Guidebook for course providers

D3.4 Training material for activating the supply-side

Clarence Rose
31 March 2025

Grant Agreement No.	101076316
Start date of Project	1 October 2022
Duration of the Project	48 months
Deliverable Number	D3.4
Deliverable Leader	KERN
Dissemination Level (PU, SEN, Cl)	PU – Public, as referred to in Commission Decision 2001/844/EC.

Status	Definitive
Version	V2.0_NL
Submission Date	31-3-2025

Authors, Co-authors, and contributors

Author	Organization	E-mail
Clarence Rose	KERN	clarence@kennisinstituutkern.nl
Contributors	Organization	E-mail
Erwin Mlecnik	TUD	e.mlecnik@tudelft.nl

Johan Vanden Driessche	EM	johan.vandendriessche@embuild.be
Annick Vanhove	MECH	annick.vanhove@mechelen.be
Veva Roesems	ANTW	Veva.Roesems@antwerpen.be
Claire Verberck	ANTW	Claire.Verberck@antwerpen.be
Walter van Steenis	WNR	walter.vansteenis@wnr.nu

Quality Control

	Name	Date
WP leader WNR	Walter van Steenis	January 2024
Coordinator TUD	Erwin Mlecnik	January 2024
EBC	Elena Petrich/ Fernando Sigchos Jiménez	January 2024
APC	Camilo Jimenez	January 2024

History of Changes

VERSION	DATE	EDITORS	COMMENT
Version 0.1	14/11/2023	Clarence Rose	Initial draft NL
Version 0.2	21/12/2023	Clarence Rose	Final draft EN
Version 1.0	31/01/2024	Clarence Rose	Intermediate
Version 1.1	31/03/2025	Clarence Rose	Final

Acknowledgement of funding

This manual has been developed as part of CondoReno. This project received funding from the European Union's Programme for Environment and Climate Action (LIFE) MGA — Multi & Mono, under grant agreement No. 101076316.
Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

This manual is part of the continuation and further development of the WNR model that was created partly with the help of the Multi-Year Mission-Driven Innovation Programme 3+4 of the Dutch Ministry of Economic Affairs and Climate Change and the Dutch Ministry of the Interior and Kingdom Relations, implemented by the *Rijksdienst voor Ondernemend Nederland.*

Table of Contents

Executive summary

To implement energy-saving renovations that go beyond label-A while the initial (low) housing costs are retained and building performance standards are guaranteed requires significant levels of knowledge.
This guide is intended for established knowledge organizations in the construction and renovation industry and provides a perspective on knowledge development and transfer for these renovations. It complements existing programmes with suggestions for the structure and content of training programmes for the various stakeholders and professionals involved.

Samenvatting (Executive summary in Dutch)

Voor de uitrol van succesvolle energetische renovaties die verder gaan dan label-A met inbegrip van gelijkblijvende woonlasten en gegarandeerde gebouwprestatiegarantie is kennis vereist. Deze handleiding is bedoeld voor reguliere kennisorganisaties voor de bouw en renovatiebranche en geeft een doorkijk voor de hiervoor nodige kennisontwikkeling. Voortbordurend op reeds aanwezige trainingsprogramma's geeft deze handleiding de nog deels ontbrekende inhoud en suggesties voor de opbouw in een aanvullend trainingsprogramma voor diverse betrokken stakeholders en specialisten.

1 INTRODUCTION

1.1 Context of this guide

With their complex social, financial, legal and operational structure, apartment buildings with a Condominium Association (CA) are often disadvantaged when it comes to public sector services that support building renovation. Also, construction companies often make a big turn around these heterogeneous client groups. As a result, CA-buildings lag behind in energy transition. Sometimes - with or without the advice of their CA manager - seemingly profitable energy improvement measures take place. Unfortunately, these adjustments too often create a lock-in that even further undermines the future value of the building.
In short, due to a lack of affinity, public services and market players often leave CAs to their own devices. As a result, the large and promising renovation task is unnecessarily neglected.

The reason for developing a training program for the (market) parties involved in the energy-efficient renovation of apartment buildings in private ownership is the need for knowledge, expertise and quality assurance. Indeed, an integrated approach of high quality can turn this tide.
To start, it is important for government and market parties to learn to facilitate the CAs and their renovations as a particular and worthwhile target group.

In addition, a successful renovation approach requires predefined ambitious performance targets in which the present and future interests of the residents now and in the future are paramount. In this regard, quality is the key to affordability.

This training program is based on the CondoReno-roadmap for integral home renovation services, see appendix 2.
An Integrated Housing Renovation Service (IHRS) involves a number of essential roles/functions. This guide is tailored to the professionals who perform these roles in IHRS-guided renovations for CAs. See Appendix 3 for an overview of these roles. Obviously, designations and exact interpretation of the roles depend on the particular IHRS and its logistical, national and regional context.

1.2 Purpose of this guide

This manual is intended for knowledge organizations that want to support market actors and public stakeholders in integrated renovations of apartment buildings. Through this training program, they can make a relevant contribution in raising the awareness (activation) and professionalization of facilitating and executing stakeholders involved in high-quality integrated renovations. This is a process of cross-fertilization with initial regional developments of IHRSs. On the one hand, these knowledge organizations are able to provide professionals with the necessary skills and tools and on the other hand,

IHRSs serve to collect regional examples, to gather practical experience and to identify any further knowledge need.

With the right knowledge about the challenges and opportunities in renovating apartment buildings with CAs, public service employees can play a crucial role in an IHRS. They can encourage CAs to start thinking about renovation in the first place and present a high-quality future-oriented renovation approach as a possibility.
Similarly, market players can, through the following courses, become aware of the role they can play in renovation and learn what it takes to successfully facilitate CAs.

With this guide, we hope to support initiatives in this direction. Because renovating with CAs is not a smooth ride. Use this guide as a stepping stone to move forward in initiating, developing and scaling up one or more IHRSs in your region.

1.3 Quality as key for affordability

Healthy, comfortable and affordable housing

Energy conserving renovation is not purely about saving energy, even on the contrary. First and foremost, comfort will improve. Conversely, inappropriate renovations can lead to unhealthy indoor conditions. Therefore, when conducting energy-saving measures, the risk of an unhealthy indoor climate must be carefully identified and eliminated.

An energy approach that does not cause future harm to the building and its users requires a well thought out, integrated design and enough capital. In addition, it requires adequate resources and personnel. Furthermore, the successful transition to a high-performing low-energy building requires bridging the financial gap to meet the initial higher investment costs.

A guarantee on the (very) low energy needs of an apartment building after renovation - and thus guaranteed minimum operating costs - proves to be the missing link to (additional) long-term affordable loans[1].

Thus, the solution to the higher costs of a thorough energy-saving renovation lies in long-term savings. Including future energy cost savings into financing for the intervention can ensure continued affordability.

Key to this is a building performance contract with a guarantee of the promised energy savings. A high-quality renovation approach is exactly what a renovation provider needs to get a grip on the energy performance of a building. And vice versa, such a guarantee enables low-threshold financing for a high-quality approach. This way, high-quality renovations become feasible for private homeowners.

[1] The Asser service fee model is a Dutch financing model that makes high-quality energetic renovations of Ca apartment buildings cost-neutral, see appendix 1

Confidence in supply and process

Integral performance guarantees for highly energy-efficient renovations can generate confidence among residents and apartment owners, making them more likely to agree to an integral renovation offer[2]. Conversely, these guarantees also strengthen the operational commitment of the renovation providers involved. Designing highly energy-efficient buildings will include measures beyond the easy first steps that suffice for a simple label A target. A truly energy saving renovation relies on construction activities of a superior quality. These design and construction efforts require competent designers and builders, both building-wide and on the level of construction components.
After promising a high quality, contractors, installers and component suppliers will feel obliged to better coordinate their efforts. This can make the renovation faster, more fine-tuned and scaled up and may lead to the formation and presentation of more integrated and comprehensive renovation services. In addition, the present training programme can form the basis for a licensing structure for and by providers of integral renovations (IHRS). By providing a solid base for quality control, the training will both strengthen the IHRS process and bolster the confidence of those offering it.

Affordable through high quality

In view of the long lifetime of most buildings, renovations that will result in highly energy efficient buildings can perfectly meet the demands of long-term investors: low risks, high returns and sheer endless performance. A guarantee of very low energy requirements and low maintenance costs make renovations for energy savings economically attractive, mainly because of their relatively low overall costs in the utilisation phase and added property value.

The risk of taking on a larger loan as required for higher-quality construction can be more easily accepted in the context of guaranteed low operating costs. To interest flat owners in investing in higher quality, long-term loans are essential, for example loans for 30 years instead of the usual 10 to 20 years.

Once the owner-occupants are aware of the beneficial effects on operating costs of a high-quality building envelope, they may be willing to enter affordable financing schemes for the large initial costs. At the same time long-term guarantees of integral performance can make investors feel comfortable to the point that they offer long-term financing schemes. This ensures low interest rates and low monthly payments. Together with low energy costs, it creates an “offer you can’t refuse” for flat owners.

1.4 Reading guide

This document is a guide for training organisations. It describes the starting point, the knowledge prerequisites and a general perspective on a proven teaching style. After a

[2] Here, we mean by integral renovation an approach that takes into account the long-term costs and consequences of design choices for the (future) residents. An integral approach focuses on the ultimate desirable outcome for the occupant and ensures that partial aspects such as health, usability, maintenance, safety, affordability etc. are balanced in design decisions.

general description of the target groups that may be reached with this training programme, this manual elaborates on the essential specific roles/functions within an integral renovation process that includes a building performance guarantee.

Next, this manual describes a course for energy coaches and promoters in the public service function.
This course is complemented by a training tailored to CA managers and a general comprehensive training on the integral renovation with building performance guarantee. The latter is considered a central course for stakeholders involved in setting up an integral home renovation service (IHRS).

Subsequently, additional courses for specific disciplines are described for each phase in a renovation's design and implementation processes.

For the sake of readability, this document uses the masculine form. Of course, this also always refers to the female variant.

1.5 List of abbreviations

Abbreviation	**Meaning**
CA	Association of owners (condominium association)
CRS	Customer Requirements Specifications
DesignPH	3-D-model for preparing PHPP-calculations
EnerPHit	Quality standard for deep retrofit issued by the Passive House Institute
GM	General meeting (e.g. of the CA)
IHRS	Integrated Home Renovation Services, an organization that is a driving force behind integrated renovations
MYMP/MYMB	Multi-Year Maintenance Plan and associated budget
PHPP	Energy calculation tool for energy efficient buildings
t.b.d.	To be developed
TCO	Total Cost of Ownership
WNR	Woonlastenneutrale renovatie (Housing cost neutral renovation) c.q. Stichting WNR (a Dutch foundation)
V&V plan	Verification and Validation Plan

2 IDENTIFICATION OF KNOWLEDGE NEEDS

Energy-saving renovations of privately owned apartment buildings cannot refer to off-the-shelf solutions. Each project is different as well as complex, and renovation is first and foremost a social challenge. Any change in an owner-occupied apartment building is tied to a collective decision-making process, in which residents, usually laymen in the field of construction, have to make decisions about often complex technical aspects with long-term financial consequences. Owners need to be supported in this by clear and simplified formulations to arrive at a good understanding of the consequences of the decisions to be made. Confidence in the professionals involved is crucial, and this requires extensive competence in communication with residents.

Social competencies are required not only in the relationship with residents but also in interdisciplinary collaboration: Successful energy-saving renovations feature streamlined collaboration of competent designers and builders as well as good communication with those responsible for the general conditions such as policy makers, lawyers and financiers. Optimal preconditions and close collaborations can lead to the resolution of important issuers, such as the development of a financing scheme that utilizes the qualities of the proposed renovation. Streamlined interdisciplinary collaboration is at the root of any IHRS. That type of organisation requires supportive process management and communication skills from all involved. This is the "soft side" of renovation that is often neglected in technical training.
Cooperation with trainers focusing on process management, communication and soft-skills development can help here.

In the Netherlands, Hogeschool Utrecht recently started offering a course for renovation process supervisors[3]. This course prepares aspiring renovation process supervisors to assist owner-occupiers, familiarizes them with the complex regulations surrounding Dutch CAs, and provides insight into technical aspects and process management tools.

Integral (technical) knowledge for high-quality renovation

The level of knowledge in the field of energy saving buildings and renovation has risen sharply in both the Netherlands and Belgium in recent years, especially in Flanders. This was driven mainly by successively more demanding building regulations and it focused on the minimal energy performance requirements for buildings[4]. These regulations and the associated labelling system are generally applied to energy saving renovations of collectively owned apartment buildings as well. However, renovating to minimum national standards does not turn out to be particularly efficient with respect to the government's goal of an energy supply without fossil fuels; to the contrary.
To keep the future energy supply reliable and affordable, in fact, a substantial reduction of the energy demand in the winter months is required. Often, high energy-saving targets

[3] https://www.hu.nl/deeltijd-opleidingen/procesbegeleider-verduurzaming-vve[dated March 2025]
[4] E.g. the training BEN bouwen (VEKA) or Opleidingen Bouw en energie (SMB)
for energy experts, type A/B

are often compromised by limited investment budgets. To make a building highly energy efficient requires going beyond the 'low hanging fruit' when it comes to energy saving measures. This requires guaranteed building quality and knowledge of integrated renovation engineering.

Building physics knowledge essential

Also, comfort and health aspects rarely have the necessary priority when designing energy measures. Moreover, designers and builders of energy saving features often are not fully aware of the risks in building physics (e.g. moisture).
Given the complexity of their interacting components, highly energy-efficient buildings are by definition susceptible to errors in design, construction or commissioning. Such errors in a renovation immediately carry a high risk of failure to reach the targets. For example, a window that does not close properly can cause immediate discomfort or an oversized heating system can lead to exponential heat loss.

