VIDES AIZSARDZĪBAS KLUBS

INFORSE-EUROPE
International Network for Sustainable Energy

Latvijas Zaļā kustība
Latvian Green Movement

International Seminar:
"Exchange of Experience among Baltic Sea Region NGOs and Society in Promotion of Energy Efficiency for Climate Protection and Local Development"

Place: Latvian Energy Efficiency Centre, Jūrmala, Latvia
Date: 27 June, 2016

Thermal Energy Savings and Heat Recovery Options, Ikšķiles municipality, Latvia

By **Kaspars Grīnbergs**
Ltd. "Ikšķiles māja" heating and
building management service manager, Latvia

The Seminar was organised in the framework of a Baltic Sea Region NGO Cooperation Project.
More on the project: http://www.inforse.org/europe/se_buildings_project.htm

With support from

norden

Ltd. “Ikšķiles māja" heating and building management service manager

Dr. sc. ing.,
Kaspars Grīnbergs

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Introduction

- Depending on geographical circumstances Latvia and Baltic States currently are facing number of major challenges in the field of energetic, dependence on Russia are now causing anxiety and insecurity;
- Main task of the engineers and economists is to create mechanisms which reduces dependence on natural gas consumption and find alternative that replaces it equivalently;
- There are several directions in which we already have seen significant progress, however, there are issues with unexplored energy potential;
- In my presentation, I will discuss two directions in which I am involved my shelf.

Apartment house renovation

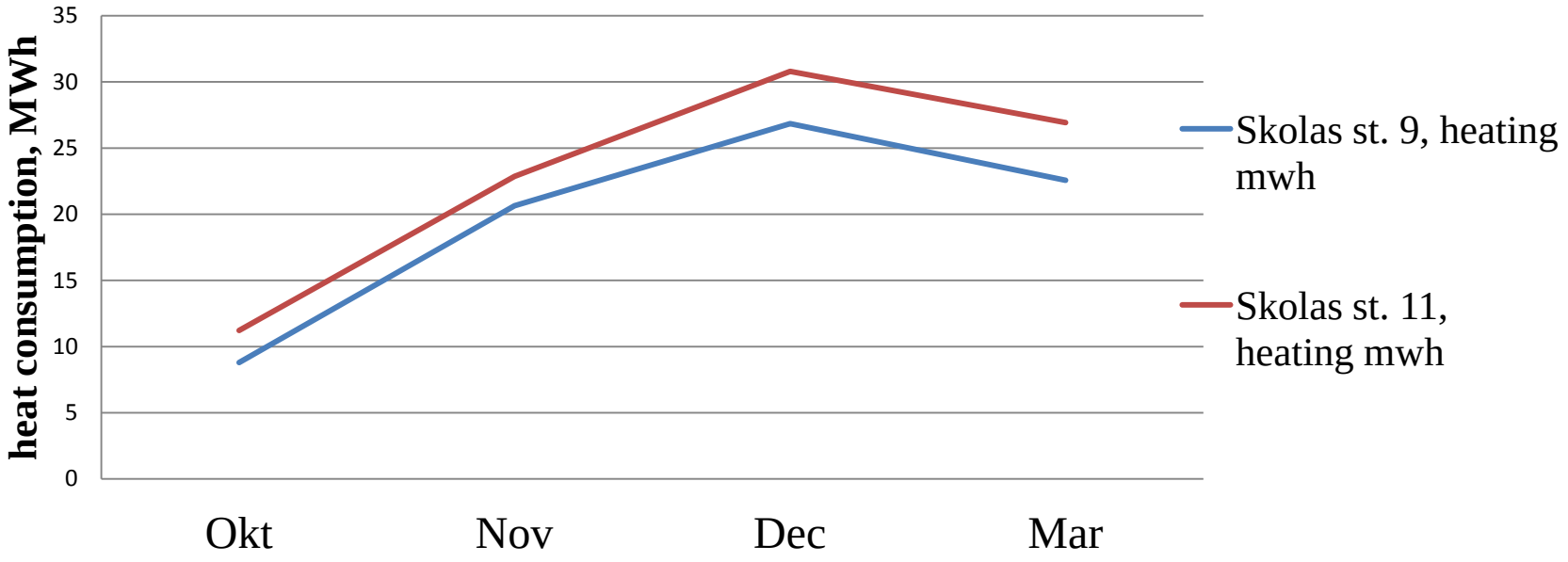
Data will be compared on two identical three-storey houses

Both houses are in identical weather conditions, because they are150m away from each other.

Apartment house renovation

- 2011 -2012.year. Thermal energy consumption before renovation.

