GREEN ENERGY PARK LIVNO
Renewable energy
• About DVOKUT

• Bioenergy and Turboden
• What we perform
• Our projects
• GREEN ENERGY PARK Livno
• Drina river basin region possibilities
• ENERGY & ENVIRONMENT
• More than 25 years of experience (since 1991),
• 20 engineers and highly educated employees,
• 15 years of experience in turn key projects,
• 12 years working with renewables,
• 5 years of CTS project management - heating on biomass
• Accredited Laboratory for Architectural Physics and Environment
WE PERFORMED

PRODUCTION OF ENERGY AND SOLID BIOFUEL

District heating on biomass

Boiler rooms

Biomass ORC/CHP (Heat and Power)
Production of renewable thermal or/and electric energy

- Livno BiH
- Sarajevo BiH
- Olovo BiH
- Petrinja HR
- Sjenica SRB
- ...

![Map showing locations of renewable energy projects](image)
GREEN ENERGY PARK LIVNO

“ESCO ECO ENERGIJA”

CENTRAL HEATING SYSTEM LIVNO

&

BIOMASS COGENERATION
INTEGRATED PROJECT

• Production and maintenance of equipment
• Manufacture of fuel chips, briquettes, pellets
• Central heating and distribution system
• Construction, engineering and design “in house”
• Development and implementation of CHP projects for partners in the region
• Production of electricity
• Production of thermal energy
• Own production / preparation of fuel (biomass)
• Realization of the project in phases
• Infrastructure construction
• Energy sale per kWh
• Renewable sources and energy efficiency
• Application of experience on other project
Public private partnership in energy service since 2008.
Municipality Livno 10%,
- Dvokut pro, Sarajevo 90%
- CTS 2008-2017

Users of CTS:
Public buildings
Business and economic
Residential buildings and houses
CAPACITIES

UP TODAY
Heat energy production
- Heat water bioler 2 MW (2008/13.)
- Heat water bioler 4 MW (2014.)
- Hot water boiler 2 MW (2016.)
- Solar energy plant 80kW (2014.)
TECHNOLOGY SOLUTION

Biomass boiler

Thermo oil

ORC

Electricity

Cold water

Hot water

Bark, pieces of bark; wood

chips

sawdust

sorting

Conditioning and packaging

Pellet

Palletizing / pressing

Preparation and conditioning

Accumulation of energy

kWh winter

Transport

kWh winter

Winter
TECHNOLOGY

ORC (ORGANIC RANKINE CYCLE)

Efficiency
Optimal capacity
Flexibility in work
Compactness and easy performance
Relatively high price

BIOMASS

BIOMASS POWERED BOILER

Thermal oil

ORC

hot water

cold water

ELECTRIC POWER

DISTRICT HEATING

COOLING SYSTEM

USE IN PUBLIC BUILDING, HOTEL, ...
2017.

Heat energy production
• Hot water boiler 2 MW
• Heat energy CHP/ORC 4 MW

Electricity production
• Solar energy plant 80kW
• ORC electricity 1,2 MW
1. Plant construction for CTS
2. Infrastructure construction CTS
3. Solar energy plant
4. CHP and pellet production
**REALIZED PROJECT**

**ENERGY PRODUCTION**

- **32%**
  - Heat energy distributed through the Central Thermal System to end users

- **65%**
  - Thermal energy for the preparation of biomass, pellet production and industrial use

- **100%**
  - Electricity is submitted to the power system

**SUBJECTS BY TYPE OF ENERGY INCOME**

- **24.32%**
  - Heat energy

- **45.07%**
  - Electricity

- **29.07%**
  - Pellet

- **1.54%**
  - Electricity from solar energy plant

*Production and processing of biomass*
• Planned mode of CHP: 8060 h/y
• Heat energy in season and off-season heating

Use of heat energy for:
✓ heating,
✓ Preparation of hot sanitary water,
✓ drying biomass
✓ Industrial production
✓ Other technological needs

Heat energy will be distributed to the heat system 360 days a year
**MAIN GOAL**

1. ESCO – All in one place throughout all stages of the project cycle
2. Energy Efficiency in Buildings
3. Public facilities energy management
4. Efficient management and public infrastructure

**SOCIAL RESPONSIBILITY**

1. Local community development
2. Encouraging and managing projects
3. Active participation in Local Communities life
DRINA RIVER BASIN REGION POSSIBILITIES

BIOMASS ENERGY

COLLECTING  CONDITIONING  CONVERTING  GENERATING
LOCAL ECONOMIC DEVELOPMENT OPPORTUNITIES
BIO MASS ENERGY

- Agricultural greenhouse production
- Processing of agricultural products
- Cogeneration energy production 350 d/y
- Optimum relation between heating / industry energy needs
- Cooperative and / or public private partnership
- Development of a large number of local economy-based activities with income from imports
Biomass cultivation on non-agricultural land
- Sustainable biodiversity
- Biomass yield 2-3 years
- Self-repellency from the stump
- Willow & Poplar

Possible areas along the river Drina?
BIOMASS PLANTS

Possible locations and situation in the region

- **Berane** ("Investors are interested in producing heat from biomass").
- **Prijepolje** ("The transfer on biomass heating is the strategic goal of the municipality of Prijepolje").
- **Priboj** ("Strategic decision of the municipality of Priboj is to replace fossil fuels and to proceed with the use of ecologically pure fuel. It is planned that next year we start the construction of a new heating plant on wood chips. As he said, this municipality wants to build a central heating plant on wood biomass, which currently uses oil fuel. ")
- **Nova Varoš** ("The biomass heating plant will, along with the extension of the network, heat the large number of apartments and public buildings, and in the summer would produce electricity and use for water heating in the apartments and the city swimming pool").
- **Užice** ("Heating is done with 14 boiler rooms. Oil fuel heating 57.0 %, gas heating 42.0% and on coal 1.0%. Capacity of plant Uzice is 75 MW. Possible solution is Gas and Biomass 20 MW and EE?
  - Conversion of coal boiler to wood pellet
  - Withdrawal from conversion to natural gas and transfer to renewable energy sources (wood pellets)").
- **Sokolac** (Biomass DH, activity for CHP on PPP)
- **Goražde** (There are activities, pellets used in larger public facilities)
- **Foča** (There are activities for CHP and DH on biomass)
- **Zvornik** (The most expensive district heating in BiH maybe
  - Combination of gas and biomass)
- **Bijeljina** (Enable conversion from fossil fuel to biomass)
ESCO ECO ENERGIJA LIVNO
2008. Heating
2010. Construction of main network
2014. Heating and PV
2018. CHP, Pellet

Number of jobs (EU2014) by technology
Renewable energy sources

Source: EurObserv'ER
Thank you for your attention!

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