The engineering and development of highly energy-efficient renovations requires considerably more attention to building physics than is commonly brought to bear today. In addition, the building and its installations must be well matched. Otherwise, renovations aiming at high quality can run astray, leading possibly to failure costs and perhaps to damage claims. This may involve not only the hygrothermal aspects including prevention of condensation and mould, but also thermal and acoustic comfort, air quality, quality of use, operability, etc. Given the high complexity of energy-oriented renovation, systematic quality assurance during the construction process is indispensable.

The training programme offered in this manual will create more awareness of risks among professionals and it offers methods to deal with these risks. These methods can be extended into performance guarantees for buildings, that can be used readily by those who offer highly energy saving renovations.

Passive house standard provides scientifically validated framework

Scientific research into a structurally sound and operationally affordable (i.e. energy saving) new construction and renovation has led to the Passive House Standard, which is used worldwide. This goes beyond national energy standards by offering proven tools to achieve future-oriented and feasible building and renovation concepts. The feasibility of Passive House technology in existing apartment buildings has been demonstrated in Dutch pilot projects. Managing the design and construction processes to meet high performance targets and offering building performance guarantees now make long-term financing possible in this realm. The long-term loan for the renovation costs once again ensures permanently low housing costs and thus feasibility of the high-quality approach. This creates a sound business case for a future-oriented renovation approach.

The technical baggage for this is available basically in present day design and consulting offices, architects and engineering firms. "The general principles such as the *Trias energetica* are well known and applied by the professional building actors"[5]. Also, in

[5] Quote Johan Vanden Driesche, Embuild October 2023

renovation advice, a presentation of the financial impact based on the total cost of living is included more often. But specific knowledge that comes in handy in the integral approach of high-quality energetic renovation is not yet common among most consulting and executing companies. Moreover, there are many misconceptions regarding the integration of the building envelope and installation technology and their possible synergies, regarding the building physics of high-quality insulation, and regarding important comfort and health aspects of highly energy-efficient buildings.

Knowledge organizations

To set up and scale up an integrated renovation service (IHRS), it is necessary to gather the knowledge gained in pilots and in advanced experimental organizations and transfer this to suitable advisors.

In the Netherlands, the foundation "Kennisinstituut KERN" originated from a learning network, “DNA in de bouw”. KERN facilitates relevant knowledge transfer about deep energy-saving renovation by using experienced frontrunners as teachers. Also KERN disseminates scientific research on highly energy-efficient construction and renovation into practice.
It offers a regular program on

- technology of integrated building envelope and installation design;
- energy calculation and building physics in very low energy-saving renovations;
- quality assurance in design and execution.

In addition to this, a high-quality renovation approach requires specific skills regarding

- integral design and engineering (co-creation in integrated renovation strategies with performance guarantees, process management, tailored contracts);
- determining total housing costs;
- communicating with and providing guidance for residents.

Regarding the latter skills, KERN has developed appropriate training courses within CondoReno.

In Belgium, Embuild has set up a learning network within the activities of CondoReno and Pixii has taken up the challenge to provide additional training to support IHRS development in Flanders. Outside the CondoReno project, the principle of learning networks is used as well to bring construction professionals together and to learn from each other and from external experts.

3 SOME WORDS ON TEACHING STYLE

3.1 Training philosophy and forms of work

Integral = interdisciplinary

Successful and affordable (near) energy neutral renovation and construction requires an integral approach and process management from design through commissioning and beyond, even more than conventional construction.

In the decision-making process during the renovation project, considerations must be given continually across a range of disciplines. These include disciplines such as process management, structural and installation engineering, as well as less obvious disciplines such as (housing) cost calculation and building physics. After all, an adjustment in one domain almost always has consequences for other domains and possibly also for the overall performance of the building. Not only the energy performance, but also the performance in terms of, for example, user functionality, comfort and health. This requires careful integral coordination.

The advantage of working integrally is that there is no accumulation of costs (e.g. through extra measures for sustainability, traditional design, risk hedging for innovation). This results in better-integrated and more affordable buildings.

Soft-skills make the world go round

For integral working, the mere presence of technical knowledge for the various disciplines is not enough. During all phases of a renovation project, different people from complementary disciplines, including the client, will have to cooperate intensively. Often these do not understand each other's terminology and have different perspectives. This means that collaboration skills are needed, as well as appropriate forms of contract, for example, that encourage the desired way of working together. Integral design techniques, such as BIM, that support mutual communication and information flow can help.

Integrated renovations with guaranteed building performance require appropriate forms of cooperation and contracts. These ensure that the parties involved (can) take joint responsibility for the performance of the renovated building. A transformation of the renovation chain is underway. Here, traditional organizational boundaries are blurring and new organizational forms are being developed. In these, professionals can work in a more customer-oriented and cost-effective way, with higher quality as the norm.

To retain the focus among professionals on customer interests there is a need for a common language regarding desired performance with respect to energy, comfort, health, costs, etc.: What do we actually mean when we use certain terms and what is or is not included in the calculations? Making the ambitions and preconditions explicit and measurable at the beginning of the project creates an unambiguous view of the destination for all parties involved. Through the use and intelligent interpretation of a

functional program of requirements and a validation & verification (V&V) plan throughout all project phases, the proper course of action can then be secured throughout the project.

Anyhow, the various subtopics in the curriculum are treated in this manual from an integral perspective: what is the issue at hand and how is it related to other issues in other domains.

People-sensitive and Practice-oriented

Those participating in the course may have different learning styles. Their favourite form can be identified by the 4MAT method[6], see Appendix 5. Preferably, participants differ in their backgrounds. To help stakeholders develop towards an integral approach, a highly practical training program was developed in which all relevant aspects of sustainable and energy-efficient building are addressed as well as their interrelationships.

Starting from the necessary theoretical background, the trainers always make the connection with building practice, based on experience in successful projects. In addition, they let the participants apply the new information to recognizable cases, sometimes even to their own projects or assignments. Serious gaming is also used wherever possible to practice integral collaboration skills.

The idea behind this emphasis on hands-on practice is that theory on its own is generally poorly remembered and rarely leads to behavioural change. Also, it makes the translation to one's own work practice easier. An additional effect is that the instruction days are varied for the participants, who do a lot of their own work with all kinds of assignments, and that the time spent on the course, as they themselves often say, appears to "just fly by."

Knowledge modules

Knowledge modules are short and powerful interventions (half-day to two days) that provide participants with knowledge or skills or a tool to better perform daily work. These modules take place in the form of workshops, lectures and/or regular courses. They form an addition to the conventional courses.

Coaching on the job

As soon as what is learned in the modules is applied in daily practice, new questions may arise. Coaching on the job means that a trainer periodically observes/co-operates in the project and coaches the project team members on the implementation of what was learned. This can be organized as periodic supervision or incidental consulting.

Number of participants

We aim for groups between 10 and 15 participants to ensure maximum interaction. Of course, other group sizes are also possible. A non-homogeneous group with participants from different fields is preferable because interdisciplinary discussions are very enriching

[6] 4MAT is based on four styles of learning distinguished by David Kolb, see www.4mat.eu. [dated March 2025]

and enlightening for the participants. The number of trainers depends on the topics and the expected group size and the expected variety of participants.

Teaching materials

Teaching materials are usually provided with each training session. The materials include a summary of the material offered and possibly references for relevant background information. Course materials are provided digitally. This can be a one-time delivery via email but can also be access to an online e-learning environment for a period of time. This is determined in consultation with the client/teachers involved.

Certification

Upon completion of a training course, individual certificates of participation may be issued.

For a recognisable quality assurance of integral renovations, a more structural and robust certification of integral housing renovation service providers and stakeholders is needed. This certification should create confidence in the results of renovations done by Integrated Home Renovation Services.

KERN is preparing a course that can prepare for a certification (tailored to the WNR-process). A national roll-out deserves further investigation, for example by CondoReno's National Advisory Board (NAB). As of yet, a nation-wide course in the Netherlands for managers of renovation processes is only in the making. It may be worth exploring the extent to which the certification of WNR stakeholders matches national requirements and recognitions.

To secure the necessary technological know-how and design quality, it is recommended to link up with the international quality assurance structure for passive building, developed and managed by the Passive House Institute[7].
Exams for the Passive House Designer and Passive House Tradesperson qualifications are organized by Kennisinstituut KERN and are offered twice a year.

[7] https://passivehouse.com/03_certification/03_certification.htm [dated March 2025]

4 TARGET GROUPS AND COMPETENCY PROFILES

This guide focuses on aspiring providers of an integrated renovation service and private and/or public stakeholders who play a role in this service, specifically the

- General members of CAs, of resident sustainability committee, of Association's Board;
- Social process supervisor;
- Local government or local energy service desk employee;
- Technical process supervisor;
- CA's manager;
- Architect/construction engineer;
- Building physics experts on energy/acoustic/fire issue;
- Building survey specialist;
- Structural engineer;
- Installation advisor;
- Financial process manager;
- Building cost specialist;
- Asbestos specialist;
- Ecologist;
- Legal expert;
- Renovation provider (director, project manager, technical draftsperson, work planner, calculator, communications officer);
- Installers;
- Suppliers;
- Quality coordinator;
- Commissioning specialist;
- Monitoring specialist.
- Maintenance specialist;
- Investors.

These roles/functions belong to an integrated renovation service, whereby this list of roles is not exhaustive and in the design of projects and services some functions may be combined to be performed by a single person or organization. For further explanation of these roles, see appendix 3.

The following are the key competency profiles for an IHRS including the skills needed and training advice.

4.2 IHRS acquisitor

The IHRS (Integrated Housing Renovation Service) Acquisition Officer can explain the comprehensive cost-controlled renovation approach to potential clients and perform the initial test of whether a project qualifies for an integrated approach (often by sketching a few scenarios). This role suits energy advisors of condominium renovations who endorse low total costs of living as the guiding principle and who integrate that approach into their working method. He is responsible for carefully carrying out a building inventory and

combining this with the client wishes and requirements to develop a few renovation scenarios and preparing associated feasibility analyses. He also ensures client-tailored communication of the results of the scenario study.

4.2.1 Tasks/ responsibilities

Orientation phase:

- Establish contact with the CA Board of directors;
- Preparing and conducting client interviews;
- Control of the existing building survey: Condition measurement in accordance with NEN 2767, including construction, installation, building condition. Possible bottlenecks/challenges for a renovation (asbestos, bats, solar panels…);
- Checking fire safety situation and requirements;
- Assessing the risk of the presence of asbestos, carrying out or supervising asbestos inspections.
- Initial energy measurement: collect current energy consumption data (via network manager/energy supplier, of this building and of average buildings of this size);
- Retrieve important information, what is going on, what is the (renovation) history of the building, rough assessment of the technical condition of the building and its installations;
- Assessing whether the project fits within the scope of a renovation that focuses on integral costs of living (e.g. considering insulation measures that have been carried out in the past, legal and financial situation, presence of a district heating system, etc.);
- Variants study to roughly work out different renovation scenarios (or have them worked out) using an integral costing approach;
- Present in detail to the board of the owner association what an integral cost-controlled renovation approach entails, provide objective information;
- Preparing an offer suitable to the situation and the building for a feasibility study including any appropriate more detailed surveys;
- Participation in project evaluation.

4.2.2 Competency profile

Experience/ basic competencies professional profile

- ≥ 5 years of construction-related work experience, or:
- Affinity with construction and master's level education;
- Strong communication skills;
- Experience in sales.

Required additional competencies

- Detailed knowledge of housing renovation as a cost-controlled effort;
- Experience/understanding of how and why to work integrally;
- Particulars of CAs - legal and organizational;
- Basic technical and energy knowledge.

Recommended training

Passive House Trades Person course;

Course on Acquisition of cost of ownership-driven renovation for CAs;
Possibly additional courses on Communicating with customers.

4.3 Social process supervisor

A social process supervisor supports the activities of the sustainability committee on behalf of the CA. He directs the process and his role as an outsider allows him to ensure a safe atmosphere during residents' meetings. He provides support to the CA during all phases, is attentive to the social aspects during the decision-making process by the CA members and can mediate and advise in communication if necessary. He monitors the completion of the correct steps in the process of a CA from initiative to after completion of the renovation.

4.3.1 Tasks/ responsibilities

Overall process:
- Securing the sequential steps in the customer journey to a high-quality approach
- Providing necessary information and experience regarding comprehensive renovation

Initiation phase:
- Supporting the sustainability committee in tasks such as collecting resident evaluations and resident communication, organizing general meetings and information meetings etc.
- Advice on drawing up joint goals regarding sustainability
- Advice in requesting scenario sketches

Orientation phase:
- Support sustainability committee in collecting building data, energy consumption etc.
- Support decision-making process CA for the renovation scenario to be worked out

Deepening phase:
- Support in conducting comprehensive occupant survey
- Support of functional requirements testing
- Support decision-making process regarding functional requirements

Transaction phase:
- Support communication regarding choice of renovation provider
- Support communication and decision-making process regarding the assignment of renovation including possible changes to the deed of subdivision and financing scheme.
- Support communication regarding applications for permits, grants and financing

Aftercare phase:
- Support resident communication regarding complaint handling and aftercare.

4.3.2 Competency profile

Experience/ basic competencies professional profile

- Bachelor's degree in management or > 2 years of project management experience;
- Experience supervising CAs or other types of collective private clients;
- High-level communication skills (project management and conflict mediation).

Required additional competencies

- Knowledge of roadmap for integral energy-saving renovation
- Knowledge of grants, schemes, etc.

