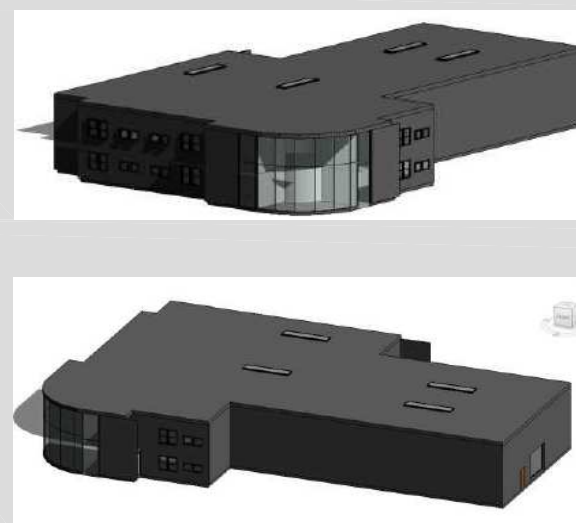
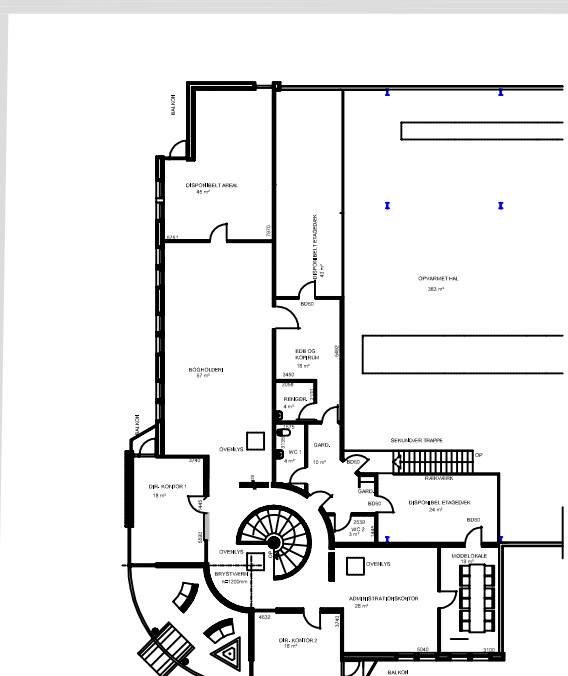
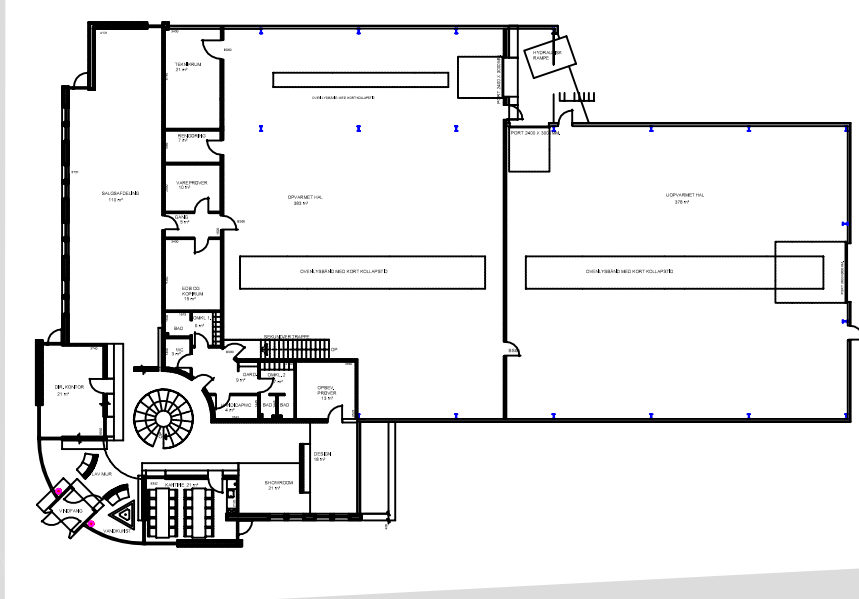


