

Demand Side Management in Vilnius

Experience of District Heating Operator 2002 - 2007

EFIEES Congress, Vilnius
14th September 2007

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Summary

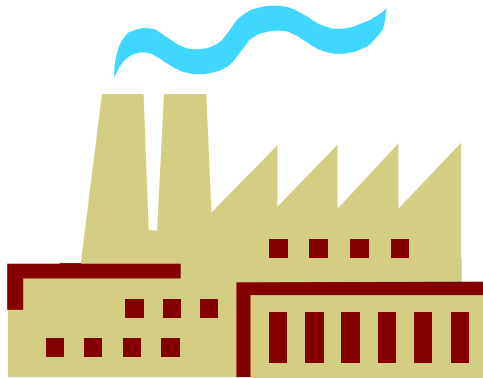
- First lease agreement for DHN operation in Lithuania was signed by Dalkia in 2000. After 7 years, we operate in 10 cities with about 45% of market share
- That has allowed us to implement a comprehensive strategy to improve situation and prepare future
- Since this beginning, main change was due to fast increase in environmental issues. That added some risks and opportunities on top of social and economical issues
- Our experience shows that, with a proper management, old fashioned soviet style DHN could be transformed in a modern, reliable, efficient and environmentally friendly way to deliver energy to consumers
- But behind systems, issues are now on the demand side management. In Lithuania, energy consumption could potentially be reduced by 50%. That is the main stake!

Energy savings, a comprehensive combined action “from primary energy supply to demand side management”

energy input



energy processing



heat transportation



delivery of heating



Diversification of fuels

Renewable sources

Optimization of CHP
mode increasing
electricity sales

Reducing own
consumption

Decreasing losses and
water feeding

Elimination of group
substations

Installation of individual
automatic substations
(replacement of hydro-
ejectors)

Individualization of heating
(control and invoicing)

Economical impact - 3 to 5%
in decreasing consumption

- 7 to 8%

up to - 20%

Focus on Demand Side – Pilot project to individualize Heat consumption and billing at flat level

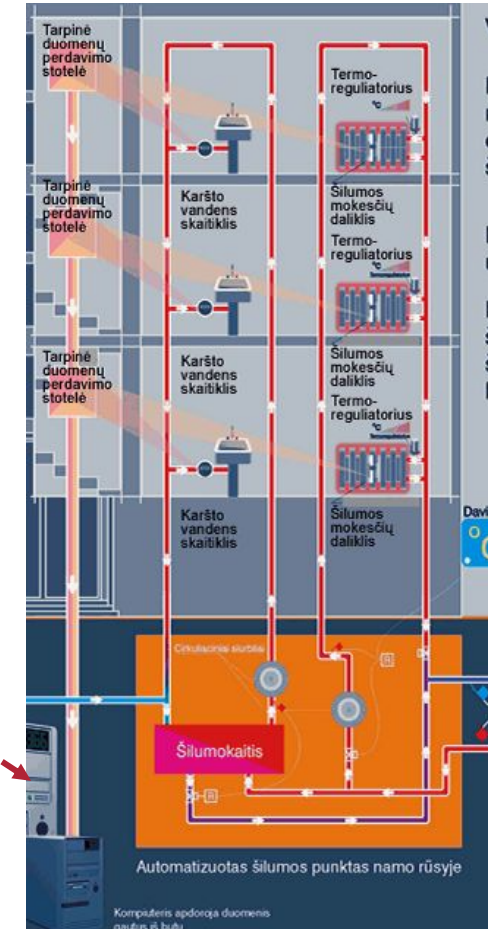
Project has consisted in proposing installation of a full package for individualization:

- Heat measurer on each radiator
- New hot water meter
- Remote record of consumptions (hot water & measurer) – Data collection at substation level + data transfer via GSM
- Centralized IT processing for billing

