BALTIC SEA REGION PROGRAMME PROJECT "BIOENERGY PROMOTION 2"
FINAL INTERNATIONAL CONFERENCE
"FROM STRATEGIES TO ACTIVITIES – GOOD PRACTICE EXAMPLES OF REGIONAL BIOENERGY PROMOTION"

EXPERIENCE IN DEVELOPING THE USE OF BIOMASS IN DISTRICT HEATING OF KAUNAS CITY

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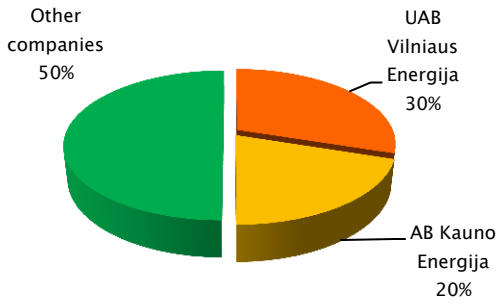
AB KAUNO ENERGIJA

AB Kauno Energija is:

- **Second largest** (by number of customers and by turnover) heat supplies company in Lithuania. The Company shares approx. 20 % of Lithuanian heat supplies market;



- **78 company by annual turnover** in the list of 1000 largest Lithuanian companies of the business daily „Verslo žinios“ (Business News) of the year 2012;

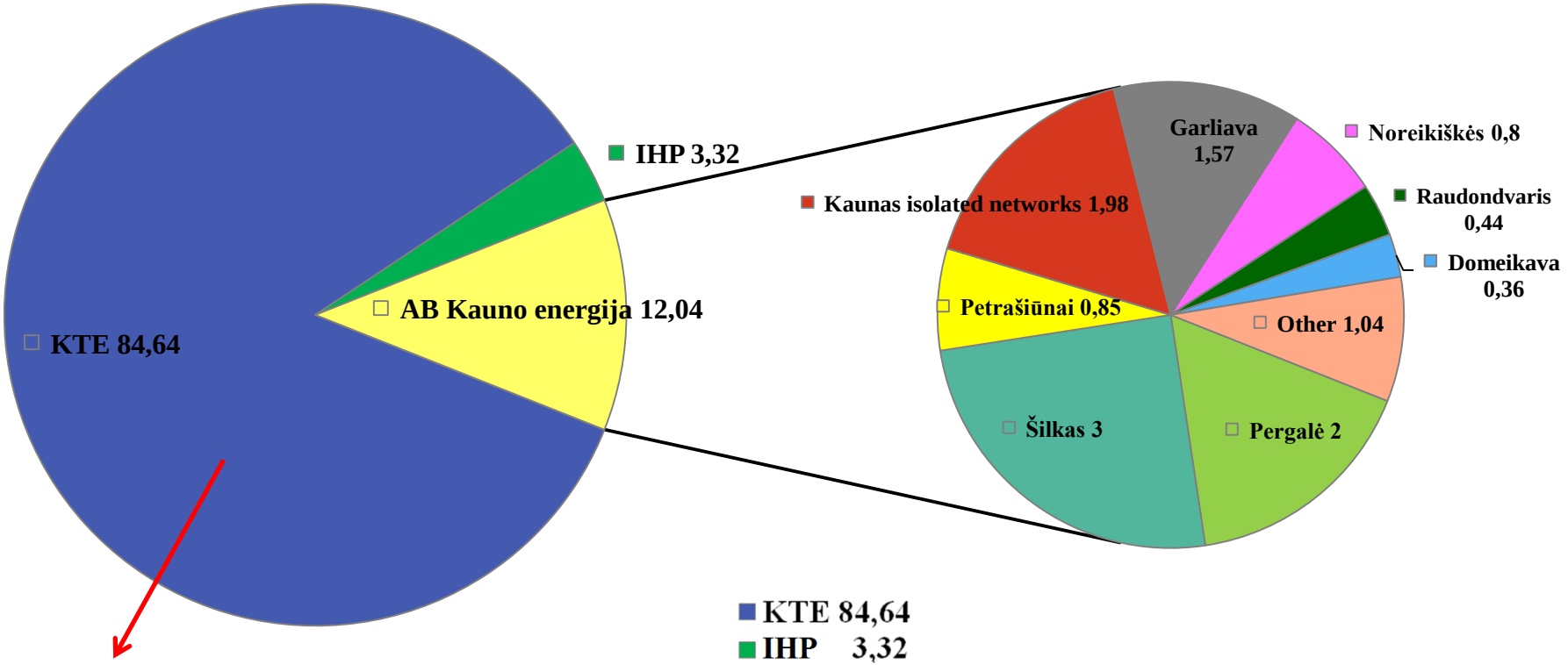
- **The only heat supplies company in Lithuania** listed in „NASDAQ OMX Baltic“ stock exchange.

