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Active House

- a vision of buildings that create a healthy and comfortable life for people

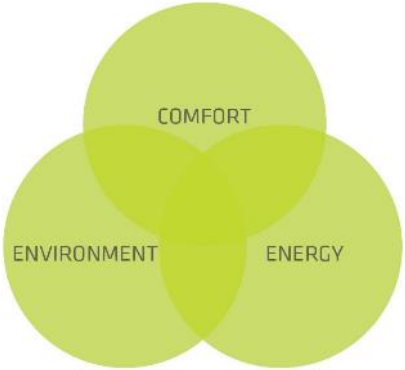
+

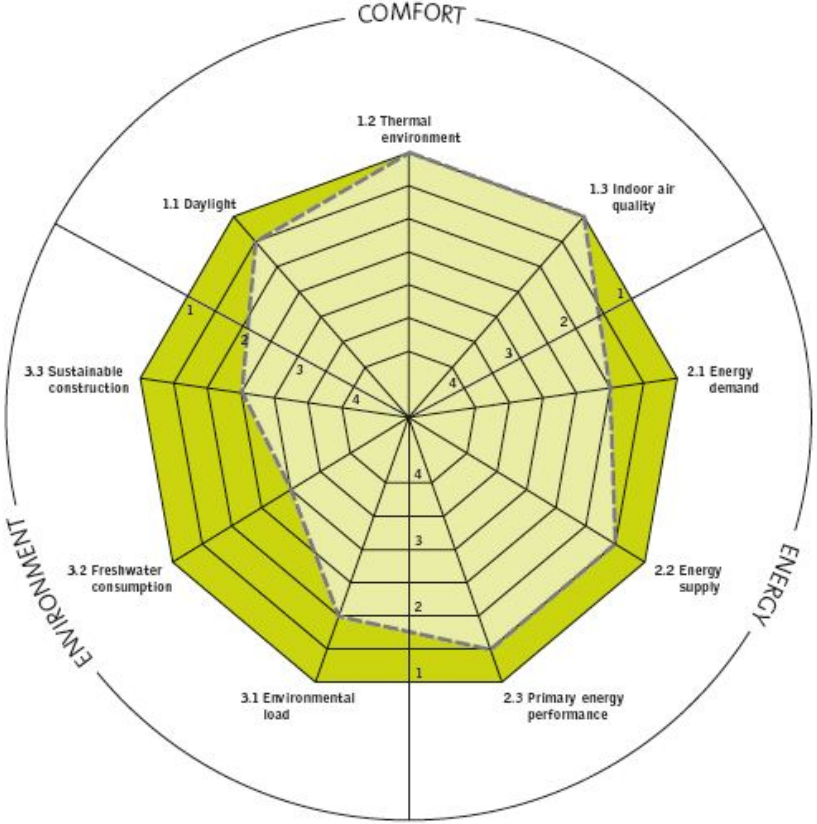
- a tool to empower house owners and developers to design sustainable buildings

Kurt Emil Eriksen, Head of Policy Workgroup, Active House Alliance, kurt.emil.eriksen@velux.com

Active House:

-a vision of buildings that create a healthy and comfortable life for people





Active House:

-a vision of buildings that create a healthy and comfortable life for people

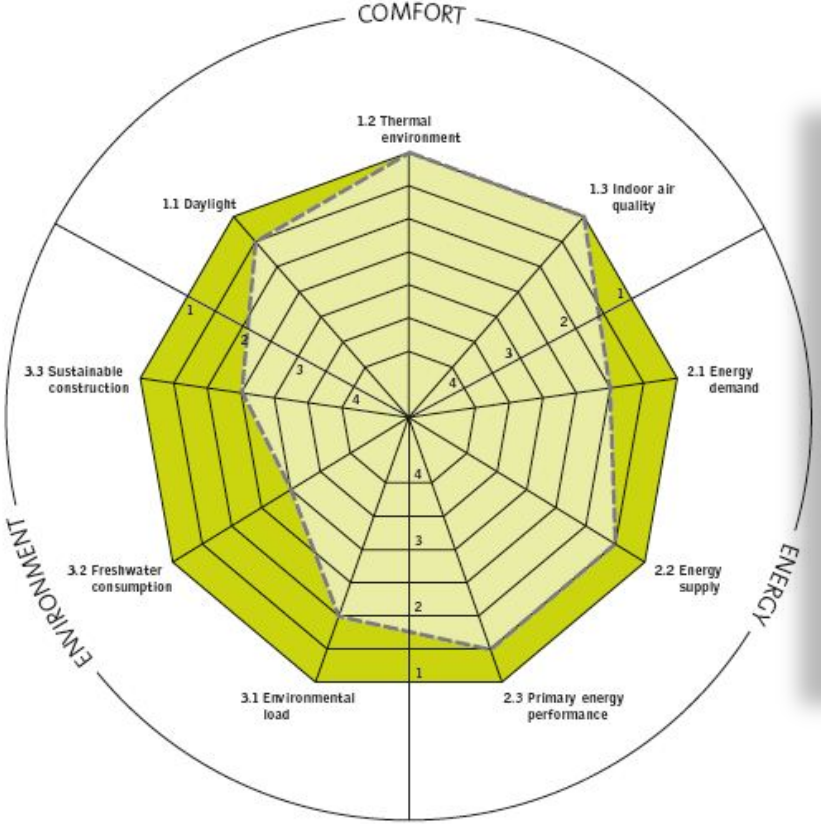
Quantitative Criteria
Ratings: 1 (best) – 4 (acceptable)

Comfort
- Daylight
- Thermal environment
- Indoor air quality

Energy
- Energy demand
- Energy supply
- Energy performance

Environment
- Environmental loads
- Freshwater consumption
- Sustainable construction

