Implementation of heat saving measures in Jelgava

Jelgava, 17.09.2009

Profile of SIA Jelgavas nekustamā īpašuma pārvalde

- Developed on 16 June 1998, during the reorganization of 4 house management institution and maintenance-emergency enterprise “Glābējzvans”
- Registered in the Commercial register on 5 October 2004
- Equity capital is Ls 78 889, 100% municipality owned commercial company
- Basic activity – property management, maintenance and repair work
- 416 dwellings under management with 30915 inhabitants, and 53 commercial buildings and structure. 212 contracts of authorization in management signed
- Total managed territory – 1 034 362.77 m^2
- Net turnover in 2008 ~ 2.62 mil Ls
- Average number of employees – 275, 40 of them in management

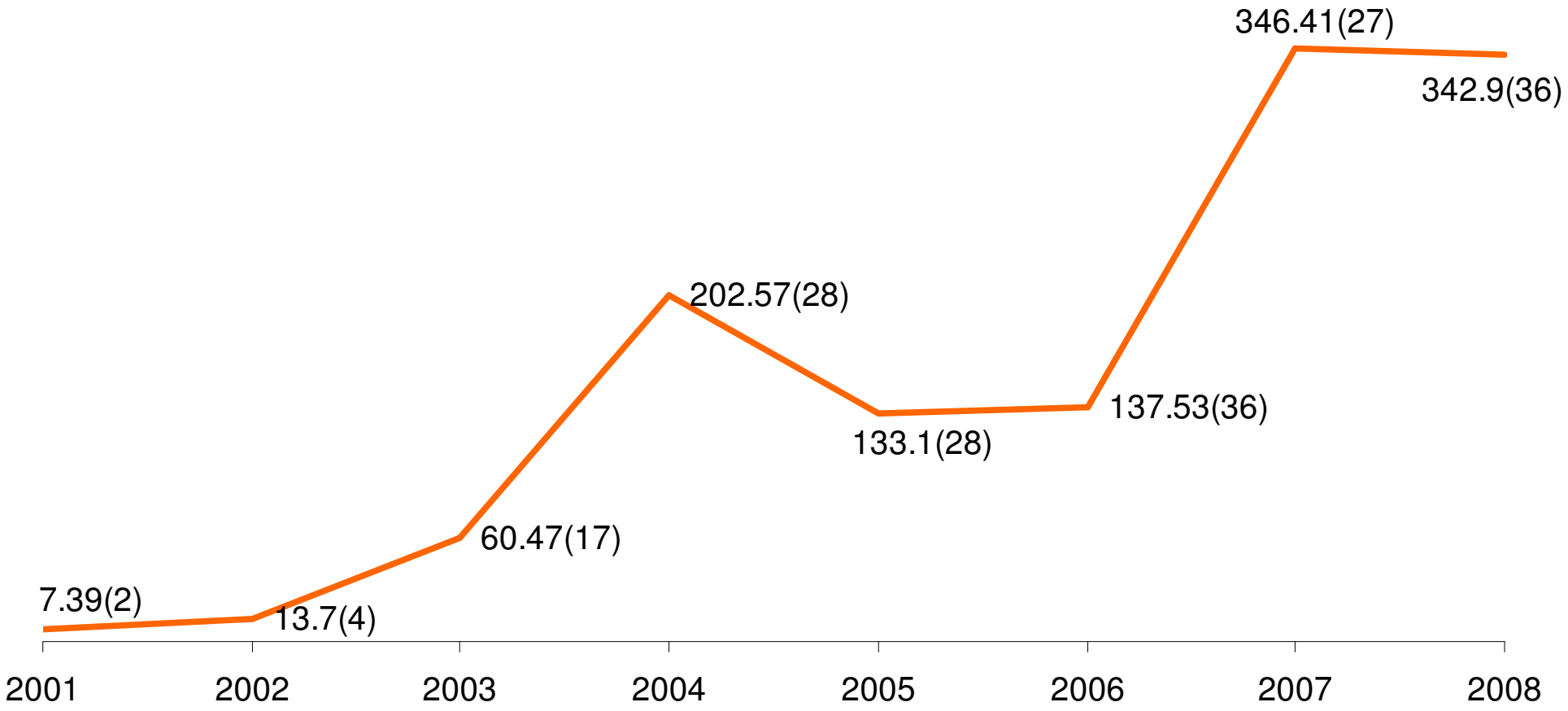
1. SIA JNIP implemented heat saving measures

