

## Project data

### Calculation

	Project	Reference
Calculation type:	Main calculation	Data from legal requirements
Evaluation type:	Renovation	-

### Building information

	Project	Reference
Project name:	15.244 Stueetage Vestervold 4, Ranc Anslået eksisterende score	
Street:	Vestervold 4	
Postcode/city/country:	8900 Randers C	
Building type:	Kontorbygning	
Year of Construction:	1964	

### Owner/client information

	Project	Reference
Home Owner/client:	Brian Andersen	
Email/phone:		

### Architect information

	Project	Reference
Architect:	Randers Arkitekten ApS	
Company:	Randers Arkitekten ApS	
Email/phone:		

### Mechanical engineer information

	Project	Reference
Engineer:	Stokvad Rådgivende Ingeniører A/S	
Company:	Stokvad Rådgivende Ingeniører A/S	
Email/phone:	mail@stokvad.dk / 89153030	

### Certification

	Project	Reference
Certified by:	Mike Bruun Bugge, Randers Arkitekt	

### Active House tool

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## 1.1 Daylight

### Daylight factor

Room type	Project	Reference
Living room 1	> 3%	> 2%
Office 1	> 2%	> 2%
Office 2	> 2%	> 2%
Office 3	> 3%	> 2%
Office 1	> 3%	> 2%
Office 2	> 3%	> 2%
Office 3	> 5%	> 2%
Office 1	> 5%	> 2%
Office 2	> 3%	> 2%
Office 3	> 3%	> 2%

### Daylight factor score:

	Project	Reference
Validated simulation program:	yes	yes
Daylight factor score:	3,0	3,0

### Direct sunlight availability

	Project	Reference
British Standard BS 8206-2:2008:	yes	yes
Maximum sunlight provision:	≥ 10	≥ 5
Direct sunlight availability score:	1	3,0

### Daylight score

	Project	Reference
Daylight score:	2	3,0

## 1.2 Thermal environment

### Project

Room type	Max operative temp. score	Min operative temp. Score
Living room 1	1.0	2.0
Office 1	1.0	2.0
Office 2	1.0	2.0
Office 3	1.0	2.0
Office 1	1.0	2.0
Office 2	1.0	2.0
Office 3	1.0	2.0
Office 1	1.0	2.0
Office 2	1.0	2.0
Office 3	1.0	2.0

### Reference

Room type	Max operative temp. score	Min operative temp. Score
Living room 1	1.0	2.0
Office 1	1.0	2.0
Office 2	1.0	2.0
Office 3	1.0	2.0
Office 1	1.0	2.0
Office 2	1.0	2.0
Office 3	1.0	2.0
Office 1	1.0	2.0
Office 2	1.0	2.0
Office 3	1.0	2.0

### Thermal environment score

	Project	Reference
Dynamic simulation:	no	yes
Project stage:	Planning (use of Active House Tool)	Planning (use of Active House Tool)
Thermal environment category:	Better level	Out of AH category
<b>Thermal environment score:</b>	<b>1,5</b>	<b>Out of AH category</b>

## 1.3 Indoor air quality

### Project

Room type	Occupancy rate	CO2-concentration above outdoor
Living room 1	0,149	≤ 750 ppm
Office 1	0,3	≤ 750 ppm
Office 2	0,3	≤ 750 ppm
Office 3	0,3	≤ 750 ppm
Office 1	0,3	≤ 750 ppm
Office 2	0,3	≤ 750 ppm
Office 3	0,3	≤ 750 ppm
Office 1	0,3	≤ 750 ppm
Office 2	0,3	≤ 750 ppm
Office 3	0,3	≤ 750 ppm

### Reference

Room type	Occupancy rate	Category, overall
Living room 1	0,149	Out of AH category
Office 1	0,3	Out of AH category
Office 2	0,3	Out of AH category
Office 3	0,3	Out of AH category
Office 1	0,3	Out of AH category
Office 2	0,3	Out of AH category
Office 3	0,3	Out of AH category
Office 1	0,3	Out of AH category
Office 2	0,3	Out of AH category
Office 3	0,3	Out of AH category

