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Energy supply systems in Grodno region

Heating supply systems in Grodno region are closed . Their heat parameters from 150/70°C till 120/70 °C in Grodno and Lida. Mostly heating supply from Lida department of state Grodnoenergo heating company. Also heating can supply from communal service sources.

Heat parameters from the Grodno region communal service enterprises heating system are 95/70 °C.

Grodno region communal service enterprises has 446 heating plants:
among them:

- 134 use natural gas;
- 118 use mix of natural gas and local gas and fuel;
- 194 use use only local gas and fuel;

Local gas and fuel consist of wood, turf, wood cutting, etc.

Lida has 7 heating plants with natural gas usage.

Grodno region use 20,6% of local gas and fuel in 2009.

Lida use near 29% of local gas and fuel in 2009.

In 2009 Lida housing stock used near 252 thousand GKal from Grodnoenergo and 65 thousand GKal from own sources.

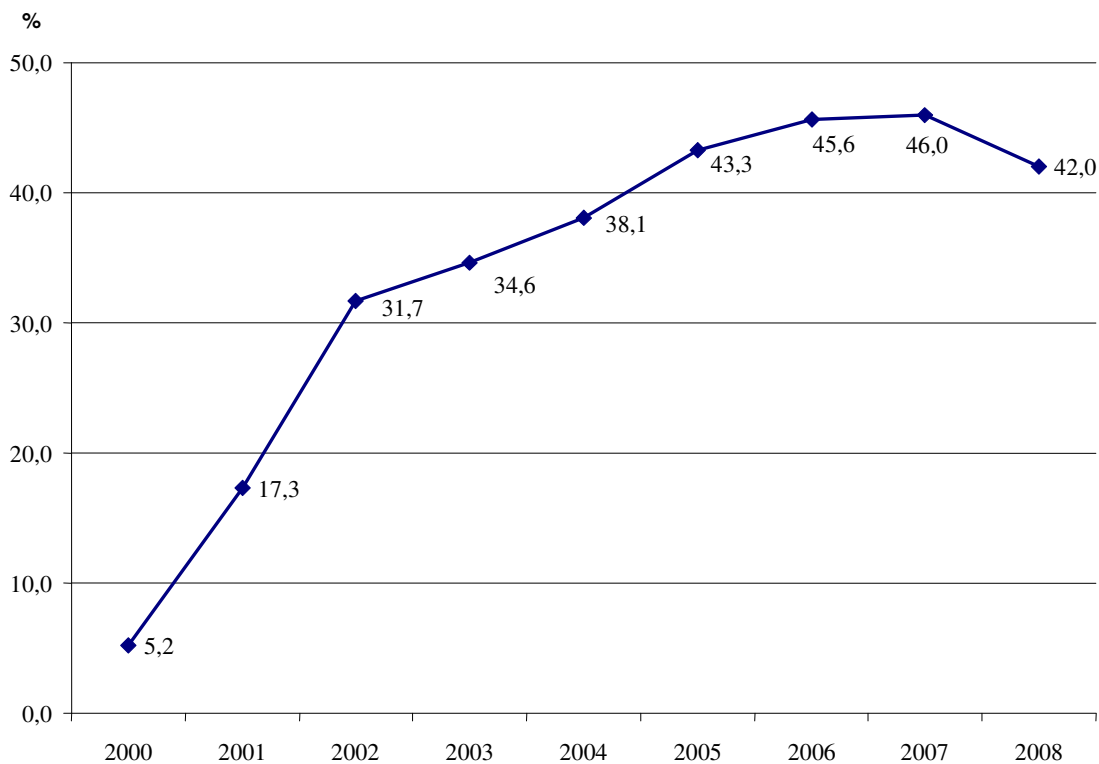
Grodno region cogeneration units produced 1,701 thousand kWh of electricity. Lida communal service enterprises have 2 cogeneration plants.

95% of Grodno heat energy generation and supply for housing stock is provided from "Grodnoenergo" company sources. In the town of Lida, 82% of heat energy is supplied from sources of "Grodnoenergo" and 18% - from sources of housing and communal services. Grodno region have no companies producing biogas fuels and using heat pumps. Alternative energy sources are also not used.

Heating tariffs for residents
1 euro for 20.11.2009 = 4061.39 BYR

Kind of heating	Tariff, BYR/euro
Natural gas	
Summer period for 1 м3	462/0,11
Heating period for 1 м3	219,1/0,05
CHP	
For 1 GKal	43 458/10,7

Picture 1: Share of payments by residents for communal service in Grodno region



Source: Grodno Housing Department Executive Committee, 2007г.