Recommended training

- Course on Acquisition of housing cost-driven renovation for CAs;
- Communication training[8], managementtraining

4.4 Technical process supervisor

The technical process supervisor is the spider in the web the deepening phase and the transaction phase. During these phases, the process supervisor is responsible for all support activities to make the process run smoothly during the designing process. He supervises the design process and ensures that the steps are taken as scheduled (in sequence and predictable) so that the process is completed on time and within budget. The technical process supervisor represents the IHRS/design team to the client and other stakeholders, prepares presentations regarding the technical decision-making process of the client. He is responsible for the implementation of quality assurance and functions as a point of contact for all parties involved in these phases. He also handles internal project evaluation.

4.4.1 Tasks/ responsibilities

Deepening phase:

- Establish scheduling and process monitoring;
- Organize research/design team, delegate tasks and responsibilities to experts; this includes streamlining expert work on Customer Requirements Specifications (CRS), on a verification and validation (V&V) plan, and on the feasibility analysis including survey, baseline measurement, renovation scenarios with appropriate building cost as well as subsequent housing costs (TCO)-analysis;
- Organize meetings, prepare and report decision lists;
- Set up communication structure for sharing project information (up to date and retrievable);
- Set up customer requirements list, manage customer expectations;
- Draw up CRS: prioritize customer requirements and translate them into functional specifications with associated performance indicators;

[8] E.g. trainings at Kern Konsult: https://kernkonsult.nl/trainingen [d.d. maart 2025]

- Draw up or have drawn up a V&V plan including maintenance requirements (calling in additional expertise if needed);
- Organize reformulation, if needed, of the legal framework of the CA's association such as the deed of subdivision and associated regulations, trace any other legal bottlenecks, call in legal specialist if necessary;
- Check financial health of the CA; check current Multi-Year Maintenance Plan and associated budget (MYMP/MYMB) and adjust it where inappropriate or incomplete, similarly check service cost structure together with building cost specialist;
- Organize assessment of all legal aspects of the renovation scenarios (explore individual and collective consequences);
- Organize the drawing up of a sustainable MYMP/MYMB for after the renovation;
- Manage structural engineering elaboration of the selected renovation design including its MYMP;
- Manage the installation-technical elaboration of the selected renovation design including its MYMP;
- Customer communication, possibly in cooperation with social process supervisor/communication officer;
- Organize morphological design sessions;
- Organize contact with municipality and other authorities such as governments and utility companies for support and approval;
- Perform or have performed any necessary calculations for permits and grants, e.g. the Dutch BENG standards for building permits.

Transaction phase:

- Plan and monitor the process of preparing for and implementing the renovation;
- Form and organize the design team, secure delegation of tasks and responsibilities to experts charged with the elaboration of the selected renovation scenario (technical design process, assessment of legal framework, updating MYMP/MYMB and TCO calculation);
- Use V&V plan to have the quality of the renovation design assured and to have this tool ready for assessing the implementation of the renovation, reporting on this to the client, call for any adjustments of the MYMP/MYMBs and V&V plan on the basis of this quality assurance;
- Organize design team meetings, prepare and report decision lists;
- Set up award procedure, call for renovation contractors;
- Execute award procedure for the main renovation contractor;
- Organize knowledge and information transfer to renovation provider and monitor/supervise the more detailed design process of construction details and technical installations including their MYMP/MYMBs;
- Draw up contract with renovation provider (renovation approach agreement);
- Client communication, consultation with board of CA, social process supervision and contact with stakeholders;
- Prepare communication and arrange agreements about potential loans (possibly together with financial expert);
- Search and arrange grants and guarantees;
- Set up and keep up a renovation dossier;

- Organize project evaluation and supervise the integration of improvements into the renovation (IHRS) process.

Project evaluation:
- Organize and participate in project evaluation;
- Prepare project evaluation report and assess quality assurance process (annual management report).

4.4.2 Competency profile

Experience/ basic competencies professional profile

- ≥ 5 years of construction-related project management and design management;
- Experience in process management, lean management;
- Experience in renovation projects;
- Basic knowledge of preparing Multi-Year Plans;
- Energy expert, minimum level EPA-W;
- Experience asbestos inventory (able to assess situation and to direct follow-up steps);
- Basic knowledge of fire safety in apartment buildings;
- High-level communication skills (project management and mediation).

Required additional competencies

- Either: certified passive house professional, passive house advisor or passive house designer or similar qualification;
- Or: involved in this or a similar role in the execution of one or more successful (certified) EnerPHit renovation, passive house renovation or integral renovation projects;
- Knowledge of EPB software and requirements package (Flanders).
- Either: experience with integral project budgeting from sketch design to completion and experience with integral feasibility analysis;
- Or: certificate of course in Housing costs and feasibility study in highly energy-efficient renovation[9];
- Knowledge of grants, regulations, etc.

Recommended training

- Passive House Trades Person course;
- Course on Acquisition of cost of ownership-driven renovation for CAs;
- Course on Housing costs and feasibility study in highly energy-efficient renovation;
- Course on Chain cooperation and continuous improvement;
- Course on Quality assurance for renovations with building performance guarantee;
- Course on Communication.

4.5 Construction Cost Specialist

The work of the construction cost specialist largely takes place in the orientation phase, deepening phase and transaction phase. The construction cost specialist is responsible

[9] https://kennisinstituutkern.nl/aanbod/woonlasten-en-haalbaarheidsonderzoek [dated March 2025]

for the preparation of cost estimates for the feasibility analysis (budgeting renovation scenarios) and the preparation of accurate element estimates (bill of quantities). Moreover, he provides guidance in the elaboration of the chosen renovation scenario aiming at low housing cost, also for the purposes of approaching potential financiers and selecting a renovation provider.

4.5.1 Tasks/ responsibilities

Support the technical process supervisor (and design and construction team) by providing:

- Construction cost estimation and TCO/Housing costs calculations of various renovation scenarios for the purpose of scenario assessment;
- Support the elaboration and financial engineering of the selected renovation scenario by providing:
    - Cost estimates, element quantities and budgets, MYMP/MYMBs and TCO/ Housing costs calculations from initial to definitive, following the design as it becomes more detailed and as adjustments are made;
    - MYMP/MYMBs (updating current projection, show projection per renovation scenario, fine tuning projections upon elaboration of a sustainable renovation design).
- Support renovation provider selection with:
    - Reviews and assessments of the project budget estimates of candidate renovation provider(s) (using IHRS baseline budget).

Project evaluation:

- Support post-calculation following renovation;
- Participate in project evaluation and implement points of improvement in the integral renovation procedure.

4.5.2 Competency profile

Experience/ basic competencies professional profile

- Construction cost expert (master's level), or estimator (master's level) with affinity for element budgeting;
- ≥ 2 years working experience element budgeting;
- Experience in preparing MYMBs.

Required additional competencies

- Proven experience with TCO calculation / certificate of course on Housing costs and feasibility studies for highly energy efficient renovation
- Basic knowledge of Passive House construction and retrofit;
- Experience with MYMB according to WNR-scenarios/standards (long term, including measures for highly energy efficient buildings);
- Familiarity/experience with cost indices for very low energy buildings and integral construction activities.

Recommended training

Course on Housing costs and feasibility study in highly energy-efficient renovation

4.6 Building physics energy advisor (energy advisor)

The energy advisor is responsible for a correct renovation design in terms of energy and building physics. He supports the design team in the orientation phase, deepening phase and transaction phase with advice and energy balance calculations. In the construction phase he supports the technical process supervisor with V&V measures and during commissioning he provides verification calculations for comparison with measurement data for optimizing building functions. If desired, he also provides the necessary project documentation for a new energy label and for EnerPHit certification.

4.6.1 Tasks/ responsibilities

Orientation phase:
- Support elaboration of CRS/ customer expectations: provide functional specifications for energy, comfort, indoor climate with associated performance indicators;
- Assess current situation and energy design/calculate energy performance of renovation scenarios through DesignPH/PHPP;
- Calculate heating and cooling requirements and advice on technical installation capacities;
- Supply input parameters for TCO/housing costs calculation;
- Provide information for external verification (EnerPHit certification etc.).

Deepening phase:
- Support technical elaboration of the selected renovation design;
- Fine-tune energy balance calculation;
- Give advice on the technical design;
- Supply input parameters for elaborating TCO/housing costs calculations;
- Support implementation of V&V plan;
- Provide information for external control (EnerPHit certification etc.).

Transaction phase:
- Give advice for installation engineering;
- Supply input parameters for TCO/housing costs calculation;
- Provide support in drafting minimum requirements for maintenance measures;
- Support implementation of V&V plan for the renovation design;
- Support the drafting of performance agreements for the renovation (off-take agreement);
- Provide/prepare documentation for calculating the national energy requirements, for the renovation dossier and, if desired, for EnerPHit certification.

Construction phase:
- Support implementation of V&V plan and support WNR process supervisor in supervision;

- Provide/prepare documentation for EnerPHit certification, for calculating the national energy requirements and for the renovation file.

Project evaluation:
- Participate in project evaluation and incorporate improvement points into the integral renovation process.

4.6.2 Competency profile

Experience/ basic competencies professional profile

≥ 2 years of work experience in construction or installation engineering (college level);
Knowledge of energy regulations and by-laws (to be able to estimate consequences).

Required additional competencies

Either: Passive house designer certificate
Or: Passive house craftsman certificate + demonstrable experience in designing (certified) passive houses;
More than 2 years demonstrable work experience with PHPP calculation/ tools for computing energy balance in very energy efficient buildings and heat flow calculations;
Basic knowledge of TCO calculation.

Recommended training

Either: Passive House Designer Course;
Or: Passive House Trades Person course and course on Energy Balance with PHPP/DesignPH calculation tool.
Course Energy Balance with DesignPH calculation tool.
Course on Calculating heat transfer in thermal bridges.

4.7 Installation advisor

The installation advisor supports the design team with installation advice; in the orientation phase this applies to the installation engineering part of the renovation scenarios and to the preparation of the V&V process, and in the deepening and the transaction phases this applies to in the elaboration of the installation engineering in the chosen renovation scenario and to the actual V&V of the design.

4.7.1 Tasks/ responsibilities

Orientation phase:
- Support elaboration of the CRS into functional specifications of energy, comfort, indoor climate with associated performance indicators;
- Assessment and possible adjustment of existing MYMP (installation-technical);
- Feasibility assessments of installation design in preliminary renovation scenarios;
- Support in drafting new MYMPs (per scenario);
- Support in drafting the request for renovation provider;
- Draw up V&V plans (technical installation part).

Deepening phase:
- Elaborate technical installations of the selected renovation design including associated MYMP/MYMBs;
- Support in drafting performance contract/purchase agreement;
- Quality assurance design in accordance with V&V plan.

Transaction phase:
- Knowledge and information transfer for technical elaboration of selected renovation design including MYMP/MYMBs;
- Monitoring and supervising the implementation of the V&V plan.

Construction phase:
- Support renovation execution process supervisor, e.g. an IHRS employee, in monitoring V&V plan implementation during execution;
- Same during commissioning.

Project evaluation:
- Participate in project evaluation and assimilate improvement points in integral renovation process.

4.7.2 Competency profile

Experience/basic competencies professional profile

- ≥ 5 years of work experience in building installation technology including installation design and implementation (master's level);
- Basic knowledge of MYMP/MYMBs for maintenance of installations.

Required additional competencies

- Certified Passive House Designer or Passive House Craftsman or similar qualification;
- Knowledge of/experience with passive house installations and their sizing.

Recommended training

Either:
- Passive House Designer Course

Or:
- Passive House Trades Person course and course on Energy Balance with PHPP/DesignPH calculation tool;
- Deepening course on the design of energy-efficient balanced ventilation systems;
- And:
- Course on Quality assurance for renovations with building performance guarantee.

4.8 Implementation Process Supervisor

The implementation process supervisor represents the IHRS and represents/advocates the interests of the CAs during the implementation of the renovation. His contributions take place in the construction phase and aftercare phase. Then he oversees supervision

and support activities to ensure the process runs optimally. The process supervisor is the contact person for the IHRS to the client and to the other stakeholders, and in that context, he organizes meetings and presentations. He supports the renovation provider in the implementation of quality assurance and is the point of contact for all parties involved in these phases.

4.8.1 Tasks/responsibilities

Construction phase:
- Streamline communication with and between members of the CA and the renovation provider;
- Supervise quality assurance implementation in line with V&V plan;
- Manage the use and improvement of V&V plan;
- Organize preparation of renovation dossier with information about delivery and quality checks;
- Organize update of sustainable future MYMP/MYMBs and of list of predictable prerequisites regarding maintenance.

Commissioning:
- Oversee project delivery;
- Streamline communication with and between members of the CA and renovation contractor;
- Supervision of delivery and processing of monitoring data;
- Organization of project evaluation by residents;
- Planning of integral commissioning and supervision of quality assurance in line with V&V plan;
- Oversee adequate service in case of defects;
- Complete renovation file upon commissioning;
- Organize post-calculation of the renovation and input key figures into cost database of IHRS.

Project evaluation:
- Organize and participate in project evaluation;
- Monitor the embedding of improvements in the integral renovation process of IHRS.

4.8.2 Competency profile

Experience/ basic competencies professional profile

- ≥ 5 years of experience in construction-related project management during execution;
- Experience with planning and management of integral construction processes and lean management;
- High-level communication skills (project management and mediation).

Required additional competencies

Either: Certified passive house professional, passive house advisor or passive house designer or similar qualification

Or: involved in this or a similar role in the implementation of one or more successful (certified) EnerPHit renovations, passive houses or integral renovation projects.

Recommended training

- Passive House Trades Person course
- Course on Quality assurance for renovations with building performance guarantee;
- Course on Chain cooperation and continuous improvement;
- Course on Communication in the construction process.