Qualitative Criteria; checklist



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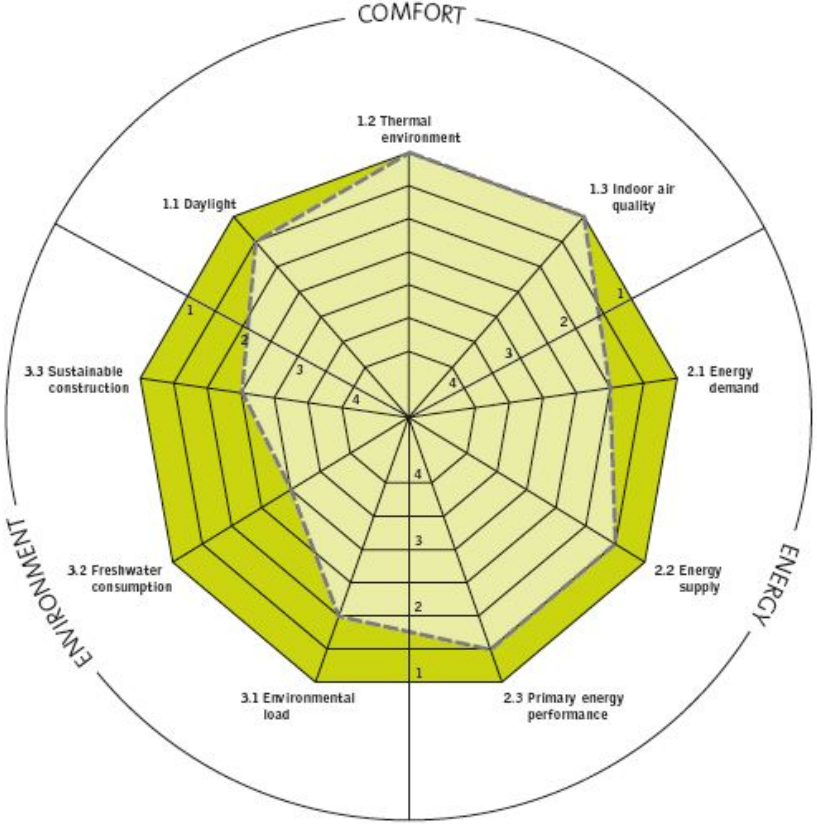
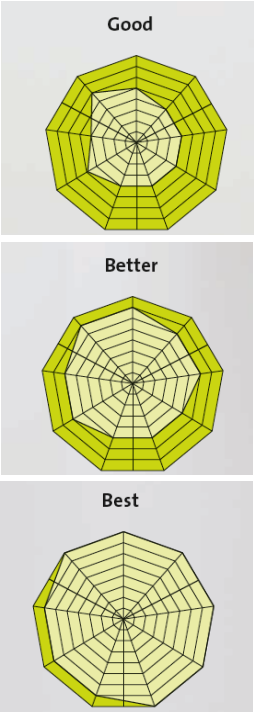




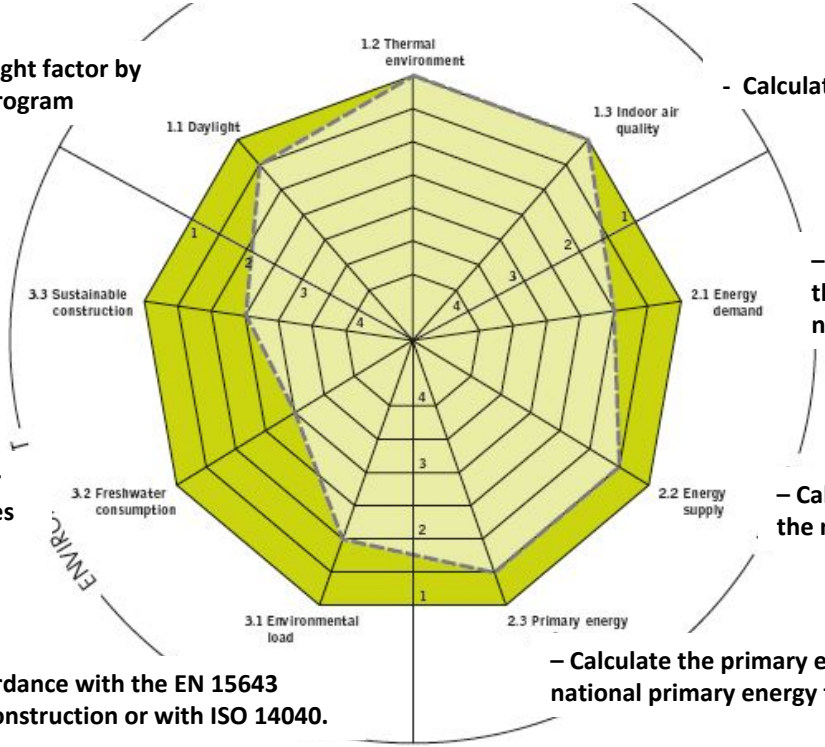
Active House:

-a methodology that is a valid method in all EU countries

– Calculate summer and winter conditions by use of the adaptive method in EN 15251

– Calculate the daylight factor by use of a validated program

- Calculate CO2 level by use of EN 15251



– Calculate the performance by evaluating the sourcing of materials

– Calculate the Energy Demand with the EPBD as reference and with the national methodology in the country

– Calculate the use of water based on national references

– Calculate the renewable energy by use of the renewable energy directive as reference

– Calculate LCA in accordance with the EN 15643 series on sustainable construction or with ISO 14040.