Financial figures of the Company of the year 2012, EUR thousands

Index	Rate
Revenue	**107.644** (LTL 371.370)
Profit from ordinary activities	**587,8** (LTL 2.028)
Net profit	**242,6** (LTL 837)

Fixed exchange rate – 1 Euro = 3,45 Litas

Ratio of the heat, produced during the year 2012 by AB Kauno Energija, UAB Kauno Termofikacijos Elektrinė (KTE) and independent heat producers (IHP) (percentage)



95 % of heat, consumed in Kaunas integrated network, was produced by KTE

KTE 84,64
IHP 3,32

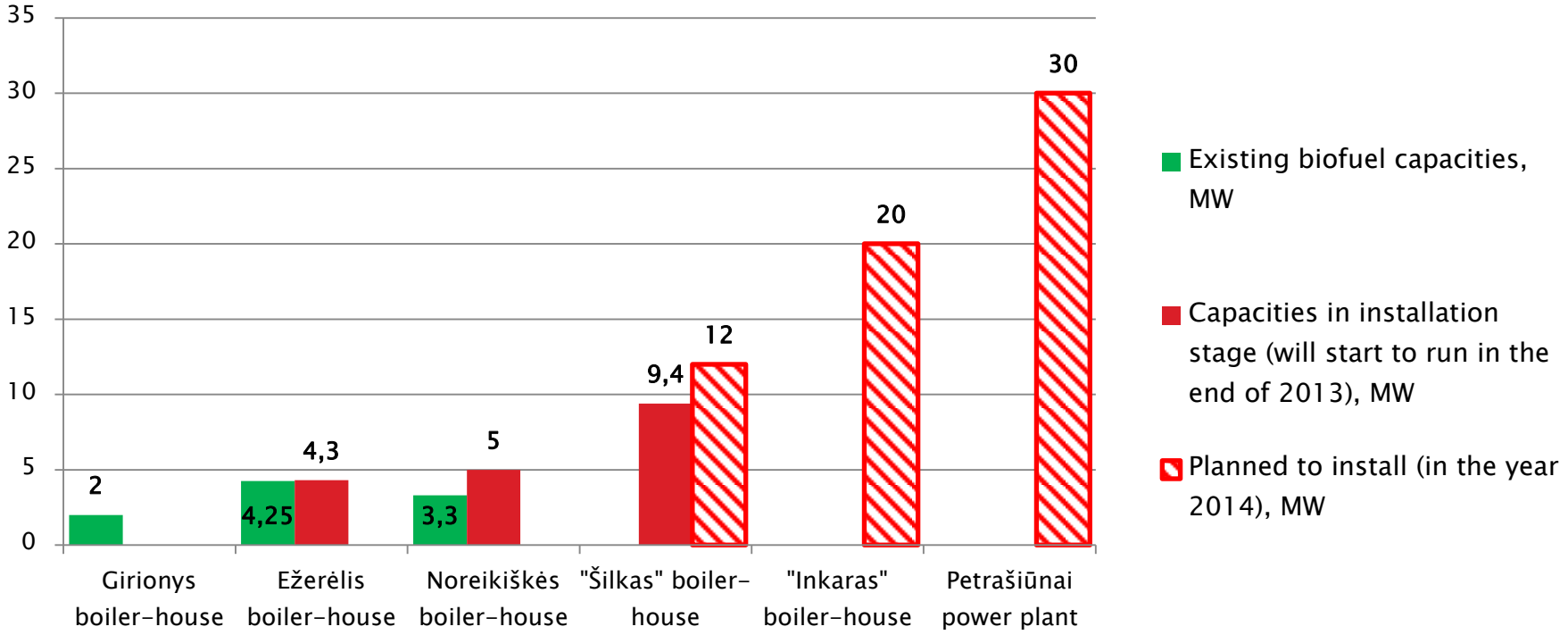
AB Kauno Energija

Kaunas integrated networks:
- Pergalė 2
- Šilkas 3
- Petrašiūnai 0,85

Kaunas isolated networks: 1,98

Kaunas district networks:
- Garliava 1,57
- Noreikiškės 0,8
- Raudondvaris 0,44
- Domeikava 0,36
- Other 1,04

