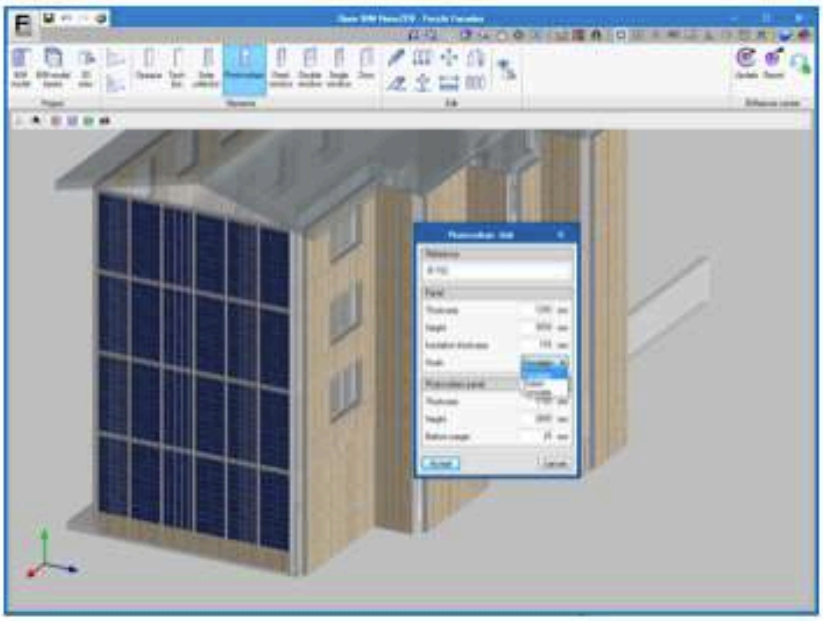
Launch of the first version of "Open BIM RenoZEB - Focchi Facades"

The "Open BIM RenoZEB - Focchi Facades" is a free computer tool for the drawing and subsequent cutting of the facades for the rehabilitation of the company Focchi in Italy. The program is integrated in the Open BIM workflow, which allows you to export the constructive solutions defined to the BIM model of a project hosted on the BIMserver.center platform and to be part of the collaborative, multidisciplinary and multi-user workflow provided by the technology Open BIM.

The objective of the program is to obtain a list with the account and the size of each panel that, which allows the company Focchi to manufacture the necessary panels. These panels are also drawn in 3D and are part of the BIM model of the project. The software is designed to introduce in a 3D view the panels of the company Focchi on the imported facades of the architectural model of the building.

To start working with the program it is necessary for the user to connect the new or already existing BIM project on the BIMserver.center platform as a model with the geometry of the building (generated by CAD / BIM programs such as IFC Builder, Allplan, Archicad or Revit).





Example of the demonstration building in Durango (Spain)

Building Overall Performance and Renovation Operation Quality

One of the objectives of the RenoZEB project is to incentivize the deep renovation of existing buildings by smoothing the renovation process and improving both, the energy performance and the overall quality (including health, comfort and Indoor Environment Quality [IEQ]) of the dwellings.

Therefore, two main areas are investigated: **Building Overall Performance** and **Renovation Operation Quality**. For a given building, overall performance covers not only energy performance, which remains one of the main goals of renovation works, but also environmental performance, thermal, acoustic and visual comfort, indoor air quality and property value. This comprehensive approach, through the assessment of a building's overall performance and its improvement, is fundamental to ensure the overall quality of deep renovation operations. Besides, the quality of the renovation operation can be evaluated through the energy consumption, waste generation, occupants' disturbance and total cost due to the operation itself. This Renovation Operation Quality plays a great part in a building owner's decision towards renovation.

Since December 2018, demonstration buildings in Võru (Estonia) and Durango (Spain) are monitored continuously with sensors to assess the overall performance of buildings before and after renovation (energy, basic comfort and indoor air quality), and the resulting improvement. In the coming weeks, complementary measurements (on short periods) will be performed to consolidate the assessment and additional data will be collected by experts and through questionnaires regarding thermal, acoustic and visual comfort, indoor air quality and property value. The renovation operation quality will be assessed through specific questionnaires sent to occupants, owners and construction companies involved in the renovation.

Demonstration Building in Durango (Spain)

Paper: A workflow for retrofitting façade systems for daylight, comfortable and energy efficient buildings

On February 2019, Bruno Bueno and Fatma Özceylan from Fraunhofer ISE (a partner of the RenoZEB project) presented their paper "A workflow for retrofitting façade systems for daylight, comfortable and energy efficient buildings" during the H2020 BAMB project conference held in Brussels.

The building façade not only provides the aesthetic signature of a building, but also important functions, such as daylight provision, glare protection, solar gain management and visual contact with the outside, which make the building usable and energy efficient. These functions often oppose each other, so the selection and design of façade systems and their control for a certain building application should depend on those functions that the designer wants to promote to the detriment of the other functions.
The proposed workflow consists of analysing the space from the point of view of the functions of its façade.

- In a first step, the analysis of the case study leads to the definition of the design requirements, i.e. the relevance of the different façade functions and their priorities.
- The second step involves the selection of a suitable fenestration system and control strategy for the retrofit solution. In this step, an optimization process for the control strategy is proposed based on state-of-the-art thermal and daylighting simulations.
- In a third step, the annual performance of the retrofit solution is evaluated in order to check if the requirements are fulfilled.

The proposed workflow is illustrated with a case study, in which the automation strategy of a retrofitted façade system is optimized for two different applications: a residential and an office building in Bilbao (Spain). Read the open-access article and the presentation.

RenoZEB and P2Endure - two European projects working together!

In recent weeks, a between the RenoZEB and the P2Endure European Projects has been created. The activity is carried out by the Università Politecnica delle Marche (Italy), partner in both projects.

P2Endure (GA No. 723391) , a sister project of RenoZEB, focuses on the promotion and application of innovative solutions for buildings' deep renovation. Aiming at providing solutions applicable and replicable for the widest range of building typologies, prefabricated plug-and-play (PnP) systems and the BIM technology are two key points of the projects.

The P2Endure PnP solutions concern the building envelope and the technical systems, as well as on-site 3D technologies. Their application to demo cases is actually under development both in a real and virtual way.

In this context, the RenoZEB prefab units (developed by Focchi S.p.A.) have been included as one of the possible PnP solutions for the deep renovation of the building envelope. The solution has been considered suitable for the Ancona demo case (picture below), which is a large social housing block. The application of the units can provide several advantages. The features of the stratigraphy enhance the energy performance, the flexibility of the dimensions (both height and length) and simplifie the renovation design while the modularity shortens the installation process.

The project of the units' arrangement on the building façades is currently under development, as well as the BIM modelling of some of the units' typologies.

The current situation of the Ancona demo case

The pre-retrofit BIM model of the Ancona demo case

Related projects: the H2020 ExcEED project

The ExcEED project -which stands for European Energy Efficient building district Database: from data to information to knowledge - is an H2020-funded project that aims at establishing a robust and durable return of knowledge mechanism collecting actual buildings' energy performance data and providing information to designers, energy managers and policy-makers. The scope of ExcEED is to create a European database for measured and qualitative data beyond the state-of-the-art buildings and districts. Key performance indicators (KPIs) were developed to quantify and benchmark the energy efficiency and the environmental quality at building and district level. Advanced tools and KPIs are associated to the database to analyse real energy performance and environmental quality at the level of single building/district, geo-cluster of buildings, and European new or renovated building stock.

More info on the ExcEED project website

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 649473.

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The 4th RenoZEB Newsletter, November 2019:

RenoZEB Newsletter 4- November 2019

Welcome to the #4 issue of RenoZEB's newsletter!

Dear readers,
This edition is the third bi-annual newsletter from the EU funded project RenoZEB. We like to keep you up-to-date on cutting edge research on renovation to nearly Zero Energy Building (nZEB) standards from all around Europe. Currently the project team is working hard on plug and play façades for a fast and undisturbed renovation process. We hope you enjoy the reading.
Let's keep in touch for future news and events!
The RenoZEB team

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RenoZEB is offering free training - funded by the European Union

Buildings remain as the key factor to transform cities in energy efficient environments and contributing to the new European objectives (40-27-27-15) by 2030. Considering the low construction rates of new buildings, it is necessary promoting the energy renovation of the existing building stock and create a large-scale nZEB renovation Market.
The EU-funded RenoZEB project is organising, as a part of its strategy towards a sustainable built environment, a training and dissemination event in Brussels about the new tools developed in the project for energy calculation, efficiency and optimisation of renovated buildings. This event will provide architects from all over Europe with deep knowledge about the newest procedures and strategies for guaranteeing the implementation of key eco-friendly measures in the design process, thus aiming to reduce the emission according to the 2020 European objectives. The event will be host by the Architects' Council of Europe in March 2020.
The RenoZEB strategies will create a comprehensive workflow and original pipelines that implement sustainable measures in every phase of the project. This will facilitate the crucial keys of affordable and sustainable buildings through the establishment of a brand-new methodology. Additionally, the trainees will learn how to use the RenoZEB cloud platform - a common data environment suitable for collaborative project development through open BIM and GIS technology. Users will learn how to develop sustainable BIM projects on the cloud, managing its information and sharing them with others.
The selected tools allow the energy calculation, simulation and certification of new buildings and renovations, supporting international standards and developing a BIM model that consolidates the information in a 3D parametric environment. By the end of the event, the participants will be able to develop their own detailed BIM models from scratch (using IFC Builder and Open BIM RenoZEB - Focchi Facades) and create several analytical models that will generate accurate information about the energy performance and efficiency of the building, allowing later adjustments in an iterative process for energy optimization.
Additionally, the architects will be taught to work in Open BIM, meaning that they will be able to implement those tools later in their own studios, independently of their BIM software (Revit, ArchiCAD, Allplan, etc.). Studios that do not use BIM technology can develop fully functional and calculated energy models, not needing any previous knowledge.

Introducing "Le Due Torri" virtual demo case

"Le Due Torri" Shopping Centre, situated in the municipality of Stezzano (Bergamo - Italy), is one of the three RenoZEB virtual demo cases.
It was opened on 14 April 2010. With a gross floor area of 42 000 sqm, two retail levels, 1 400 total car spaces and 6,500,0000 of visitors per year. The retail center house 100 retail tenants, with 20 of them in franchising including food services, entertainment and additional services such as: dentist, gym, smart clinic center for blood tests and bank services.