– Calculate the primary energy for the building by use of national primary energy factor as required in the EPBD

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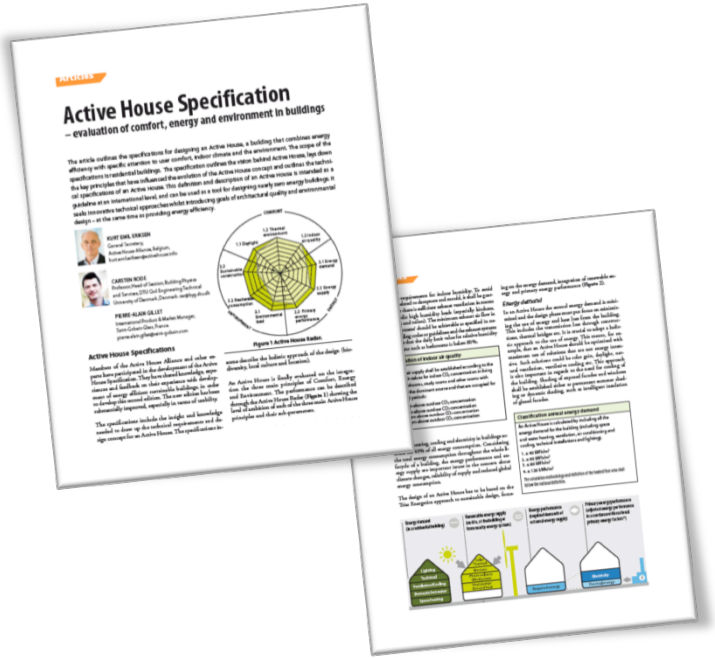
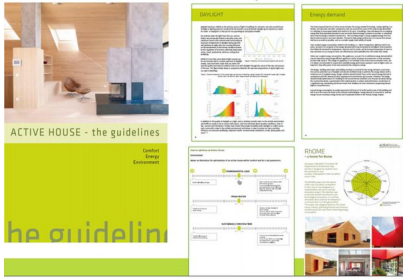
Active House:

- a tool to empower developers to design sustainable buildings





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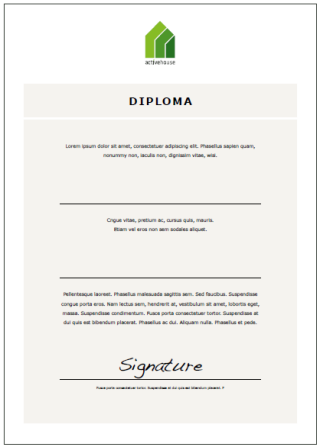
Active House Label:

- a label that empower house owners to require sustainable buildings



Entrance

Metal sign

Active House Label:

- verifiers for the active house label

Name:	Amdi Worm
Title:	Senior consultant, Sustainability
Organization:	Arkitema Architects
Country:	Denmark
Contact:	

Name:	Eileen Meyer
Title:	Architect
Organization:	Eileen Meyer Architect
Country:	Italy
Contact:	

Name:	Guenther Gantioler
Title:	Engineer Building Physics
Organization:	Active House Italy
Country:	Italy
Contact:	

Name:	Alexander Kucheravy
Title:	Architect
Organization:	ARCHI energy
Country:	Ukraine
Contact:	

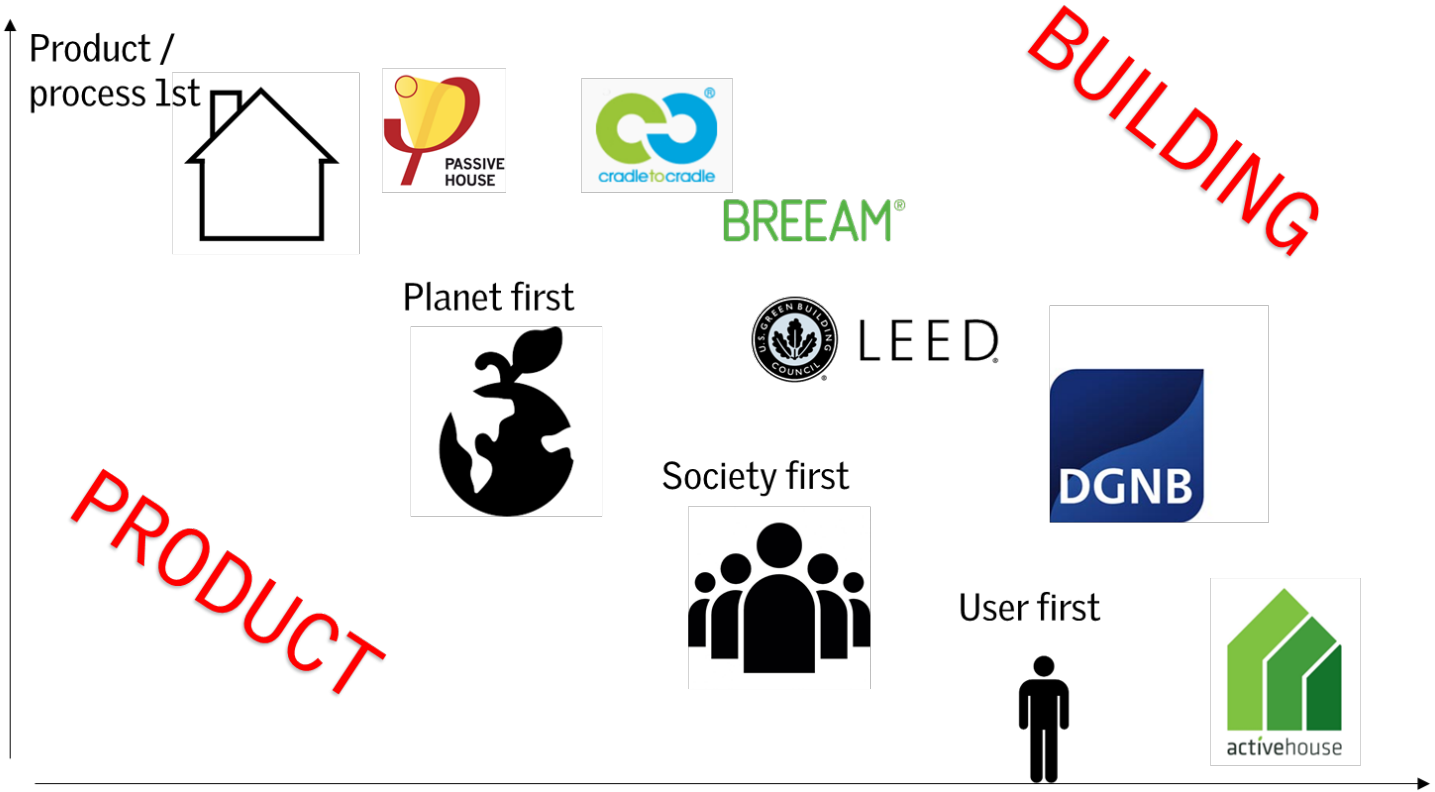
Name:	Agnieszka Szwarczewska
Title:	M. Eng. & Arch.
Organization:	Independent
Country:	Denmark
Contact:	