Company's heat production sources, running (and planned to run) on biofuel, MW



- Use of biofuel for heat production in Kaunas integrated network has not been developed, because the Company had an obligation to purchase not less than 80 % of heat, consumed in integrated network, from UAB Kauno Termofikacijos Elektrinė (hereinafter – KTE) starting from 31 March 2003 up to 2018. An obligation has been cancelled in October 2012 when the heat purchase agreement has been terminated.
- A real schemes of biofuel support were started to implement in Kaunas city from the year 2013.
- The use of biofuel is actively declared by KTE since the year 2011, but there are still no particular results.
- Cooperation agreements with Lithuanian and foreign companies regarding use of biofuel starting from 2010, initiated by municipality, are still not realized.

Fuel balance of AB Kauno Energija (percentage)

Company's past applications for partial financing of building of biofuel burned cogeneration plants from EU Structural Funds in 2012

- **„Building of biofuel using termofication powerplant in "Inkaras" boiler-house"**

  Capacity – 3,5 MW_{el} + 11,4 MW_{th}. Financing allocated – EUR 1,74 million (LTL 6 million). Value of the project – EUR 13,34 million (LTL 46 million).

- **„Building of biofuel using termofication power plant in Noreikiškės boiler-house ".**

  Capacity – 0,4 MW_{el} + 1,3 MW_{th}. Value of the project – EUR 3,48 million (LTL12 million).

- **„Reconstruction of Petrašiūnai power plant, equipping it with cogeneration power plant, using biofuel".**

  Capacity – 16 MW_{el} + 44 MW_{th}. Value of the project – EUR 34,5 million (LTL 119 million). Financing allocated – EUR 1,74 million (LTL 6 million).

After the change in "green" electricity procurement order, the Company refused from implementation of these projects. The main reasons were as follows:

1) **small intensity of support,**
2) **only one support scheme would be applied to each project.**

Company's past application for partial financing of Petrašiūnai power plant reconstruction from EU Structural Funds in 2012

- **„Reconstruction of Petrašiūnai power plant, equipping it with cogeneration power plant, using biofuel "**. Capacity – 16 MW_{el} + 60 MW_{th}.

Application prepared in order to participate in electricity incentive quota auction (max. rate – EUR 10,73 ct/kWh (LTL 37 ct/kWh) for the period of 12 years.

In July 2013 auction was terminated. The Company refused from project implementation.

EU Structural Funds support for 3 Company's biofuel projects has been approved

On 2 October 2013 The Minister of Economy of the Republic of Lithuania approved a partial financial support from EU Structural Funds for 3 Company's biofuel projects (as follows):

- **„Reconstruction of Petrašiūnai power plant changing used fuel to biofuel (stage I)"**

  Financing allocated – up to EUR 1,74 million (LTL 6 million) for capital formation expenses reimbursement. Financing intensity – up to 24,49 %. Total planned capacity of reconstructed equipment – up to 30 MW;

- **„Reconstruction of "Inkaras" boiler-house changing used fuel to biofuel"**

  Financing allocated – up to EUR 1,74 million (LTL 6 million) for capital formation expenses reimbursement. Financing intensity – up to 42,90 %. It's planned to install 2 x 8 MW biofuel burned boilers and 4 MW condensational economizer;

- **„Reconstruction of "Šilkas" boiler-house changing used fuel to biofuel (stage II)"**

  Financing allocated – up to EUR 1,16 million (LTL 3,99 million) for capital formation expenses reimbursement. Financing intensity – up to 50 %. It's planned to install 8 MW biofuel burned boiler and 4 MW condensational economizer.

Partial financial support up to EUR 1,76 million (LTL 6 million) is maximum that can be allocated under the measure VP3-3.4-ŪM-02-K "The use of renewable energy sources for energy production" of 3 priority "Environment and sustainable development" of the "Operational Programme for Promotion of Cohesion for 2007-2013". Projects are already started to implement.

