Successful biomass (wood pellets) implementation in Estonia

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Regional Energy centres in Estonia

Biomass Utilisation of Local & Regional Level
Managenergy workshop and study tour
4 - 5 February 2003
Bratislava, Slovakia

This presentation will cover

- Supply of primary energy in Estonia
- Wood fuels production
- Pellet firing projects in Estonia – SIDA Demo East programme:
  - Description
  - Results
  - Lessons learned

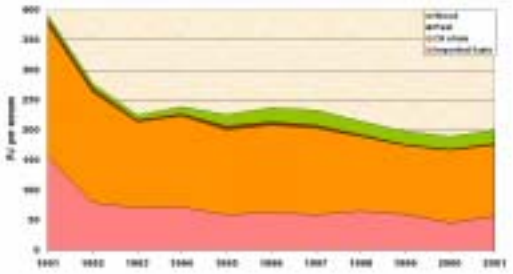
Regional Energy Centres in Estonia

- Organisation

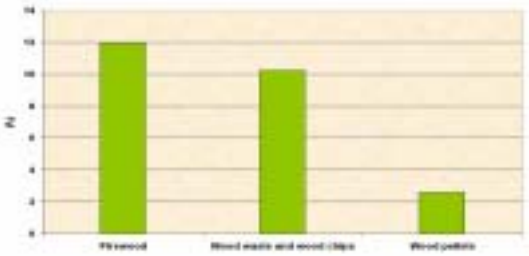
  Regional Energy Energy Centres in Estonia is non-profit organisation established in June 1999 to continue the activities of energy centres that had been founded in the framework of the EU PHARE Project "Regional Energy centres in Estonia"
- Objective

  The objective of the Regional Energy Centres is to promote energy economy in Estonian regions in accordance with the Estonians energy and environmental policy and the principles of sustainable development

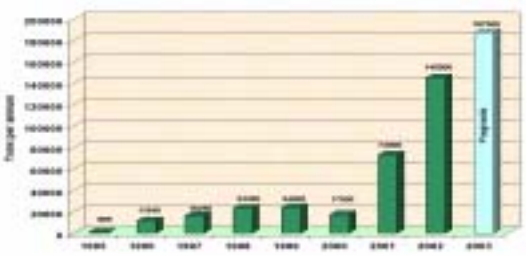
Supply of primary energy in Estonia



Production of wood fuels in Estonia in 2002



Wood pellets production in Estonia in 1995 - 2002



Pellet firing projects in Estonia: SIDA Demo East 2001

- Wood pellets firing projects in Estonia have been initiated by Environmental Technology of Sound (MTÖ) in Sweden and Regional Energy Centres (REC) in Estonia.
- The projects have been implemented with financing provided by SIDA Demo East funds.
- The specific aim of the demonstration programs (Demo East) is to make it possible for purchasers in the Baltic States, Poland and North-West Russia to test and gain experience from Swedish equipment in the environment and energy sectors. Demo East finances 50 per cent of the costs of equipment and a small training program when the equipment is taken into operation. The rest of the investment costs, building – and consulting costs, are paid by the client.
- At three different sites in Estonia:Kiltsi, Leie and Rakvere, light oil-fired boilers have been converted to pellet firing.

Pellet firing projects in Estonia: Description 1

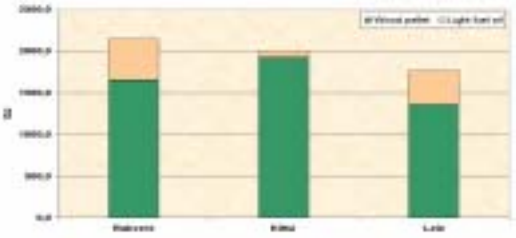
Boiler house location	Kiltsi Basic School	Leie Basic School	Kunderi str. in Rakvere
Existing boilers	Thermia H20-16	De Dietrich GT 306 GT 306	Thermia H21 NOVA H26 NOVA
Converted boilers	H20-16	GT 306 (was rebuilt into boiler GT 309)	H21 NOVA
Technical solution	Installation of pellet burner, silo, pellets transport system, automatic control equipment. Ash removing equipment was included		
Installed additional equipment		Flue gas fan	Flue gas fan New chimney

Pellet firing projects in Estonia: Description 2

Boiler house location	Kiltsi Basic School	Leie Basic School	Kunderi str. in Rakvere
Supplier of pellet burners	NE Naturenergi AB		
Burner capacity, kW	200	150	250
Planned annual heat production, MWh	490	470	500
Investment cost, SEK	380 000	370 000	420 000
In operation from:	December 2001		

Pellet firing projects in Estonia: Results

Fuel consumption after conversion to wood pellet heating in 2002



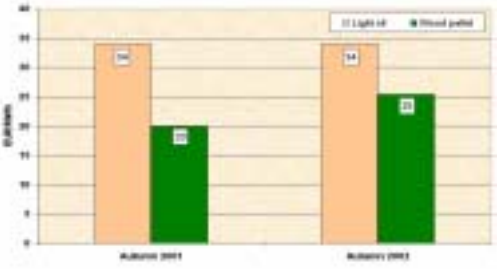
Pellet firing projects in Estonia: Results

Wood pellets consumption in 2002

Site	Consumption, t/y
Kiltsi	111
Leie	78,3
Rakvere	95,5
Total	284,8

Pellet firing projects in Estonia: Results

Consumer prices of light oil and wood pellets



Pellet firing projects in Estonia: Results

Emissions reduction in 2002

Site	Emissions reduction, t/y	
	CO2	SO2
Kiltsi	130,7	0,33
Leie	93	0,23
Rakvere	106,6	0,27
Total	330,3	0,83

Pellet firing projects in Estonia

Lessons learned 1:

- The practical experience of conversion light oil boilers into wood pellets burning boilers by installation of wood pellets burners as well as in operating of wood pellets fuelled boilers was obtained
- Only one possibility in installation of wood pellets burning equipment was implemented but to get the best demonstration effect it will be necessary in the near future to implement projects with installation of the special wood pellets burning boilers integrated with pellet burner in the factory.

Pellet firing projects in Estonia

Lessons learned 2:

- To avoid problems in operating of pellets burning and existing equipment in the future the careful inspection of technical situation of existing equipment in the boiler house must be carried out before boiler conversion. The existing boiler must be suitable for installation pellet burner
- The quality of wood pellets is an important factor for good operation of pellets burning equipment. There have been problems with high content of the fine particles in the wood pellets. Precautions have to be taken against crushing pellets during storage filling procedure

Pellet firing projects in Estonia

Lessons learned 3:

- The basics for getting good results in operation of new equipment like pellet burning equipment is a start up training of the boiler house personnel and such training was carried out during the project implementation
- The satisfaction of boiler house owners has created interest among another boiler house owners to install pellets burning equipment

Thank you for your attention

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