1. BUILDING DESCRIPTION

PLANTS



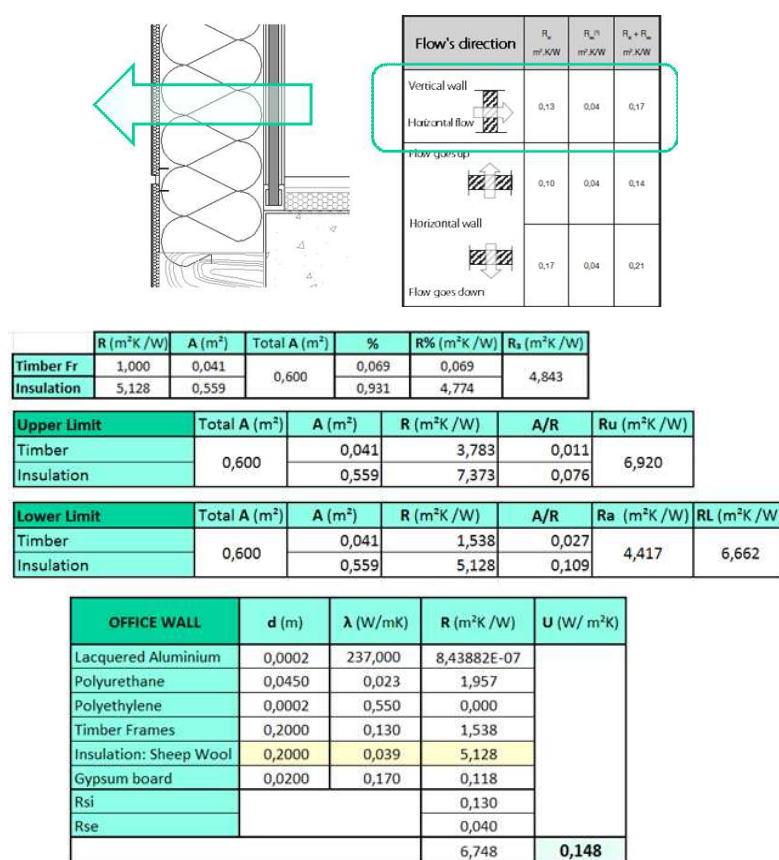
LOCATION



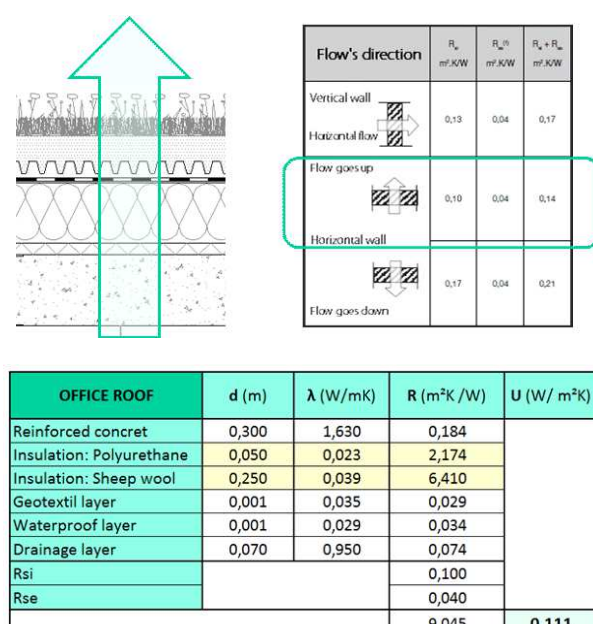
The Building is going to be located in Denmark. Specifically the place it will be in the outskirts of Horsens. The future utilization of this building can be generating some eventual noise. The ground floor of the office area is about 390m² that makes ~780m² in both stories. The storing area of the building is about 770m².