### Air quality score

	Project	Reference
Project stage:	Design (use of standards)	Planning (use of Active House Tool)
CO2-concentration above outdoor:	≤ 750 ppm	≤ 1200 ppm
<b>Indoor air quality score:</b>	<b>2,0</b>	<b>4</b>

## 2.0 Energy, Project

### Space heating

Yearly energy demand	Energy demand	PE factor/COP (Heat pump)	PE demand
District heating:	40,0 kWh/m <sup>2</sup>	0,8	32,0 kWh/m <sup>2</sup>
Boiler (oil, gas, wood pillar etc.):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electric heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Heat pump (space heating):	0,0 kWh/m <sup>2</sup>	0,0	-
<b>Total:</b>	<b>40,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>32,0 kWh/m<sup>2</sup></b>
Yearly electricity consumption	Energy demand	PE factor	PE demand
Heat pump:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Pumps:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Domestic hot water

Yearly energy demand	Energy demand	PE factor/COP (Heat pump)	PE demand
District heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Boiler (oil, gas, wood pillar etc.):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electric heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Heat pump (space heating):	0,0 kWh/m <sup>2</sup>	0,0	-
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>
Yearly electricity consumption	Energy demand	PE factor	PE demand
Heat pump:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Pumps:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Mechanical ventilation

Yearly electricity consumption	Energy demand	PE factor	PE demand
Fans:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Cooling

Yearly electricity consumption	Energy demand	PE factor	PE demand
Colling unit:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Overheating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Control systems

Yearly electricity consumption	Energy demand	PE factor	PE demand
BMS, natural ventilation etc.:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	31,4 kWh/m <sup>2</sup>	2,5	78,4 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>78,4 kWh/m<sup>2</sup></b>

### Lighting

Yearly electricity consumption	Energy demand	PE factor	PE demand
Lighting:	24,5 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>

## 2.0 Energy, Project

### Electricity produced by renewable energy

Yearly electricity production	Energy demand	PE factor	PE demand
PV Cells (on site):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Windmills and others (on site):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Off-site renewable production:	41,3 kWh/m <sup>2</sup>	2,5	103,1 kWh/m <sup>2</sup>
Electricity grid:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Total:	0,0 kWh/m <sup>2</sup>	-	103,1 kWh/m <sup>2</sup>

### Heat produced by renewable energy

Yearly heat production	Energy demand	PE factor	PE demand
Solar panel (space heating):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Solar panel (domestic hot water):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
District heating (Renewable part):	30,0 kWh/m <sup>2</sup>	0,8	24,0 kWh/m <sup>2</sup>
Boiler (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electric heating (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Heat Pump (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Biofuels:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Biogas:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Total:	30,0 kWh/m <sup>2</sup>	-	24,0 kWh/m <sup>2</sup>

### General information

Heated floor area:	526 m <sup>2</sup>
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### 2.1 Energy demand score

Space heating:	40,0 kWh/m <sup>2</sup>
Domestic hot water:	0,0 kWh/m <sup>2</sup>
Mechanical ventilation:	0,0 kWh/m <sup>2</sup>
Cooling:	0,0 kWh/m <sup>2</sup>
Control systems:	31,4 kWh/m <sup>2</sup>
Lighting:	24,5 kWh/m <sup>2</sup>
Total:	95,8 kWh/m <sup>2</sup>
Energy demand score:	3,39575

### 2.2 Energy supply score

Electricity produced by renewable energy:	41,3 kWh/m <sup>2</sup>
Heat produced by renewable energy:	30,0 kWh/m <sup>2</sup>
Total:	71,3 kWh/m <sup>2</sup>
Energy supply score:	2,0

### 2.3 Primary energy performance score

Total:	-16,8 kWh/m <sup>2</sup>
PE performance score:	1,0

## 2.0 Energy, Reference

### Space heating

Yearly energy demand	Energy demand	PE factor/COP (Heat pump)	PE demand
District heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Boiler (oil, gas, wood pillar etc.):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electric heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Heat pump (space heating):	0,0 kWh/m <sup>2</sup>	0,0	-
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

Yearly electricity consumption	Energy demand	PE factor	PE demand
Heat pump:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Pumps:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Domestic hot water