In the following chapter, you will read a description of the main training for stakeholders of a IHRS. This training concerns the specific challenges of high-performance energy-saving renovations with guaranteed building performance for CA properties.

5 CENTRAL COURSES FOR IHRS-STAKEHOLDERS:

5.1 Basic course Renovating with guaranteed building performance[10]

5.1.1 Objective

To gain insight into the result-oriented methodologies for successfully renovating and maintaining apartment buildings.

This course gives stakeholders involved in renovations for CAs the necessary tools and insight to achieve energy efficiency that goes beyond "label A". This training gives confidence in the possibilities to enter into renovations that aim to bring down housing costs by using a performance guarantee.

The course provides insight into the optimization opportunities in the regular renovation process to achieve high sustainability ambitions and to include the client and other stakeholders in the process. Course participants will also learn about the challenges and synergetic relationships in highly energy-efficient construction. This course prepares stakeholders to develop or engage in an IHRS business model.

5.1.2 Target group

All professionals involved in the management, maintenance and renovation of apartment buildings, e.g.:

- CA managers;
- Architect/construction engineers;
- Construction managers;
- Social and technical process supervisors;
- Energy experts;
- Building cost specialists;
- Renovation providers (director, project manager, technical draftsperson, work planner, calculator, communications officer);
- Installers;
- Suppliers;
- Investors.

Level of this course: Masters and higher

5.1.3 Main content

Grip on the renovation process

- Successful realization of renovation, transformation and maintenance of houses and apartment buildings having predictable performance and quality;
- The stages of the renovation approach

[10] Zie: https://kennisinstituutkern.nl/aanbod/renoveren-met-gegarandeerde-gebouwprestatie/ [dated March 2025]

- Quality optimization and assurance before and during renovation;
- Integral approach by involving all parts of the building and looking at total costs over the desired lifetime;
- Cost reduction/value creation by optimizing the renovation process.
- Optimal effective cooperation between all stakeholders, the benefits of an IHRS and how to develop an integrated renovation service.
- Optimization of processes through intrinsic drive and reduction of failure costs;
- Organizing job satisfaction for all involved;
- Clear agreements in your project about demarcation lines between parties involved.

Understanding the costumer journey

- Supporting decision making by the CA members
- Customer is king, identify the values/wishes behind what is said at first;
- Making customer needs and wishes measurable in the solution space of the design brief (how do you know if something is a good decision if you don't know exactly what it will deliver overall?);
- Communication with residents.

Grip on the expenses

- Determining total cost over the desired lifetime (monthly cost model) with trade-offs cost and performance (energy, comfort, health)
- Cost parameters
- Cost reduction/value creation through process optimisation
- Cost-efficient renovation measures

Grip on the technical aspects

- Designing with performance requirements energy, comfort, health
- Ability to steer quality in design and execution of either the one-shot or step-by-step approach
- Knowledge of installation solutions in highly energy-efficient apartment buildings
- Low-tech approach and solutions

5.1.4 Training structure

Study time takes 2-3 hours of preparation per training day, 24 hours of life course. It is possible to conclude this training with a practical assignment of 8-16 hours of self-study and 3 hours of follow-up discussion (online or life). This programme is indicative.

Preparatory assignment

A few weeks before the start of the course, participants receive a preparatory assignment. By studying some material in the run-up to the training and by attempting to apply it to your own practice, you can make a flying start in the training and facilitate the assimilation of the training material. The time required for this assignment is about two to three hours.

Content preparatory assignment

1) Glossary
What is the meaning of…
Put a checkmark if you already know the term. Otherwise look it up and write a memo-note for yourself.
2) Costs
What are total user costs? What cost items play a role in this?
What makes renovations expensive?
a) Regarding investment costs
b) Regarding total user costs
What is a regret measure?
Give examples of regret measures.
What are ways of making a renovation cost-effective?
Name examples of cost optimisation in a renovation.
3) Energy-efficient renovation
Which measures ensure energy (cost) savings in a renovation?
What are the three goals of passive building?
Why is building physics particularly important in an energy-efficient renovation?
What is needed to create a healthy indoor climate after renovation? Why do things often go wrong?

Module 1: The process of integral renovation

- Cost drivers in renovation - an exploration (preparatory assignment to stimulate discussion)
- CondoReno: Challenges in renovation with complex commissioning
- Legal context of a CA structure
- Useful methods for process optimisation
  - Result-oriented collaboration (RGS) [11]: The four components
  - Systems engineering
  - AZEB 17-step methodology[12],
  - Lean[13]
- CondoReno roadmap: Overview of phases and steps in renovating CA apartment buildings

[11] RGS stands for Result-oriented collaboration and aims to make parties, involved in maintenance to work together optimally towards improved maintenance quality, prevention of failure costs and increased customer satisfaction. For more information: Leidraad Resultaatgericht Samenwerken

[12] AZEB stands for Affordable Zero Energy Building and was a European research project aiming to accelerate the implementation of high energy building. AZEB provides a method for an optimal design and construction process that achieves predetermined integral project goals. Going through its 17 process steps leads to high construction quality at lower costs. To learn more: www.azeb.eu

[13] Lean is a business strategy, originating from the automotive industry (Toyota), where the entire organization focuses on creating optimal customer value at the lowest possible effort.

Learning objectives:
· Understanding the need for an integrated approach in energy-saving renovation.
· Insight into available methods for process optimisation.
· Knowledge of legal context and challenges in CAs.
· Familiar with the CondoReno roadmap.

Module 2: Customer needs and communication

· Support
· CA in the starting blocks
· Communication with residents
· Dealing with conflicting interests
· Focusing on the Customer requirement - functional specification

Learning objectives:
· The participant will gain insight into the challenges and opportunities when communicating with CA-flat owners
· Introduction to the method of focusing on the customer's needs: Customer requirements specification (CRS)
· Translating Customer requirements into functional requirements

Module 3: Getting a grip on building performance

· Performance gap
· Occupant behaviour
· Predictable energy performance passive house
· Introduction passive building
  - Healthy indoor climate
  - Comfort
  - Affordability
· Integral design with a step-by-step approach
· Examples of cost-efficient passive house renovations
· Building performance guarantee

Learning objectives:
· The participant understands the opportunity of a high-quality energetic renovation approach for guaranteed building performance
· He learns the basic principles of passive house renovation
· The logistical, technical and financial challenges and the added value of an integral design process in a step-by-step approach become clear
· He learns about convincing practical examples
· The structure of a building performance guarantee becomes clear

Module 4: Cost-effective renovation design

· Condition measurement
· Cost control
· Introduction to economic calculation
· Monthly Charge Method (TCO)

· Housing cost engineering
· Examples of housing cost-neutral renovations

Learning objectives:
· The participant understands the need for proper condition measurement.
· He sees the challenges and opportunities to make costs manageable.
· He gains a general understanding of economic calculation and knows the 'Cost of kWh saved' approach.
· He understands the connection between renovation decisions and housing costs
· He knows the intent and approach to a housing costs-driven design process

Module 5: Cooperation and quality assurance in implementation

· Optimal cooperation in CA renovation using the IHRS model
· Quality assurance process
· Commissioning
· Project dossier
· PHI certification
· Monitoring and after-care, management and maintenance with building performance guarantee
· Liability
· Practical experience with building performance guarantee
· Project evaluation

Learning objectives:
· The participant understands the benefit of an integrated housing renovation service
· He knows the process of quality assurance along the V&V-plan in execution resulting in a project file
· He is familiar with the requirements for integral commissioning
· He is familiar with the approach to validation/verification with a 1st and 2nd handover
· He knows the approach to EnerPHit certification
· He knows the approach for building management after delivery while maintaining building performance guarantee
· He understands the importance of continuous process optimisation

Module 6: Evaluation and excursion

· Debriefing course
· Follow-up
· Practical examples, tips and tricks
· Project visit
· Optional explanation of concluding practical assignment/ distribution of participation certificates.

Learning objectives:
· Wrap-up of the course, the participant is given space for questions
· Greater insight into the practice of high-quality renovations of apartment buildings

5.2 Sustainable renovation with CAs (for energy coaches)[14]

5.2.1 Purpose

Energy coaches learn about the challenges of renovating a CAs apartment building.
Energy coaches from energy desks gain insight into what is involved in renovating apartment buildings. In their role as energy coaches, they learn to deal with the demand for energy-saving renovation of an apartment building and they come to understand the importance of an integrated approach. They learn to suggest interventions that reduce the energy demand of the building, steering towards a high-quality approach beyond the A-label. They understand the Dutch/Belgian financial climate regarding grants and loans for renovating flats. They become aware of the possibilities of making a high-quality integral renovation affordable and feasible.

5.2.2 Target group

This training focuses in particular on energy coaches (of the Flemish energy houses) and energy directors (of the Dutch energy offices).

Structure of the training

This training consists of a preparatory homework assignment (2-4 hrs), a 2-day course, with 4 modules, a project visit and a practical assignment.

The programme below is indicative.

Preparatory assignment

A few weeks before the start of the course, participants will receive a preparatory assignment. The required time for this assignment is two to four hours.
On the basis of a glossary and some (look-up) exercises, participants start working with construction concepts.

Learning objectives:
With this homework assignment, the participants (from diverse backgrounds) will lay a good foundation for taking this course and for their role as energy coaches.

Module 1 - Introduction to renovation with CAs

- Introduction and discussion homework assignment (0.5h)
- Legislation rights and obligations (1h)
- Decision-making process CAs (1h)
- Renovating for now and the future (1h)
- The stakeholders (0.5h)

Learning objectives:

[14] e.g. https://kennisinstituutkern.nl/aanbod/verduurzamen-VvE [dated March 2025]

- Energy coaches are introduced to the policy framework for CA renovations. They learn what is important in building regulations and apartment regulations. They learn the concepts around co-ownership, bylaws, board, council.
- They gain knowledge about the processes CAs go through in making their apartment building sustainable and learn about and assess the specific challenges in these processes.
- They gain insight into the benefits of integrated design. They understand that the final result depends on the consistency of measures. They gain insight into the risks of lock-ins and how to avoid them ('If you do it, do it right').
- Energy coaches gain insight into the parties and roles involved in the process.

Module 2 - The technical aspects of energetic renovation

- The condition measurement (0.5h)
- Building envelope renovation and (circular) use of materials 1h)
- Ventilation (0.5h)
- Details of interior insulation (0.5h)
- Heating during renovation of apartment buildings (0.5h)
- Summer comfort measures (0.5h)

Learning objectives:
- Understanding the purpose of a condition measurement. Knowledge of what a condition measurement should achieve
- Knowledge of the renovation measures of insulation and airproofing, the functioning of energy efficient windows, and of the importance of ventilation after renovation
- The differences between systems, impact on energy balance

Module 3 - Finances, grants & offers

- Grants, finances and monthly costs (3h)
- Dealing with offers (1h)

Learning objectives:
- How to estimate the average costs of different renovation measures
- What are the possibilities for financial support, where can residents go and what should they pay attention to when applying for premiums/grants?
- Where can residents go for loans and what is special about financing for CAs
- Participants learn to see the opportunities for value creation and understand the effects on monthly costs

Module 4 - Communication with resident groups

- Essentials of communication (2h)
- Details of communication with resident groups (1h)
- How to move in a multi-party contract, 'How to avoid hassle' and achieve an effective conversation (1h)

Learning objectives:

- Participant becomes aware of the particularities when communicating with resident groups
- Soft-skills development, energy coach gains insight into his possibilities to contribute positively to the decision-making process with CAs and knows tools for an efficient conversation in larger groups with varied interests

Module 5 - Practical experience

- Visit example case (4h)
- Homework assignment: Draw up renovation advice (2h)
- Renovation advice discussion in group (2h, possibly online)

Learning objectives:

- Gain practical experience by visiting example.
- Giving integrated and overarching renovation advice aimed at the long term by working out renovation advice based on the visit to the sample case.
- Further insight by improving the drawn-up renovation recommendations through classroom discussion, comparison and mutual learning.

5.3 How to future-proof CA apartment complexes (for CA managers) [15]

5.3.1 Purpose

CA managers learn to see the opportunities for value creation in the apartment buildings under their management.
They become aware of the consequences of ill-considered energy measures and the importance of a well-structured decision-making process.
In their role as managers, they learn to deal with the demand for energetic renovation of an apartment building and understand the importance of an integrated approach. They learn to suggest interventions that reduce the energy demand of the apartment building and, in doing so, they learn to steer towards a high-quality approach that goes beyond an A-label.
They learn how to make their business model more sustainable by calling in an integrated renovation service. They learn how to draw up a sound MYMP and use it to support a CA board and include it in decision-making on the necessary budget for this. They become enthusiastic about high-quality energy-saving renovation and learn how to convey this to CA boards as ambassadors.
They gain an understanding of the Dutch/Belgian financial climate around grants/subsidies and loans for renovating flats. They become aware of the possibilities to shape a high-quality integral renovation in a way that is affordable and feasible.

5.3.2 Target group

This training is aimed in particular at CA managers.

5.3.3 Training structure

This training consists of a preparatory homework assignment (2-4 hrs), a 1-day course, with 2 modules, a project visit and a practical assignment.

The following programme is indicative.

Preparatory assignment

A few weeks before the start of the course, participants will receive a preparatory assignment. The time required for this assignment is two to four hours.
On the basis of a glossary and some (look-up) exercises, the participants will work on a common vocabulary covering construction, monthly costs in CAs and cost drivers in renovation.

Learning objectives:
With this homework assignment, participants (CAs Managers) will lay a good foundation for taking the one-day course.