2. Implemented heat saving measures during a German-Latvian pilot project

SIA JNIP implemented heat saving measures in LVL thousands

Implemented measures	2001	2002	2003	2004	2005	2006	2007	2008	Total
Insulation of buildings (outer walls, roof, aisles between windows)	6.87	13.43	29.86	90.32	47.69	49.27	97.8	36.22	301.89
Change of windows for all house, staircases, attic)	-	-	17.47	96.41	85.41	71.19	152.33	32.93	608.82
Entrance units' reconstruction	-	-	14.1	12.28	-	-	6.57	38.3	71.25
Full renovation	-	-	-	-	-	-	-	209.59	209.59
Development of technical documentation for renovations (power-audit, termography, reports etc.)	0.52	0.27	3.04	3.56	-	17.07	6.2	25.96	56.62
Total:	**7.39**	**13.7**	**60.47**	**202.57**	**133.1**	**137.53**	**346.41**	**342.9**	**1248.2**

SIA JNIP implemented heat saving measures in LVL thousands (number of activities)



Windows' changes in staircases with insulation

Insulation of outer walls

Reconstruction of entrance units

Cooperation with Federal Ministry for Environment, Nature Protection and Reactor Safety of Federal Republic of Germany and KfW (German Development Bank)

- Federal Ministry for Environment, Nature Protection and Reactor Safety of Federal Republic of Germany and Ministry of Environment of the Republic of Latvia signed a contract on 27 May 2004, which intends to implement pilot projects in the territory of Republic of Latvia in environment safety area, whose task is to decrease any cross-border environmental pollution from sources in Latvia, hence enabling climate protection;

- Heat supply company in Jelgava, presently SIA *Fortum Jelgava*, based on the aforementioned contract, has signed a support contract with KfW branch in Bonn on 20 October 2005 on implementing the German-Latvian pilot-project "Modernization of Jelgava city heat supply system". This cooperation is coordinated by the IWO – *Initiative Wohningswirtschaft Osteuropa* (non governmental organization) from Germany);

- SIA *Jelgavas nekustamā īpašuma pārvalde* signed a contract with SIA *Fortum Jelgava* on 10 September 2007 on cooperation in implementation of the environment protection pilot-project "Modernization of Jelgava city heat supply system".

Additional requirements during the implementation of the German-Latvian pilot program in environment protection "Modernization of Jelgava city heat supply system".

• Full renovation of apartment house: a renovation of apartment house was done from October 2007 until January 2009 in 4th line (series 103) in Jelgava. Additionally an agreement with Federal Ministry for Environment, Nature Protection and Reactor Safety of Federal Republic of Germany was reached about full renovation of additional house. A house on K.Helmaņa 3 (series 104) Jelgava was chosen. German party covers 40% (excluding VAT) from total renovation expenses. Project part was done by SIA JNĪP.

• Create a power industry agency: the *Zemgale Regional Power Industry Agency* started to work on 2 March 2009 in Jelgava with the support of the *The Intelligent Energy Executive Agency*, which already provides consultations on energy saving measures

• Equip 600 apartments in 11 apartment houses with heat consumption proportionality spreaders until December 2008. these apartments were equipped with heat consumption proportionality spreaders. Heat consumption in one of these houses is done by using this system. The same system will be used for other houses during the next heating season. Project part was organized by SIA JNĪP

• Develop a concept of how to save up to 50% of consumed heat in Jelgava apartment houses: long-term concept "Decrease of Heat energy Consumption up to 50% in Jelgava Apartment Houses" has been developed in cooperation with Latvia University

Full renovation measures in the Apartment house on 4th line 1 (series 103), Jelgava

Nr.	Building measures	Cost (Ls)	Cost Ls/m2	Cost %
1.	Insulation of ending walls	15664.24	10.50	6.80
2.	Insulation of a façade	81416.88	54.70	35.20
3.	Insulation of an attic	7623.28	5.10	3.20
4.	Insulation of a basement plinth	15254.43	10.25	6.60
5.	Changes of windows	43669.05	29.35	18.90
6.	Rebuilding of the Heating system from one-pipe into two-pipes system with change of heating elements	25839.17	17.35	11.20
7.	Montage of thermo-regulating elements	5678.55	3.80	2.45
8.	Montage of Heating proportionality spreaders	4 423.12	3.00	1.90
9.	Staircase remodeling	10020.00	6.75	4.35
10.	Other costs (project development, author's supervision, building supervisions)	21740.00	14.60	9.40
	Total:	**231328.72**	**155.45**	**100**