Name:	Henrik Henrik Poulin
Title:	Consultant
Organization:	Danish Technological Institute
Country:	Denmark
Contact:	

Name:	Emilia Mladin
Title:	PHD
Organization:	Romanian Asociation of Europe Auditors for Buildings
Country:	Romania
Contact:	

Active House:

- compared to other labels



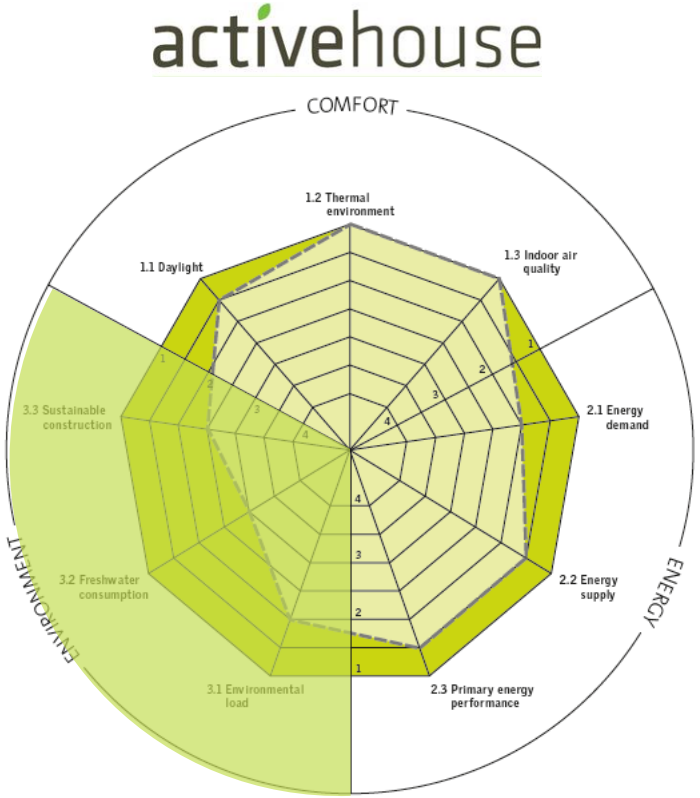
Active House for nZEB implementation

Comfort requirement is included in the EPBD revision requiring that member states set comfort requirement to NZEB

National energy requirement shall be set in combination to indoor climate requirement, securing that the comfort levels required, can be met with the required energy level

Active House Vision can be used as common methodology, with focus on:

- Daylight
- Thermal comfort
- Air Quality
- Final Energy
- Renewable energy
- Primary energy



Active House Centennial Park

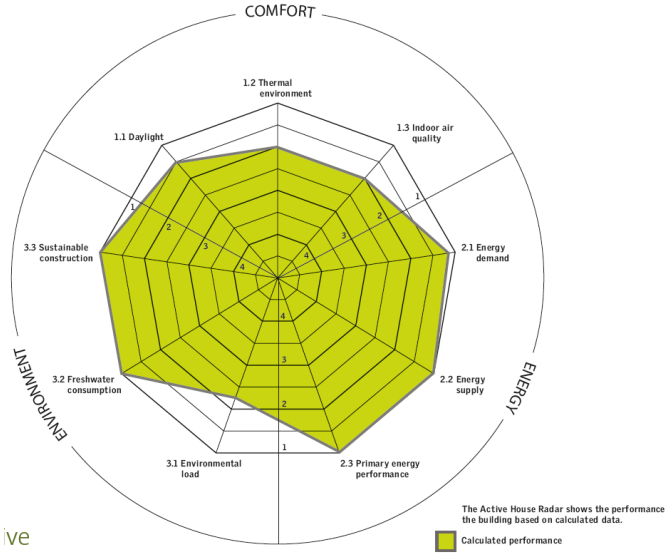
– use passive solutions to create good indoor comfort