2. BUILDING PHYSICS

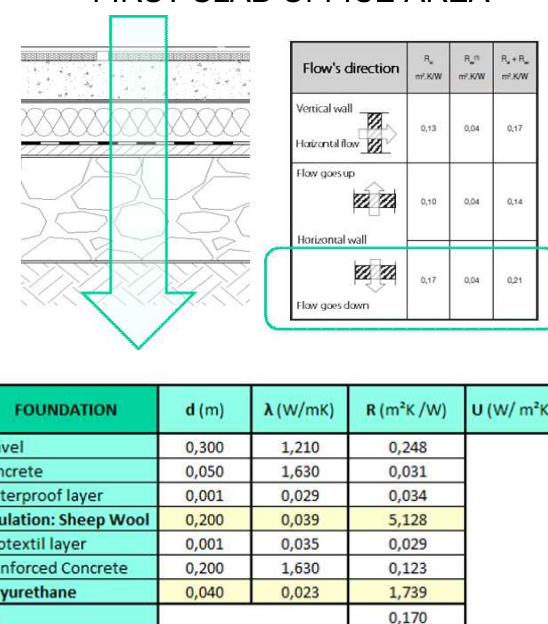
EXTERNAL WALL OFFICE AREA



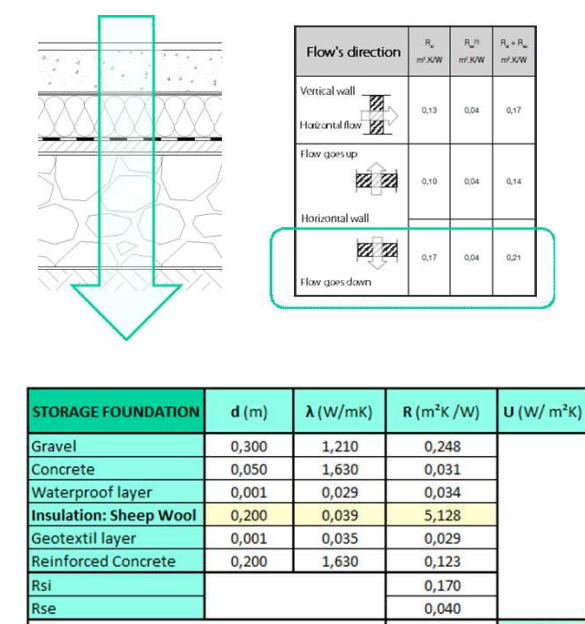
GREEN ROOF OFFICE AREA



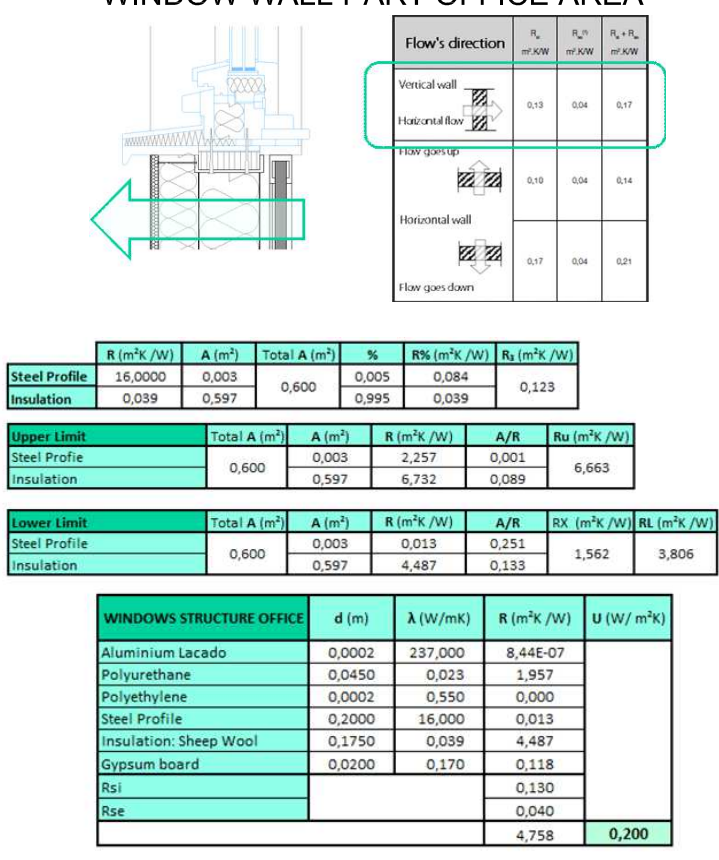
FIRST SLAB OFFICE AREA



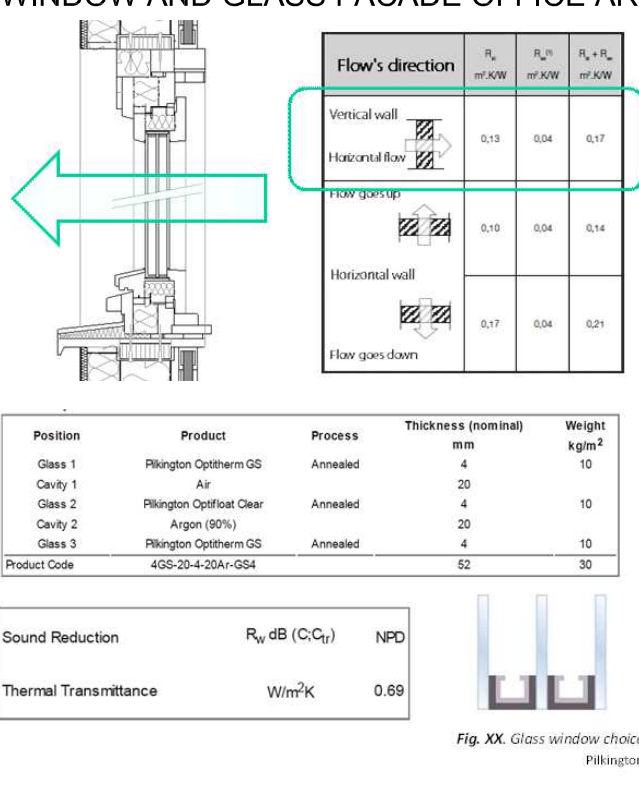
FIRST SLAB STORE AREA



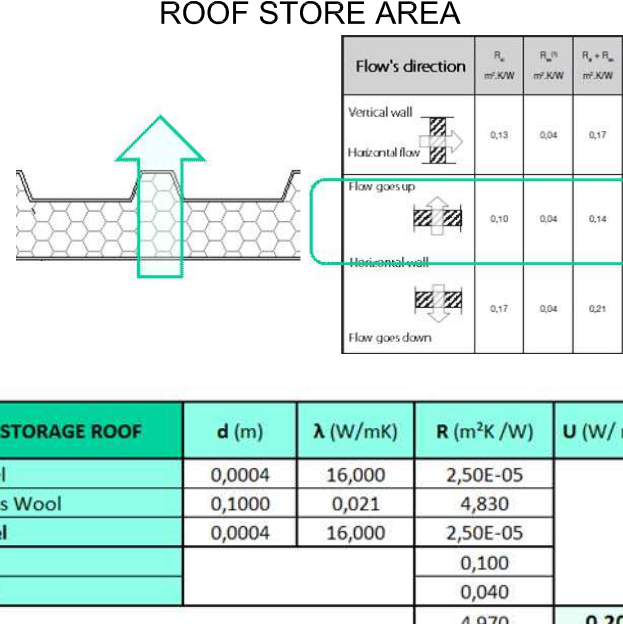
WINDOW WALL PART OFFICE AREA



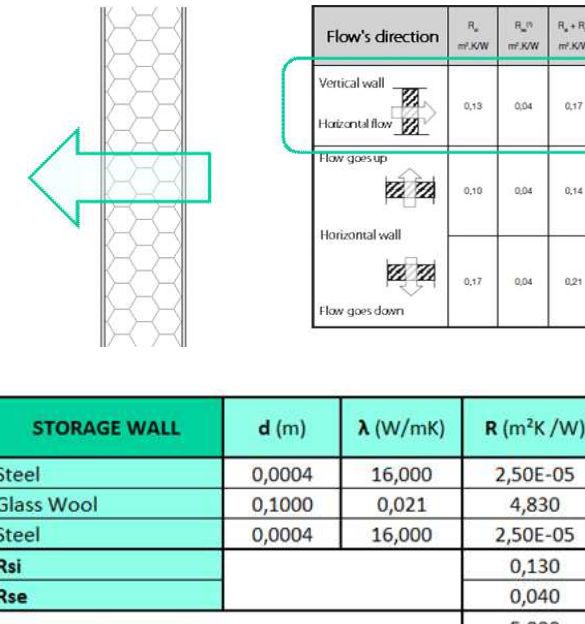
WINDOW AND GLASS FACADE OFFICE AREA



ROOF STORE AREA



WALL STORE AREA



Choose which kind of glazing fits better to the weather conditions where the building is located. At the appendix it's possible to look at all