Division of Project's funding

Nr.	Title	Measure-ment unit	Amount	Cost Ls/m2	Cost %
1.	**Apartment owners**	**Ls**	**125750.00**	**84.45**	**54.35**
2.	Co-funding of German Ministry of Environment state budget	Ls	83838.72	56.30	36.25
3.	Co-funding of Jelgava municipality	Ls	21740.0	14.60	9.40

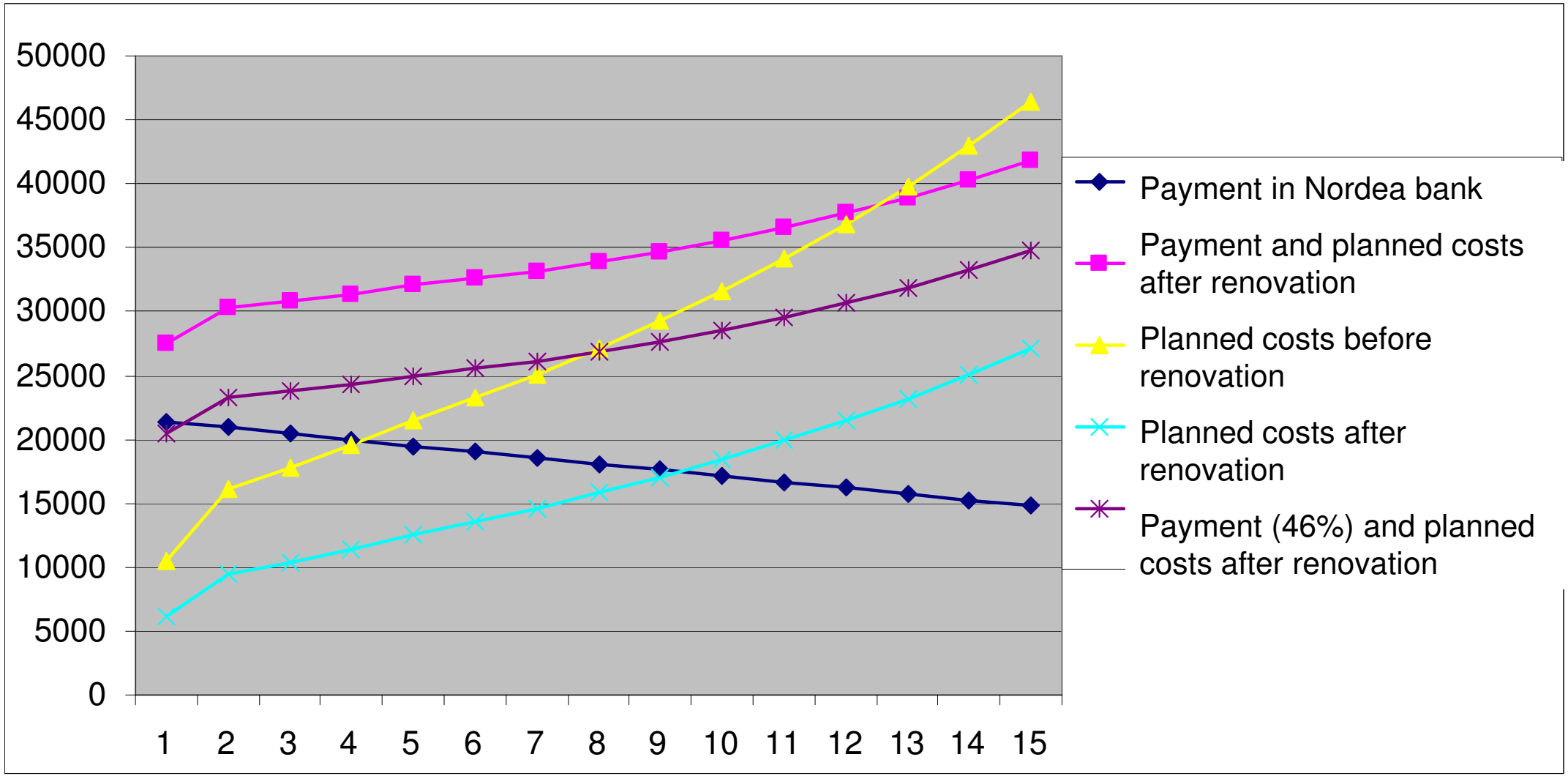
A loan to renovate the apartment house was taken in the Nordea bank. The loan has a linear payment schedule with a fixed interest rate.

Apartment owners were provided with following options to pay off the renovation:

- pay off all amount at once
- partial payment, covering building costs later
- full covering of building costs in correspondence with a loan schedule

A calculation of building costs for each apartment owned was done individually, taking into account the renovation jobs completed in every separate apartment, ie., change of windows and heating elements.