Shopping mall - view inside. Image courtesy of visitbergamo.net

The building is also equipped by the following IT services: audio systems, counting equipment for both, people and parking, caretaker and security guard, and a building management system, which is able to control all the HVAC of the building.
The envelope is mainly composed by four different façade systems: ventilated, glazed, aluminum and ETICS system façade. The envelope possesses a high energy performance with an average U-value of the external wall of 0.22 W/m^2K, and 0.25 W/m^2K for the roof. The HVAC system is composed by three groundwater reversible heat pumps with heat recovery and high coefficient of performance. The full air system provides heating, cooling and fresh air changes along the mall. Each internal tenant is supplied by heated and cooled water and can regulate and control, separately, temperature and air velocity inside the spaces. The BMS system is associated also to the CO_2 sensors and does not allow, by means an automatic external damper control, to the CO_2 concentration to rise over 800 ppm.

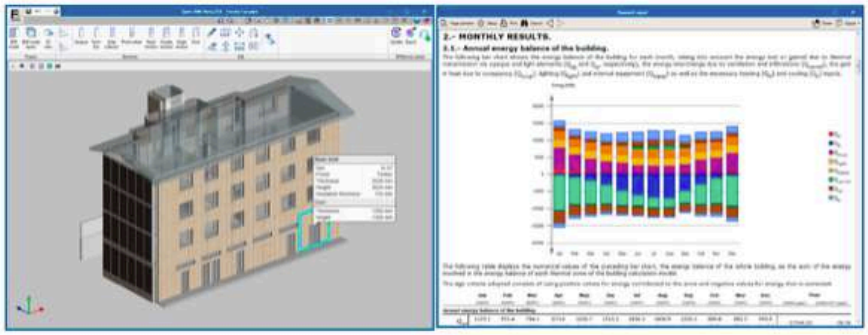
"Le Due Torri" is already certified under BREEAM New Construction and BREEAM IN USE rating systems. The ratings for classification are respectively "Good" for the New Construction protocols and "Excellent" for the "In Use" certification.

BREEAM® has achieved a rating of Good ★★★☆☆☆ BREEAM

BREEAM® In-Use has achieved a rating of Excellent ★★★★★☆ BREEAM

Do you like to better collaborate with all renovation stakeholders?

The first prototype of RenoZEB Collaboration Platform is already available and ready to use. It allows an efficient data sharing and decision-making during the renovation process thanks to its native Open BIM support in the cloud and its connection to KPI evaluation and visualisation. Don't hesitate to contact us, if you want to test it yourself!
Two kind of viewers are supported: 'stand-alone' (where we can see the building structure and properties) and 'geo-referenced' view.
The project manager can set the KPI (key performance indicator) targets for each project and then each of the possible renovation scenarios is evaluated against these KPIs and scored according to project priorities. Additional modules are also developed for data repository and issues and task management, paying special attention to user-friendliness.
Next steps in the project will be focused in the validation by end-users by applying it to the pilot projects, gathering a useful feedback. So stay tuned to learn more about up-coming progress.



More publications from RenoZEB

As results are coming in, the RenoZEB team has published five more articles. Two articles were published on BuildUp, the European platform on energy efficiency in buildings. If you have not visited the BuildUp website yet, get amazed by the one stop shop for all outcomes of EU funded projects on the subjects. You will find a plethora of articles, events, tools, webinars and training materials. RenoZEB uses this platform to speak about its results, for instance the architectural Focchi façade state of progress, as well as UIPI interview to Hardi Kolli, co-owner from the Apartment Owners Association "Rannaliiva" - Estonia (RenoZEB partner).

Our project partner EnergyPro published an article in the Measurement &Verification online magazine.

Last but not least, two scientific articles were successfully published during the last months:
- Università Politecnica delle Marche, ISE Fraunhofer and Focchi have published a scientific peer review publication on "Sensors and control solutions for Smart-IoT façade modules";
- Solintel M&P, Università Politecnica delle Marche, Tecnalia, CYPE and Focchi have published the 2nd open access publication on "Accelerating Energy Renovation Solution for Zero Energy Buildings and Neighbourhoods".

RenoZEB at the STUNNING conference in Paris in September

RenoZEB was presented by the coordinator Michele Vavallo in Paris in September during the final conference of STUNNING, another EU funded project, working on business models for deep renovation of buildings.
Interesting contributions to the event were made in the areas of:

- cost-benefit benchmarking of refurbishment packages
- comprehensive analysis of current barriers to the wide adoption of refurbishment measures
- promising business models for building refurbishment
- the online knowledge exchange platform "Renovation Hub"

RenoZEB was part of 10 European related projects in the field of energy-efficient building renovation and construction that have been invited to introduce the work done so far and share their experiences. The conference participants worked in interactive sessions in two groups. The objective was to discuss about business models / financing of renovation, public and market acceptance of innovation in the field of deep renovation, and refurbishment packages. How can we get towards an integrated approach and finally narrow down the performance gap?
The RenoZEB project outcomes and lessons learnt so far have been shared and discussed with other participants, providing added value and future outlooks to the workshop. Recommendation resulted from this activity will be published and shared with the European Commission.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 649473.

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The 5th RenoZEB Newsletter, April 2020:

RenoZEB Newsletter 5- April 2020

Welcome to the #5 issue of RenoZEB's newsletter!

Dear readers,
This edition is the #5 newsletter from the EU funded project RenoZEB.
These are difficult times with many uncertainties. In line with the COVID-19 crisis, the RenoZEB team has switched to remote working and teleconferences. Still the project team is working hard on cutting edge research on renovation to nearly Zero Energy Building (nZEB) standards from all around Europe.
Stay updated with our latest news and videos during the lockdown.
#stayhome
The RenoZEB team

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human-centric monitoring system

RenoZEB has started to investigate the human-centric monitoring system with an innovative approach developed by the Measurement & Sensor Group at Università Politecnica delle Marche (UNIVPM).
A first test was conducted last January in KUBIK thanks to a joints action of UNIVPM and TECNALIA. Following such an approach, the idea is to get physiological quantities, that are correlated to comfort perception, and use them for the indoor environmental control. The final goal is to obtain a human-based monitoring system that considers the occupants' side of the comfort problem.
To achieve this objective, a measurement campaign was conducted in January 2020 in KUBIK involving ten participants who were asked to sit inside the monitored test-room while performing light office activities. In the meantime, the room air temperature was varied with step changes from 15°C up to 26°C.
Physiological quantities were collected by means of a smartwatch and also with a thermal camera to have additional information about the heat balance of the user. Data were processed to extract some useful physiological indicators related to human comfort. Then, using a Machine Learning approach, a prediction model was trained to predict the thermal sensation vote of each user with an average root mean square error (RMSE) of 15%.
These indicators could act as driver of an innovative human-centric model: the physiological indicator can be used to measure whether the occupant is experiencing discomfort and, together with ambient parameters, could be used to trigger an actuation on the air temperature set-point to restore comfort conditions.

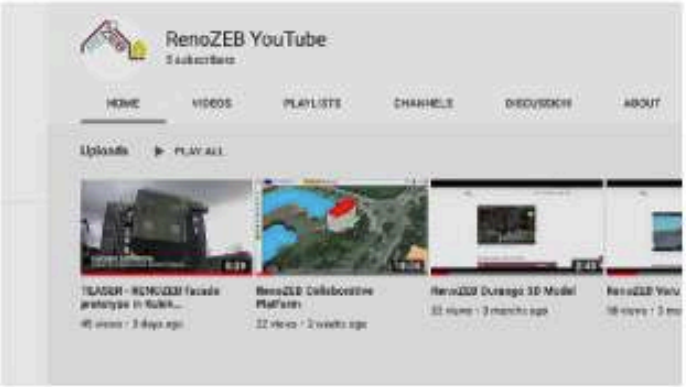
Plug and play for deep renovation: lessons learned on the decision-making process

The decision-making process is one of the biggest challenges for deep renovation: difficulty to reach an agreement between parts, lack of sufficient financing schemes, and no clear vision of expected results, just to mention a few issues. Plug and play options help to overcome some of these concerns, as they usually enable a significant revalorisation of the property through a cost-effective and fast deep retrofitting.
The RenoZEB project is a great example of an attempt to solve not only the first crucial step, that is decision-making, but also offering holistic innovative solutions for retrofitting with a human-centric approach and plug and play options, such as modular prefabricated panels. Thanks to this project and its demonstration cases, there are some lessons learned that can be useful to all that wish to influence the decision-making process towards the adoption of new insulation and heating, ventilation, and air conditioning technologies into the renovation market.
Read more here.

Pre-validation of the RenoZEB modular façade in the KUBIK test infrastructure (Bilbao, Spain)

The RenoZEB project aims to unlock the nZEB renovation market through a new systemic approach to retrofitting that includes innovative components, and processes and decision-making methodologies for the nZEB building renovation process.
As part of this mission, an innovative plug-and-play modular façade has been designed and will be validated within the project through two pilot renovation projects in the cities of Durango (Spain) and Voru (Estonia).
Transitioning from development to real use and down the line commercialisation of façade solutions such as the one designed in RenoZEB, tends to take significant time. Furthermore, trying to accelerate this process may imply undertaking considerable risks. To minimise these risks and accelerate the process from prototypes to ready-to-use innovative façade solutions the RenoZEB project includes a pre-validation phase. In this phase, partial developments or complete active/passive systems can be put to real-use in a safe and highly monitored environment. This early-testing is able to quickly give rich feedback to the designers about their solutions, allowing them to correct and fine-tune their products, before their final validation in the demonstration buildings.
This pre-validation phase of the façade elements has been realised in KUBIK, the test-infrastructure managed by TECNALIA Research & Innovation in Bilbao, Spain. KUBIK is the first digital twin of a building in Spain. Static and dynamic information obtained automatically and based on BIM models enables performance assessments of innovative products and technologies. The RenoZEB façade modules, manufactured by FOCCHI, were delivered in late November 2019 and installed over two floors of the west façade of KUBIK.
Read more here

RenoZEB Youtube channel is online!



