

## 1. Questionnaire

A completed example questionnaire with the questions considered in the paper has been presented below:

6. Jak oceniasz oświetlenie w tym pomieszczeniu?
- ☐ zbyt mocne (+1)      ☒ odpowiednie (0)      ☐ zbyt słabe (-1)
7. Jak oceniasz swoją aktualną produktywność (zdolność do przyswajania wiedzy)?
- ☐ wysoka (czyli lepsza niż zwykle) (+1)  
☒ normalna (czyli taka jak zwykle) (0)  
☐ słaba (czyli gorsza niż zwykle) (-1)
8. Jaka była Twoja aktywność fizyczna w czasie 30 min przed przyjściem do tego pomieszczenia?
- ☐ intensywny wysiłek fizyczny (np. dźwiganie ciężkich przedmiotów, aerobik, szybki bieg) (-2)  
☐ umiarkowany wysiłek fizyczny (np. noszenie lżejszych ciężarów, jazda rowerem, szybki marsz) (-1)  
☐ spacer, który trwał co najmniej 10 minut (0)  
☒ siedzenie (+1)
9. Jak oceniasz jakość powietrza w tym pomieszczeniu?
- ☐ bardzo dobra (+2)  
☒ dobra (+1)  
☐ ani dobra ani zła (0)  
☐ zła (-1)  
☐ bardzo zła (-2)
10. Jak ogólnie czujesz się w tym pomieszczeniu:
- ☐ bardzo dobrze (+2)  
☐ dobrze (+1)  
☒ obojętnie (0)  
☐ źle (-1)  
☐ bardzo źle (-2)
14. Proszę zaznaczyć swoje aktualne ubranie:
- a) ☐ podkoszulek bez rękawów      ☒ podkoszulek z krótkim rękawem  
☐ podkoszulek z długim rękawem
- b) ☐ rajstopy cienkie      ☐ rajstopy grube  
☒ skarpety cienkie      ☐ skarpety grube
- c) ☐ koszula cienka z krótkim rękawem      ☐ koszula cienka z długim rękawem  
☐ koszula gruba z krótkim rękawem      ☐ koszula gruba z długim rękawem  
☒ bluza cienka      ☐ bluza gruba  
☐ sweter/golf cienki      ☐ sweter/golf gruby  
☐ marynarka cienka      ☐ marynarka gruba  
☐ kurtka/plaszcz cienki      ☐ kurtka/plaszcz gruby
- d) ☒ spodnie cienkie      ☐ spodnie grube  
☐ krótkie spodenki      ☐ spódnica cienka  
☐ spódnica gruba  
☐ sukienka cienka      ☐ sukienka gruba
- e) ☐ sandały/japonki      ☐ trampki/tenisówki  
☒ półbuty/pantofle      ☐ kozaki krótkie/buty do kostek  
☐ kozaki długie

Metryczka:	Płeć: <input type="checkbox"/> kobieta <input checked="" type="checkbox"/> mężczyzna	Wzrost [cm]: 189
	Wiek w latach ukończonych: 20	Waga [kg]: 105

where the questions and answers translated into the English language are as follows:

6. How do you assess lighting conditions in this room?

too strong, appropriate, too weak

7. How do you rate your current productivity (your potential to absorb knowledge)?

strong (better than usual), normal (as usual), weak (worse than usual)

8. What was your past activity within 30 minutes before entering this room?

intense physical activity (e.g. lifting heavy objects, aerobic, running), moderate physical activity (e.g. lifting light objects, riding a bike, fast marching), walking of at least 10 minutes, sitting

9. How do you assess air quality in this room?

very good, good, neither good nor bad, bad, very bad

10. How do you generally feel in this room?

very good, good, neutral, bad, very bad

11. Mark the clothes you wear

a) T-shirt without sleeves, long sleeve T-shirt, short sleeve T-shirt

b) thin stockings, thick stockings, thin socks, thick socks

c) short sleeve thin shirt, long sleeve thin shirt, short sleeve thick shirt, long sleeve thick shirt, thin hoodie, thick hoodie, thin sweater, thick sweater, thin jacket, thick jacket, thin coat, thick coat

d) thin trousers, thick trousers, short trousers, thin skirt, thick skirt, thin dress, thick dress

e) sandals, sneakers, brogues, short boots, long boots

Table data: gender (woman, man), age, height, weight

## 2. Data of the buildings

**Table S1.** The main technical data of the analysed buildings.

No.	Parameter	Energis building	Traditional buildings
1	Completion year	2012	1970 - 1985
2	Number of above ground storeys	4	5
3	External wall (construction material/thickness)	ceramic hollow brick/ 25 cm	sand-lime blocks/ 25 cm
4	External walls' thermal insulation thickness	25 cm	13 cm
5	U value of the external wall	0.17 W/(m <sup>2</sup> K)	0.25 W/(m <sup>2</sup> K)
6	Ventilation type	mechanical	natural

## 3. Data of the rooms

**Table S2.** Data of the rooms where the tests took place (1-67: intelligent building, 68-92 traditional buildings with no fans installed).