the characteristics of the window because it has been calculated with an special program that allows mixing different kind of glasses and cavities.

Triple glazed windows perfect unit is 4 + 20 + 4 + 20 = 52mm

VENTILATION

DESIGN CRITERIA

Type of building space	Occupancy (per m ²)	Ventilation rate (l/s/m ²)	Category B	Category C
Single office	0.1	2.8	1.4	0.8
Landscaped office	0.07	1.7	1.2	0.7
Conference room	0.5	6.8	4.2	2.8
Auditorium	1.5	16.8	11.2	6.4
Restaurant	0.7	8.0	5.0	3.2
Classroom	0.6	6.8	4.2	2.8
Kindergarten	0.5	7.1	4.3	2.8
Department store	0.15	4.2	3.0	1.6

Type of building space	Ventilation rate (l/s/m ²)	Ventilation rate (l/s/m ²)
Office	15 - 20 persons	15 - 20 persons
Landscaped office	15 - 20 persons	15 - 20 persons
Conference room	15 - 20 persons	15 - 20 persons
Auditorium	15 - 20 persons	15 - 20 persons
Restaurant	15 - 20 persons	15 - 20 persons
Classroom	15 - 20 persons	15 - 20 persons
Kindergarten	15 - 20 persons	15 - 20 persons
Department store	15 - 20 persons	15 - 20 persons

Position	Product	Process	Thickness (mm)	Weight (kg/m ²)
Single 1	Pilington Optimum GS	Annealed	4	10
Single 2	Pilington Optimum GS	Annealed	4	10
Single 3	Pilington Optimum GS	Annealed	4	10
Product Code	425-20-4-25A-25A	Annealed	4	10