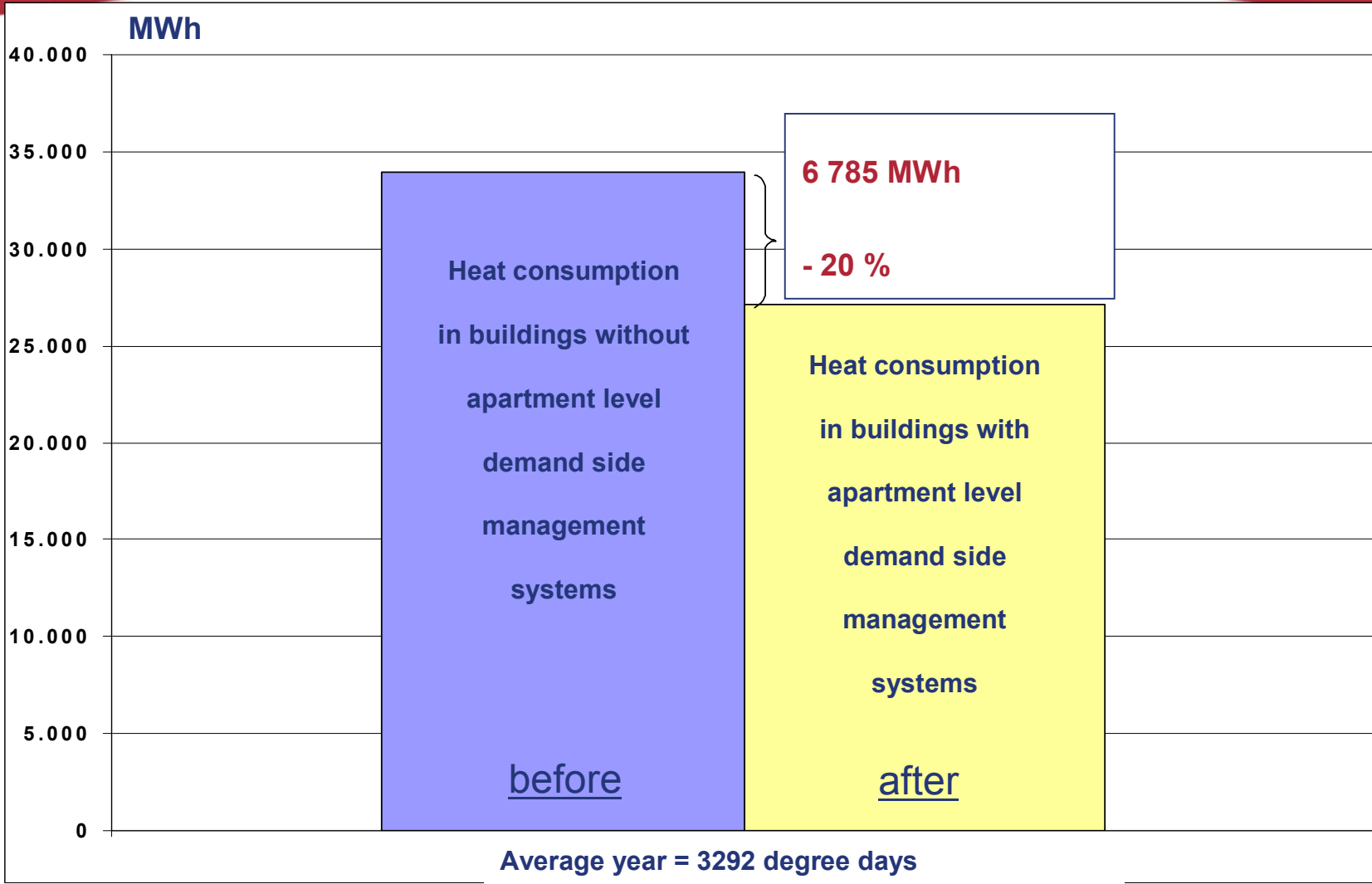
Installation cost covered by Vilniaus energija at 75%