Active House Centennial Park

– use of natural ventilation and daylight to create good indoor comfort

RHome
– Solar decathlon winner 2015

Photos by: Lorenzo Procaccini



Green Solution House
– AWARD winner 2016

Active House for renovation
– RenovActive

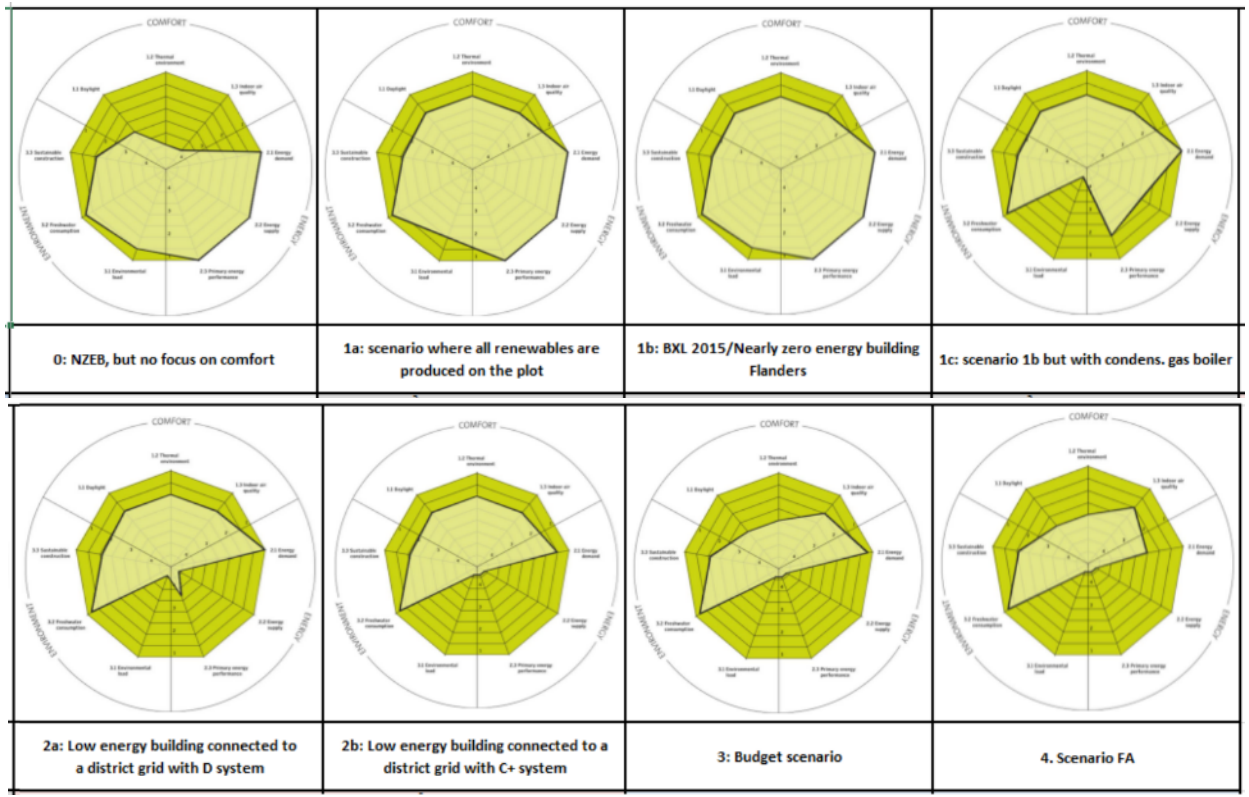
After renovation

Before renovation

The before renovation radar reflects an uninhabited house with leaky windows.

Active House for renovation

– use of Active House Radar as design tool



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THANKS

– read more at the Active House homepage

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Apply for an Active House Label

UPLOAD YOUR PROJECT | CREATE A RADAR | APPLY FOR AN ACTIVE HOUSE LABEL | JOIN THE ACTIVE HOUSE AWARD |

How to apply for an Active House Label

Step 1: Download Application and formula
Step 2: Send the Application form to Active House
Step 3: Active House will contact you and provide you with your Active House Label

Description

Active House Label
The Active House label is a world wide quality stamp for comfortable and sustainable buildings. It advices on elements that are important to humans life and living in their homes.

Buildings that have received the Active House label have been designed and evaluated with a combined focus on comfort, smart use of energy and minimum impact on the environment.

The label is a sign to homeowners that this building is designed with focus on human needs and a home fit for the future

How to apply
Homeowners, professional house builders, investors and architects are invited to apply for the label by sending the attached formula to the secretariat at: secretariat@activehouse.info

DOCUMENTS FOR LABEL

Guidelines to the Active House Label
Application and formula
Manual for verification
Table with qualitative questions

DOWNLOAD TOOLS

Active House specification
Active House design guide
Active House calculation Tool
LCA tool
Indoor Comfort Tool

CONTACT

Active House Secretariat:
secretariat@activehouse.info

VERIFYING BODIES

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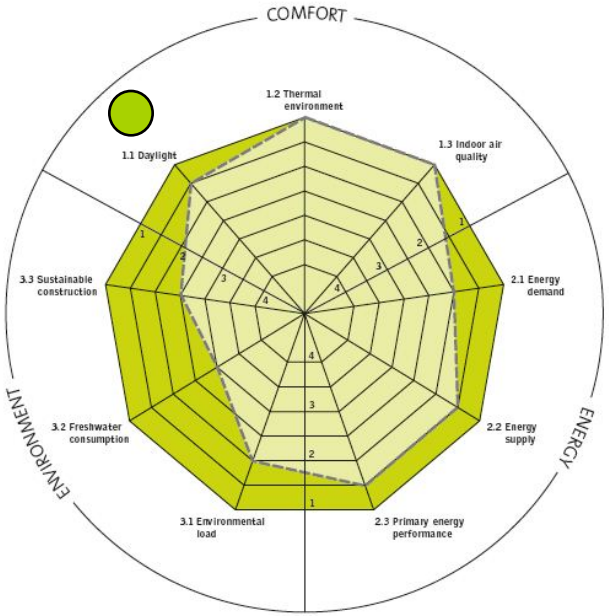