[15] e.g. https://kennisinstituutkern.nl/aanbod/energetisch-renoveren-VvE-beheerders [dated March 2025]

Module 1 - Introduction to housing cost-neutral renovation

- Introduction and follow-up homework assignment (0.5h)
- Introduction housing cost-controlled renovation (1.5h)
- What measures ensure energy (cost) savings in a renovation?
- Step-by-step approach without regrets
- Financing, grants and housing costs
- The customer journey with the CA (1h)
- The approach of an integrated housing renovation service, roles and stakeholders and business model of CA management (1h)
- The condition measurement as a basis for an MYMP and cost-driven renovation (0.5h)

Learning objectives:

- CA managers learn how to respond to a CA's request to investigate renovation scenarios. How to do this, and where to go for this?
- They gain knowledge about the added value of cost-controlled renovation.
- They gain insight into the advantages of an integrated approach and see the synergy in renovation measures. They understand that the final result depends on the coherence of measures. They gain insight into the risks of lock-ins and how to avoid them ('If you do it, do it right').
- They get to know the schemes for loans and grants/ subsidies and what is special about financing for CAs
- They learn about the customer journey and gain insight into the integrated process of an IHRS and the parties and roles involved.
- There is an appreciation of initial and subsequent condition measurement. Knowledge about what a condition measurement should include in order to serve as a basis for an MYMP and housing cost-neutral renovation.
- They will gain insight into the possibilities for expanding their offerings and services in supporting 'their' CAs in housing cost-driven renovation.

Module 2 - The technique of energetic renovation

- Building envelope renovation and ventilation (2h)
- Why is building physics particularly important in an energetic renovation?
- What is needed to create a healthy indoor climate after renovation? Why do things often go wrong?
- Special aspects of interior insulation (1h)
- Heating after renovating apartment buildings (0.5h)
- Summer comfort measures (0.5h)

Learning objectives:

- CA managers gain knowledge about renovation measures insulation and air sealing, the functioning of energy-saving windows, the importance of ventilation after air sealing, advantages of balanced ventilation
- They become aware of the importance of structurally correct measures for a healthy indoor climate and damage-free renovation, especially in the case of interior insulation

- They understand the differences between systems, impact on energy balance, comfort and indoor climate

Module 3 - Practical experience

Visit example case study (4h)

Learning objectives:
- Gain practical experience and develop confidence in an integrated renovation approach by visiting an example case study.

Alternatives:
Course Renovating with guaranteed building performance
Basic training for first-line renovation consultants (BE-REEL!)[16]

The following section offers a picture of the further training and courses required for each phase.

[16] https://www.be-reel.be/course/opleiding-voor-1ste-lijn-renovatieadviseurs [dated March 2025]

6 COMPLEMENTARY TRAINING BY PHASE

6.1 Initiative phase

In this phase, residents/ members of the CA are activated, informed and involved in the decision-making process for the energy saving renovation.
In this phase, it is important that the Association's Board and its members are familiar with what is expected of them during this process, and what they can expect from the parties involved. There are pitfalls and there are steps that can help them become a knowledgeable principal client. They also learn what is needed to develop support among the association membership. Here, a municipality can provide effective support, for example by offering independent information and/or a course and by facilitating activities that will strengthen the organization and its attitude towards renovation.

Stakeholders involved in this phase, include:
- Members of the CA including residents in general, members of a sustainability committee, the Association's Board;
- Ambassador of the IHRS (first contact with the client);
- Social process supervisor;
- Municipality;
- Condominium manager.

6.1.1 Courses supporting the initiation phase

The importance of good management in a Condominium Association[17]

Target group: CA members
Objective: To make residents of an owner-managed association aware of:
- their rights and obligations as an association member;
- the importance of good governance;
- the challenges posed by the energy transition and what it means for their Association;
- proper financial planning based on a full Multi-Year Projection;
- the possibility of a cost-neutral renovation of their building;
- the unique working method in an integrated approach such as that offered by an IHRS such as WNR in the Netherlands.

Duration: 2 hours online

Alternative course in the Dutch speaking part of Belgium: training for the board of co-managers, offered by 'Eigenaarsbond' (Union of Owners' Associations)

Dealing with complex decisions[18]

Target group: Owners' association members

[17] e.g. https://kennisinstituutkern.nl/aanbod/webinar-wnr-voor-appartementseigenaren/ [dated March 2025]
[18] e.g. https://kennisinstituutkern.nl/aanbod/complexe-besluiten-VvEs/ [dated March 2025]

Objective: First introduction to renovation with constant living-costs for board members of Homeowners' Associations (CAs). Participants become competent principals for integral renovation, know the crucial decision moments and are prepared for the journey to a sustainable building.
Duration: 4 half-day sessions

Acquisition interviews for cost-controlled renovation of Condominium Association properties[19]

Target group: Energy advisor, social process advisors
Objective: The participant learns how to convince the board of a CA to commission research into the feasibility of an integral renovation aimed at low overall cost of living. The participant learns the vision and methodology of an integral approach and how to convey this to residents of an Association, including the advantages and possibilities of a future-oriented approach. Lectures and discussions emphasise the importance of a comprehensive feasibility study that applies the integrated renovation strategy of an IHRS to the project at hand and compares it with other (more traditional) renovation strategies.
Duration: 3 half-days

Alternative course: Renovating with guaranteed building performance

[19] E.g. https://kennisinstituutkern.nl/aanbod/aquisitie-woonlastengestuurde-renovatie/ [dated March 2025]

6.2 Orientation phase

In the orientation phase, the most important preconditions are set, within which the renovation should take place. There is an emphasis on analysing the problem, the context and the possible ambitions, translating resident wishes into a specification of what results/performance must be achieved regarding, for example, ease of use, energy, health, comfort and aesthetics.
In this phase, the Multi-Year Maintenance Plan plays a decisive role and should be sufficiently realistic with a view to the future of the association and the financing of maintenance. The existing technical situation of the building is surveyed and an initial dossier is compiled.
Based on an initial overview of the resident wishes and needs, an independent advisor makes an estimate of the possibilities for sustainability (scenario sketches). Here the focus is on creating feasible variants within previously set preconditions. Special focus here is to avoid sub-optimal processes, decisions with unexpected side-effects and excessively restricting the solution space which may turn out limiting in later phases.

Stakeholders involved in this phase, include:
- General members of CAs, of resident sustainability committee, of Association's Board;
- Social process supervisor;
- Municipality;
- Condominium manager;
- Building cost specialist;
- Acquirer of IHRS/renovation projects (e.g. expert feasibility analyst of the Dutch WNR);
- Building physics energy expert;
- Building survey specialist.

6.2.1 Courses supporting the orientation phase

Communication in construction[20]

Target group: Architects, energy consultants, occupancy specialists, technical process facilitators and other design and construction professionals

Learning objectives:
- Effective communication in an integrally complex and ambitious design and construction process e.g. with CA residents.
- In this course, you will learn how to organize and facilitate effective communication during the various phases of an integral building/renovation project.
- As this course progresses, you will learn about and apply adequate forms of communication and consultation. With these skills, you yourself can become that one indispensable link in a well-oiled cooperation process with design and construction parties on the one hand and CA residents (groups) on the other.

[20] E.g. https://kennisinstituutkern.nl/aanbod/communicatie-in-het-bouwproces/ [dated March 2025]

Duration: 2 days

Programme:
Module 1 (3h): Communication & I
Module 2 (3h): Communication & the other
Module 3 (3h): How do I get them to join me?
Module 4: Staying put when things get exciting

Learning to communicate in conflict situations using Leary's Rose. Training Communication in construction © KERN

This training can be extended with the Value Creation and Communication with Residents course and the Ambition Setting with the DCBA Method and Morphological Design course, see below.

Alternative: basic training for first-line renovation consultants (BE-REEL!)

Value creation with residents[21]

Target group: Communication specialists, resident experts, architects, technical process supervisors (quality manager)

Objective:
- Nudging residents 'Get them interested and make them have time for it'
- Create awareness of a common problem
- The roles in a group: Six thinking hats of De Bono - Embrace resistance
- To enable resident specialists to conduct an effective survey in apartment buildings.
- Using practical examples and sample resident surveys, participants will learn how to translate the information collected into resident requirements. This also highlights the importance of uncovering the question behind the requests.
- Based on the customer requirements, participants learn to define the objectives of the entire project. These will guide all project decisions and quality control of all steps during the project. It is therefore important to set up a balanced set of functional requirements and performance indicators.

Duration: 2 half-days

Alternative course: Renovating with guaranteed building performance

[21] e.g. https://kennisinstituutkern.nl/aanbod/waardecreatie met bewoners [dated March 2025]

Ambition setting with the DCBA method and morphological design[22]

Target group: Architect, construction team

Objective: To enable design teams to make structured decisions. They learn to carry out a variance study in which the possible points of interest and interventions are shown in a single overview. Based on this overview, the right connections can be made between intervention choices and implications of these choices. This promotes logical decision making for the renovation scenarios.

Duration: 3 half-days (Forming an opinion, forming a judgement, making a decision)

Alternative course: Renovating with guaranteed building performance supplemented by coaching on the job[23].

Housing costs estimation and feasibility study in highly energy-efficient renovation[24]

Target group: Construction cost specialist, technical process supervisor
Objective:

- Cost experts gain insight into methods to determine the net present value of energy savings and learn to include the result in a feasibility study or in a comparison of variants. They also become familiar with integral project budgeting approaches.
- They learn to perform a Housing cost analysis and to communicate the results transparently.
- Using an example project, they learn about housing cost-effective renovation measures and gain insight into a design method that is aimed at low total costs of ownership (TCO).

Duration: 4 half-day sessions

Alternative course:

- Renovating with guaranteed building performance
- Alternative for the Dutch speaking part of Belgium: Initiation to use the DUBO Limburg tool for CA renovation, TCO tool of University College Ghent

Structural inspection in accordance with NEN 2767[25]

Target group: Building survey specialist

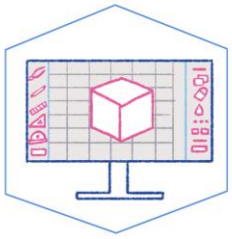
[22] e.g. https://kennisinstituutkern.nl/aanbod/in-4-weken-van-beeldvorming-naar-besluitvorming/ [dated March 2025]
[23] e.g. https://kennisinstituutkern.nl/aanbod/diensten/in-4-weken-van-beeldvorming-naar-besluitvorming/ [dated March 2025]
[24] e.g. https://kennisinstituutkern.nl/aanbod/sturen-op-woonlasten [dated March 2025]
[25] e.g. https://www.hu.nl/deeltijd-opleidingen/nen-2767 [dated March 2025]

Learning objectives:
To enable building surveyors to carry out a full condition assessment in accordance with NEN 2767

Duration: 10 half-days (trainer e.g. HU)

Training:
Netherlands: Deeltijd Hogeschool Utrecht
Belgium: Training and exams at Vlisog.be (Vlaams Initiatief Systematisch Onderhoud van Gebouwen) and certification of the experts at BCCA (Belgian Construction Certification Association vzw)
Practical training condition assessments for existing buildings (Praktijk conditiemeting van gebouwen volgens NEN 2767 - de technische installaties) (Buildwise)

6.3 Deepening phase



In the deepening phase, experts elaborate on the preferred scenario in extensive detail. To do this, they first determine the functional requirements. From this, they derive the technical specifications, which they then calculate for the design at hand and keep adjusting until the functional requirements are met. They also initiate the necessary permit and financing applications. When calculating the resulting monthly costs, the experts take into account the available resources, the form of financing and grants and determine the optimal approach (based on the resulting housing costs and client wishes). Decisions on this will look ahead to the entire project cycle through operation and maintenance, including even the demolition phase.
The choice of form of tendering and contracting is also prepared with an emphasis on an integral project approach. On the basis of the functional design brief, a V&V plan is drawn up that will ensure that the client requirements are maintained throughout all project phases.

Stakeholders involved in this phase, include:
- General members of CAs, of resident sustainability committee, of Association's Board;
- Social process supervisor;
- Technical process supervisor;
- CAs manager;
- Architect/construction engineer;
- Building physics experts on energy/acoustic/fire issue;
- Financial process manager;
- Building cost specialist;
- Asbestos specialist;
- Ecologist;
- Structural engineer;
- Installation advisor;
- Legal expert;
- Quality coordinator.

6.3.1 Courses supporting the deepening phase

Quality assurance in renovations with building performance guarantee[26]

Target group: Architect, building physics energy expert, technical process supervisor, commissioning specialist, installation advisor, quality coordinator, management and team leader of IHRS
Objective: Basis of quality and risk management in highly energy efficient projects. Achieving the next level in project organization and quality management. This course provides valuable guidance on how to keep a grip on ambitions, costs and quality from project inception to completion.

[26] e.g. https://kennisinstituutkern.nl/aanbod/integrale-kwaliteitsborging/ [dated March 2025]

Participants learn to define customer requirements specifications based on customer wishes. These will guide all project decisions and quality control during all steps of the project. It is therefore important to set up a balanced set of functional requirements and performance indicators. To that end a V&V plan can be drafted. This is a quality management plan for crucial control moments throughout the project, i.e. not only after the design and implementation processes, but also during commissioning and while monitoring after commissioning. Useful methods to properly embed this quality assurance procedure in the collaboration process will be shared. Proper contract formulation is essential here. Practical quality assurance systems such as passive house certification are also covered and the role of external quality control will become clear.
In addition, the course will go into the administrative organization that needs to be set up and how to manage the system adequately.
Furthermore, this course enables participants to draw up a risk profile for a project and to create a risk action plan based on this profile.