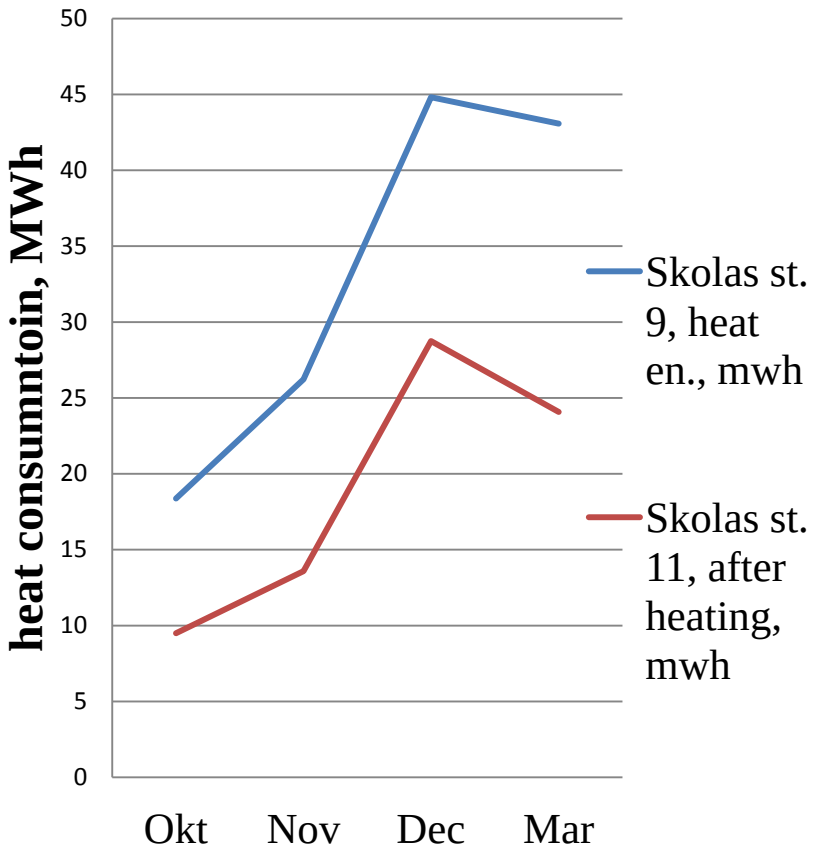
Month	Okt	Nov	Dec	Jan	Feb	Mar	*Total*
Skolas st. 9, heating mwh	8.79	20.64	26.85	38.86	39.91	22.57	157.62
Skolas st. 11, heating mwh	11.22	22.86	30.79	42.81	49.36	26.93	183.97



Apartment house renovation

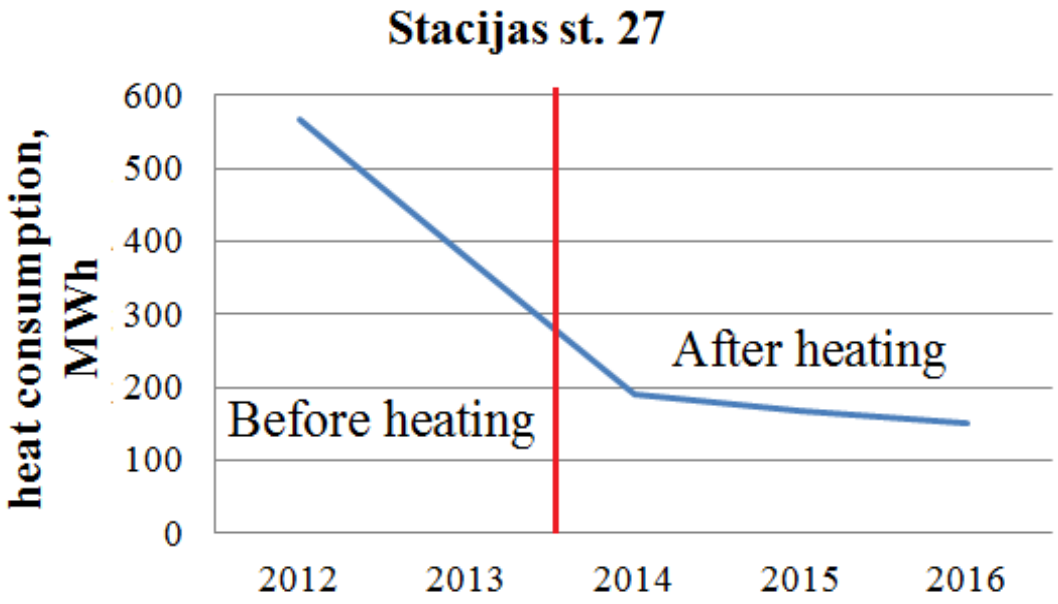
- Skolas 11, after renovation saved in energy bills ***6692.63*** EUR per year;