Sound Reduction	R_w dB (C ₅₀)	NPD
Thermal Transmittance	W/m ² K	0.69


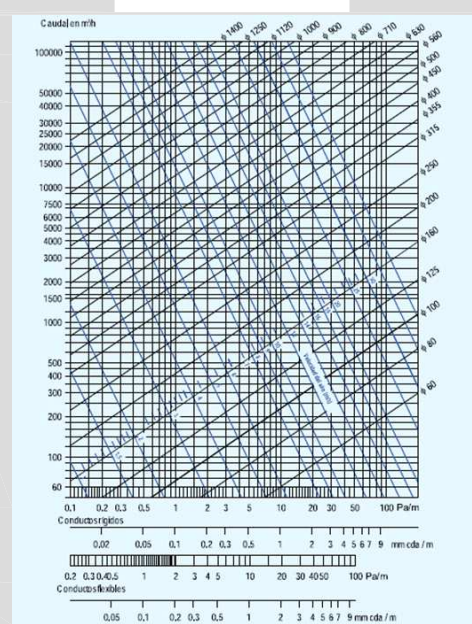


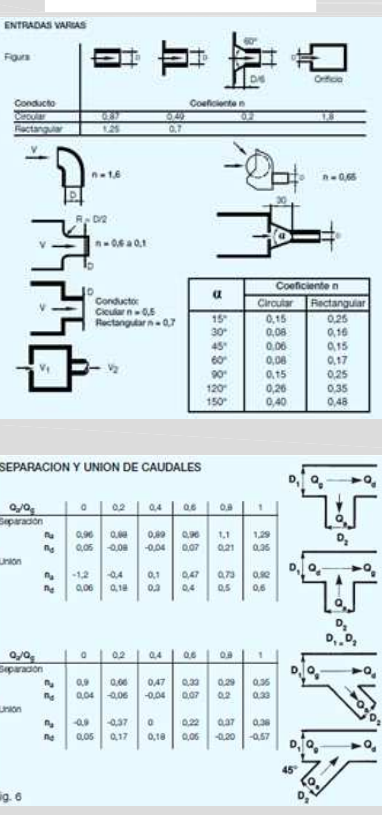
Fig. XX. Glass window choice
Pilkington

3. HEATING SYSTEM

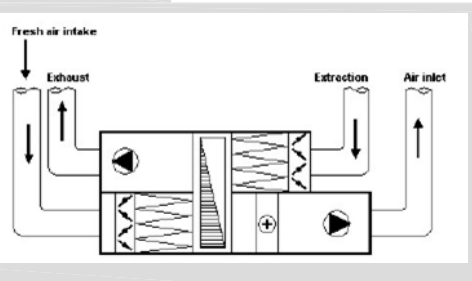
HEAD LOSSES



"n" COEFFICIENT



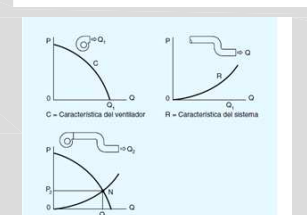
ROTARY HEAT EXCHANGE



DEMAND CONTROLLED VENTILATION



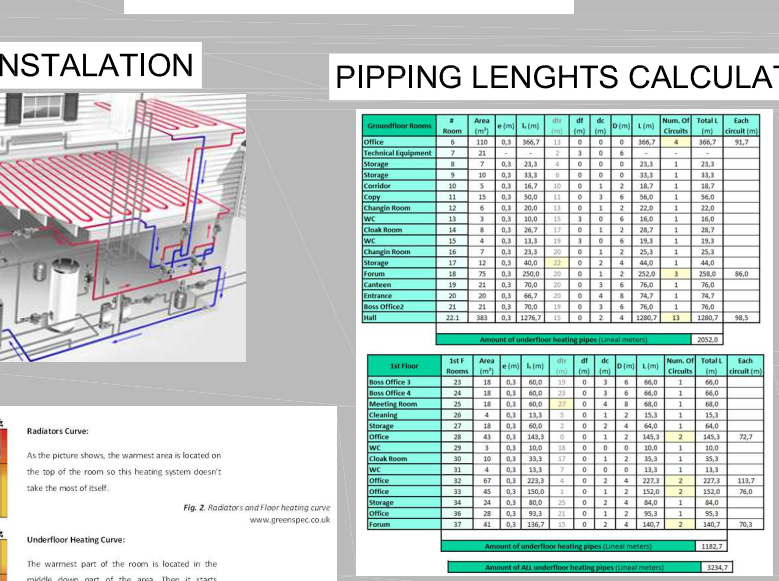
FAN / VENTILATOR



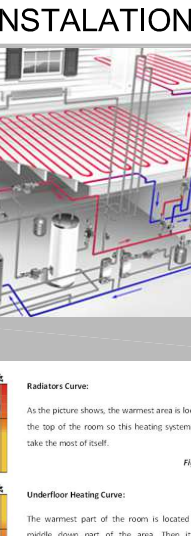
ENERGY CONSUMPTION

	Td	air supply	p	c	t1	t2	Qv inlet
September	275	2.88	1.2	1	0.4167	0.7142	0.85
October	354	2.88	1.2	1	0.4167	0.7142	0.85
November	424	2.88	1.2	1	0.4167	0.7142	0.85
December	656	2.88	1.2	1	0.4167	0.7142	0.85
January	600	2.88	1.2	1	0.4167	0.7142	0.85
February	568	2.88	1.2	1	0.4167	0.7142	0.85
March	662	2.88	1.2	1	0.4167	0.7142	0.85
April	422	2.88	1.2	1	0.4167	0.7142	0.85
May	214	2.88	1.2	1	0.4167	0.7142	0.85
June	191	2.88	1.2	1	0.4167	0.7142	0.85
July	105	2.88	1.2	1	0.4167	0.7142	0.85
August	97	2.88	1.2	1	0.4167	0.7142	0.85