RenoZEB Youtube channel is finally online! It offers training videos for all Tools developed by RenoZEB consortium, as well as the project Collaborative Platform.
Check our Youtube channel here and subscribe!

RenoZEB at CERÁMICA INNOVA

The RenoZEB project was selected to be introduced during the 7th Technology and Business Networking Event organized in the frame of the CERAMICA INNOVA - CEVISAMA Fair, in Valencia (Spain) on 6 February 2020.
It was an international networking event, which purpose was to connect companies and organisations from HABITAT, CONSTRUCTION, ARCHITECTURE and CERAMICS SECTORS, fostering meetings among them to share innovative technological proposals and to discover solutions for new challenges.
The RenoZEB project was selected mainly because its outcomes are in line with two of the workshop goals:

- FROM R&D TO INNOVATION: a workshop to present results obtained from European funded projects and technologies ready to be transferred to the industries
- FROM INNOVATION TO MARKET: Workshop to present innovative products, services and technologies ready to be transferred to the market

Thus, the follow-up of the RenoZEB project was presented and the future actions and introduced. A special attention was reserved to the description of the outcomes and their marketability after the project ends. Attendees expressed positive feedback on our project results, they will closely follow the project newsletters and webpage from now on in order to see the exploitability of our tools and modular facades.
For more information about the event click here.

New design for sustainable built environment - RenoZEB at the Cluster International Conference

The event "Cluster International Conference", organised by Bologna University - Department of Architecture, took place on 16 December 2019 in Bologna (Italy). The focus was on the state of scientific research in Europe regarding building energy efficiency and related issues. The interactive discussion was organised around the following five main topics:

- Smart Façade
- Industrial processes for the deep renovation of buildings
- Construction processes and technology building blocks
- Renewable energy and HVAC systems
- Smart grid

Among the various points of interest characterising the event, the modular façade systems developed within the MORE-CONNECT and P2ENDURE projects deserve to be mentioned, together with the development work of compact modular PCM TES tank (Thermal Energy Storage Tanks with Phase Change Materials) carried out in the context of the TESSe2b project. All the above-mentioned projects are co-funded by the European Commission under the Horizon 2020 program.
The RENOZEB project, included in the section reserved to industrial processes, has aroused attention not only for the manufacturing system developed by FOCCHI, but also for the integrated services (point cloud optimisation, the e-catalogue, Open BIM RenoZEB-Focchi Facades) developed by CYPE in order to facilitate the renovation process.

This project has received funding from the European Union's Horizon 2020 research and
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The 6th RenoZEB Newsletter, October 2020:

Renozeb Newsletter 6 - October 2020

Welcome to the #6 issue of RenoZEB's newsletter!

Dear readers,
This edition is the #6 newsletter from the EU funded project RenoZEB.
In line with the COVID-19 crisis, the RenoZEB team is still working remotely on cutting-edge research to achieve the nearly Zero Energy Building (nZEB) standards from all around Europe. Stay updated with our latest news and videos!
The RenoZEB team

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'Train The Trainers' session

RenoZEB project organised a **Training Day for architects and CPD trainers** about the new tools developed in the project for energy calculation, efficiency and optimisation of renovated buildings. This event provided architects from all over Europe with deep knowledge about the newest procedures and strategies for guaranteeing the implementation of key eco-friendly measures in the design process, thus aiming to reduce the emission according to the SOTEU 2020.
The architects were taught to work in Open BIM, meaning that they will be able to implement those tools later in their own studios, independently of their BIM software (Revit, ArchiCAD, Allplan, etc.). Studios that do not use BIM technology can develop fully functional and calculated energy models, not needing any previous knowledge.
Read more at this link and watch the recorded session on our YouTube channel.

The European Commission Renovation Wave Strategy

Last week the European Commission published its Renovation Wave Strategy to improve the energy performance of buildings.
The Commission declared its willingness to at least double the renovation rates by 2030 and to increase the energy efficiency, affordability and circularity of the renovated buildings. This means that 35 million buildings could be renovated in the next ten years.This large-scale operation can finally address our cities and built environment to a more sustainable model.
The Renovation Wave Strategy follows the State of the European Union (SOTEU) speech by President of the European Commission Ursula von der Leyen where she reaffirmed the Commission's plan to pursue and strengthen the Green Deal objectives. In conformity with RenoZEB's underlying principles and objectives, one of the goals stressed by President Von der Leyen is to "kickstart a European renovation wave to make the Union a leader in the circular economy".
Read the RenoZEB press release about the SOTEU 2020 here.

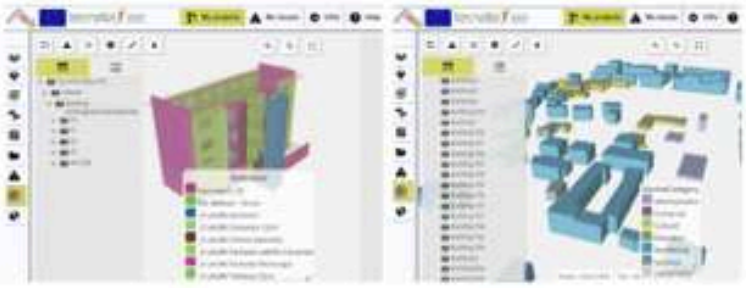
How can Europe's existing building stock be upgraded to nZEB buildings by 2050?

Alex Rathmell, Managing Director at RenoZEB consortium partner EnergyPro, wrote the article "Retrofit zero energy projects - How can Europe's existing building stock be upgraded to 'nearly zero energy' buildings by 2050?", published in RICS Built Environment Journal.
"Long before the discussion of a green post-COVID economic recovery, governments across Europe had already been directed to develop long-term decarbonisation strategies for buildings, via Article 2a of the European Commission's Energy Performance of Buildings Directive, Long Term Renovation Strategies pp. 7-10.
In practice this means that by 2050, most of Europe's existing building stock will be upgraded to 'nearly zero energy' buildings (nZEBs). The question currently being asked is how this unprecedented transformation can be cost-effectively delivered.
[...] One project that is aiming to tackle a whole range of interrelated technical and market barriers is RenoZEB, running from 2017-21. The project is ambitious, aiming to unlock the nZEB renovation market by harnessing the anticipated uplift in property value that renovated buildings will experience. This will be achieved through a new systemic approach to retrofitting, including innovative integrated façade components, processes and decision-making methodologies embedded in new software tools, and a BIM-based collaborative online environment to bring together all value-chain actors in the renovation process."
Read the full article here, and access to all the RenoZEB open publications here.

UIPI Coffee Talk: Can the industrialisation process make building renovation more efficient?

In the framework of the Renovation Wave, industrialisation has been put forward as a solution towards a more efficient construction, housing and real estate sectors. For this reason RenoZEB partner UIPI organised an online talk about this topic on 2 June 2020, not only to explain what it generally means and implies, but also to present concrete examples and experiences brought by RenoZEB itself. Project coordinator Michele Vavallo opened the session with an overview on how to accelerate the renovation process. Vavallo's intervention was followed by the stakeholders discussion: Dr.Veronika Schröpfer (ACE) from the architects perspective, Ann Cathrin Rönsch (EBC) from the construction sector, and Emmanuelle Causse (UIPI) from the property owners perspective.
If you want to know more about this event, you can watch Michele Vavallo's presentation and the stakeholders discussion on our YouTube channel.

News from the RenoZEB collaborative platform



RenoZEB Platform is progressing with nice improvements. It allows all the stakeholders in a renovation process to collaborate by sharing information and BIM models, defining KPIs and calculating the score for each alternative based on those KPIs and managing the tasks and issues during the process.
The most recent update enables to query an IFC model on the web by generating coloured representations of given criteria or filtering the elements that fulfil a condition. It supports both building and district scale BIM models thanks to the BIM/GIS interoperability tools developed. BIM models and available information from demonstration building in Durango and Võru are being used for testing.
RenoZEB collaborative platform was featured on BuildUP, the European Portal for Energy Efficiency in Buildings. Read more here.

RenoZEB at Sustainable Places 2020

This year RenoZEB project will participate in three exciting sessions at Sustainable Places 2020 on-line event held between the 27th and the 30th of October. RenoZEB partners will address the project contribution to Digitalisation, European renovation wave and innovative solution for nearly Zero Energy Building (nZEB). The sessions will include interesting panels discussion between experts from different European funded.
Interesting in learning more about innovative solutions and technologies RenoZEB and other European projects are developing?
Join us for our 3 sessions:
'Digitalization Tools for Energy-Efficient Renovation'
Wednesday 28 October, 13:00 - 16:30
'Innovative Solutions Supporting the NZEB renovation'
Friday 30 October, 09:00 - 12:00
'Deep renovation Joint Workshop 2.0'
Friday 30 October, 09:00 - 12:00.
Don't forget to register in the above links. Please, note it is a paid event.
The RenoZEB team is looking forward to e-meeting you there!

Energy efficient technologies for building envelopes - Hybrid event

The RenoZEB project will be presented at the event 'Energy efficient technologies for building envelopes', organised by Fraunhofer and supported by German National and the EU wide large research networks FLEX-G, Follow-e2, Switch2Save and PowerSkin+, the European Commission and the German Federal Ministry for Economic Affairs and Energy (BMWi).
RenoZEB will join this workshop to investigate the latest trends and discuss about most promising technologies for energy efficiency in buildings such as nanotechnology, which offers energy saving solutions (smart windows, solar energy harvesting, active energy storage or super insulative elements).
The event can be attended **online or at the Fraunhofer FEP Headquarters (Dresden, Germany).** Register today at thislink.

Introducing LIFE Level(s), RenoZEB related project

Life for LCA LCC Level(s) project (short: **LIFE Level(s)**) **is a project funded by the LIFE Programme of the European Union.** The project will last for three years, from 2019 until 2022.

The main goal of LIFE Level(s) project is to mainstream sustainable buildings in Europe through greater awareness and use of the indicators within the framework of Level(s), **a set of common European Union indicators to address life cycle environmental performance of buildings.**

According to previous experience, it is challenging for most European companies to apply the indicators within Level(s) such are LCA, LCC and IAQ, due to a lack of data and a lack of expertise in the industry.