Long term maintenance and operation contract

End of 2006, 3688 flats in 84 buildings were installed with individualization

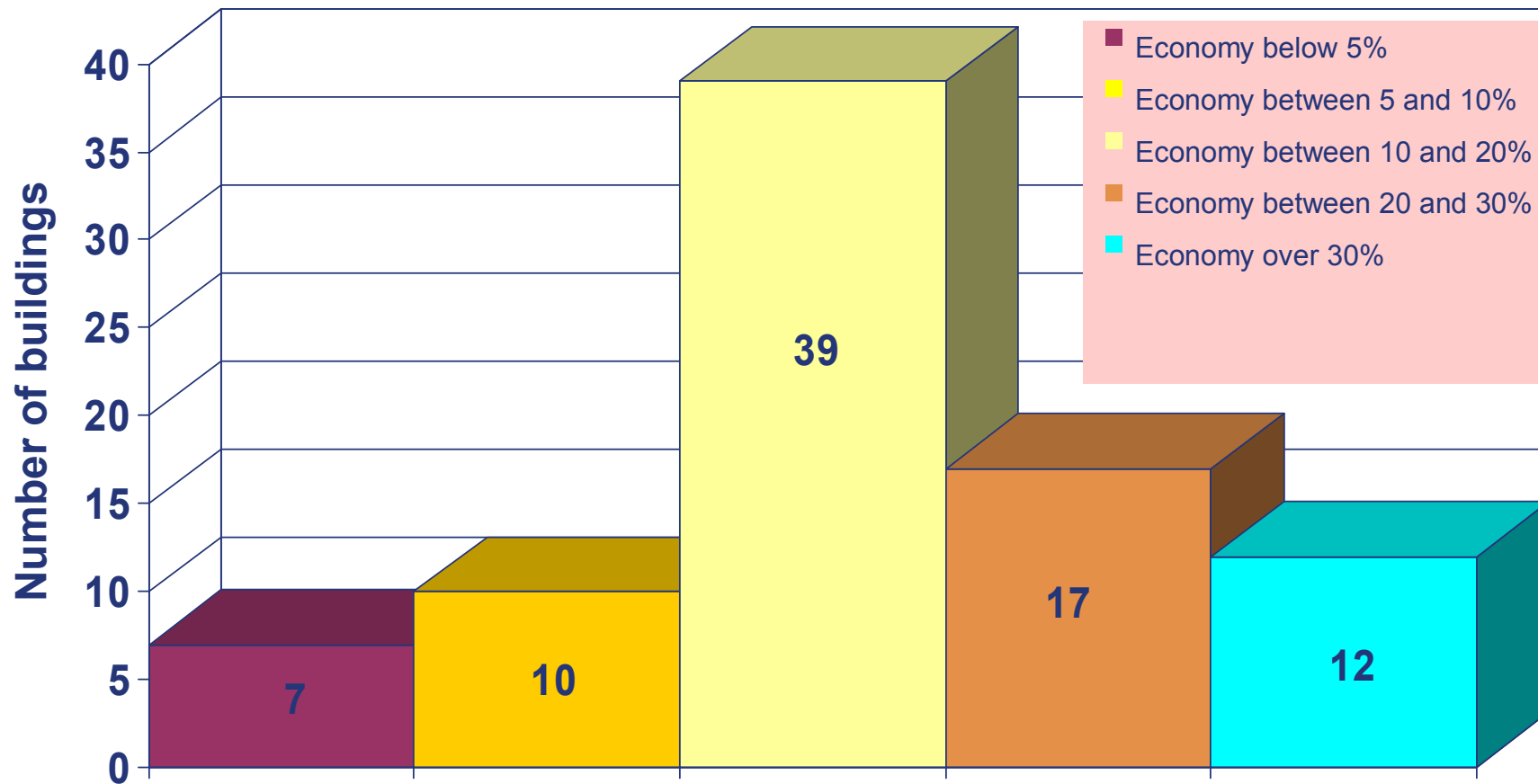


Heat consumption for 70 buildings before and after individualization



Individualization of heating brings about 20% of savings

Heating savings in ALDSM buildings



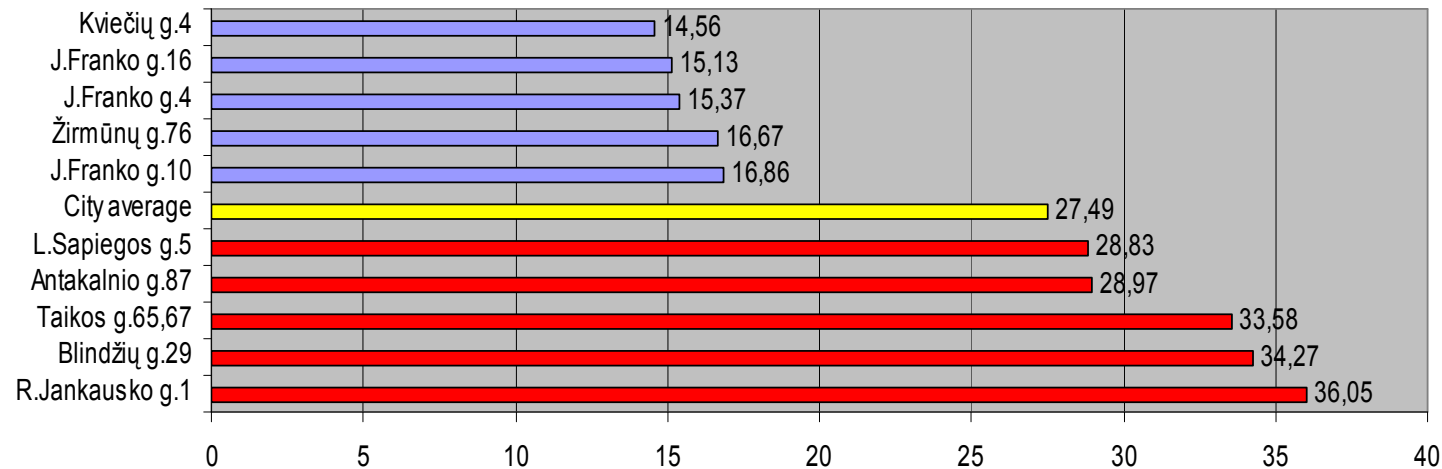
Appreciation of individualization following focus groups of consumers