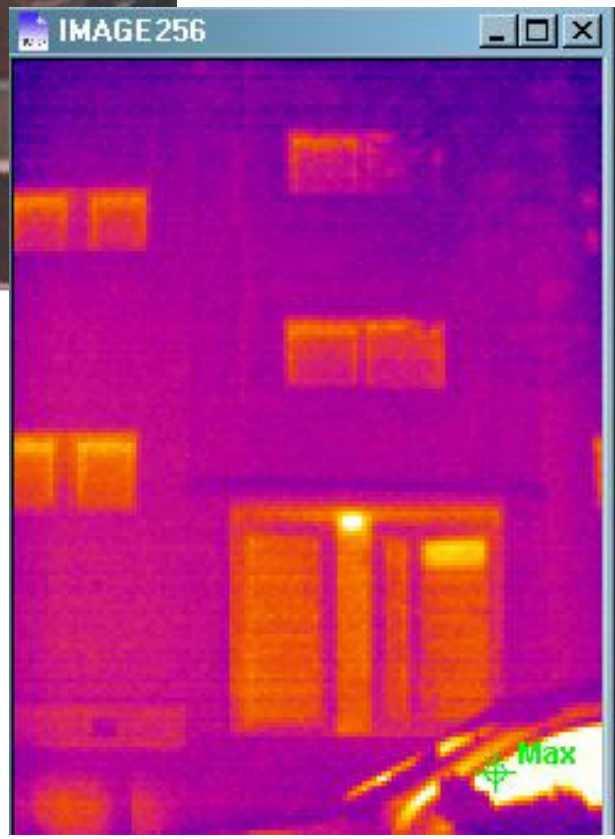
Comparison of Heat energy before and after renovation project for the Apartment house in 4th line 1 (2008-2022)



Apartment house on 4th line 1, Jelgava before renovation...

....and Apartment house on 4th line 1, Jelgava after renovation

Thermography pictures after the apartment house renovation



First results of a monitoring

Heating price Ls/m2

	2008					2009	
	Jan	Feb	Oct	Nov	Dec	Jan	Feb
4th line 1	**0.560**	**0.414**	**0.125**	**0.426**	**0.554**	**0.715**	**0.635**
Kooperatīva street 6	1.172	0.892	0.046	1.378	1.358	1.603	1.408
Dobeles road 96	1.139	0.825	0.041	1.369	1.393	1.543	1.355
Dobeles road 98	1.202	0.889	0.060	1.400	1.497	1.620	1.406

According to the agreement, all results are sent to the Federal Ministry for Environment, Nature Protection and Reactor Safety of Federal Republic of Germany, the IWO being their representative.

CO_2 emission in atmosphere has been reduced by 390 tons per year as a result of implementing renovation project in Heating systems and houses. The calculation is done based on decrease of heating losses in the renovated part of the heating main.