PARAMETER	VALUE	CRITERIA	SCORE
1.1.1 Daylight factor		The amount of daylight in a room is evaluated through average daylight factor levels on a horizontal work plane: 1. DF > 5% on average 2. DF > 3% on average 3. DF > 2% on average 4. DF > 1% on average Daylight factors are calculated using a validated daylight simulation program.	
1.1.2 Direct sunlight availability		For minimum one of the main habitable rooms, sunlight provision should be available between autumn and spring equinox: 1. At least 10% of probable sunlight hours 2. At least 7.5% of probable sunlight hours 3. At least 5% of probable sunlight hours 4. At least 2.5% of probable sunlight hours The evaluation is made according to British Standard BS 8206-2:2008 "Lighting for buildings – Part 2: Code of practice for daylight".	
		TOTAL AVERAGE:	

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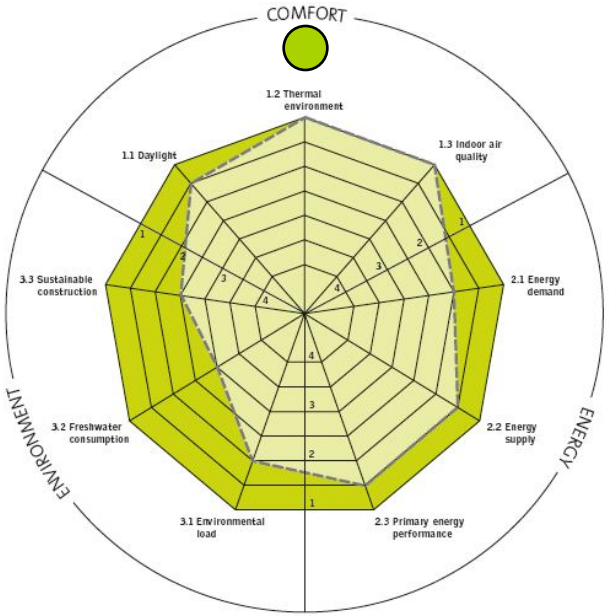

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PARAMETER	VALUE	CRITERIA	SCORE
1.2.1 Maximum operative temperature		The maximum indoor temperature limits apply in periods with an outside T_m of 12°C or more. For living rooms, kitchens, study rooms, bedrooms etc. in dwellings without mechanical air conditioning and with adequate opportunities for natural (cross or stack) ventilation, the maximum indoor operative temperatures are: 1. $T_{i,e} < 0.33 \times T_m + 20.8$°C 2. $T_{i,e} < 0.33 \times T_m + 21.8$°C 3. $T_{i,e} < 0.33 \times T_m + 22.8$°C 4. $T_{i,e} < 0.33 \times T_m + 23.8$°C T_m is the Running Mean outdoor temperature as defined in 'chapter 3.n External temperature, running mean of EN 15251:2007'. For living rooms etc. in residential buildings with air conditioning, the maximum operative temperatures are: 1. $T_{i,e} < 25.5$°C 2. $T_{i,e} < 26$°C 3. $T_{i,e} < 27$°C 4. $T_{i,e} < 28$°C For bedrooms (especially at night time), a 2°C lower value should preferably be used than indicated above as people are more sensitive to high temperatures when sleeping or trying to fall asleep. Also, in kitchens higher temperatures than indicated can be allowed periodically, e.g. during cooking activities. The system should be designed to achieve the values, the users can however choose other settings. Reference: EN 15251:2007.	
1.2.2 Minimum operative temperature		The minimum indoor temperature limits apply in periods with an outside T_m of 12°C or less. For living rooms, kitchens, study rooms, bedrooms etc. in dwellings, the minimum operative temperatures are: 1. $T_{i,e} > 21$°C 2. $T_{i,e} > 20$°C 3. $T_{i,e} > 19$°C 4. $T_{i,e} > 18$°C The system should be designed to achieve the values, the users can however choose other settings.	

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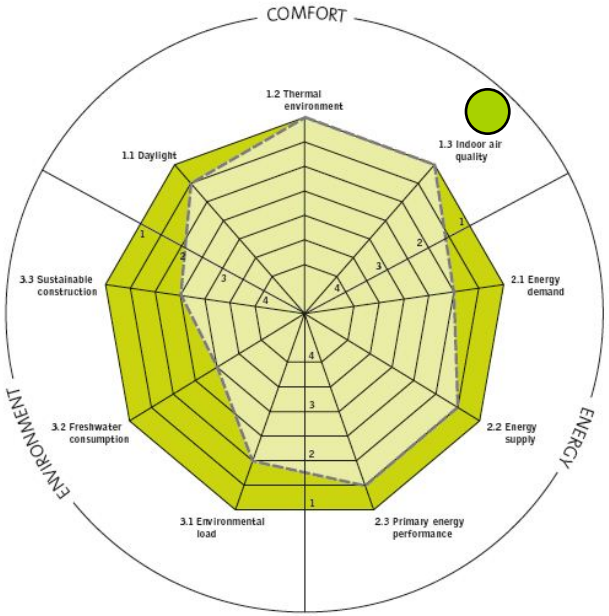

PARAMETER	VALUE	CRITERIA	SCORE
1.3.1 Standard fresh air supply		The fresh air supply shall be established according to the below limit values for indoor CO_2 concentration in living rooms, bedrooms, study rooms and other rooms with people as the dominant source and that are occupied for prolonged periods: 1. 500 ppm above outdoor CO_2 concentration 2. 750 ppm above outdoor CO_2 concentration 3. 1000 ppm above outdoor CO_2 concentration 4. 1200 ppm above outdoor CO_2 concentration	

