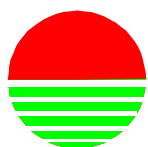


WP 4 Energy Supply

The Analyses of EE in typical buildings and of the state of the energy supply infrastructure

Located In A1MWU area limited by streets Kusocińskiego, Wojska Polskiego, Fabryczna and Puławska in Piaseczno

15th January 2010



NATIONAL ENERGY CONSERVATION AGENCY



PIASECZNO MUNICIPALITY



Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument).

Table of Contents

Formal basis	3
Aim	3
Scope.....	3
Description of the existing situation, including technical, economic and ownership aspects of the buildings in question.....	3
Imprint.....	6

Formal basis

The analysis was elaborated in the framework of an agreement from 15 September 2009 between Piaseczno Municipality and NAPE, concerning preparation of “The Concept of Integrated Urban Development of the area A1MWU limited by streets Kusocińskiego, Wojska Polskiego, Fabryczna and Puławska in Piaseczno” for the purpose of realization of Urb.Energy project which is partly financed by the European Union through „Baltic Sea Region Programme 2007-2013 (CCI No. 2007CB163PO020)”.

Aim

The aim of this study is to present a analysis of energy efficient refurbishment measures in multifamily dwellings located in a typical residential district in the center of Piaseczno.

Scope

This analysis concerns 26 multifamily dwellings, for which energy audits have been elaborated in accordance with the Act on supporting thermomodernization and renovation of 21 November 2008, Journal of Laws No. 223, article 1459.

The energy audits are a source of information about the technical condition of these buildings affecting heat losses, and identify energy efficiency undertakings.

Moreover, energy audits are required to apply for financing from the system of financial support for thermomodernization undertakings, existing in Poland since 1998.

This study provides input to “The Concept of Integrated Urban Development of the area A1MWU limited by streets Kusocińskiego, Wojska Polskiego, Fabryczna and Puławska in Piaseczno,” prepared in the framework of the same agreement. The agreement is an indispensable document for property owners, to be able to apply for financing from EU Structural Funds dedicated to support urban development.

The analysis includes:

1. description of the existing situation, including technical, economic and ownership aspects of the buildings in question
2. technical-economic comparative analysis of energy efficient refurbishment measures identified in energy audits

Description of the existing situation, including technical, economic and ownership aspects of the buildings in question

There are 26 residential buildings in this area, 24 of which have been erected in years 1961-1966, and 2 in 1974. These are 3-5 storey buildings with total useful area of about 40 000 m², total number of apartments is 1051, inhabited by some 2000 people. The average area of an apartment is 38 m² averagely inhabited by 2 persons.

All the buildings are constructed from prefabricated concrete blocks and are characterized by high values of the heat transfer coefficient, which leads to energy demand for heating on the level of approximately 240 kWh/m²/year, characteristic of buildings erected in that period. At present, the guidelines being in force for residential buildings design result in values of 100-120 kWh/m²/year.

In 4 of 18 buildings belonging to housing communities (Szkolna 8, 10, Wojska Polskiego 7, Kusocińskiego 3a), there have been comprehensive thermomodernization works conducted in the last 3 years, including thermal insulation of walls, flat roofs, windows replacement in staircases and in non-heated basements, doors and central heating system replacement. In these buildings, energy demand for heating purposes is approximately 100 kWh/m²/year. Investments in these buildings have been financed by housing communities from their own means accumulated in renovation funds, thermomodernization loans, and a small subsidy from EU funds in the framework of Interreg IIIB, BEEN project.

In 8 buildings belonging to the housing cooperative „Jedność” the energy demand for heating is 100-140 kWh/m²/year, because their thermal insulation has been partly improved and the central heating system has been replaced. Nevertheless, they require further actions to improve their energy performance.

The buildings are supplied with heat from the city grid operated by PCU Sp. z o.o., a company owned partly by the city and partly a cooperative property, operating a low-temperature boiler room powered by natural gas. District heating grids belong to Piaseczno Municipality. Domestic hot water is prepared in each apartment with the use of domestic gas boilers.

Of the 26 buildings, 8 belong to the housing cooperative „Jedność,” while the remaining 18 are parts of a housing estate belonging to housing communities, created on the basis of the Apartment ownership act of 24 June 1994 (Journal of Laws No. 85, article 388) from buildings belonging previously to the Piaseczno Municipality. The buildings are located on parcels limited by external outlines of buildings, while the surrounding green areas and small infrastructure belong to the Municipality of Piaseczno. Properties belonging to housing communities are managed by two licensed property managers.

The technical and occupational data of each building are presented in the following table.