Duration: 6 half-day sessions

Passive house design & construction[27]

Target group: Architects, energy advisors, installation advisors, quality assurance officers, project leaders

Objective:

- The Passive House Design and Construction course gives designers and decision-makers in the building and installation sector the necessary baggage to create high-quality energetic renovation designs and to ensure quality in implementation.
- The course provides the scientific basis of passive house design principles.
- In addition to a more thorough theoretical basis of a correct design in terms of building physics, participants learn about the practical implementation of the passive house principles.

Duration: 10 days plus 3 days homework and exam

Calculating with the PHPP software package[28]

Target group: Architects, building physics energy experts, technical process supervisors, commissioning specialists, installation advisors, quality coordinators

Objective:

- Get a grip on the energy performance of your designs, be able to give informed advice on energy measures. PHPP is a globally valued tool for calculating the energy balance of building and renovation projects.

[27] e.g. https://kennisinstituutkern.nl/aanbod/passiefhuis-ontwerp/ [dated March 2025]
[28] e.g. https://kennisinstituutkern.nl/aanbod/rekenen-met-PHPP/ [dated March 2025]

- The course provides training in the application of PHPP. Also, it will cover sources for useful information in this regard. With some practice, participants will thus succeed in calculating complex buildings properly.

Duration: 4 half-day sessions

Energy balance with DesignPH[29]

Target group: Architects, building physics energy experts

Objective:
- To learn to perform fast and reliable energy analysis of designs. DesignPH is a graphical interface for easy and reliable input of data about buildings into PHPP software.
- Using DesignPH, a building can be entered as an energetic 3D model in Sketchup. Subsequently, you can import this model into PHPP.
- DesignPH will offer an impression of the building's energy performance even during import into Sketchup. This facilitates optimising the energy balance of a design at an early stage. The course Energy Balance with DesignPH provides an easy introduction to working with this tool.

Duration: 1 day

Course on Chain cooperation and continuous improvement[30]

Target group: Architect, technical process supervisor, installation advisor
Objective: Participants learn how to optimise the value chain and processes within and outside an organization. This can be reached by efficient integral chain cooperation, by setting up and optimising Value Streams (within the organization) and Extended Value Streams (in the chain). This can be applied to the areas of costs, quality, energy performance, resident comfort, indoor climate, sustainability and labour conditions. Participants gain insight into the methodology of 'Value Stream Mapping'. They learn to apply it to the work processes related to energy saving renovation projects. Participants also learn about the crucial communication moments and their place within the renovation process. Tips for setting up a clear communication structure within the renovation process are part of this course.
Duration: 2 half-day sessions

Deepening course Energy-efficient balanced ventilation design[31]

Target group: Installation advisors, installers, energy advisors
Objective: In this course, participants learn about the cascade ventilation methodology. This is a proven and scientifically developed method of balanced ventilation and forms the basis for a simple energy-efficient ventilation concept with high air quality in all seasons. With it, professionals achieve high indoor air quality in the living areas; reduce

[29] https://kennisinstituutkern.nl/aanbod/energiebalans-met-designph/ [dated March 2025]
[30] https://kennisinstituutkern.nl/aanbod/ketensamenwerking/ [dated March 2025]
[31] Zie bijv. https://kennisinstituutkern.nl/aanbod/ventilatie-ontwerp [dated March 2025]

the risk of dry air and limit energy losses due to unnecessary air changes. Participants learn how to properly design a balanced ventilation system to suit future use.
Duration: 1 half-day session

6.4 Transaction phase

At this stage, the renovation provider enters the scene. Together with the design/build team, they develop the technical specifications into a final execution design with a corresponding financing plan and time schedule. Supported by the design team, the renovation provider ensures a technically and financially feasible plan that meets the expectations of the CA.

Stakeholders involved in this phase, include:
- General members of CAs, of resident sustainability committee, of Association's Board;
- Renovation provider (director, project manager, technical draftsperson, work planner, calculator, communications officer);
- Social process supervisor;
- Technical process supervisor;
- Management of IHRS;
- Architect/construction engineer;
- Building physics experts on energy/acoustic/fire issue;
- Financial process manager;
- Building cost specialist;
- Structural engineer;
- Installation expert;
- Quality coordinator;
- Asbestos specialist;
- Maintenance specialist;
- Commissioning specialist;
- Monitoring specialist.

6.4.1 Courses supporting the transaction phase

Quality assurance in renovations with building performance guarantee

See page 46

Passive House Trades person course[32]

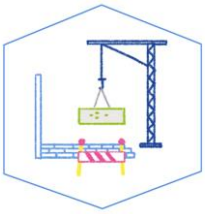
Target group: employees renovation provider, installation advisor, installer, maintenance specialist, commissioning specialist, monitoring specialist, building cost specialist, structural engineer
Objective: Making executing parties aware of the interdependence of energy-related aspects in buildings. Understanding interdisciplinary dependencies, especially in execution. Learning the importance of high-quality construction execution. Assessing risks in implementation and becoming familiar with solutions. Topics include:
- Building physics in highly insulated buildings;
- Airtight construction;
- Thermal insulation;

[32] e.g. https://kennisinstituutkern.nl/aanbod/cursus-energieneutraal-bouwen-en-renoveren/ [dated March 2025]

- Construction without thermal bridges;
- Energy-producing frames, windows, doors;
- Balanced ventilation in new construction and renovation;
- Heat generation and distribution in a highly energy-efficient building;
- Energy generation and sustainable energy supply.

Duration: 4 days

6.5 Construction phase



In the construction phase, it is important to organize good communication and cooperation between the executing parties involved, set up and manage a good planning and organize good quality control. Resources such as people, machines and materials need to be organized as effectively and efficiently as possible to avoid quality problems and/or failure costs. This requires team building, smart planning, good communication (tools) and sharp quality control at critical aspects and moments. No matter how good a renovation design is, if it is not realised as intended, this can have drastic consequences for the final performance and costs in the aftercare phase.

Stakeholders involved in this phase, include:

- General members of CAs, of resident sustainability committee, of Association's Board;
- Renovation provider (director, project manager, technical draftsperson, work planner, calculator, communications officer, staff member assembly team);
- Social process supervisor;
- Management of IHRS;
- Building physics experts on energy/acoustic/fire issue;
- Structural engineer;
- Installation expert, staff member assembly team;
- Quality coordinator;
- Commissioning specialist;
- Monitoring specialist.

6.5.1 Courses supporting the construction phase

Course on Communication in construction

See page 42

Quality assurance in renovations with building performance guarantee

See page 46

Passive House Trades person course

See page 50

6.6 After-care phase

Assuming a successful construction phase, costs and performance in this phase are still influenced mainly by the way the building is used, including user behaviour, and the monitoring and optimisation of the various building elements (such as installations) so that intended performance is achieved. In this phase, project evaluation takes place and the integration of lessons learned for the purpose of process optimisation of the IHRS organization.

Stakeholders involved in this phase, include:

- General members of CAs, of resident sustainability committee, of Association's Board;
- Renovation provider (director, project managers, technical draftspersons, work planners, calculators, communications officer, staff members assembly team);
- Social process supervisors;
- Technical process supervisors;
- Management of IHRS;
- Building physics experts on energy/acoustic/fire issue;
- Building cost specialists;
- Structural engineers;
- Architect/construction engineers;
- Installation expert, staff member assembly teams;
- Quality coordinators;
- Commissioning specialists;
- Monitoring specialists;
- Maintenance specialists.

6.6.1 Courses supporting the aftercare phase

Course on Chain cooperation and continuous improvement

See page 52

6.6.2 Quality assurance in renovations with building performance guarantee

See page 52

7 CONCLUSION

According to this survey, the knowledge for initiating and scaling up IHRS is available in the context of Flanders and the Netherlands. Existing courses can also serve as a good starting point. However, several courses had to be compiled and further developed, some focusing on the specific aspects of the IHRS process. Results from ongoing research within CondoReno could possibly also be valuable additions.
Follow-up steps include (further) testing and fine-tuning the training courses in the regional context (starting in Flanders and the Netherlands) and consolidation of quality assurance through these courses as obtaining (national) recognition of the certificates. Also, the licensing structure of the IHRSs needs to be rolled out. The IHRSs developed within CondoReno play an important role in further scaling up the training courses (stimulating demand for these courses and providing skilled, experienced teachers).

Appendix 1:

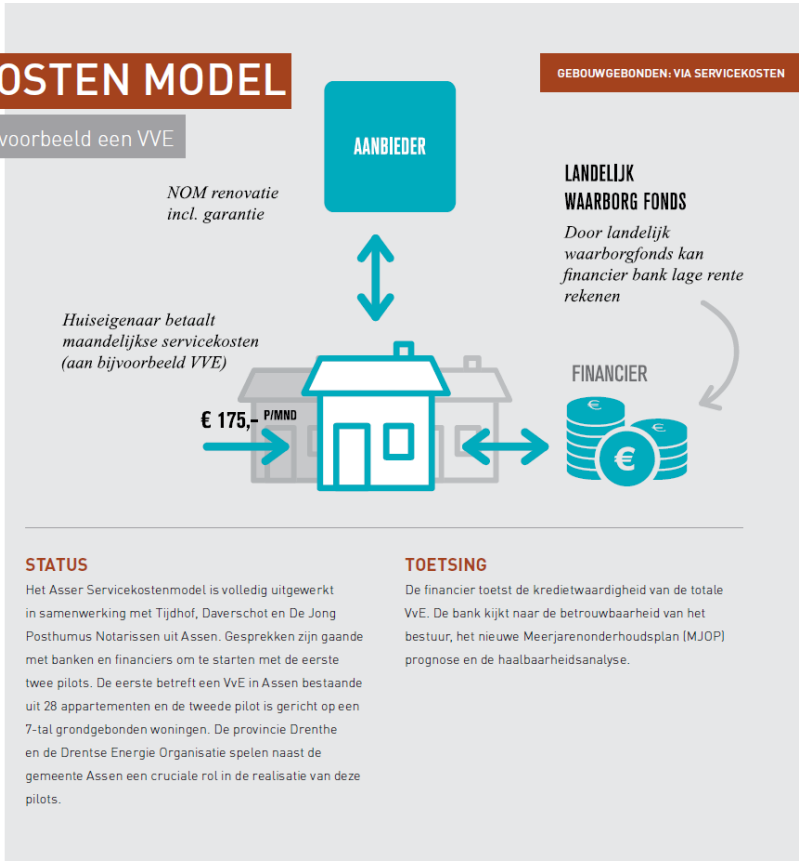
ASSER SERVICEKOSTEN MODEL

Financiering via servicekosten, via bijvoorbeeld een VVE

HOE WERKT HET FINANCIERINGSMODEL?

De Gemeente Assen heeft samen met het financieel energie adviesbureau Segon een financieringsconstructie ontwikkeld. Hiermee kan zonder stijging van de maandlasten een Nul op de Meter renovatie worden bekostigd voor eigenaar-bewoners van Verenigingen van Eigenaren en van grondgebonden woningen. De kosten voor de Nul op de Meter renovatie worden verrekend in de servicekosten en voldaan uit de besparing op de energielasten en de toekomstige besparing op onderhoud. De hoogte van de servicekosten is daarmee leidend voor de looptijd van de overeenkomst. Op het moment dat de woning wordt verkocht zijn de servicekosten voor de volgende woningeigenaar. Het geselecteerde consortium van uitvoerders garandeert de afgesproken energieprestaties gedurende de looptijd en zorgt voor het beheer en onderhoud.

Een landelijk waarborgfonds geeft garantie op de maandelijkse premie en dus niet op de totale investering. Hierdoor blijft het risico voor de financier minimaal, zodat de rente ook laag kan blijven. In ruil hiervoor neemt de financier of bank afstand van de hoofdelijke aansprakelijkheid van de deelnemer(s). De eigenaar-bewoner wordt ook niet met een extra schuld geconfronteerd en hoeft geen krediettoets te ondergaan. Zo is deze constructie laagdrempelig en transparant.



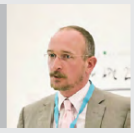
STATUS

Het Asser Servicekostenmodel is volledig uitgewerkt in samenwerking met Tijdhof, Daverschot en De Jong Posthumus Notarissen uit Assen. Gesprekken zijn gaande met banken en financiers om te starten met de eerste twee pilots. De eerste betreft een VvE in Assen bestaande uit 28 appartementen en de tweede pilot is gericht op een 7-tal grondgebonden woningen. De provincie Drenthe en de Drentse Energie Organisatie spelen naast de gemeente Assen een cruciale rol in de realisatie van deze pilots.

TOETSING

De financier toetst de kredietwaardigheid van de totale VvE. De bank kijkt naar de betrouwbaarheid van het bestuur, het nieuwe Meerjarenonderhoudsplan (MJOP) prognose en de haalbaarheidsanalyse.

Marco Attema
e: m.attema@assen.nl
t: 06 10 874 250
w. www.assen.nl



Joost Schretlen
e: joost.schretlen@segon.nl
t: 06 53 240 339
w. www.segon.nl

Frank Huizinga
e: frank.huizinga@segon.nl
t: 088 0900 000
w. www.segon.nl

ASSER SERVICEKOSTEN MODEL

Aandachtspunten

PROCESMANAGEMENT

De renovatie van een woning of appartement vergt veel tijd en geduld. Renovatie naar Nul op de Meter is nieuw en vraagt doorzettingsvermogen van de eigenaar en de uitvoerders. Alle betrokken partijen moeten met elkaar in overeenstemming komen over de aanpak en de middelen. Dit is mensenwerk en vraagt om een zorgvuldig proces.