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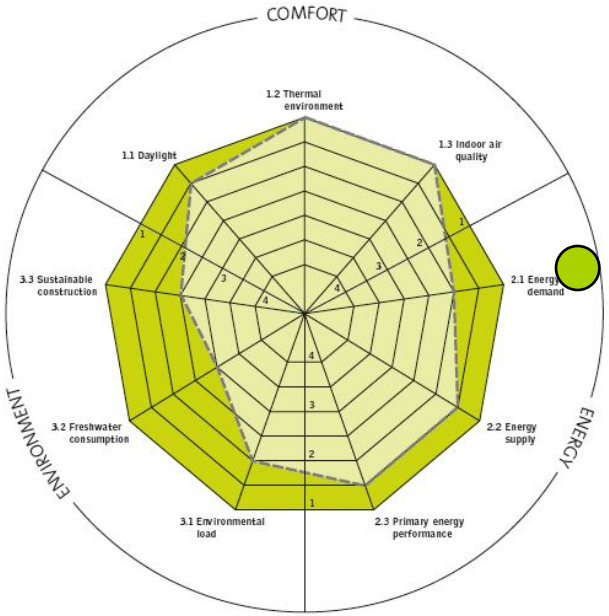

PARAMETER	VALUE	CRITERIA	SCORE
2.1 Annual energy demand		1. ≤ 40 kWh/m² 2. ≤ 60 kWh/m² 3. ≤ 80 kWh/m² 4. ≤ 120 kWh/m²	

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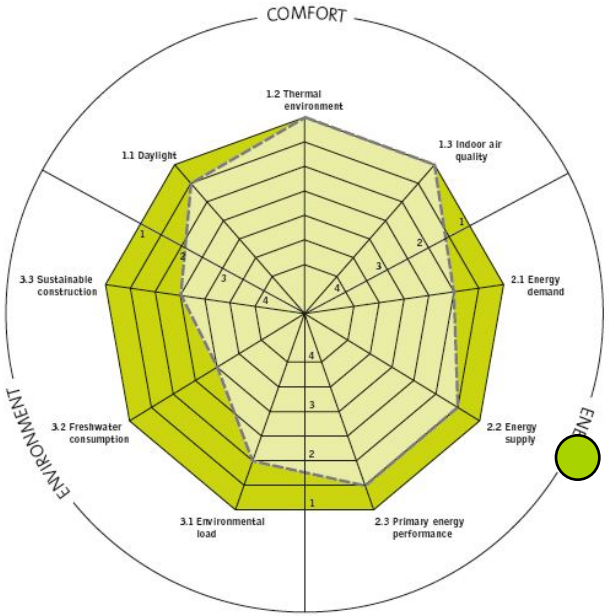

PARAMETER	VALUE	CRITERIA	SCORE
2.2 Origin of energy supply		1. 100% or more of the energy used in the building is produced on the plot or in a nearby system 2. ≥ 75% of the energy used in the building is produced on the plot or in a nearby system 3. ≥ 50% of the energy used in the building is produced on the plot or in a nearby system 4. ≥ 25% of the energy used in the building is produced on the plot or in a nearby system	

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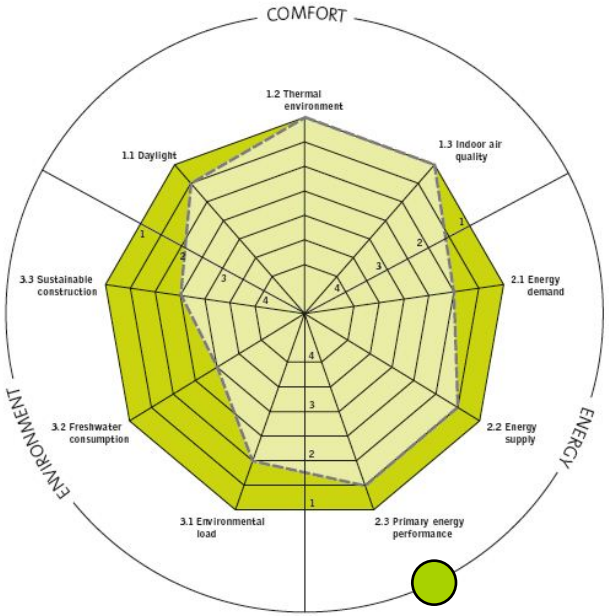

PARAMETER	VALUE	CRITERIA	SCORE
Annual primary energy performance		1. < 0 kWh/m² for the building 2. 0-15 kWh/m² for the building 3. 15-30 kWh/m² for the building 4. ≥ 30 kWh/m² for the building	

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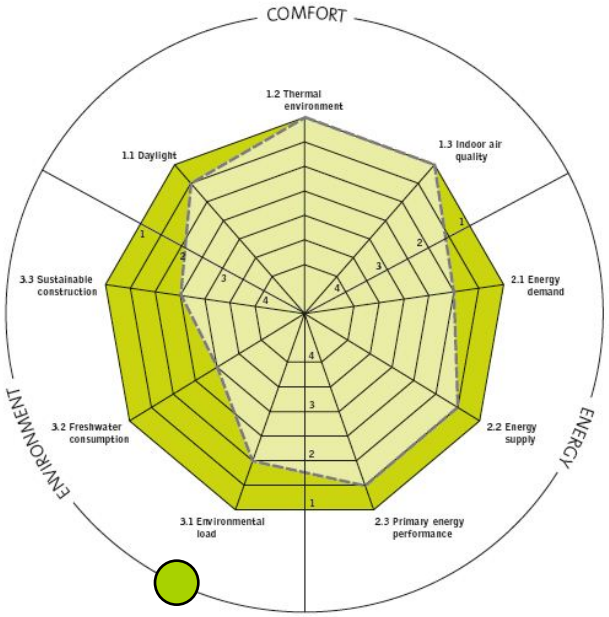