Technical and occupational data of buildings

No.	Address	Owner	Constructi on year	Construction type	seasonal heat demand for heating kWh/m ² /y	seasonal heat demand for heating brutto GJ/r	heat demand for hot water kWh/m ² /r	heat demand for hot water GJ/r	heated area m ²	heated volume m ³	number of storeys	number of staircases	number of apartments	number of service flats	usable area of dwellings m ²	service area m ²	number of inhabitants	inhabitants/ dwelling
1.	Piaseczno ul. Fabryczna 2	Home owner's Association	1974	prefabricated concrete block	243,7	1067	61,9	271	1 216	4 309	5	2	24	4	779	274,00	39	1,63
2.	Piaseczno ul. Fabryczna 5	Home owner's Association	1962	prefabricated concrete block	236,6	1081	81,4	372	1 269	4 315	3	3	27	0	1 153	0	60	2,22
3.	Piaseczno ul. Fabryczna 7	Home owner's Association	1962	prefabricated concrete block	218,0	982	62,0	279	1 251	4 253	3	3	27	0	1 135	0	45	1,67
4.	Piaseczno ul. Fabryczna 9	Home owner's Association	1961	prefabricated concrete block	199,5	894	74,5	334	1 245	4 233	3	3	27	0	1 129	0	54	2,00
5.	Piaseczno ul. Kusocińskiego 3a	Home owner's Association	1962	prefabricated concrete block	107,0	865	91,9	743	2 245	7 015	4	4	48	0	2 038	0	120	2,50
6.	Piaseczno ul. Puławska 19	Home owner's Association	1962	prefabricated concrete block	199,3	1213	79,3	483	1 691	5 390	4	3	36	0	1 537	0	78	2,17
7.	Piaseczno ul. Puławska 21	Home owner's Association	1964	prefabricated concrete block	196,9	1164	90,2	533	1 642	5 234	4	3	44	0	1 488	0	86	1,95
8.	Piaseczno ul. Puławska 21A	Home owner's Association	1964	prefabricated concrete block	192,1	556	113,3	328	804	2 686	5	1	20	0	709	0	53	2,65
9.	Piaseczno ul. Puławska 23	Home owner's Association	1962	prefabricated concrete block	170,3	1037	79,3	483	1 691	5 390	4	3	36	0	1 537	0	78	2,17
10.	Piaseczno ul. Szkolna 3	Home owner's Association	1963	prefabricated concrete block	245,9	741	76,0	229	837	2 844	3	2	18	0	759	0	37	2,06
11.	Piaseczno ul. Szkolna 4	Home owner's Association	1964	prefabricated concrete block	202,0	586	102,4	297	806	2 693	5	1	20	0	711	0	48	2,40
12.	Piaseczno ul. Szkolna 5	Home owner's Association	1962	prefabricated concrete block	248,3	742	85,0	254	830	2 822	3	2	18	0	753	0	41	2,28
13.	Piaseczno ul. Szkolna 6	Home owner's Association	1960	prefabricated concrete block	201,4	2002	88,5	880	2 761	9 571	4	5	64	1	2 316	126	142	2,22
14.	Piaseczno ul. Szkolna 7	Home owner's Association	1963	prefabricated concrete block	240,3	724	82,3	248	837	2 844	3	2	18	0	759	0	40	2,22
15.	Piaseczno ul. Szkolna 10A	Home owner's Association	1964	prefabricated concrete block	201,6	585	91,7	266	806	2 693	5	1	20	0	711	0	43	2,15
16.	Piaseczno ul. Szkolna 8	Home owner's Association	1961	prefabricated concrete block	101,1	819	80,2	650	2 250	7 031	4	4	48	0	2 044	0	105	2,19
17.	Piaseczno ul. Szkolna 10	Home owner's Association	1965	prefabricated concrete block	107,0	1407	56,5	743	3 651	12 170	5	4	80	0	3 219	0	120	1,50
18.	Piaseczno ul. Wojska Polskiego 7	Home owner's Association	1964	prefabricated concrete block	89,2	1162	108,3	1412	3 620	12 066	5	4	114	4	3 159	28,00	228	2,00
19.	Piaseczno ul. Szkolna 12	Housing co-operative Jedność	1966	prefabricated concrete block	113,8	436	92,2	353	1 064	3 556	5	1	20	0	949	0,00	57	2,85
20.	Piaseczno ul. Wojska Polskiego 5	Housing co-operative Jedność	1966	prefabricated concrete block	96,9	1294	84,0	1121	3 708	12 359	5	4	114	0	3 247	0,00	181	1,59
21.	Piaseczno ul. Puławska 25	Housing co-operative Jedność	1963	prefabricated concrete block	114,9	716	67,6	421	1 731	5 518	4	3	36	0	1 577	0,00	68	1,89
22.	Piaseczno ul. Kusocińskiego 5	Housing co-operative Jedność	1964	prefabricated concrete block	142,1	425	78,6	235	831	2 770	5	1	20	0	736	0,00	38	1,90
23.	Piaseczno ul. Kusocińskiego 3	Housing co-operative Jedność	1966	prefabricated concrete block	119,0	456	92,2	353	1 064	3 556	5	1	20	0	949	0,00	57	2,85
24.	Piaseczno ul. Szkolna 8a	Housing co-operative Jedność	1962	prefabricated concrete block	103,4	847	83,2	681	2 275	7 111	4	4	48	0	2 068	0,00	110	2,29
25.	Piaseczno ul. Szkolna 1	Housing co-operative Jedność	1974	prefabricated concrete block	124,6	1726	75,6	1047	3 848	13 390	5	7	68	8	2 756	602,30	68	1,00
26.	Piaseczno ul. Kusocińskiego 5a	Housing co-operative Jedność	1964	prefabricated concrete block	114,2	681	86,2	514	1 657	5 282	4	3	36	0	1 503	0,00	83	2,31
				Sum	147,4	24208	82,4	13530	45 630	151 101	-	-	1051	-	39 721	1 030	2 079	1,98



Imprint

National Energy Conservation Agency

ul. Świętokrzyska 20
00-002 Warszawa
Poland

Tel. +(48) 22 50 54 661
Fax +(48) 22 825 86 70

<http://www.nape.pl>
<http://www.urbenergy.eu>