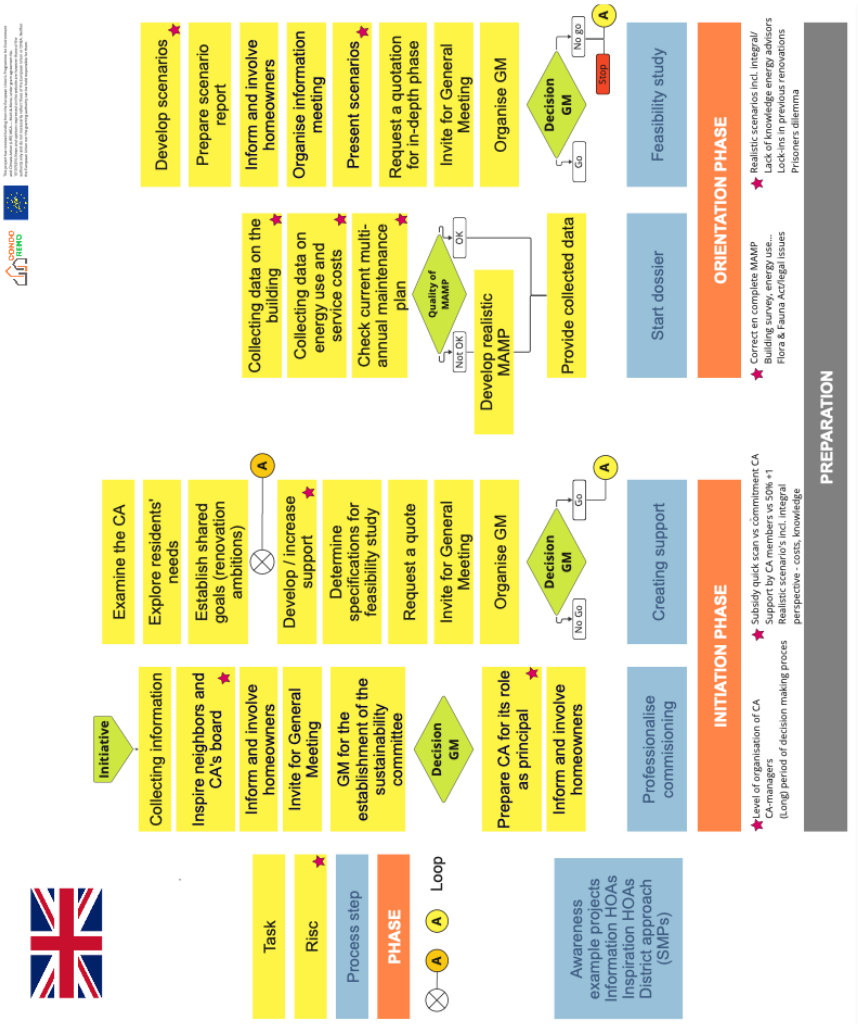
SPLITSINGSAKTE VAN VVE'S

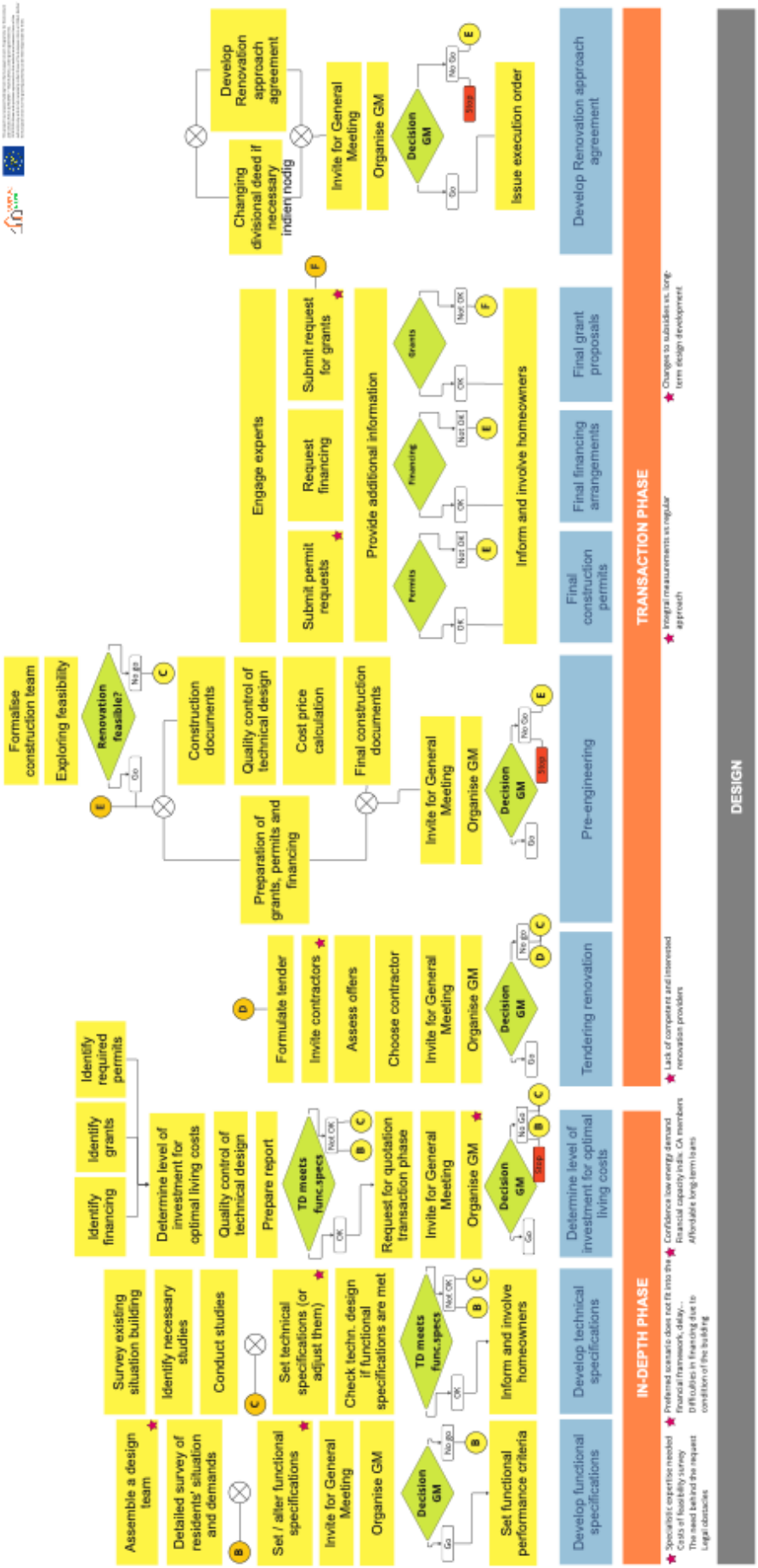
Een aanpassing van de splitsingsakte kan een langdurig en enerverend traject zijn. Bij het renoveren van een VVE naar Nul op de Meter moet mogelijk de splitsingsakte worden aangepast. De fundering en het dak zijn vaak gezamenlijk eigendom, de schil ofwel de buitengevel is soms per appartement opgesplitst. De splitsingsakte kan alleen worden aangepast na unanieme goedkeuring van de VVE, soms is er vastgelegd dat besluiten kunnen worden genomen als 80% van het totaal aantal stemmen in de VVE akkoord gaat. Naast tijd zijn er ook kosten verbonden aan het wijzigen van de splitsingsakte, voor de notaris en voor eventueel juridisch advies.

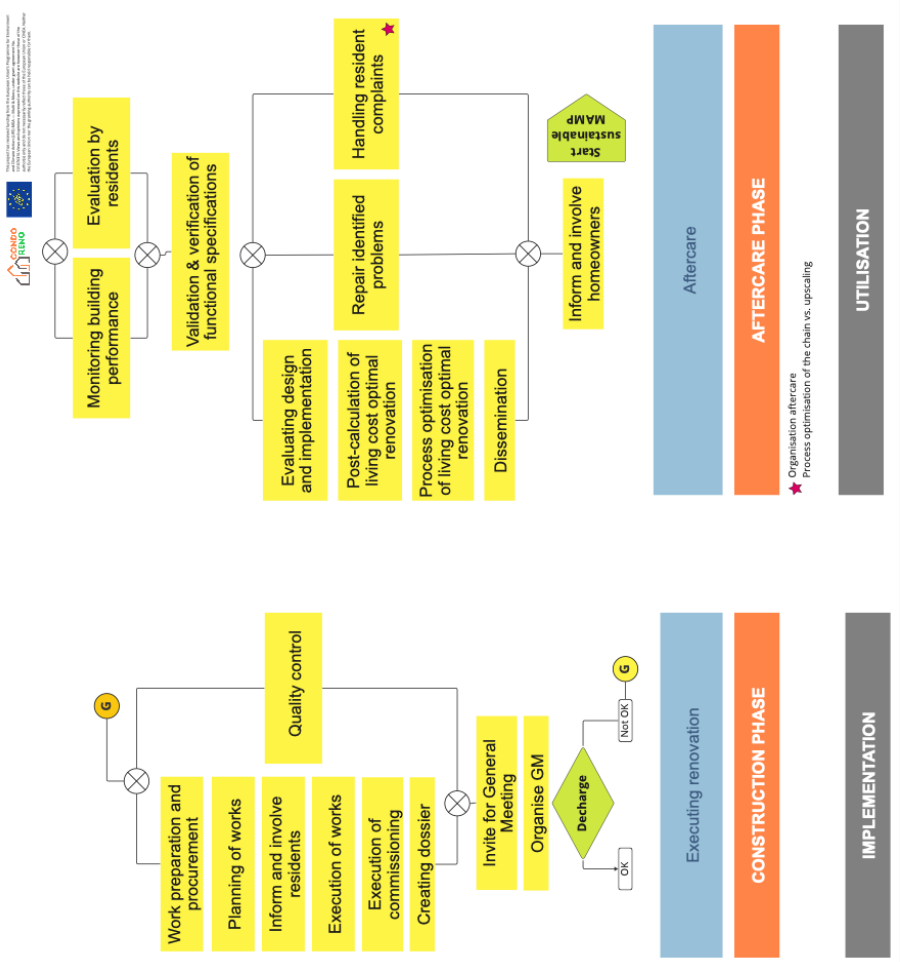
WAARBORGFONDS: GARANTSTELLING OP SERVICEKOSTEN

Een financier die een lening aan een VVE verstrekt wil de zekerheid dat deze lening wordt terugbetaald. Nul op de Meter is een nieuw concept. Om de financier de garantie te geven dat de servicekosten worden betaald kan volgens de initiatiefnemers een landelijk waarborgfonds worden opgericht dat hiervoor garant staat. Dit kan een revolverend fonds zijn, waarbij in de servicekosten een kleine premie verwerkt zit die weer naar het fonds gaat.

Appendix 2: Overview of the IHRS- roadmap




DESIGN
IN-DEPTH PHASE
TRANSACTION PHASE
Develop functional specifications
Develop technical specifications
Determine level of investment for optimal living costs
Tendering renovation
Pre-engineering
Final construction permits
Final financing arrangements
Final grant proposals
Develop Renovation approach agreement
Assemble a design team
Detailed survey of residents' situation and demands
Set / alter functional specifications
Invite for General Meeting
Organise GM
Set functional performance criteria
Survey existing situation building
Identify necessary studies
Conduct studies
Set technical specifications (or adjust them)
Check techn. design if functional specifications are met
Inform and involve homeowners
Identify financing
Identify grants
Identify required permits
Determine level of investment for optimal living costs
Quality control of technical design
Prepare report
Formulate tender
Invite contractors
Assess offers
Choose contractor
Request for quotation transaction phase
Invite for General Meeting
Organise GM
Preparation of grants, permits and financing
Formalise construction team
Exploring feasibility
Renovation feasible?
Construction documents
Quality control of technical design
Cost price calculation
Final construction documents
Invite for General Meeting
Organise GM
Engage experts
Submit permit requests
Request financing
Submit request for grants
Provide additional information
Inform and involve homeowners
Changing divisional deed if necessary indien nodig
Develop Renovation approach agreement
Invite for General Meeting
Organise GM
Issue execution order
Decision GM
TD meets func.specs
Permits
Financing
Grants
Go
No go
OK
Not OK
Stop


Start sustainable MAMP
Handling resident complaints
Repair identified problems
Inform and involve homeowners
Evaluating design and implementation
Post-calculation of living cost optimal renovation
Process optimisation of living cost optimal renovation
Dissemination
Validation & verification of functional specifications
Evaluation by residents
Monitoring building performance
Aftercare
AFTERCARE PHASE
Organisation aftercare
Process optimisation of the chain vs. upscaling
UTILISATION
Quality control
Work preparation and procurement
Planning of works
Inform and involve residents
Execution of works
Execution of commissioning
Creating dossier
Invite for General Meeting
Organise GM
Decharge
Not OK
OK
G
Executing renovation
CONSTRUCTION PHASE
IMPLEMENTATION