address	Heating	Saving	Heat energy tarif tarifs EUR/MWh, costs, EUR	difference, EUR
okt.12	MWh	%	75.08	
Skolas iela 9	18.37		1379.22	
Skolas iela 11 (after heating)	9.49	-48.34	712.51	666.71
nov.12	MWh	%	75.08	
Skolas iela 9	26.23		1969.34	
Skolas iela 11 (after heating)	13.59	-48.19	1020.33	949.01
dec.12	MWh	%	75.08	
Skolas iela 9	44.81		3364.33	
Skolas iela 11 (after heating)	28.75	-35.84	2158.55	1205.78
jan.13	MWh	%	75.08	
Skolas iela 9	47.35		3555.03	
Skolas iela 11 (after heating)	27.73	-41.44	2081.96	1473.07
feb.13	MWh	%	75.08	
Skolas iela 9	32.93		2472.38	
Skolas iela 11 (after heating)	19.99	39. 30	1500.84	971.53
mar.13	MWh	%	75.08	
Skolas iela 9	43.07		3233.69	
Skolas iela 11 (after heating)	24.07	-44.11	1807.17	1426.52
			Skolas 11, cost saving per year, EUR	***6692.63***



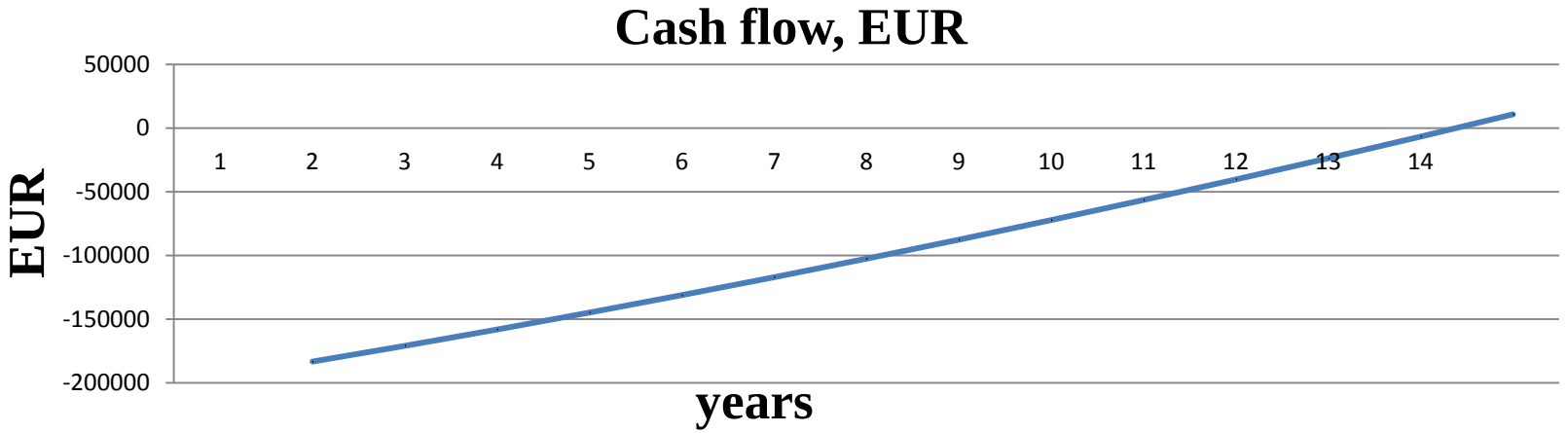
Apartment house renovation

- Stacijas 27, after renovation significantly reduced heat energy consumption in the following years.