For that reason, the idea behind the LIFE Level(s) project is to work with stakeholders from the public, private sector and certification schemes companies to explore **how the mentioned key Level(s) indicators can be implemented on a pan-European scale.**

The partners engaged in the execution of the project and implementation of its outcomes are **8 European Green Building Councils**, recognised for their contribution in spreading the awareness about green building principles and promotion of environment protection and energy efficiency values.

Visit Life Level(s) website!

This project has received funding from the European Union's Horizon 2020 research and
innovation programme under grant agreement No. 649473.

Project coordinator

Solintel, Spain
Michele Vavallo
info@renozeb.eu

The 7th RenoZEB Newsletter, April 2021:

Renozeb Newsletter 7 - April 2021

Welcome to the #7 issue of RenoZEB's newsletter!

Dear Reader,
Welcome to the 7th newsletter from the EU Funded Project RenoZEB.
In spite of the COVID-19 crisis, the RenoZEB consortium managed to carry on with the demonstration buildings, which are more or less half way through their retrofitting process. Meanwhile the rest of the consortium partners are working on the final tasks of the project to demonstrate and validate the RenoZEB project results and impacts inside the Near to Zero Energy Building (nZEB) market. The next newsletter in September will be our final one and we are already looking forward to presenting you the results of our four year efforts.
Stay tuned with our latest news and video and have a nice reading!
The RenoZEB team

Why do I get this newsletter?
You receive this newsletter, because you have subscribed online on our project page or you are a part of the team.
You can unsubscribe at any time here.

News from our Estonia demonstration case!

The renovation of the multi-apartment demo building in Võru is nearing completion. The goal is to raise the energy label from the existing energy label "E" (231 kWh/m2 a) to label "B" (124 kWh/m2 a) - which is now a reached target.
The indoor climate of the building was well improved thanks to a new ventilation system with heat recovery, new heating, and domestic hot water system. A new PV system will now cover energy needs and lowering management costs of inhabitants.
The pilot renovation project was validated in Võru (Estonia) thanks to a new systemic approach that includes an innovative prefabricated plug-and-play modular façade. The facade system was designed by Focchi and worked out within an international team of engineers, specialists, and technicians.
Read more here.

RenoZEB podcast

RenoZEB partner Architects' Council of Europe (ACE) is producing the podcast 'Architects in EU research', a series of interviews with several architects who share their professional journey in the architectural world and how they got involved in EU-funded Projects on innovation and education. In the third episode of the podcast, Dr Veronika Schröpfer (ACE Head of EU Research Projects) interviewed RenoZEB project partner Ane Ferreiro Sistiaga (architect at CYPE Software) on the RenoZEB plug&play technologies.
Listen to the podcast at this link.

The RenoZEB project welcomes the Renovation Wave Strategy and the New EU Bauhaus initiative!

In October 2020 the European Commission launched the Renovation Wave Strategy, an initiative aiming at reducing the energy performance of the EU building stock and at least doubling the renovation rates by 2030. As mentioned by the Commission, 'buildings are responsible for about 40% of the EU's energy consumption, and 36% of greenhouse gas emissions from energy. But only 1% of buildings undergo energy-efficient renovation every year, so effective action is **crucial to making Europe the first climate-neutral continent by 2050**'. Read more here.

UIPI online survey about property owners' readiness and capacity to renovate

Discover the results of the survey "Property owners' capacity and readiness to renovate" that obtained a representative sample at the EU level and provides important insights on how to create adapted policies to boost the Renovation Wave.
The International Union of Property Owners (UIPI) conducted an online survey to assess European property owners' capacity and willingness to renovate their homes. The goal was to assess whether property owners in Europe were considering/planning renovations before COVID-19 - and if so, what were they planning and why; and if not, why not - and the impact of COVID-19 on these renovation plans. The analysis of the collected data from over 10,000 respondents in 36 European countries allows to shed light on the real situation of property owners and guide future policy recommendations aiming to enable the Renovation Wave and meet EU climate goals.
Access the full report here.

ReCO2ST: A sister project of RenoZEB aiming to better building & living

ReCO2ST addresses the challenges of nZEB refurbishment through a systemic 3 step approach: Initially a Refurbishment Assessment Tool (RAT) is deployed to create refurbishment scenarios, empowering the decision making of the building owner, public or private. Then Action Plans for the renovation are formed through Integrated Project Delivery (IPD), and finally a refurbishment package of innovative and customizable technologies is installed (Retrofit-Kit) for personalised renovation.
RenoZEB is happy to collaborate with ReCO2ST on tackling the European renovation wave!
Read more about the project here.

8.4 Appendix 4: Publications

There have been six scientific publications and various non-scientific articles published by the RenoZEB consortium. They were reported to SEDIA and can also be found at the website: https://renozeb.eu/new-media/articles.html With the aim to provide long-lasting and sustainable accessibility to open access publications the project has also established a Zenodo community: https://zenodo.org/communities/renozeb/?page=1&size=20

The first scientific publication of the RenoZEB project was presented at the final conference of the BAMB H2020 project in Brussels on 6/7 February 2019, which was part of the worldwide prestigious SBE19 Conference Series. The golden open access of the paper is available under: https://iopscience.iop.org/article/10.1088/1755-1315/225/1/012034

SBE19 Brussels BAMB-CIRCPATH IOP Publishing
IOP Conf. Series: Earth and Environmental Science 225 (2019) 012034 doi:10.1088/1755-1315/225/1/012034

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642384.

A workflow for retrofitting façade systems for daylight, comfortable and energy efficient buildings

Bruno Bueno and Fatma Özceylan

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Abstract. The building façade not only provides the aesthetic signature of a building, but also important functions, such as daylight provision, glare protection, solar gain management and visual contact with the outside, which make the building usable and energy efficient. These functions often oppose each other, so the selection and design of façade systems and their control for a certain building application should depend on those functions that the designer wants to promote to the detriment of the other functions. In the context of the H2020 RenoZEB project, this paper presents a workflow for the conceptual planning of façade systems as applied to building retrofitting. The proposed workflow consists of analysing the space from the point of view of the functions of its façade. In a first step, the analysis of the case study leads to the definition of the design requirements, i.e. the relevance of the different façade functions and their priorities. The second step involves the selection of a suitable fenestration system and control strategy for the retrofit solution. In this step, an optimization process for the control strategy is proposed based on state-of-the-art thermal and daylighting simulations. In a third step, the annual performance of the retrofit solution is evaluated in order to check if the requirements are fulfilled. The proposed workflow is illustrated with a case study, in which the automation strategy of a retrofitted façade system is optimized for two different applications: a residential and an office building in Bilbao (Spain).

Keywords: retrofit, façade, comfort, energy efficiency, building simulation, daylight.

1. Introduction

The building façade is in charge of important building functions for its occupants, such as visual contact with the outside, daylight provision, glare protection, solar gain management, security and privacy. Movable shading devices or switchable elements are necessary in order to dynamically balance the different façade functions, which are of varying relevance, depending on the time of the day and season. This implies the consideration of a control strategy. Several studies show that manual control is neither optimized in terms of energy efficiency nor in terms of comfort. Building occupants generally close a shading system to prevent direct solar radiation but then forget to retract it [1].

The second open access publication 'Accelerating Energy Renovation Solution for Zero Energy Buildings and Neighbourhoods—The Experience of the RenoZEB Project' was published by Michele Vavallo, Marco Arnesano, Gian Marco Revel, Asier Mediavilla, Ane Ferreiro Sistiaga, Alessandro Pracucci, Sara Magnani and Oscar Casadei. It is available under the following link: http://www.mdpi.com/2504-3900/20/1/1/pdf

proceedings MDPI

Proceedings

Accelerating Energy Renovation Solution for Zero Energy Buildings and Neighbourhoods—The Experience of the RenoZEB Project †

Michele Vavallo [1,*], Marco Arnesano [2], Gian Marco Revel [2], Asier Mediavilla [3], Ane Ferreiro Sistiaga [4], Alessandro Pracucci [5], Sara Magnani [5] and Oscar Casadei [5]

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† Presented at the Sustainable Places 2019 (SP 2019), Cagliari, Italy, 5–7 June 2019.

Received: 18 July 2019

Abstract: Buildings are the key factor to transform cities and to contribute to recent European energy efficiency objectives for 2030 and long-term 2050. New buildings account to only 1–2% annually. Yet, ninety percent of the existing building stock in Europe was built before 1990, it is therefore necessary to promote their energy renovation to achieve the set objectives. Renovation solutions are available on the market, yet a wrong implementation and integration due to a lack of knowledge neither maximizes the energy performance of the post-retrofitting nor the financial optimisation and viability of the projects. This paper presents research on a plug & play, modular, easy installable façade and ICT decision making technologies to provide affordable solutions in order to overcome those deep renovation barriers. The paper sets out by defining a value framework that can be applied by real estate investors for making better retrofitting decisions for residential buildings, through mapping targeted building typologies and investigating new building revalorisation strategies, new renovation concepts and KPIs for evaluation. Thereafter the paper presents the modular and easy-to-install façade system that is replicable and scalable at European level.

Keywords: energy-efficient buildings; deep renovation; plug&play façade; retrofitting; BIM; decision making tools

1. Introduction

According to the EPBD Recast Directive, currently only 1–2% of the building stock is replaced annually. As a result, the successful accomplishment of the emission reduction target by 2050, involves specially the need to retrofit almost all the European building stock at a rate of 2.9% of buildings per year, versus current 1.2%. Buildings remain as the key factor to transform cities in energy efficient environments and contributing to the new European objectives (40-27-27-15) by 2030 [1]. However, currently retrofitting processes are expensive, with many uncertainties regarding the built result, complex for the industry and disturbing for the occupant [2]. Consequently, the energy renovation rate and even the performance of these renovation projects are rather low. The benefits and costs ratios of the renovation solutions evaluated in real projects are diminished by the poor real performance of the selected technologies, potentially caused by a wrong implementation and

A third publication has been done on 'Sensors and control solutions for Smart-IoT façade modules' by Marco Arnesano; Bruno Bueno; Alessandro Pracucci; Sara Magnagni; Oscar Casadei; Gian Marco Revel. It is currently not yet open access, but available at https://ieeexplore.ieee.org/document/8805024 The authors are trying to reach open access as soon as possible.

