

## Energy concept summary

**Title of the energy concept:** **Switch Lignite to Natural Gas with Steam and Electricity CHP System Textile Industrial Facility Teteks RMG**

Topic area choice and topic marking in blue:

- ( ) **Building** e.g. Insulation, change of windows, Low-energy-buildings
- ( ) **Electrical energy** e.g. Light, Compressed air, Electrical drives, Cooling machines, Load management
- (X) **Heat** e.g. Heating, Process heat, Heat recovery, Air conditioning, **Combined heat & power**
- ( ) **Renewable energy** e.g. Solar technology, Wood-fired plants, Biogas, Geothermal energy
- ( ) **Management** e.g. Energy buying, Contracting, Emission trade, Energy data management systems



Company: **Teteks, Republic of Macedonia**  
 Branch and NACE-Code(s): **18.22: Manufacture of Outerwear Products/Services: Suites, OverCoats, Sacos**  
 No of employees: **325**  
 Name of energy concept producer: **Zarko TRPKOSKI**  
 Participant in EUREM No.: **1**  
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### Energy concept description:

Riviewing existing energy generation and consumption at textile facility, it has been looked for conservation possibilities, providing an integral energy optimization solution. First step is to switch from central energy old plant on coal to local modern natural gas fired CHP system for generation of electricity, steam and heat energy. The heart of the new energy concept is CHP sytem having 600 kW electricity, 680 kW heat (water 90°C). As superheated steam 210°C is used, additional gas fired 4t/h boiler is added to generate superheated steam from hot water. As a result, 1,915 MWh electricity, 11,907 MWh of heat (steam) will be produced per year. Due to Energy Efficiency improved from 64% at old plant to 91% with new system, annual savings are 252,228 euro, whith 985,036 euro capital investment. IRR =19.97% and NPV=569.869 euro for 15 years life cycle were calculated. Significant reduction of CO<sub>2</sub> emission as well as zero ash polution is expected.



### Results:

Energy saving potential: **4,128,727** [kWh/a]:

Energy source: **Natural Gas**

Cost reduction potential [Euro/year]: **252,228**

CO<sub>2</sub>- saving potential [t/a]: **2,441**

Conversion factor: **Lignite 0.36 N Gas 0.20 [CO<sub>2</sub>/kWh]**

Investment costs [Euro]: **985,036**

Pay-back time [Years]: **3.9**

Chance of implementation:

( ) high (x) middle ( ) low