	Consider positively	Consider negatively
<p>Are users of individualized system installed by Vilniaus energija</p>	<p>They are happy because they can control their heating and pay less.</p> <p>Independence and savings are the two drivers of their satisfaction</p>	<p>They had no information about lack of insulation of their building.</p> <p>Now they think that energy is wasted and they are disappointed regarding the real savings they anticipated bigger</p>
<p>Are not users of individualized system</p>	<p>They have not such system because need of big additional investments.</p> <p>They would like to install for two reasons:</p> <ul style="list-style-type: none"> -Saving money -Be independent from neighbors 	<p>They are satisfied by current heating system and do not want to change</p> <p>Additionally main part of them do not belong to a homeowner association which make them farer from such individualization system</p>

Additional investments for insulation of buildings are the main problem for consumers. Owners are in a “vicious circle”: more the house is in a poor condition, more he will pay for heating despite savings brought by individualization and less he will perceive economical benefit.

Individualization has no impact on building envelop

kWh amount per 1 sq.m.

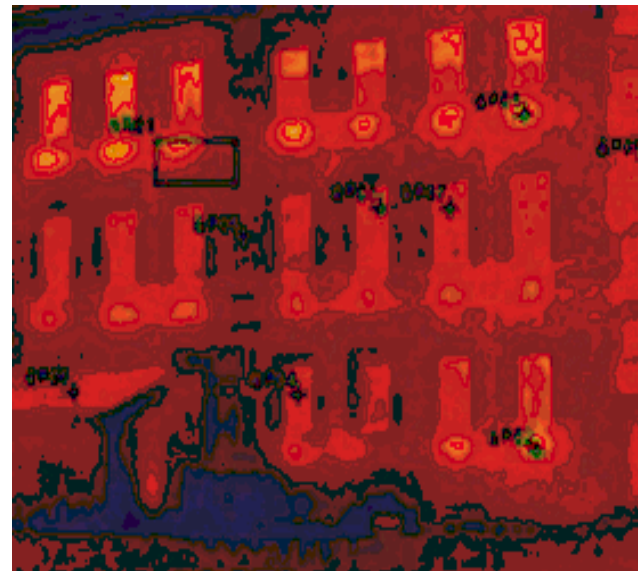
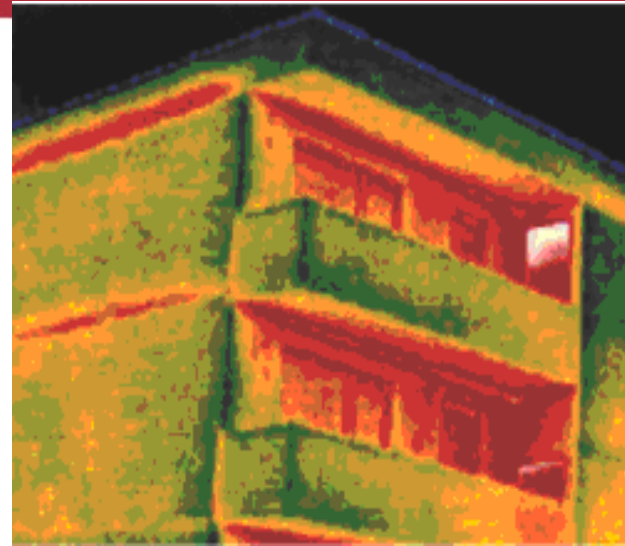