Sensors and control solutions for Smart-IoT façade modules

Publisher: IEEE Cite This

6 Author(s) Marco Arnesano ; Bruno Bueno ; Alessandro Pracucci ; Sara Magnagni ... **View All Authors**

59 Full Text Views

Abstract

Document Sections

I. Introduction

II. Concept of the Smart-Iot façade and Sensing Functionalities

III. Intergration with the Iot Platform

IV. Prototype Testing in a Real Case Study

V. Application To Shading Control

Authors

Figures

References

Keywords

Metrics

Abstract:
Measuring the operating conditions of buildings' components is generally applied to technical systems for improving the energy and environmental management, especially exploiting the IoT functions. However, the measuring and connectivity capabilities are not largely applied to the building envelope. This paper presents the development of a sensing and control system integrated into prefabricated envelope elements, with the functionalities typical of an IoT system. In fact, the Smart-IoT façade is based on the idea of transforming the buildings' façade into a IoT device, capable of communicating with external actors: building owner/manager, building management systems or local controller. Given the importance of the façade as interface between indoor and outdoor environments, the possibility of having real-time data on the envelope operating conditions, is significant to improve the building operation, in terms of comfort and energy efficiency, enabling the adaptive or intelligent façade concept. To this aim, the RenoZEB project is developing a plug&play façade module for building renovation, with embedded sensors and actuators. The module with the sensing architecture is completely assembled off-site, reducing the amount of work to be done onsite. Once installed and configured, the module sends data to a IoT platform, that makes them available for third parties. Different configurations of sensors/actuators can be developed. Among them, this paper presents a solution to optimize the control of windows' shadings. Thus, the façade sensing system has been integrated with an advanced controller that aims at optimizing the shadings position to provide the maximum comfort but allowing the right amount of solar radiation to pass through the windows.

Published in: 2019 IEEE International Symposium on Measurements & Networking (M&N)

Date of Conference: 8-10 July 2019

Date Added to IEEE *Xplore*: 19 August 2019

ISBN Information:

ISSN Information:

INSPEC Accession Number: 18921919

DOI: 10.1109/IWMN.2019.8805024

Publisher: IEEE

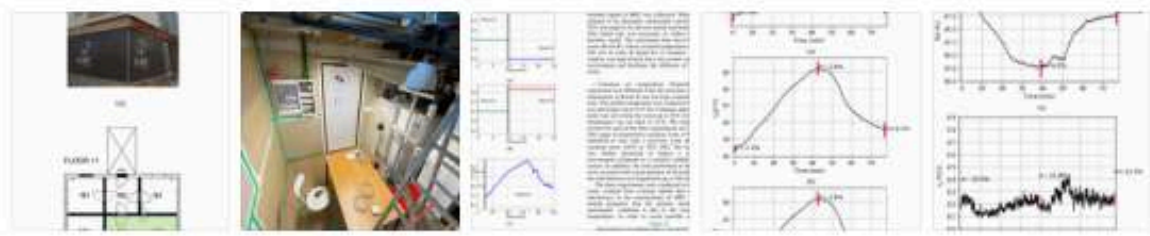
Conference Location: Catania, Italy, Italy

I. Introduction
This paper presents the design and development of the Smart-IoT façade module, capable of measuring the operating conditions of the building envelope to allow functionalities typical of a smart and adaptive

The fourth scientific publication is: Morresi, Nicole & Casaccia, Sara & Sorcinelli, M. & Arnesano, M. & Uriarte, Amaia & Torrens-Galdiz, J. & Revel, G.. (2021). Sensing physiological and environmental quantities to measure human thermal comfort through Machine Learning techniques. IEEE Sensors Journal. PP. 1-1. 10.1109/JSEN.2021.3064707.

Abstract and Figures

This paper presents the results from the experimental application of smartwatch sensors to predict occupants' thermal comfort under varying environmental conditions. The goal is to investigate the measurement accuracy of smartwatches when used as thermal comfort sensors to be integrated into Heating, Ventilation and Air Conditioning (HVAC) control loops. Ten participants were exposed to various environmental conditions as well as warm - induced and cold-induced discomfort tests and 13 participants were exposed to a transient-condition while a network of sensors and a smartwatch collected both environmental parameters and heart rate variability (HRV). HRV features were used as input to Machine Learning (ML) classification algorithms to establish whether a user was in discomfort, providing an average accuracy of 92.2 %. ML and Deep Learning regression algorithms were trained to predict the thermal sensation vote (TSV) in a transient environment and the results show that the aggregation of environmental and physiological quantities provide a better TSV prediction in terms of Mean Absolute Error (MAE) and Mean Absolute Percentage Error (MAPE), 1.2 and 20% respectively, than just the HRV features used for the prediction. In conclusion, this experiment supports the assumption that physiological quantities related to thermal comfort can improve TSV prediction when combined with environmental quantities.



The fifth paper is: *Pracucci, A.; Magnani, S.; Vandi, L.; Casadei, O.; Uriarte, A.; Bueno, B.; Vavallo, M. An Analytical Approach for the Selection of Technologies to be Integrated in a Plug&play Façade Unit: The RenoZEB Case Study. Proceedings 2020, 65, 29.* https://doi.org/10.3390/proceedings2020065029

Open Access | Proceeding Paper

An Analytical Approach for the Selection of Technologies to be Integrated in a Plug&play Façade Unit: The RenoZEB Case Study †

by Alessandro Pracucci [1,*], Sara Magnani [1], Laura Vandi [1], Oscar Casadei [1], Amaia Uriarte [2], Bruno Bueno [3] and Michele Vavallo [4]

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† Presented at the Sustainable Places 2020, Online, 28–30 October; Available online: https://www.sustainableplaces.eu/.

Proceedings **2020**, *65*(1), 29; https://doi.org/10.3390/proceedings2020065029

Published: 18 January 2021

(This article belongs to the Proceedings of The 8th Annual International Sustainable Places Conference (SP2020) Proceedings)

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Abstract

The nearly Zero Energy building (nZEB) renovation market is currently the key feature in the construction sector. RenoZEB aims to develop a systematic approach for retrofitting by assembling different technologies in a plug and play building envelope. This paper presents the methodology used to transform the RenoZEB concept in the design system. A multi-criteria decision matrix is used for the selection of the best façade technologies within the market while the analysis of the existing building conditions allows to develop a replicable approach for designing deep retrofitting intervention through a plug&play façade. The methodology appears to be a valuable support for the selection of technologies and allows to define a design guideline for the envelope.

Keywords: energy-efficient buildings; methodology; plug&play façade; multi-criteria decision matrix

The sixth paper: *Torres, J.; Garay-Martinez, R.; Oregi, X.; Torrens-Galdiz, J.I.; Uriarte-Arrien, A.; Pracucci, A.; Casadei, O.; Magnani, S.; Arroyo, N.; Cea, A.M. Plug and Play Modular Façade Construction System for Renovation for Residential Buildings. Buildings 2021, 11, 419.* https://doi.org/10.3390/buildings11090419 is available as green access here https://www.mdpi.com/2075-5309/11/9/419/htm

Open Access Article

Plug and Play Modular Façade Construction System for Renovation for Residential Buildings

by Jorge Torres [1,*], Roberto Garay-Martinez [1], Xabat Oregi [2], J. Ignacio Torrens-Galdiz [1,3], Amaia Uriarte-Arrien [1], Alessandro Pracucci [4], Oscar Casadei [4], Sara Magnani [4], Noemi Arroyo [5] and Angel M. Cea [6]

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Academic Editor: Gerardo Maria Mauro

Buildings **2021**, *11*(9), 419; https://doi.org/10.3390/buildings11090419

Received: 29 July 2021 / Revised: 30 August 2021 / Accepted: 11 September 2021 / Published: 18 September 2021

(This article belongs to the Section Building Materials, and Repair & Renovation)

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Abstract

The present paper focuses on the architectural and constructional features required to ensure that building envelope renovation are safe, functional, and adaptable to the building stock, with particular focus on "plug and play" modular facade construction systems. It presents the design of one such system and how it addresses these issues. The outcome of early-stage functional test with a full-scale mock-up system, as well as its applicability to a real construction project is presented. It is found crucial to obtain high quality information about the status of the existing façade with the use of modern technologies such as topographic surveys or 3D scans and point cloud. Detailed design processes are required to ensure the compatibility of manufacture and installation tolerances, along with anchor systems that deliver flexibility for adjustment, and construction processes adapting standard installation methods to the architectural particularities of each case that may hinder its use or require some modification in each situation. This prefabricated plug and play modular system has been tested by reproducing the holistic methodology and new technologies in the market by means of real demonstrators. When compared to more conventional construction methods, this system achieves savings in a real case of 50% (time), 30% (materials) and 25% (waste), thus achieving significant economic savings. View Full-Text

Keywords: building retrofit; industrialized construction; modular façade; anchor system; installation process; building envelope

8.5 Appendix 5: The Final Event

The original plan was to organise a European final project event, which was not feasible due to the COVID situation. Hence it was decided to organise three national events in Hungary, Belgium and Spain as the so-called 'Renovation Tour' addressing private property owners hosted by consortium partner UIPI. This way the events are less prone to last minute travel restrictions and have higher impact as they could be delivered in national languages. These events are also used as cluster events with other projects to allow cross-fertilisation of project results and hence support sustainability of the results. Two of the following three events took place. Since the last one is out of the project period, it cannot be reported on it in this document.

- 17 September 2021, Budapest, HU (total of 194 participants)
- 24 September 2021, Liège, BE (total of 115 participants)
- 28 October 2021, Bilbao, ES

Here follows a complete report on the first event in Budapest. For the other two events please consult the website for the full reports.