After the implementation of these projects final heat price for customers should decrease approx. EUR 1,3 – 1,45 ct/kWh excl. VAT.

The use of financing models for installation of biofuel equipment (1)

AB Kauno Energija used almost biggest variety of financing models for installation of biofuel equipment in Lithuania:

1. **The use of own funds:**
   - Fitting of water heating boiler to work on biofuel in „Šilkas“ boiler-house (installed capacity – 9,4 MW);
   - Girionys boiler-house (capacity – 2 MW),
   - Noreikiškės boiler-house (the use of bio-gas from water treatment company for cogeneration, capacity – 3,3 MW);
   - The use of local fuel (peat) in Ežerėlis boiler-house (4,25 MW);

2. **The use of European Union (EU) Structural Funds (SF) for partial financing of a projects.** 3 already mentioned projects will be implemented under this model:
   - „Reconstruction of Petrašiūnai power plant changing used fuel to biofuel (stage I)”. Total planned capacity of reconstructed equipment will reach up to 30 MW;
   - „Reconstruction of “Inkaras” boiler-house changing used fuel to biofuel”. Total capacity will reach 20 MW;
   - „Reconstruction of “Šilkas” boiler-house changing used fuel to biofuel (stage II)”. Total capacity of equipment installed will reach 12 MW;

The use of financing models for installation of biofuel equipment (1)

3. **The use of funds of Lithuanian Environmental Investment Fund (LEIF) for partial financing of projects:**
   - „Reconstruction of Noreikiškės boiler-house equipping it with 4 MW biofuel burned water heating boiler". Partial financing in amount of EUR 0,67 million (LTL 2,3 million) was allocated from the Special Program of Climate Change.
   - „Reconstruction of Ežerėlis boiler-house equipping it with 3,5 MW biofuel burned water heating boiler". Partial financing in amount of EUR 0,52 million (LTL 1,8 million) was allocated from the Special Program of Climate Change.

4. **Application of Energy Service Company (ESCO) model:**
   - UAB ENG biofuel boiler in Garliava boiler-house (installed capacity – 6,3 MW);

5. **Cooperation with new independent heat producers (IHP):**
   - UAB GECO Kaunas boiler-house (20 MW),
   - UAB Lorizon Energy boiler-house (10 MW),
   - UAB Ekoresursai cogeneration plant in Lapės dumping ground (installed capacity – 4 x 300 kW_{el} ir 4 x 340 $kW_{th)}$.

The use of bio-gas in Kaunas district (1)

A bio-gas power plant in Noreikiškės boiler-house started to run in 2001. This was the first cogeneration power plant using such type of fuel among Lithuanian heat supply companies.

The main fuel in this plant is bio-gas, supplied from UAB Kauno Vandenys water treatment equipment. Installed capacity – 5 x 150 kW_{el} ir 5 x 210 kW_{th}.

The company invested in Noreikiškės bio-gas power plant more than EUR 0,64 million (LTL 2,2 million).

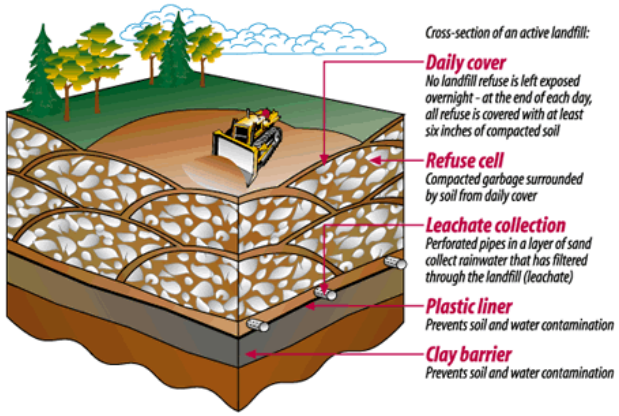
The project can be estimated as an environment protection project, because the methane gas from water treatment equipment is not emitted into environment and is burned in power plant.
Experience:
a) a lot of investments with no financial support;
b) there are no guarantees for bio-gas supplies and the price – a long term agreements "would be an advantage".