On the 84 buildings where Vilniaus energija has installed individualization, consumption, in MWh/m² can vary dramatically, from 1 to 3 [example of February 2007]

That creates strong disappointment to owners of the poorest buildings who compare their cost to modern buildings

Individualization should be linked to renovation

The real problem in Lithuania – Dramatic lack of insulation for buildings



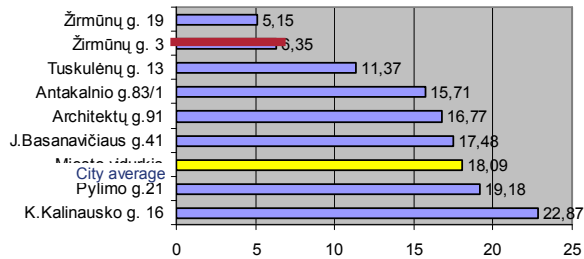
Major part of housing in Lithuania is out of date, with poor insulation (walls, windows, roof, ...) Consumption reaches 2 to 3 times what it should be with modern buildings.

Heat Consumption in Renovated Building, 2006-2007

Building renovated in Vilnius - "Žirmunai project"

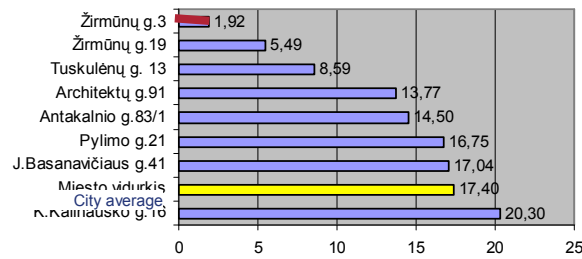
November

kWh amount per 1 sq.m.



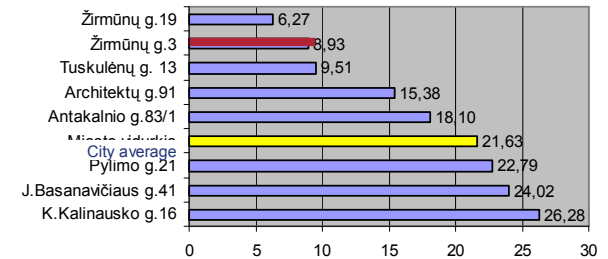
December

kWh amount per 1 sq.m.



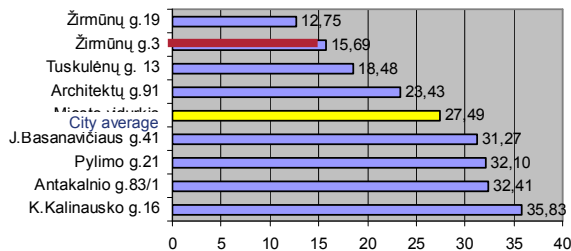
January

kWh amount per 1 sq.m.



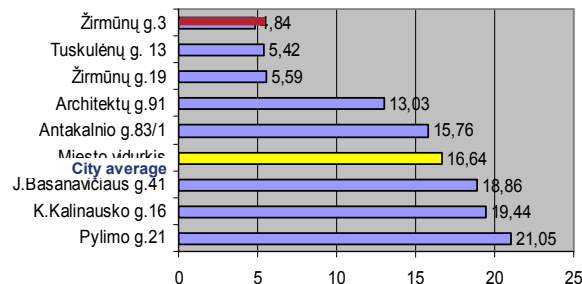
February

kWh amount per 1 sq.m.



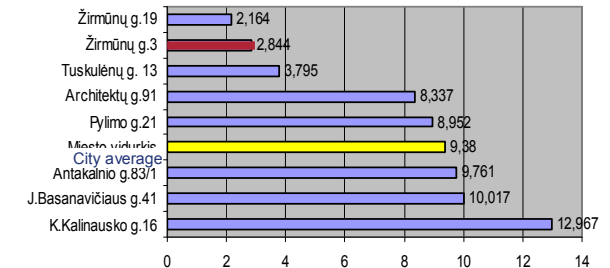
March

kWh amount per 1 sq.m.



April

kWh amount per 1 sq.m.



- █ Renovated building
- █ Average of City of Vilnius
- █ Other types of buildings

After renovation, consumption has decreased by more than 50% and is equivalent to what have new modern buildings