BUDAPEST, HUNGARY
UIPI
RENOVATION
TOUR
RENOZEB EVENT REPORT
by UIPI
29/09/21
HUNGARIAN
OWNERS
ON BOARD
17 SEPTEMBER 2021
RADISSON BLU BÉKE HOTEL
UIPI

RenoZeb event report
UIPI Renovation Tour – Hungarian Owners on Board

TABLE OF CONTENTS

INTRODUCTION

UIPI Renovation Tour

The International Union of Property Owners launched the UIPI Renovation Tour hybrid event series in Europe in September 2021. It aims to bring the European Commission's (EC) climate targets closer to EU citizens and property owners by leading locally relevant policy debates and proposing practical solutions building on existing European and local initiatives. To stimulate the Renovation Wave, it is crucial to empower citizens and raise awareness, while gathering the views of stakeholders who are crucial partners in making change happen and paving the way towards a greener and more sustainable Europe for all. We strongly believe that a just energy transition in Europe cannot be achieved without the mobilisation of key civil society groups, notably property owners, as they can play a crucial role in engaging, advising and supporting citizens and policy makers on their path towards the energy transition, and ensuring that quality projects are delivered.

As the RenoZeb project comes to an end and most exploitable results are ready to be showcased, UIPI decided in agreement with the rest of the project's consortium to make the first two events of the series the last RenoZeb events, and use the occasion to disseminate and potentiate market uptake by offering RenoZeb and its solutions as practical examples of existing tools in the market to help property owners renovate and for condominium managers to propose to the owners they work with. This report is about the first event.

Objectives

On one hand, as all events of the series *UIPI Renovation tour*, the aim was to bring the European Commission's (EC) climate targets closer to EU citizens, by leading a locally relevant policy debate and proposing practical solutions building on existing European and local initiatives. On the other, the aim was also to present RenoZeb solutions to potential users/buyers. In other words, the idea is to inform citizens and give them the opportunity to clarify any doubts, provide feedback and ask questions, raise awareness, and capitalise on the work done in EU-funded projects, by presenting some relevant results as practical solutions the targeted audience can use to deep renovate their properties.

Adding to this, the goal was also to enable feedback gathering and hear what property owners, condominium managers, policy makers and other relevant stakeholders (namely from banking institutions, the construction sector and architects) had to say. If we wanted the raise awareness about EU's climate goals, national strategy plans and local programmes, we also wanted to understand what are the views and experiences of those affected by those measures or that will be affected by them. Are policies adapted to reality? Are they feasible? What is working and what is not? What should be improved? Only a bottom-up approach can help answer these questions, so we proposed top-down presentations in the programme to stimulate discussion and debate and collect feedback.

Targeted audience

There were two targeted audiences: one presential and another online. As the goal was to reach the maximum number of property owners, UIPI worked in association with the Hungarian National Association of Condominiums and Condominium Managers (TTOE), and to target Hungarian property owners and condominium managers (which TTOE represents) to attend the presential event. The latter group have a very big replication potential, as they manage multi-apartment buildings composed by many properties and hence capable of influencing several property owners. The online audience targeted was broader and included property owners across Europe, relevant stakeholders, project participants and sister projects.

PREPARING THE EVENT

Date and venue

UIPI hosted the first event of the UIPI renovation Tour in Budapest on 17 September 2021 at the Radisson Blu Béke Hotel.

Local partnerships

To ensure the local relevance of the event, UIPI counted with the help of the previously mentioned TTOE, but also, and by association, with THT, a specialised media company that works with TTOE on a regular basis and is able to reach the targeted audience.

Guiding principles and strategy

As some of the main goals of the event were to raise awareness, stimulate the Renovation Wave and potentiate RenoZeb solutions' market uptake, it was decided that the event should be **accessible** to all and would be totally **free of charge** to all participants, to help obtain more registrations and avoid discriminating less wealthy groups of the targeted audience. To attend the event all that was asked from participants was to register. As UIPI is an non-profit NGO, there were no commercial partnerships nor sponsors and the event was entirely funded with allocated budget from the presented EU-funded H2020 projects.

Another guiding principle was to make this event **understandable** to all. The event targeted Hungarian property owners and condominium managers but a wider audience was expected online, which meant that streaming the event in English was a must. In addition to that, most participants

and speakers would be Hungarian speakers, but others (including UIPI) were English speaking; we needed to ensure that **all could follow the event in Hungarian and in English** as well. To cover that, we made sure to have simultaneous interpretation available, both for presential attendees and for the online streaming version too.

We tried our best to obtain **gender balance** in our programme and with our speakers but unfortunately as we were highly dependent on external factors this was not achieved.

Hired services

To be able to offer a good programme and guarantee the event's success the following services were hired for the occasion:

- Venue (with included breaks and lunch catering);
- Technical material and team in charge of sound, video projection and online streaming;
- Zoom Webinar subscription for online streaming;
- Simultaneous interpretation and contents translation team;
- Helping staff for the registration, in-room assistance and Q&A session;
- Photographer for event coverage;
- Media pack (to disseminate the event, deal with registrations in Hungarian, print the programme, produce articles about the event and RenoZeb to publish in a specialised magazine).

All services were hired according to H2020 funding rules (with several quotes obtained for each unless there is a valid justification for it and all the process properly documented).

Contents

Programme and speakers

The event is divided in two sessions. The morning is a policy session which featured keynote speaker presentations to set the scene, and explain to the participants **what is expected at EU, national and local level in terms of regulations and support schemes with an energy-efficiency focus**. To steer the discussion around the implications that these might entail for relevant stakeholders, decision-makers and affected citizens, this morning session ends with a participative round-table discussion, in which invited speakers have the opportunity to exchange their views and expertise, and all event participants (presential and virtual) get to ask questions or make comments.

The afternoon session is dedicated to help citizens, property owners and building managers entail with the changes asked from them. A series of **practical workshop panels showcase cutting edge developed solutions, especially adapted to their needs, in the fields of financial aspects and support, technical solutions and innovations, and available assistance to facilitate renovation**. The

workshops include short presentations or trainings and allow for participants to clear out any doubts they might have by addressing the panellists directly. To end the afternoon session and event, there is a final feedback session to review provided information, main takes and comments from all participants.

A copy of the handed out programme and of the speakers list is included in this report's annex (page 15).

Support documents

Several support documents were produced during this event's organization for the different parties involved. These are:

- Programme;
- Webpage of UIPI Renovation Tour event series and one for each event in the series;
- Speaker invitations and note (speaker instructions);
- Internal newsletter article;
- Project related articles;
- Confirmed speakers list (with short biography);
- Project newsletter articles;
- Social media posts;
- Privacy policy and data consent forms to clearly inform and request consent from event participants (for the recording and streaming of the event).

Dissemination

Strategy

The event was disseminated internally by UIPI amongst its members using its internal newsletter and communication emails, and also amongst consortium partners of all the EU-funded projects (both from H2020 and Erasmus+ programmes) UIPI is involved with: Renozeb, Triplea-Reno, Drive 0, NRG2Peers, Eenvest, Save the Homes, Re-MODULEES, HOME, Housing+ and EduHome. Dissemination was also made online using UIPI's website and social media (Facebook, LinkedIn and Twitter).

TTOE also disseminated the event in Hungary amongst its members (mainly condominium managers) and with the help of THT, a partner organisation that produces the sector magazine *"Társasházi Háztartás: Társasházak és társasházkezelok lapja"*.

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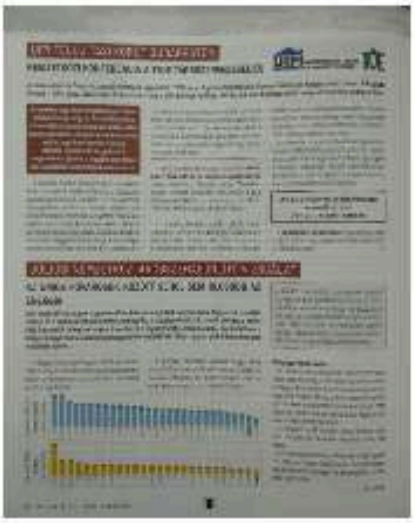
Articles

Several articles were produced for the event's dissemination and about the Renozeb solutions. Here is the list with links/screenshots and information about publication (where and when):

- Liaison Group newsletter:
  - 24 September 2021: Article *"UIPI Renovation Tour kicks off in September"*. Link.
- THT printed magazine:
  - August 2021: Article announcing the event: *"UIPI Felújítas Körút Budapesten: Nemzetközi Konferencia a TTOE Társszervezésében"*.



  - September 2021: Article on Renozeb solutions: *"Are modular solutions the key to renovate our building stock and make it more energy-efficient?"* (no screenshots available yet).
- UIPI monthly newsletter
  - 1 July 2021: Article *"UIPI Renovation Tour is about to launch in September"*.

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- 1 September 2021: Article *"UIPI Renovation Tour kicks off in Budapest on 17 September"*.

- 4 October 2021: Article on UIPI Renovation Tour – Hungarian Owners On Board main take-aways (no screenshot available yet).

- UIPI website:
  - 15 July 2021: Dedicated events page on UIPI website. Link.
  - 8 September 2021: Article *"UIPI Renovation Tour – Owners on Board"*. Link.

- UIPI mailing campaigns:
  - 5 August 2021: SAVE THE DATE: UIPI Renovation Tour - Hungarian Owners on Board @ Budapest + online, 17 September.

- 16 September 2021: UIPI Renovation Tour | Hungarian Owners on Board - 17 September ONLINE.

- UIPI social media:
  - Twitter: from 27 August to 17 September, a total number of 31 tweets were posted on UIPI Twitter account regarding the event. They included dissemination at the beginning to raise awareness about the event, promotion of the registration process (both online and presential), details about the speakers and agenda, etc. And the event coverage itself afterwards, as can be seen in the following screenshots. All the posts available here.

  - Facebook: from 27 August to 17 September, a total number of 5 Facebook posts were published on UIPI Facebook account regarding the event. They included dissemination at the beginning to raise awareness about the event, promotion of the registration process (both online and presential), details about the speakers and agenda, etc. And the event

coverage itself afterwards, as can be seen in the following screenshots. All the posts available here.

- LinkedIn: from 27 August to 17 September, a total number of 5 LinkedIn posts were published on UIPI LinkedIn account regarding the event. They included dissemination at the beginning to raise awareness about the event, promotion of the registration process (both online and presential), details about the speakers and agenda, etc. And the event coverage itself afterwards, as can be seen in the following screenshots. All the posts available here.

Other contents:

Other contents were also produced for the event such as the whole event recording, videos with short interviews to participants, photos of the event and PowerPoint presentations.