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Short description for “Заключение по обследованию состояния наружных ограждающих конструкций по объекту: ж/д. 35, ул. Тавлая, г. Лида»

«The conclusion of outside protect constructions situation for selected houses in Russian for two selected houses»

Elaborated by the industrial Republican Unitary Enterprise
“Гродноэнергосбережение” (“Grodnoenergysaving”).
Republic of Belarus, Grodno
Energy effective department

This document was elaborated in accordance with contract №34 signed 18.02.2009
The main purpose of this work is operative inspection of house building quality and also the most typical heat losses places in building construction detection.

The device control of heat transfer resistance of protect constructions includes the next works:

- the preparatory building achievement for the protect constructions accordance to project calculated documents and to base heat technical parameters.
- the preparatory building achievement of the protect constructions and their elements by heat vision removal;
- heat transfer resistance practical meaning determination for protect constructions;
- results processing and carried out achievement report elaboration.

The constructions heat vision removal carry out on the basis of ТКП 45-2.04-43-2006 (2250) Building heat technique.

The heat vision removals based on the heat vision device distant dimension of temperature fields for protect constructions areas. There is a temperature difference between the outside and inside protect constructions areas.

The heat vision removal includes:

- objects and protect constructions pictures;
- survey heat vision removal of protect constructions areas;

- thermic heterogeneous sectors of protect constructions definition and their deep achievements;
- the received through the heat vision device thermogramms processing and temperature fields analysis.

The achievement object was the next building:

- the resident house of Tavlaya str. 35, Lida

There was used the heat vision device “SAT – S280” (no. 28010092) for infra red removals. There was used a thermometer “TESTO – 925” (no. 33741885) for protect constructions area and air temperature dimensions.

The name of “Гродноэнергосбережение” (“Grodnoenergysaving”) testing laboratory Certificate of accreditation is no. BY/112 02.2.0.3329 of 30 of May 2008.

The document includes :

1. The heat transfer resistance for protect constructions calculation method
2. The building construction achievements results for resident house of Tavlaya str., 35

The conclusion:

During the heat vision diagnostic for residents’ house of Tavlaya str., 35 carrying out, there were identified the next defects:

- high level of heat losses through the splices between panels;
- high level of temperature near the building places were heat system situated.

The protect constructions thermic resistance is not agree with a ТКП 45-2.04-43-2006(02250) Building heat technique ($R_t < 2,0$, table 1.8)

This conclusion is represented for decisionmaking about practicality of house protect constructions refurbishment activities carrying out.

**The result table of dimension and heat transfer resistance calculation for the
object:**

**Resident house
Lida, Mitskevicha, 24**

№	No. of picture	The outside air temperature, °C	The inside air temperature, °C	The temperature of protect constructions inside area, °C	Heat flux, Wt/m²	Weighted average temperature of outside area, °C	Protect constructions resistance, m²*°C/Wt	Protect constructions heat transfer resistance, m²*°C/Wt	Standard heat transfer resistance, Rt, m²*°C/Wt
1	2	3	4	5	6	7	8	9	10
1	picture No 1	0 °C	19,6	17,9	14,79	+ 2,1	1,07	1,23	2,0
2	picture No 2		19,6	17,8	15,66	+ 2,4	0,98	1,14	
3	picture No 3		19,6	17,8	15,66	+ 3,2	0,93	1,09	
4	picture No 4		19,5	17,8	14,79	+ 2,3	1,05	1,21	

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- heat transfer resistance practical meaning determination for protect constructions;
- results processing and carried out achievement report elaboration.

The constructions heat vision survey carrying out on the basis of ТКП 45-2.04-43-2006 (2250) Building heat technique.

The heat vision surveys based on the heat vision device distant dimension of temperature fields for protect constructions areas. There is a temperature difference between the outside and inside protect constructions areas.

The heat vision survey includes:

- objects and protect constructions pictures;
- the overview heat vision survey of protect constructions areas;
- thermic heterogeneous sectors of protect constructions definition and their deep achievements;

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The achievement object was the next building:

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This conclusion is represented for decisionmaking about practicality of house protect constructions refurbishment activities carrying out.

**The result table of dimension and heat transfer resistance calculation for the object:
Resident house**

Table 1.8

No	No. of picture	The outside air temperature, °C	The inside air temperature, °C	The temperature of protect constructions inside area, °C	Heat flux, Wt/m ²	Weighted average temperature of outside area, °C	Protect constructions resistance, m ² ·°C/Wt	Protect constructions heat transfer resistance, m ² ·°C/Wt	Standard heat transfer resistance, Rt, m ² ·°C/Wt
1	2	3	4	5	6	7	8	9	10
1	picture No 1	- 3,0 °C	19,2	17,3	16,53	- 1,8	1,16	1,31	2,0
2	picture No 2		19,2	17,3	16,53	- 0,9	1,10	1,26	
3	picture No 3		19,2	17,3	16,53	- 1,7	1,15	1,31	
4	picture No 4		19,2	17,2	17,4	- 0,8	1,03	1,19	