PARAMETER	VALUE	CRITERIA	SCORE
3.1.1 Building's primary energy consumption during entire life cycle		1. < -150 kWh/m² x a 2. < 15 kWh/m² x a 3. < 150 kWh/m² x a 4. < 200 kWh/m² x a	
3.1.2 Global warming potential (GWP) during building's life cycle.		1. < -30 kg CO_2-eq./m² x a 2. < 10 kg CO_2-eq./m² x a 3. < 40 kg CO_2-eq./m² x a 4. < 50 kg CO_2-eq./m² x a	
3.1.3 Ozone depletion potential (ODP) during building's life cycle.		1. < 2.25E-07 kg R_{11}-eq/m² x a 2. < 5.3E-07 kg R_{11}-eq./m² x a 3. < 3.7E-06 kg R_{11}-eq./m² x a 4. < 6.7E-06 kg R_{11}-eq./m² x a	
3.1.4 Photochemical ozone creation potential (POCP) during building's life cycle.		1. < 0.0025 kg C_2H_4-eq./m² x a 2. < 0.0040 kg C_2H_4-eq./m² x a 3. < 0.0070 kg C_2H_4-eq./m² x a 4. < 0.0085 kg C_2H_4-eq./m² x a	
3.1.5 Acidification potential (AP) during building's life cycle.		1. < 0.010 kg SO_2-eq./m² x a 2. < 0.075 kg SO_2-eq./m² x a 3. < 0.100 kg SO_2-eq./m² x a 4. < 0.125 kg SO_2-eq./m² x a	
3.1.6 Eutrophication potential (EP) during building's life cycle.		1. < 0.0040 kg PO_4-eq./m² x a 2. < 0.0055 kg PO_4-eq./m² x a 3. < 0.0085 kg PO_4-eq./m² x a 4. < 0.0105 kg PO_4-eq./m² x a	
		TOTAL AVERAGE:	

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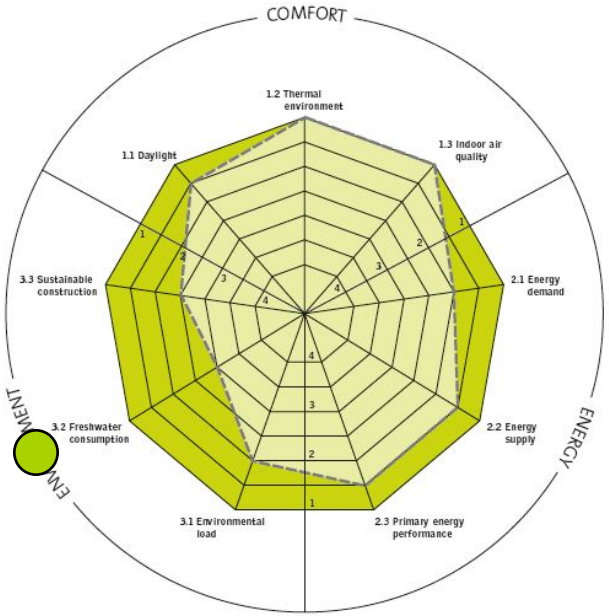

PARAMETER	VALUE	CRITERIA	SCORE
3.2.1 Minimisation of freshwater consumption during building's use[1]		Calculation is based on the national average water consumption per building per year 1. Improvement ≥ 50% (vs average) 2. Improvement ≥ 30% 3. Improvement ≥ 20% 4. Improvement ≥ 10% $\% = \frac{\text{National average} - \text{building consumption} \times 100}{\text{National average}}$	

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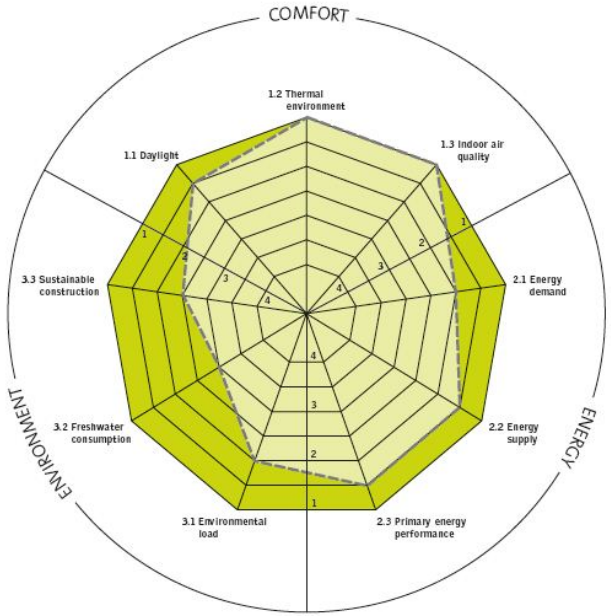

PARAMETER	VALUE	CRITERIA	SCORE
3.3.1 Recyclable content		By weight, the average of recycled content for all building materials (weighted by the proportion of the material in the building) could be: 1. ≥ 50% 2. ≥ 30% 3. ≥ 10% 4. ≥ 5% 80% of the weight of the building should be accounted for. (In the recycled content, we take into account internal, pre-consumer and post-consumer recycling).	
3.3.2 Responsible sourcing		1. 100% of the wood used is certified (FSC, PEFC) and 80% of the new material suppliers have a certified EMS 2. 80% of the wood used is certified (FSC, PEFC) and 50% of the new material suppliers have a certified EMS 3. 65% of the wood used is certified (FSC, PEFC) and 40% of the new material suppliers have a certified EMS 4. 50% of the wood used is certified (FSC, PEFC) and 25% of the new material suppliers have a certified EMS	
		TOTAL AVERAGE:	