These still need to be edited and will only be rendered available at a later stage. They will be shared through UIPI's, TTOE's and THT's communication channels and posted on the events Web page as soon as available.

RESULTS

General description of event running

The event ran without any problems : participants arrived and sat in the room, which was full. The programme went according to plan and it was great to see the level of engagement and participation of all that came.

There was a real shown interest from the participants, which had many questions and comments the whole day.

The objectives set were all achieved.

Participants

The event counted with 36 online participants and 158 presential participants.

The full capacity was reached and most participants were Hungarian condominium managers and property owners, meaning that the targeted audience was reached.

Challenges and lessons learned

Luckily this first event in Budapest of the UIPI Renovation Tour series presented little major challenges.

The main difficulty was gathering all the speakers we needed to make sure the programme made sense, matched our goals and counted with quality presentations. The hardest was to find a speaker that could explain the Hungarian national strategy in the first morning policy session.

Fortunately, we counted with the help of the Ministry for Innovation and Technology to confirm this last speaker, essential for the programme's quality.

Reaching the targeted audience was also a challenge at first, when we still didn't count with the help of THT. Once on board, the organisation, specialised in reaching the condominium management sector, managed to make the number of registered steadily increase until reaching the event's full capacity.

In terms of logistic and technical aspects, all went smoothly and with all the parties involved (venue and its staff, technical team, simultaneous interpreters and hostesses). This surely contributed for a great event.

Main takes and feedback during the event

Policy session: "Setting the Scene"

The morning session was dedicated to policy aspects around green renovation. Karlis Goldstein, Member of the European Commission's Energy Cabinet, underlined that the renovation of buildings is a huge challenge, even in the countries of the European Union, where property owners spend €100 billion a year on modernisation investments. However, to achieve full decarbonisation and carbon neutrality by 2050, triple that amount would be needed. He also pointed out that climate change must be tackled jointly and everyone must take part, but there is no single method, as the condition of buildings varies widely and property owners can and should be helped in different ways on different platforms. With 43 million people in the EU living in energy poverty, with no affordable heating in winter and cooling in summer, reducing costs through energy efficiency is the only viable and effective way forward, as it makes housing cheaper for both owners and tenants.

In Hungary, the national strategy for climate neutrality aims to increase the annual renovation rate from the current one or 2% to 5% percent for residential buildings and 3% for public buildings by 2030, according to Viktor Horváth, Head of the Department of the Ministry for Innovation and Technology. The government has set the bar high, ahead of some European countries, with plans to decarbonise 90 percent of electricity generation by 2030 as well as to increase the share of near-zero energy buildings to 20% and reduce carbon emissions by 30% by 2030. The Hungarian renovation strategy will require substantial investment to achieve its goals, so one of the main rules is to develop financing mechanisms that will not increase the level of bills. The Head of Department indicated that the government is considering a variety of different and complex support schemes, both reimbursable and non-reimbursable, but the exact framework is not yet clear, and negotiations with the EU on the details of the recovery plan are still ongoing.

A great fear that emerged is that the next 8 years will not be enough to achieve the 2030 targets if the support schemes are still being discussed. For some time now, there has been a lack of subsidies for renovation, especially for to condominiums. Some of the participants stressed that the abolition of the savings and loan scheme left a big gap, because the 30% state subsidy ensured that the loan was interest-free, and the real advantage was that it allowed the residents' associations, from

which the common property of the condominium is now not accepted by the bank as worthless property, to secure the loan.

On the subject of tenders, the TTOE President Ágnes Bék also stressed the importance of cutting red tape at the state and bank level, but above all the need to educate owners, which is a fundamental prerequisite for them to undertake renovations. Due to the Covid epidemic and the spiralling costs of work and building materials, many condominiums are now backing out of previously decided works, even though the condition of the buildings would justify it.

Meanwhile, a survey by the Hungarian Energy Efficiency Institute (Mehi) has revealed that more than half of renovations are carried out of necessity, because of broken equipment that needs replacing, and not as part of a complex plan. Ilona Szécsi, an expert at Mehi, said that 76% of renovations for modernisation did not use an energy plan and more than half of them ended without any notable energy savings, although more than 90% of customers were satisfied with the results because their homes were more comfortable. It would be important to link subsidies to energy saving conditions to ensure that the works financed with common money benefit the society.

Round table discussion with stakeholder interventions

During the discussions that followed this initial round, key sectoral stakeholders and the participants have had the chance to share their view. Experts and stakeholders from the building/real estate sector stressed that:

- it is fundamental to incentivise before imposing;
- flexibility and a local approach to renovation are needed, as it would be difficult to develop a one-size-fit all strategy at EU level, and even at national level;
- a progressive approach is also key when it comes to obligations imposed on the sector;
- it is necessary to consider other benefits linked to renovation (e.g. health and comfort);
- there is the potential to increase property value and quality of properties, but owners need to have the necessary funds to renovate;
- intermediaries (such as condominium managers, real estate agents and owners representatives) have a key role to play in renovation;
- there is a need to have well-trained professionals who can increase the quality of the work and the role of construction sector actors (e.g. architects);
- the decision-making process in multi-apartment buildings is quite complex and should be taken into account before implementing renovation policies;
- there are tremendous tasks ahead of us when it comes to renovate the Hungarian building stock.

Participants agreed with the fact that:

- the national income level does not allow for huge investments;
- grants and subsidies are very important to convince the owners;
- regulatory stability and funding stability are key, as if funding schemes disappear only after few years investments will not be sustainable;
- decisions in condominium are complex and lengthy;

- each building, when it comes to heating system replacement, is very much dependant on local energy sources.

Feedback after the event

General feedback

The general feedback received during the event and at the end was very positive. Participants came many times to thank us, claiming that the event was very useful and that they really enjoyed participating.

The participants were all very interested in the practical workshops in the afternoon in which practical tools to boost renovation were presented (partly from EU-funded projects), namely RenoZeb. The particular interest for the project was obvious, as participants asked many questions and wanted to know mainly about replicability in Hungary of the RenoZeb Plug & Play Façade system (one of the key exploitable results).

Feedback form

To collect written feedback about the overall satisfaction with the events, whether was considered useful and what could be improved, a feedback form was prepared, distributed in the event room and collected at the end or sent by email to those online. The results are still to be analyzed and will only be communicated at a later stage, but given the live feedback we have got, we are confident these are positive.

A copy of the feedback form can be found in Annex, page 19.

Event coverage

Articles

A journalist from a specialised magazine asked permission to attend the event and write about it, which was granted. The article details are the following:

- 17 September 2021: Article *"Felújítási támogatásra várnak a társasházak" (Condominiums are awaiting renovation support)* by Sándor Tünde on *ViláGgazdaság* Hungarian online magazine. Link.

Other articles about the event are still to be written and published on UIPI's website and social media, in the internal newsletter and also an article in the TTOE/THT magazine, with a special issue about RenoZeb. This will also be disseminated through all EU-funded projects partnerships.

Videos and other materials

A video summary of the event will be produced and edited in the coming weeks. It will put together interviews with speakers and participants with their impressions and opinions about the event, speakers' interventions and images from the event. It will then be disseminated through UIPI, TTOE, THT and the project's different channels. There is no link available yet.

The recording of the streamed event will be rendered available on the event page on UIPI's website, as well as all presentations (both in Hungarian and in English).

CONCLUSIONS

This experience was overall very positive. The participants, speakers and all others involved were very satisfied with the content presented during the event, the contributions during the round-table discussion and participations during the whole event. This strongly reinforces our belief that such events are extremely useful for awareness raising and to bring policy closer to citizens; two things without which the Renovation Wave will hardly be successful.

This led to the conclusion that these events are also one of the best ways to present EU-funded projects' results and capitalize on different projects at the same time, by offering the practical solutions developed in a comprehensive way.

We were also pleased with the amount and quality of participations from the audience, which we will analyse and use in our organisations' activities; this event allowed us to better understand the real situation of Hungarian owners and will allow us to better represent them.

Given all the above, after this first experience of the event series *UIPI Renovation Tour*, it is clear that more events like this are needed and UIPI will do its best to keep on organising them, all over Europe, in the years to come.

ANNEX

Programme

UIPI RENOVATION TOUR
HUNGARIAN OWNERS ON BOARD
UIPI & TTOE INTERNATIONAL CONFERENCE

DATE: 17 SEPTEMBER
ADDRESS: RADISSON BLU HOTEL IN BUDAPEST

9H00 - RECEPTION

9H30 - 12H30 MORNING POLICY SESSION
9H30 - WELCOME NOTE
9H45 - SETTING THE SCENE PRESENTATIONS WITH KEYNOTE SPEAKERS
KARLIS GOLDSTEIN, MEMBER OF THE CABINET OF THE EUROPEAN COMMISSIONER FOR ENERGY
VIKTOR HORVÁTH, HEAD OF THE MINISTRY OF INNOVATION AND TECHNOLOGY'S DEPARTMENT FOR STRATEGIC PLANNING AND PROGRAMMING
ÁGNES BÉK, TTOE PRESIDENT
ILONA SZÉCSI, HUNGARIAN ENERGY EFFICIENCY INSTITUTE (MEHI)
Q & A
10H30 - 11H00 BREAK
11H00 - ROUND-TABLE DISCUSSION WITH STAKEHOLDERS' INTERVENTIONS
EMMANUELLE CAUSSE, SECRETARY GENERAL AT THE INTERNATIONAL UNION OF PROPERTY OWNERS (UIPI)
JÓZSEF SZTRANYÁK, PRESIDENT OF THE HUNGARIAN REAL ESTATE COUNCIL AND CHAIR OF THE BUDAPEST CHAMBER OF COMMERCE AND INDUSTRY
SOURAN CHATTERJEE, POSTDOCTORAL RESEARCHER AT CENTRAL EUROPEAN UNIVERSITY
ANDRÁS BORDÁS, CHAMBER OF HUNGARIAN ARCHITETCTS

OPEN DEBATE / Q&A : GIVE VOICE TO PARTICIPANTS

12H30 13H30 - LUNCH

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13H30 - 17H30 - AFTERNOON PRACTICAL AND TRAINING SESSION

13H30 - 15H00 - WORKSHOP 1 : FINANCIAL ASPECTS, SUPPORT AND ASSISTANCE

ÁDÁM BANAI, EXECUTIVE DIRECTOR FOR MONETARY POLICY AND FOREIGN EXCHANGE MANAGEMENT, MAGYAR NEMZETI BANK (NATIONAL BANK OF HUNGARY)