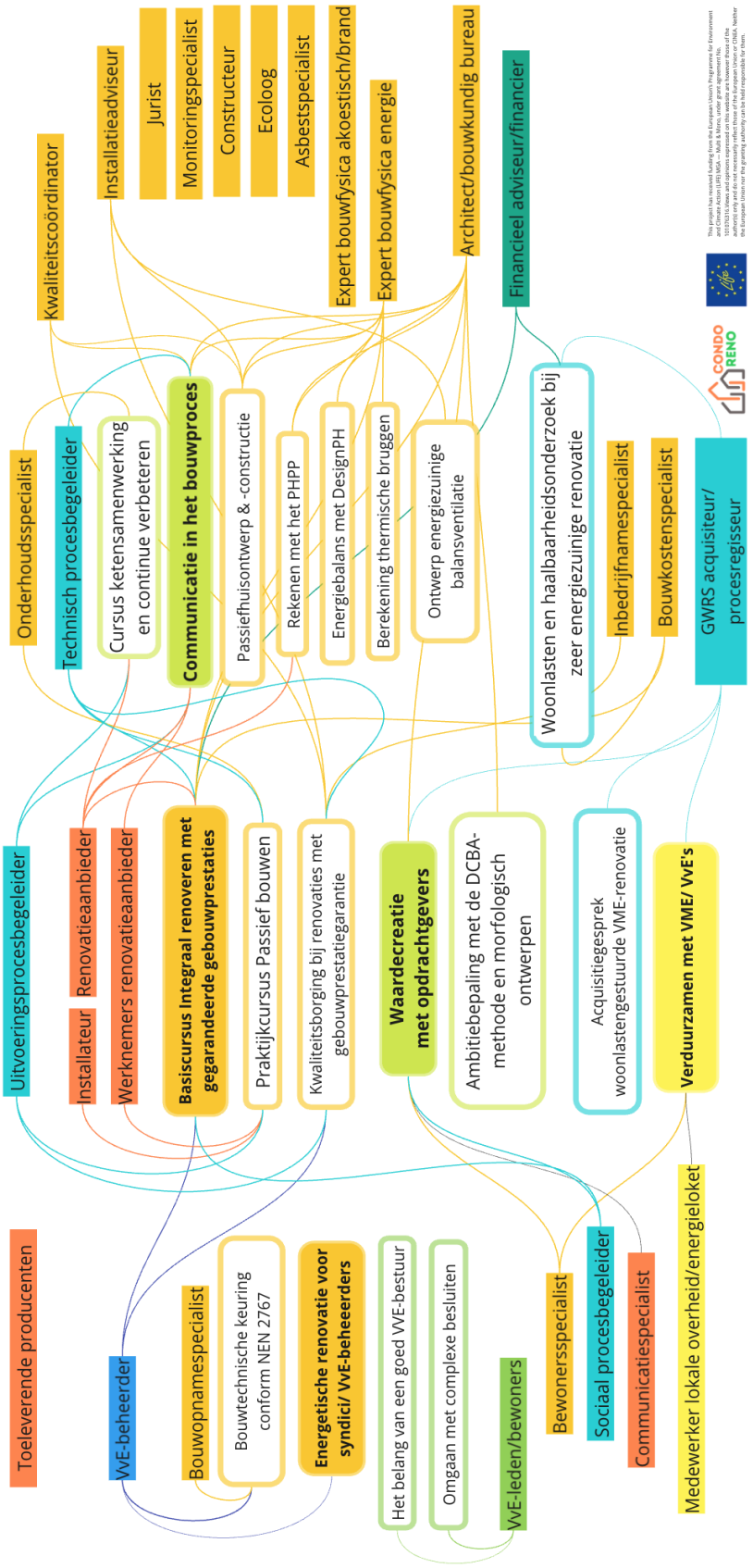
Appendix 3: Description of the roles

Role	Description
Municipality	Local policy officer, involved in policy implementation with mandate of feedback to policymakers
CA members/residents	Apartment owners with apartment rights including voting rights at the general meeting. This group is meant to include representation of tenants.
Renovation commission	CA committee consisting of intrinsically motivated residents involved in the renovation
Social process supervisor	A social process supervisor supports the activities of the sustainability committee on behalf of the CA. He directs the process and his role as an outsider allows him to ensure a safe atmosphere during residents' meetings. He provides support to the CA during all phases, is attentive to the social aspects during the decision-making process by the CA members and can mediate and advise in communication if necessary. He monitors the completion of the correct steps in the process of a CA from initiative to after completion of the renovation.
CAs board	Elected board of CA-members
CAs manager	CA manager, in charge of administrative and organizational tasks.
IHRS-ambassador	An advisor who knows, supports and shares the mission of the IHRS. IHRS ambassadors can have a significant impact on the resident initiative by getting CA members/residents and related parties interested in an IHRS renovation.
IHRS-acquirer	The IHRS acquirer explains the IHRS model to potential clients and performs the initial test of whether a project qualifies for an IHRS integrated approach (often as part of the scenario sketch). This role suits consultants to CA renovations who subscribe to the IHRS mission and methodology and integrate it into their working method.
Technical process supervisor	The technical process supervisor is the spider in the web the deepening phase and the transaction phase. During these phases, the process supervisor is responsible for all support activities to make the process run smoothly during the designing process. He supervises the design process and ensures that the steps are taken as scheduled (in sequence and predictable) so that the process is completed on time and within budget. The technical process supervisor represents the IHRS/ design team to the client and other stakeholders, prepares presentations regarding the technical decision making process of the client. He is responsible for the implementation of quality assurance and functions as a point of contact for all parties involved in these phases. He also handles internal project evaluation.
Quality coordinator	The quality coordinator is involved in quality assurance during design and execution of IHRS renovations and has the task of supervising and controlling process and the quality of engineering and implementation. The quality coordinator delegates quality-related

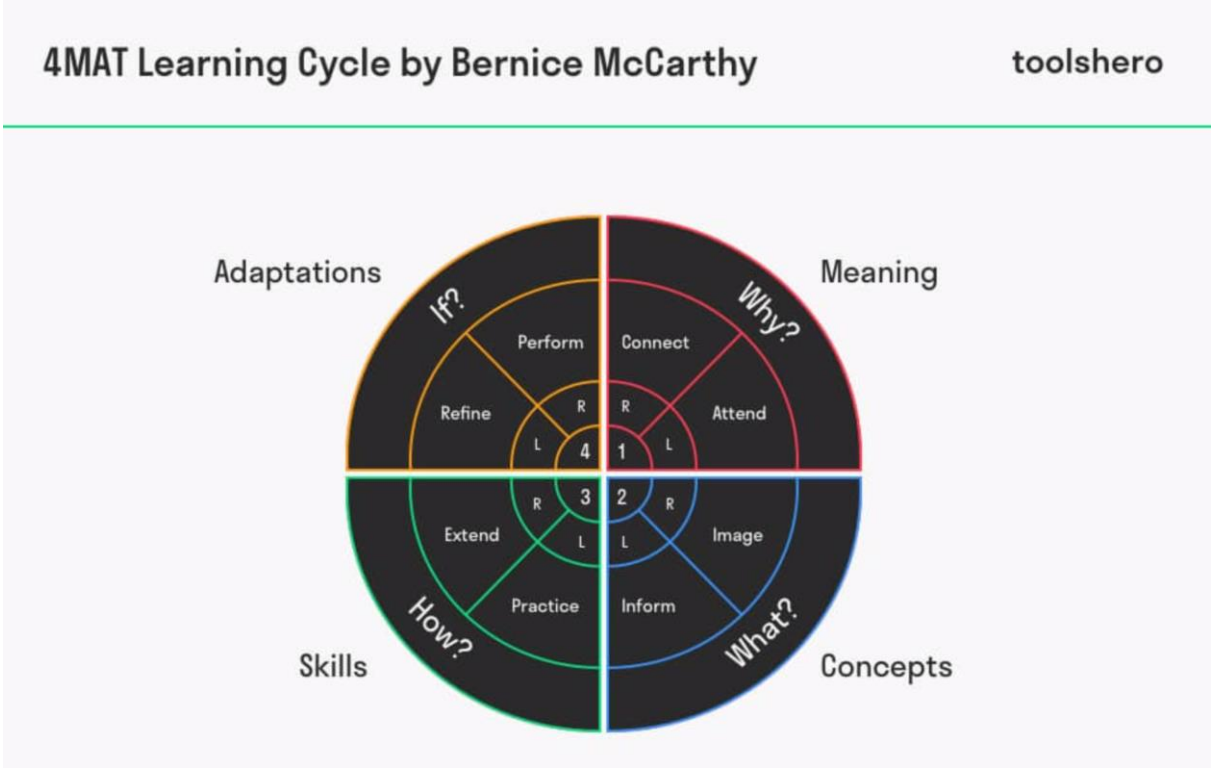
Role	Description
	issues to suitably qualified experts. He also facilitates the technical and process-related trainings for the integral renovations.
Financial process manager	Expert in finance, developing financing schemes.
Building cost specialist	Expert who monitors construction costs in the different phases (orientation phase to transaction phase and aftercare phase).
Ecologist	Advisor flora and fauna surveys
Asbestos specialist	Consultant asbestos survey and removal plan
Maintenance specialist	Maintenance optimization consultant
Resident Specialist	Resident Survey Advisor, an expert on resident communication and concerns and responsible for requesting information, including through surveys, and processing it. This consultant provides input on the specific residents' needs and thus lays the foundation for the functional requirements.
Legal expert	Legal expert, e.g. notary who can draft/amend subdivision deed.
Architect/construction engineer	Architect/construction engineer
Building survey specialist	Specialist for surveying the existing situation and present defects
Expert building physics on energy	Expert highly energy-efficient EnerPHit renovation, PHPP and heat flow calculations, correct construction detailing, knowledge of integral installation concepts.
Building physics expert on acoustics	Expert in the field of acoustic building physics
Fire prevention specialist	Expert in the field of fire safety in buildings
Structural engineer	Structural engineer
Installation advisor	Installation consultant with knowledge and experience of integral installation concepts, energy efficient ventilation, heating and comfort in highly energy efficient buildings.
Direction of renovation provider	Renovation provider/director
Technical draftsman	Technical draftsman
Project manager	Project manager
Work planner	Work planner
Construction Cost Estimator	Construction Cost Estimator
Construction worker	Construction worker for the assembly team (carpenter, mason)
Installer	Installer
Installer	Construction worker for the assembly team (installer)
Communications officer	Communications officer for the contractor. Supports the construction parties in planning and communication with residents and other stakeholders.

Role	Description
Implementation Process Supervisor	The implementation process supervisor represents the IHRS and represents/advocates the interests of the CAs during the implementation of the renovation. His contributions take place in the construction phase and aftercare phase. Then he oversees supervision and support activities to ensure the process runs optimally. The process supervisor is the contact person for the IHRS to the client and to the other stakeholders, and in that context he organizes meetings and presentations. He supports the renovation provider in the implementation of quality assurance and is the point of contact for all parties involved in these phases.
Commissioning specialist	Specialist for adjusting installations after integral renovations.
Monitoring specialist	Monitoring specialist, responsible for setting up an appropriate monitoring system, carrying out measurements and evaluating and formatting measurement data. Also responsible for ensuring the privacy of residents.

Appendix 4: Overview roles and trainings



Appendix 5: 4MAT- model of learning styles



Source: www.toolshero.com

4MAT is a method developed by Mc Carty for effective teaching based on Kolb's learning styles[33].

Read the model clockwise, starting with (top right) 'connect'. R and L stand for right and left modes of the brain.
Each block (chunk) of knowledge/insight is composed of the following (main) steps:
(1) Purpose ('little what'): Brief description of the chunk and what you want to achieve with it. (2) Why? (the imaginative learner): Create the connection with this part of the learning material (chunk) for the students by asking questions related to the chunk or naming situations in which this chunk can offer a solution. This way, learning is stimulated through personal meaning. Then from the experiences through discussion etc. to dialogue and reflection.
(3) What? (the analytical learner): Create insight on what this (this chunk) contains. How does this work? How do you do this? (conceptualising, defining, shaping and acquiring knowledge). Factual and substantive treatment of this knowledge. Move learners from the concrete to the abstract. Subjective experiences are mixed with the abstraction theory is going to be covered. This lets the trainees form an image about the subject matter, which ensures that they reinforce the focus.
4) How (common sense learner) How to proceed? Collect data, hypothesise, tinker, experiment and take decisions. Participants actively engage with the knowledge gained by using worksheets, conducting experiments and using related technology in their own

[33] https://www.toolshero.com/personal-development/4mat-learning-cycle-model/

situation (practice). Learners can add something of their own to the learning material here (extension of knowledge).
(5) What if? (dynamic learner): Providing an outlook. What can I do with it? What do you see when you have properly applied the knowledge you have learned? Analysis of what the trainees have planned as an extension of what they have learned; a refinement from what they have learned for their own situation. Implementation by trainees of practical assignments. This step is all about identifying constraints, summarising, evaluating and executing.

Scripts
All chunks are scripted. That is a concise written-out text according to the 4Mat. The script contains per chunk the spoken text (concise), flipchart notes, games, videos, practical exercises, etc. The purpose of this is:

- Methodical set-up of the course: logical, structured and congruent;
- Qualitative set-up of the course: didactically successful (achieve goal);
- Possibility of constantly improving the script (better every day);
- Taking over a course evening by another trainer is a lot easier (no need to use your own material and texts...);
- Limiting hobbyism.

Materials required
Overview of the materials and equipment needed for the training: number of chairs, layout of the room, lighting, ventilation, heating, flipchart, audio, video, beamer, screen equipment, any prints for during the training, course folder, badges, food & beverage, etc. In short, everything for a successful training.

Trainers
Preference is given to two trainers per module. Depending on the required expertise but also complementary personalities for a better fit with the different trainees.

Testing uptake of the knowledge offered
Generally no exams, tests, proofs, etc. needs to be taken to demonstrate that the knowledge has been absorbed by the leaners. The autonomy and responsibility for absorbing and mastering the knowledge lies entirely with the participants. If something is unclear or misunderstood, he/she can report it and it will be further explained (within or outside course time). The certificate issued at the end is a proof of participation; not proof of a recognised knowledge.

Good atmosphere
Students learn faster and better in a pleasant mood, atmosphere. First of all, a pleasant, working environment (light, heating, ventilation, no noise and disturbances) is an important starting point. In addition, ensuring a (socially) safe working atmosphere is a must. Also, humour is a welcome change for much-needed attention.
Of course, a well-kept and sufficient 'wet and dry' is an important fuel for the course.