CO_2 decrease, achieved by renovating an Apartment building on 4th line 1

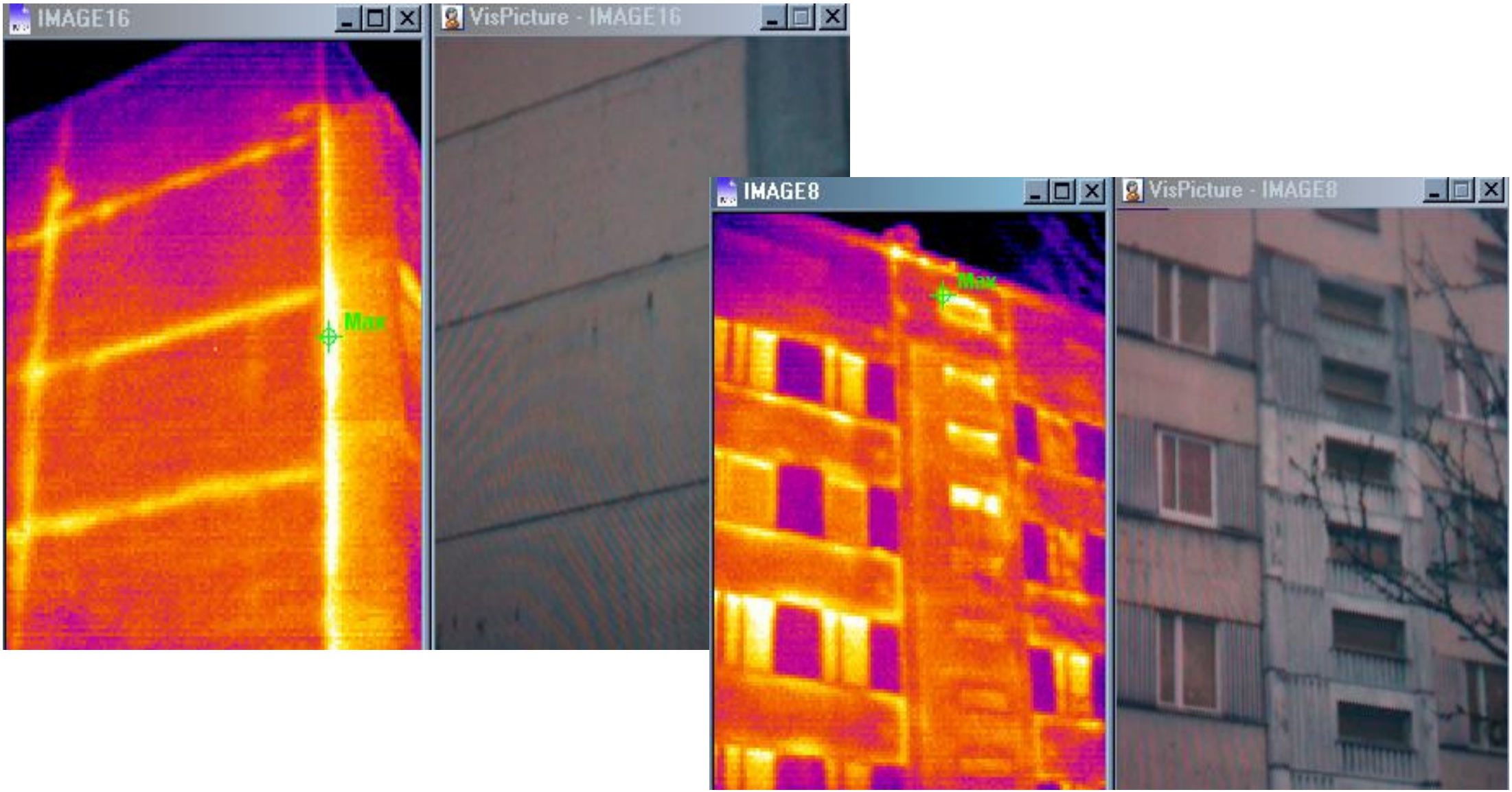
CO_2-emission	Before renovation	After renovation	Decrease
Per year	53.52 t	22.32 t	31.2 t
In average per one apartment	2.33 t	0.9 t	1.43 t

Continuation of the Pilot-project on K.Helmaņa iela 3, Jelgava, where building is performed in line with EnEv2007 standards

Planned renovation costs for the Apartment house on K.Helmaņa iela 3 (series 104), Jelgava

Nr	Building activities	Cost (Ls)	Cost Ls/m2	Cost %
1.	Preparation of construction site, scaffolding, building boards, entrance units	10311.28	6.93	6.04
2.	Insulation, facade, basement ceiling, attic covering	50906.18	34.21	29.82
3.	Windows, window panes for loggias	57712.82	38.78	33.80
5.	Hardware and locksmith work	11124.46	7.48	6.52
6.	Staircase	15775.68	10.6	9.24
7.	Ventilation	3351.38	2.25	1.96
8.	Heating	21537.91	14.47	12.62
	Total	170719.71	114.73	100.0
	VAT 21%	35851.14		
	Building costs in Total	206570.83	138.82	

Thermography pictures show that one of the reasons for an increased (165 kWh/m2) heating energy consumption is connected with a considerable loss of the heating energy through building boundary surfaces



Report of the Technical inspection

The cause of the moisture on covering parts, which are damaged by the moisture, needs to be eliminated. The repair must be done on covering parts as well as crumbled joints must be caulked. Coverings with a substantial corrosion on supporting elements must be repaired or replaced.

Majority of loggias are worn-out, especially railings, which are not usable and it is advisable to rebuild them. Procrastination of rebuilding of loggias can substantially increase the renovation costs and lead to the worsening of technical condition of constructions.

Renovation was started on 20 July 2009

Benefits for apartment owners

- living in a properly arranged environment
- price for consumed heat energy decreases
- gained understanding and knowledge in joint ownership management
- decrease in management cost

Experience gained by the Management company

- possibility to analyze and research results of full renovation
- abilities and knowledge in attraction of funds
- understanding about benefits and gains from a full renovation, as well as conviction to prove its necessity (thermography etc.)

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