Yearly energy demand	Energy demand	PE factor/COP (Heat pump)	PE demand
District heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Boiler (oil, gas, wood pillar etc.):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electric heating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Heat pump (space heating):	0,0 kWh/m <sup>2</sup>	0,0	-
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

Yearly electricity consumption	Energy demand	PE factor	PE demand
Heat pump:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Pumps:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Mechanical ventilation

Yearly electricity consumption	Energy demand	PE factor	PE demand
Fans:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Cooling

Yearly electricity consumption	Energy demand	PE factor	PE demand
Colling unit:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Overheating:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Control systems

Yearly electricity consumption	Energy demand	PE factor	PE demand
BMS, natural ventilation etc.:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Others:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
<b>Total:</b>	<b>0,0 kWh/m<sup>2</sup></b>	<b>-</b>	<b>0,0 kWh/m<sup>2</sup></b>

### Lighting

Yearly electricity consumption	Energy demand	PE factor	PE demand
Lighting:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>

## 2.0 Energy, Reference

### Electricity produced by renewable energy

Yearly electricity production	Energy demand	PE factor	PE demand
PV Cells (on site):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Windmills and others (on site):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Off-site renewable production:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electricity grid:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Total:	0,0 kWh/m <sup>2</sup>	-	0,0 kWh/m <sup>2</sup>

### Heat produced by renewable energy

Yearly heat production	Energy demand	PE factor	PE demand
Solar panel (space heating):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Solar panel (domestic hot water):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
District heating (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Boiler (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Electric heating (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Heat Pump (Renewable part):	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Biofuels:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Biogas:	0,0 kWh/m <sup>2</sup>	0,0	0,0 kWh/m <sup>2</sup>
Total:	0,0 kWh/m <sup>2</sup>	-	0,0 kWh/m <sup>2</sup>

### General information

Heated floor area:	526 m <sup>2</sup>
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### 2.1 Energy demand score

Space heating:	0,0 kWh/m <sup>2</sup>
Domestic hot water:	0,0 kWh/m <sup>2</sup>
Mechanical ventilation:	0,0 kWh/m <sup>2</sup>
Cooling:	0,0 kWh/m <sup>2</sup>
Control systems:	0,0 kWh/m <sup>2</sup>
Lighting:	0,0 kWh/m <sup>2</sup>
Total:	0,0 kWh/m <sup>2</sup>
<b>Energy demand score:</b>	<b>Out of AH category</b>

### 2.2 Energy supply score

Electricity produced by renewable energy:	0,0 kWh/m <sup>2</sup>
Heat produced by renewable energy:	0,0 kWh/m <sup>2</sup>
Total:	0,0 kWh/m <sup>2</sup>
<b>Energy supply score:</b>	<b>Out of AH category</b>

### 2.3 Primary energy performance score

Total:	0,0 kWh/m <sup>2</sup>
<b>PE performance score:</b>	<b>Out of AH category</b>



## 3.0 Environment, Project

### 3.1 Environmental loads score

Consumption type	Yearly consumption	Score
PE consumption:	<150 kWh/m <sup>2</sup>	3,0
GWP:	<40 kg CO <sub>2</sub> -eq/m <sup>2</sup>	3,0
ODP:	<3.70E-06 kg R11-eq./m <sup>2</sup>	3,0
POCP:	<0.0070 kg C <sub>2</sub> H <sub>4</sub> -eq./m <sup>2</sup>	3,0
AP:	<0.125 kg SO <sub>2</sub> -eq./m <sup>2</sup>	4,0
EP:	<0.0085 kg PO <sub>4</sub> -eq./m <sup>2</sup>	3,0
<b>Environmental loading score:</b>	-	<b>3,2</b>
Active House LCA tool:	yes	

### 3.2 Freshwater consumption score

Minimisation of freshwater consumption:	20 %
<b>Freshwater consumption score:</b>	<b>3,0</b>

### 3.3 Sustainable construction score

Category	Value	Score
Recyclabel content:	80 %	1,0
Certified wood (FSC, PEFC):	50 %	4,0
Certified EMS:	50 %	4,0
<b>Sustainable construction score:</b>		<b>2,5</b>