No	Surface area, m <sup>2</sup>	Cubature, m <sup>3</sup>	Windows' orientation	Heating/cooling systems
1	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
2	63.91	185.34	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
3	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
4	84.16	244.06	E	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
5	57.43	166.55	W	Underfloor heating, cassette indoor units for hot air

				heating and cold air cooling (from rooftop chillers)
6	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
7	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
8	63.91	185.34	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
9	57.43	166.55	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
10	461.57	1430.87	E, S, W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
11	76.51	221.88	E	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
12	84.16	244.06	E	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
13	108.09	313.48	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
14	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
15	58.17	168.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
16	57.43	166.55	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
17	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
18	61.93	179.60	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
19	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
20	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
21	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
22	57.43	166.55	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
23	47.48	137.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
24	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
25	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
26	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
27	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)

28	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
29	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
30	50.56	146.62	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
31	51.61	149.67	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
32	47.48	137.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
33	461.57	1430.87	E, S, W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
34	51.61	149.67	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
35	461.57	1430.87	E, S, W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
36	57.43	166.55	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
37	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
38	58.17	168.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
39	58.17	168.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
40	461.57	1430.87	E, S, W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
41	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
42	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
43	50.56	146.62	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
44	61.93	179.60	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
45	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
46	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
47	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
48	61.93	179.60	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
49	461.57	1430.87	E, S, W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
50	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)

51	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
52	58.17	168.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
53	50.56	146.62	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
54	57.43	166.55	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
55	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
56	58.17	168.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
57	108.09	313.48	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
58	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
59	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
60	47.48	137.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
61	43.33	125.66	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
62	46.27	134.183	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
63	58.17	168.69	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
64	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
65	63.91	185.34	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
66	160.86	466.49	W	Underfloor heating and supplementary radiators under the windows, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
67	59.49	172.52	W	Underfloor heating, cassette indoor units for hot air heating and cold air cooling (from rooftop chillers)
68	96.0	284.16	E	Heating only, radiators under the windows
69	96.0	284.16	E	Heating only, radiators under the windows
70	48.98	136.66	W	Heating only, radiators under the windows
71	41.69	116.31	W	Heating only, radiators under the windows
72	24.79	69.17	W	Heating only, radiators under the windows
73	48.98	136.66	W	Heating only, radiators under the windows
74	49.94	139.34	W	Heating only, radiators under the windows
75	50.54	141.01	W	Heating only, radiators under the windows
76	24.55	68.51	W	Heating only, radiators under the windows
77	41.69	116.31	W	Heating only, radiators under the windows
78	50.54	141.01	W	Heating only, radiators under the windows
79	96.0	284.16	W	Heating only, radiators under the windows
80	146.38	545.99	W	Heating only, radiators under the windows
81	146.38	545.99	W	Heating only, radiators under the windows

82	46.62	155.72	W	Heating only, radiators under the windows
83	48.03	159.95	W	Heating only, radiators under the windows
84	65.18	214.43	W	Heating only, radiators under the windows
85	149.63	594.01	W	Heating only, radiators under the windows
86	67.10	216.75	W	Heating only, radiators under the windows
87	248.18	1228.47	E, W	Heating only, radiators under the windows
88	132.88	556.77	W	Heating only, radiators under the windows
89	65.29	212.83	E	Heating only, radiators under the windows
90	128.58	541.33	E	Heating only, radiators under the windows
91	128.58	541.33	E	Heating only, radiators under the windows
92	128.58	541.33	E	Heating only, radiators under the windows

#### 4. Frequency count

**Table S3.** General sensation vote – frequency count, %

Vote	Energis building	Traditional buildings
-2	0.56	3.88
-1	10.22	15.05
0	42.81	43.45
1	42.02	33.25
2	4.38	4.37

**Table S4.** Indoor air quality vote – frequency count, %

Vote	Energis building	Traditional buildings
-2	0.56	3.64
-1	7.19	12.86
0	50.9	52.67
1	37.98	27.91
2	3.37	2.91

**Table S5.** Light intensity assessment – frequency count, %

Vote	Energis building	Traditional buildings
-1	14.94	12.14
0	82.92	85.19
1	2.13	2.67

**Table S6.** Self-reported productivity – frequency count, %

Vote	Energis building	Traditional buildings
-1	22.13	28.88
0	71.24	67.23
1	6.63	3.88