							704,7489

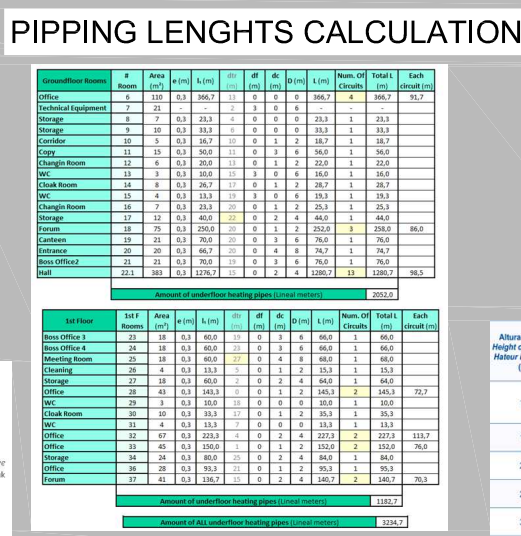
HEATING FLOOR



INSTALLATION



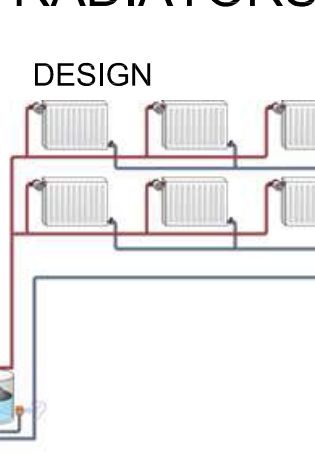
PIPPING LENGHTS CALCULATION



PUMP



RADIATORS



PIPES AND PRICES

Size	4mm	6mm	8mm	10mm	12mm	14mm	16mm	18mm	20mm	22mm	24mm	26mm	28mm	30mm
DN10	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN12	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN14	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN16	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN18	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN20	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN22	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN24	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN26	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN28	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
DN30	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41

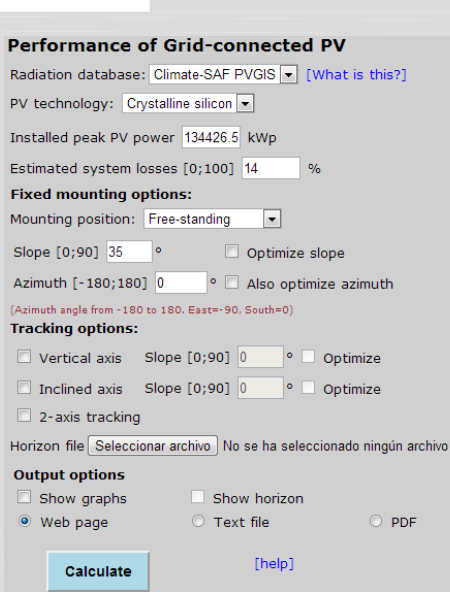
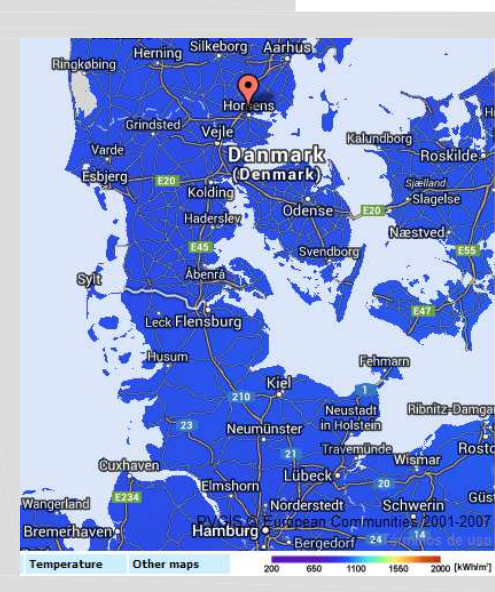
4. ELECTRICITY REQUIREMENTS