## 3.0 Environment, Reference

### 3.1 Environmental loads score

Consumption type	Yearly consumption	Score
PE consumption:	<200 kWh/m <sup>2</sup>	4,0
GWP:	<50 kg CO <sub>2</sub> -eq/m <sup>2</sup>	4,0
ODP:	<6.70E-06 kg R11-eq./m <sup>2</sup>	4,0
POCP:	<0.0070 kg C <sub>2</sub> H <sub>4</sub> -eq./m <sup>2</sup>	3,0
AP:	<0.100 kg SO <sub>2</sub> -eq./m <sup>2</sup>	3,0
EP:	<0.0085 kg PO <sub>4</sub> -eq./m <sup>2</sup>	3,0
<b>Environmental loading score:</b>	-	<b>3,5</b>
Active House LCA tool:	yes	

### 3.2 Freshwater consumption score

Minimisation of freshwater consumption:	%
<b>Freshwater consumption score:</b>	<b>3,0</b>

### 3.3 Sustainable construction score

Category	Value	Score
Recyclabel content:	5 %	4,0
Certified wood (FSC, PEFC):	50 %	4,0
Certified EMS:	50 %	4,0
<b>Sustainable construction score:</b>		<b>4,0</b>

## Results

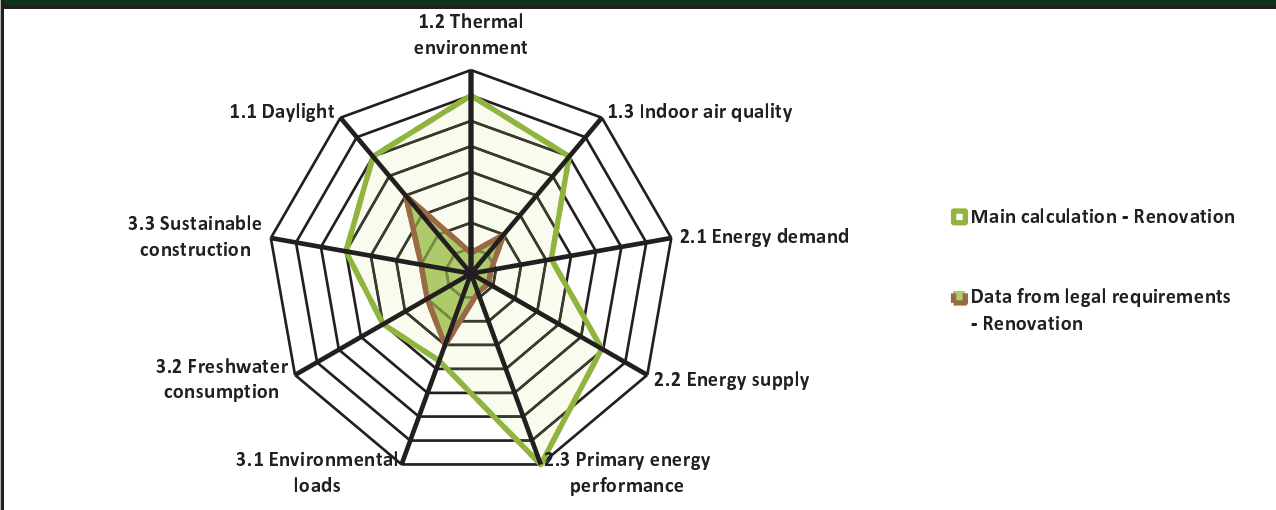
### Project

Comfort	Value	Category
1.1 Daylight:	> 2%	2,0
1.2 Thermal environment:	Better level	1,5
1.3 Indoor air quality:	≤ 750 ppm	2,0
Classification		
Energy	Value	Category
2.1 Energy demand:	95,8 kWh/m <sup>2</sup>	3,4
2.2 Energy supply:	71,3 kWh/m <sup>2</sup>	2,0
2.3 Primary energy:	-16,8 kWh/m <sup>2</sup>	1,0
Classification		
Environment	Value	Category
3.1 Environmental loads:	Lowest level	3,2
3.2 Freshwater:	20 % savings	3,0
3.3 Sustainable construction:	Good level	2,5
Classification		