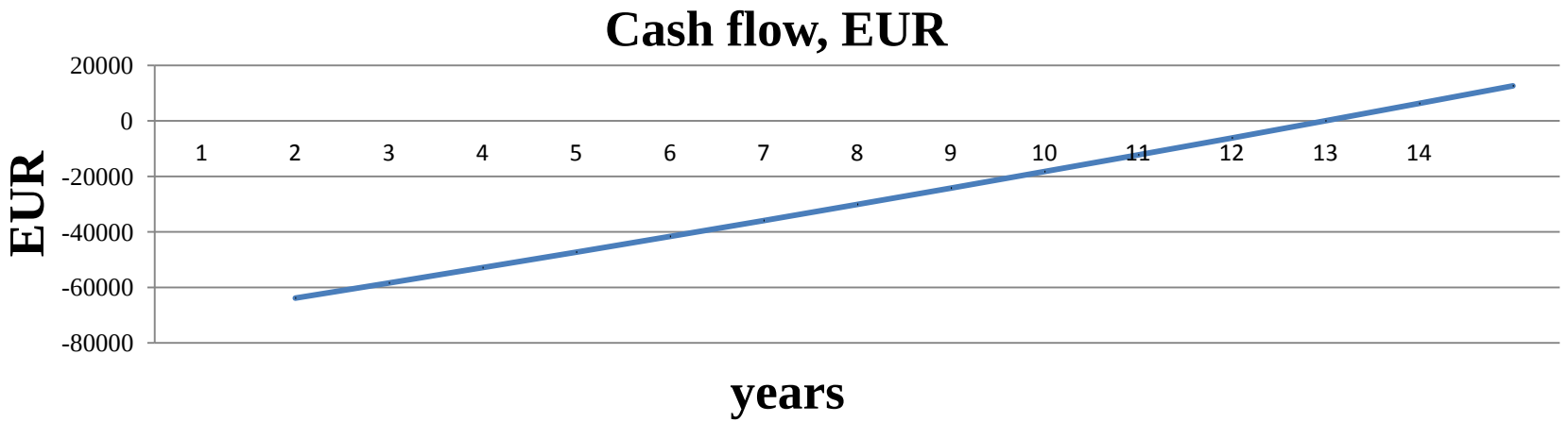


Investment payback period

- Stacijas st. 27; bank interest rate -3%; investment – 195312 EUR

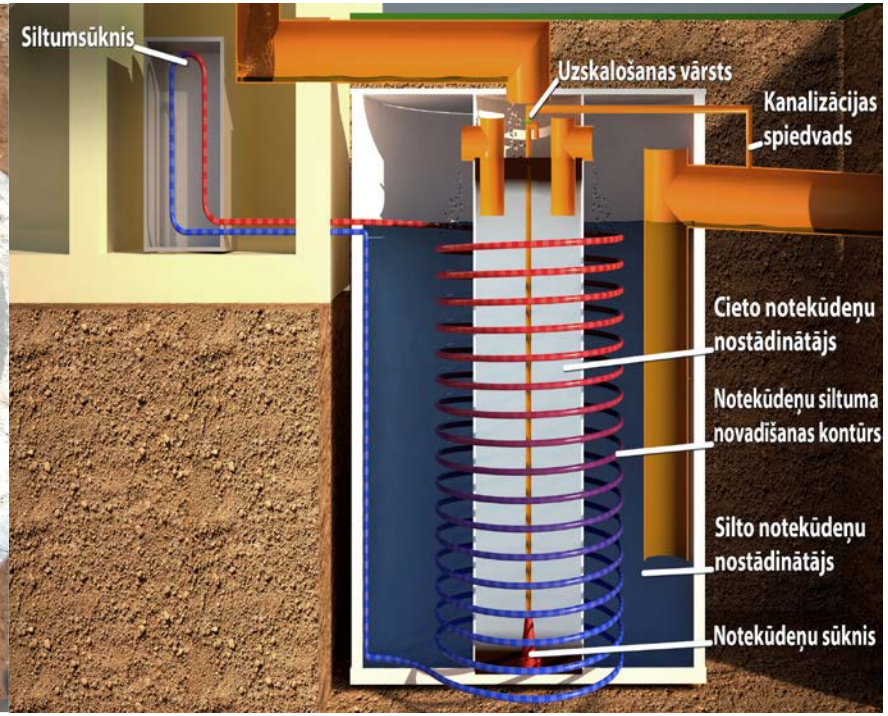


- Skolas st. 11; bank interest rate -1.5%; investment – 69189 EUR



Heat recovery from sewage

- With waste water drained into the sewage system along comes heat, which under certain conditions after discharging can be used for heating and hot water system;



- A research project is conducted in Ikskile, sewage heat recovery system is added to apartment houses in Pārbrauktuves st. 9a, it consists of wastewater tank with a sewage separator and a heat exchanger.

Heat recovery from sewage

https://dl.dropboxusercontent.com/u/61397988/waste%20heat%20recover%20animation%20small.mov

Conclusions

- The apartment house renovation must continue in the future, but the structure of the referable costs must be more comprehensive, more geared to the goal - an economically approvable investment in human healthy living conditions.
- Air exchange and indoor climate are the main conditions on which co-financing must be based, investments from the beginning should be aimed on infrastructure arrangement, only after that the outer wall correction.
- In the long term after reducing thermal energy consumption on consumers side, decreasing heat temperatures in heating and hot water supply systems, sewage heat recovery systems could partly provide heating and hot water demand of the building.
- The device with high efficiency can work if it is connected to the centralized sewage networks, where is a large amount of waste water. At the moment, there is approved project and the plant will be installed and connected to municipal sewage networks to provide hot water during summer in the municipal high school.

Thank you for your attention.

Kaspars Grīnbergs

Thermal energy savings and heat recovery options

2016