Selected electricity requirements

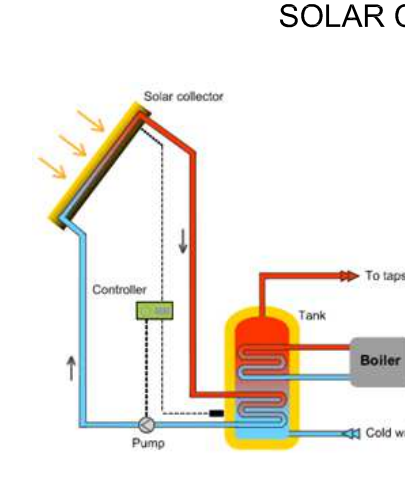
Lighting	28,2
Heating of rooms	0,0
Heating of DHW	0,0
Heat pump	0,0
Ventilators	0,0
Pumps	0,0
Cooling	0,0
Total el. consumption	146,0

5. ENERGY SOURCES

PHOTOVOLTAIC PANELS



SOLAR COLLECTOR



Type	Combined	Domestic hot water, Room heating or Combined
1.1	1.1	1.1
1.2	1.2	1.2
1.3	1.3	1.3
1.4	1.4	1.4
1.5	1.5	1.5
1.6	1.6	1.6
1.7	1.7	1.7
1.8	1.8	1.8
1.9	1.9	1.9
2.0	2.0	2.0
2.1	2.1	2.1
2.2	2.2	2.2
2.3	2.3	2.3
2.4	2.4	2.4
2.5	2.5	2.5
2.6	2.6	2.6
2.7	2.7	2.7
2.8	2.8	2.8
2.9	2.9	2.9
3.0	3.0	3.0
3.1	3.1	3.1
3.2	3.2	3.2
3.3	3.3	3.3
3.4	3.4	3.4
3.5	3.5	3.5
3.6	3.6	3.6
3.7	3.7	3.7
3.8	3.8	3.8
3.9	3.9	3.9
4.0	4.0	4.0
4.1	4.1	4.1
4.2	4.2	4.2
4.3	4.3	4.3
4.4	4.4	4.4
4.5	4.5	4.5
4.6	4.6	4.6
4.7	4.7	4.7
4.8	4.8	4.8
4.9	4.9	4.9
5.0	5.0	5.0
5.1	5.1	5.1
5.2	5.2	5.2
5.3	5.3	5.3
5.4	5.4	5.4
5.5	5.5	5.5
5.6	5.6	5.6
5.7	5.7	5.7
5.8	5.8	5.8
5.9	5.9	5.9
6.0	6.0	6.0
6.1	6.1	6.1
6.2	6.2	6.2
6.3	6.3	6.3
6.4	6.4	6.4
6.5	6.5	6.5
6.6	6.6	6.6
6.7	6.7	6.7
6.8	6.8	6.8
6.9	6.9	6.9
7.0	7.0	7.0
7.1	7.1	7.1
7.2	7.2	7.2
7.3	7.3	7.3
7.4	7.4	7.4
7.5	7.5	7.5
7.6	7.6	7.6
7.7	7.7	7.7
7.8	7.8	7.8
7.9	7.9	7.9