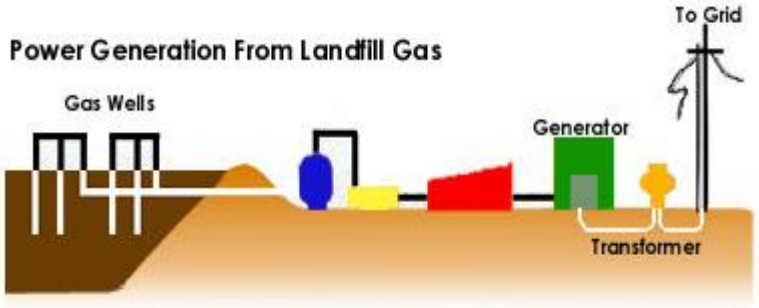
The use of bio-gas in Kaunas district (1)

UAB Ekoresursai project. A bio-gas form Lapės dumping ground is burned in cogeneration equipment of Domeikava boiler-house starting from 2001.

Installed capacity – 4 x 300 kW_{el} ir 4 x 340 kW_{th}.

AB Kauno Energija purchases heat, produced in cogeneration equipment and supplies it to the customers.





The project can be also estimated as an environment protection project, because the methane gas from dumping ground is not emitted into environment and is burned in power plant.
Experience:
Investment risk was assumed by investor, but he used support schemes and guaranteed heat procurement, as well as subsidy for selling of "green" electricity. AB Kauno Energija must have boilers for reservation of heat production capacities and a valid contracts for fuel supplies.

The use of ESCO model in Garliava boiler-house in 2012

6,3 MW biofuel boiler with condensational economizer started to run in Garliava boiler-house in 2012. The heat, produced with it is supplied for Garliava town customers.

It was one of the first biofuel equipment in Lithuania built using ESCO model. Construction of equipment was financed by ESCO, which under the terms of agreement will be responsible for it's operation.

The heat, produced in boiler is sold for AB Kauno Energija below total cost. Investor gets revenue for heat sold. After the operation period, determined in agreement, the property will be disposed to AB Kauno Energija.

Experience:

a) ESCO agreement – for long period;
b) Changed regulations inhibit from using full ESCO possibilities;
c) AB Kauno Energija must ensure reservation of capacities and fuel.

Projects, supported by Lithuanian Environmental Investments Fund (LAAIF) in the year 2013

„Reconstruction of Noreikiškės boiler-house equipping it with 4 MW biofuel burned water heating boiler".

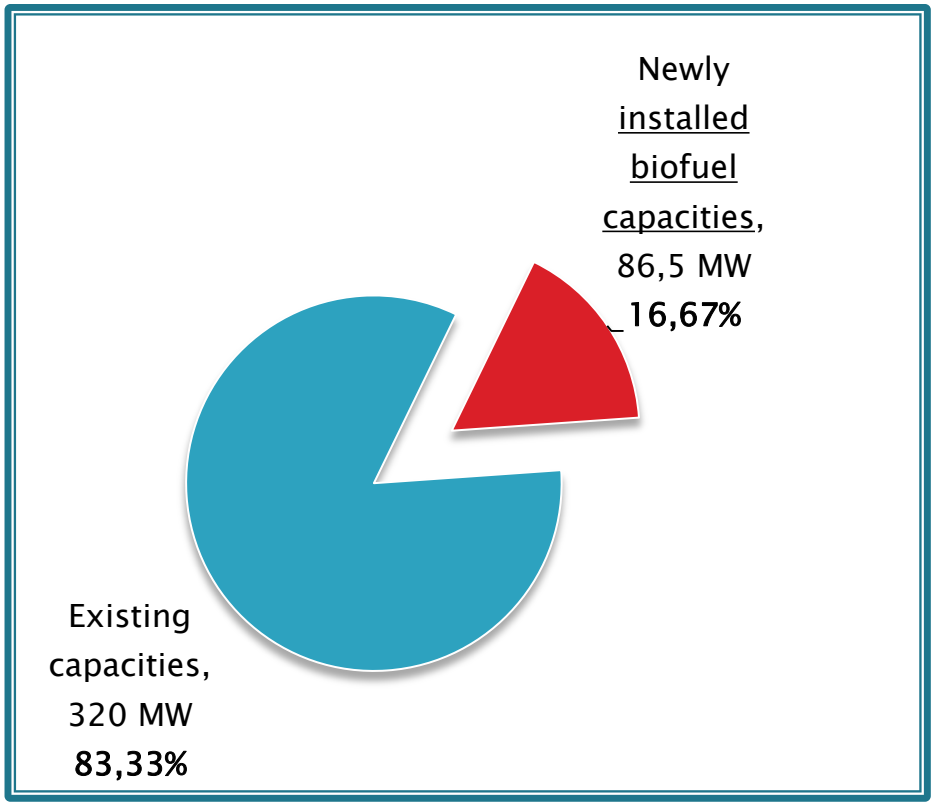
- Partial financing in amount of EUR 0,67 million (LTL 2,3 million) was allocated from the Special Program of Climate Change.
- Beginning of reconstruction – June 2013;
- **4 MW biofuel burned water heating boiler with 1 MW condensational economizer** will be installed in boiler-house.
- Equipment will start to run on 31 October 2013.