LOCAL OSS FOR RENOVATION - RENOHUB PROJECT

ZOLTÁN VARGA, EXPERT ECONOMIST AT ENERGIAKLUB

PRESENTATION OF TRIPLEA-RENO PROJECT ONLINE PLATFORM

ZOLTÁN MAGYAR, MANAGING DIRECTOR OF COMFORT CONSULTING

15H00 - 15H30 SHORT BREAK

15H30 - 16H30 WORKSHOP 2 : TECHNICAL SOLUTIONS AND INNOVATIONS

MODULAR SOLUTIONS - PRESENTATION OF RENOZEB PROJECT

ANE FERREIRO, ARCHITECT AT ARCHITECTURE, ENGINEERING AND CONSTRUCTION (CYPE)

ENERGY CERTIFICATES

DR. CSOKNYAI TAMÁS, BME SENIOR LECTURER

16H30 - 17H00 CLOSING FEEDBACK SESSION

17H00 - 17H30 COCKTAIL

UIPI INTERNATIONAL UNION OF PROPERTY OWNERS

TIUE

Triple A-reno

RenoHUb

This project has received funding from the European Union's H2020 Research and Innovation under grant agreements No 768718 and No 784972. The sole responsibility for the content lies with the authors. It does not necessarily reflect the opinion of the European Union.

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Speakers


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UIPI RENOVATION TOUR
HUNGARIAN OWNERS ON BOARD
UIPI & TTOE INTERNATIONAL CONFERENCE

Poster


BUDAPEST, HUNGARY
UIPI
RENOVATION
TOUR
HUNGARIAN
OWNERS ON BOARD
17 SEPTEMBER 2021
Triple-reno
RenoHUb

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Feedback form

Overall assessment of the event

1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10

1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10

1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10

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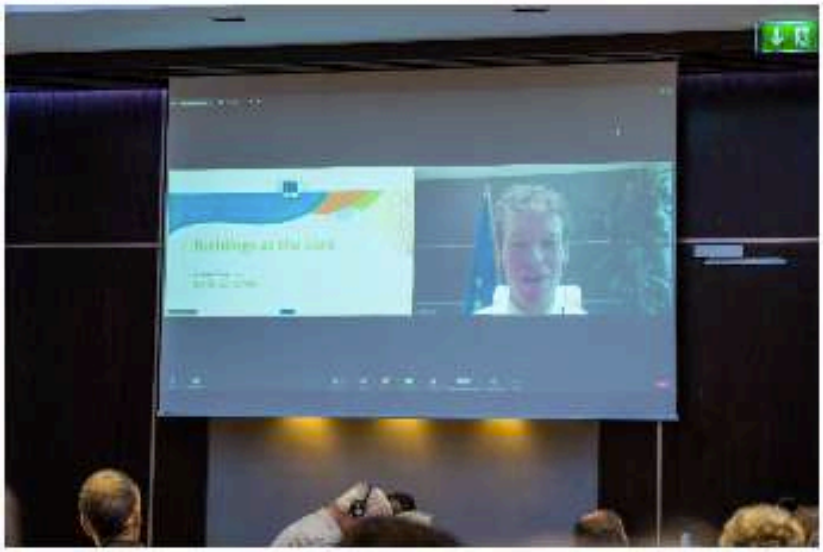
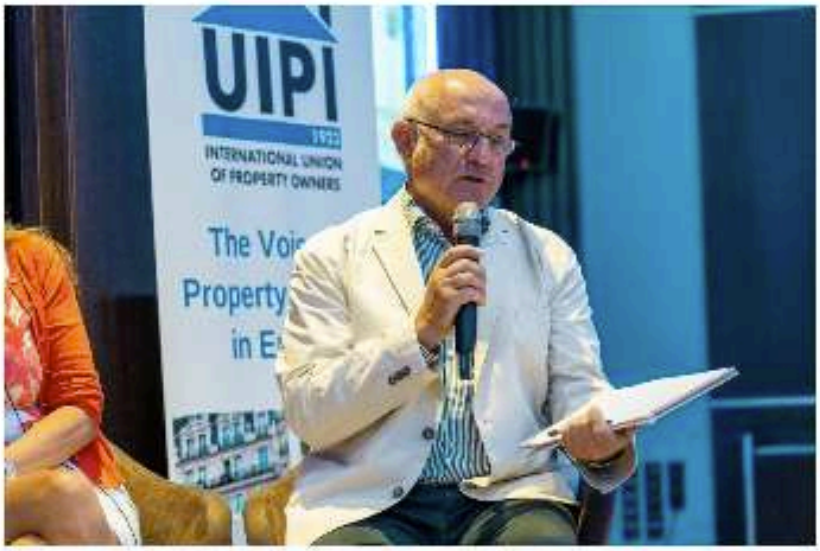
Photos




UIPI
INTERNATIONAL UNION
OF PROPERTY OWNERS


Accelerating Energy
renovation solutions for
Zero Energy Buildings and
Neighbourhoods

8.6 Appendix 6: other supporting documents of selected events

Furthermore, as presented in Chapter 6 the project partners have undertaken an abundance of dissemination and communication activities. Hereafter a selection of some events that have been documented, in order to stay within a reasonable page limit. All events can also be found in the social media feeds.

7 February 2018, coordinator Michele Vavallo presented the project at Ceramica Innova.

WORKSHOPS
FROM RESEARCH TO INDUSTRY & FROM INDUSTRY TO MARKET
Speakers sharing project results, technologies, processes, innovative products and services ready to be transferred to the market

Wednesday, 7th February			
METHODS & MATERIALS 10:00 – 11:00	Innovative methods to characterize materials	Mª Pilar Gómez	ITC
	3D printing materials for advance industrial applications	Mª Pilar Gómez	ITC
	Inks with new uses for wood, ceramics and packaging	Mª José Vicente	ITC
	Nanocoatings for ceramics, marble, metal, cement and glass materials with new functionalities	Sergio Muñoz	LAURENTIA TECHNOLOGIES
	Quartz powders with reduced crystalline silica toxicity	Ana López	ITC
	Prediction of emissions and exposure to micro- and nanoparticles in industrial environments	Sara Estupiñá	ITC
11:00 – 11:10	COMMENTS & QUESTIONS		
11:10 – 11:55	**CDTI: R&D funding opportunities in Spain**	Pilar De Miguel	
11:55 – 12:30	**Grants for the Ceramic Industry 2018 – 1st stage Strategic Plan for Valencian Industry**	Manuel Rosalén, DG Industry & Energy in Regional Government	
CITIES & BUILDINGS 12:30 – 13:10	Technologies and solutions to control and optimize the energy efficiency in buildings and districts	Michele Vavallo	SOLINTEL
	Solar tiles for facades with photovoltaic generation and energy storage	Javier Orozco	UPV
	Use of geothermal energy in buildings and cities facilities	Alicia Andreu	ITC
	Objects for sustainable and connected cities addressed to an intelligent tourism	Vicente Lázaro	ITC
13:10 – 13:20	COMMENTS & QUESTIONS		
13:20 – 13:30	COFFEE-NETWORKING		

Project partner RINA distributed some leaflets during the P2Endure Deep renovation Joint Workshop in Rome on 5 October 2018.

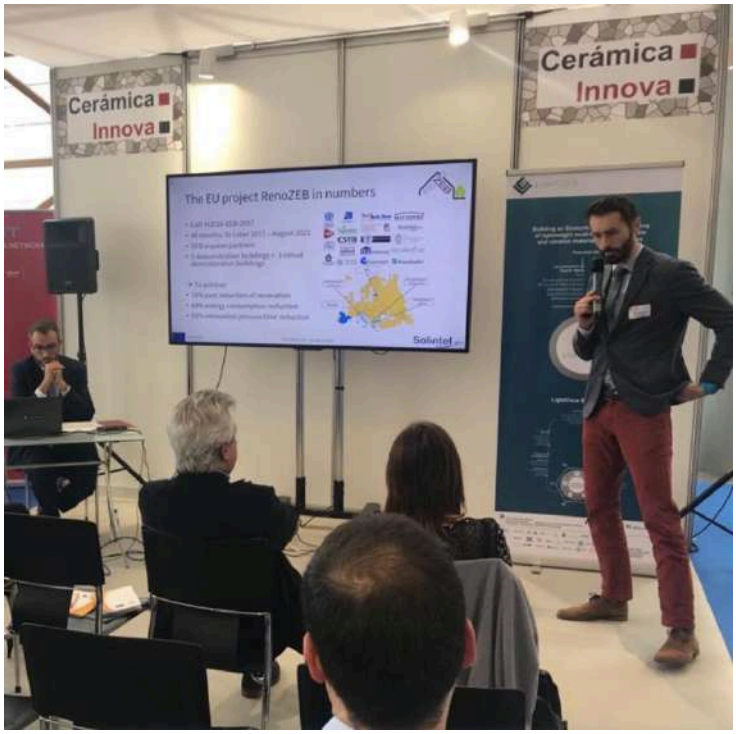
ACE has presented RenoZEB during the General Assembly of its member organisations in Innsbruck on 03 May 2019. At this event were about 100 participants representing all 600.000 European architects and the presentation was mainly used to find trainers to participate in the train-the-trainers session in March 2020.

RenoZEB coordinator Michele Vavallo has also presented the project at Sustainable Places 2019 on 06 June 2019 and has accomplished a scientific publication as well.

On 18 June 2019 RenoZEB gained a spot in the prestigious Policy Conference of the European Commission during the EUSEW. Project partner UIPI submitted the successful application for the project as a cluster workshop with the three sister projects.

Coordinator Michele Vavallo has presented RenoZEB at various events. Here in the photo below at the STUNNING final conference in Paris on 18 September 2019.

Solintel was also presenting RenoZEB at Cevisma on 06 February 2020.



Consortium partner EnergyPRO presented RenoZEB at The Offsite Show on 20 November 2019.

Project partner handed out leaflets at various events of their member organisations, here at SNPC on 22 November 2019.