### Reference

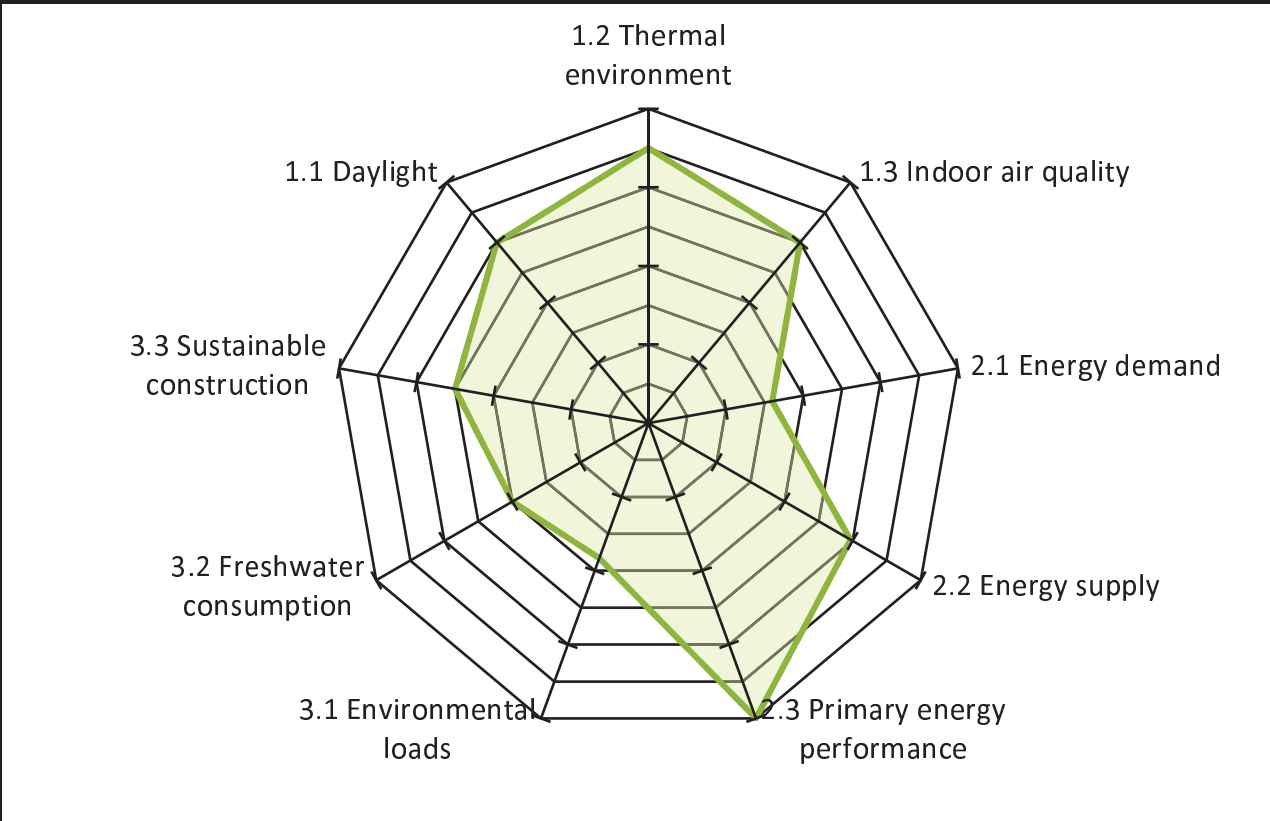
Comfort	Value	Category
1.1 Daylight:	> 2%	3,0
1.2 Thermal environment:	Out of AH category	-
1.3 Indoor air quality:	≤ 1200 ppm	4,0
Classification		
Energy	Value	Category
2.1 Energy demand:	0,0 kWh/m <sup>2</sup>	1,0
2.2 Energy supply:	0,0 kWh/m <sup>2</sup>	1,0
2.3 Primary energy:	0,0 kWh/m <sup>2</sup>	1,0
Classification		
Environment	Value	Category
3.1 Environmental loads:	Lowest level	3,5
3.2 Freshwater:	10 % savings	4,0
3.3 Sustainable construction:	Lowest level	4,0
Classification		

### Radar



## Radar

### Project



### Reference