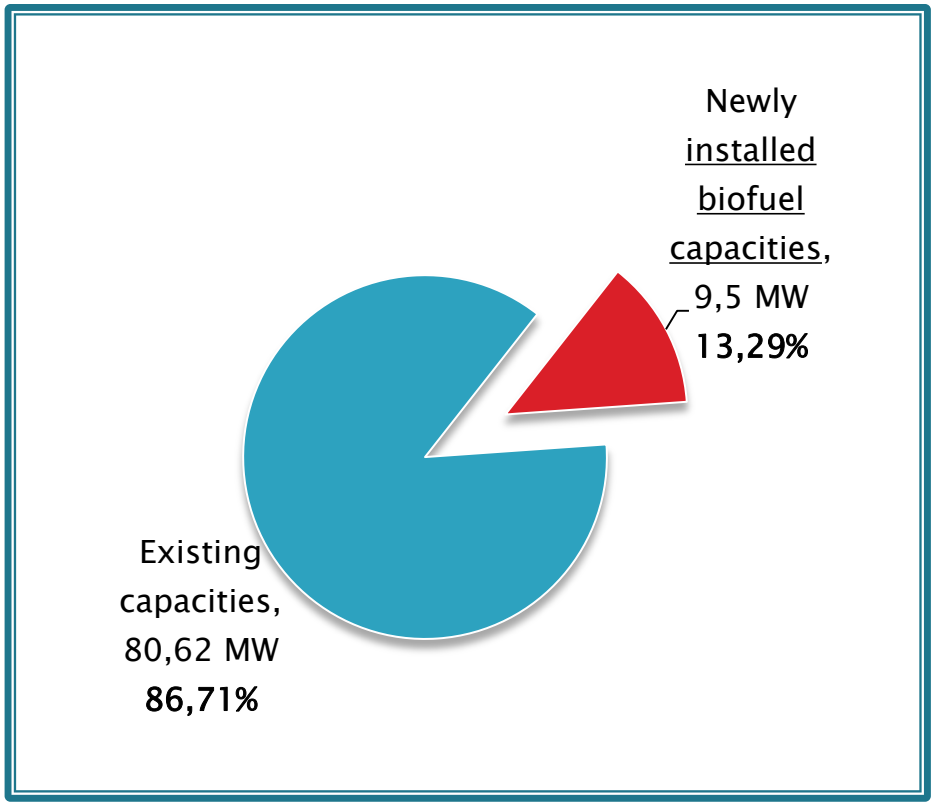
„Reconstruction of Ežerėlis boiler-house equipping it with 3,5 MW biofuel burned water heating boiler".

- Partial financing in amount of EUR 0,52 million (LTL 1,8 million) was allocated from the Special Program of Climate Change.
- Beginning of reconstruction – June 2013.
- **3,5 MW biofuel burned water heating boiler with 0,8 MW condensational economizer will be installed in boiler-house.**
- Equipment will start to run on 31 October 2013.

Partial financing for both projects was allocated from the Special Program of Climate Change.

Proportion of existing and newly installed capacities of AB Kauno Energija in Kaunas and Kaunas district





Kaunas – 406,5 MW

Kaunas district – 90,12 MW

Experience in Kaunas CHS networks and a conclusions

It's necessary for fuel diversification and development of biofuel equipment:

- a long term strategy and a less changing regulations. These conditions determine intensity of investments (the use of capital for development);
- competition in heat production sector must be developed under the market law, but sharing responsibilities/obligations.

Thank you for your attention