

Energy concept summary

Title of the energy concept: Reduce electricity consumption from power grid and CO₂ emission reduction through installation of a PV power station, a solar system, a wood pellet firing boiler and lighting refurbishment

Topic area choice and topic marking in blue:

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



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Branch: pharmaceutical industry
Products/Services: pharmaceutical products
No of employees: 61
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Energy concept description:

The power supply for this building is carried out by EVN Macedonia (power and distribution supply company).

All equipment in the building use electricity as a source of energy. Even hot water heated in a water heater (outside of heat season) and there are frequent problems with the deposition of limestone. In lighting, comprises mostly fluorescent lamps (type T8). Heating system has two low-temperature oil boilers.

The desire is to reduce electricity consumption supply by power company and to reduce CO₂ emission.

Therefore, the decision is: 1. To install photovoltaic power station of 100KW; 2. To install a solar system that would avoid the need to heat water in a water heater, plus the limescale problem will disappear. 3. To replace fluorescent lamps with LED lamps; 4. To replace one oil boiler with a wood pellet firing boiler.

Calculations give that electricity consumption from power grid from 200MWh will reduce by 126MWh, and CO₂ emission reduction will be about 120 tons per year.



Results:

Energy saving potential [kWh/a]: 125.700
 Energy source: Sun and biomass-pellets
 Cost reduction potential [Euro/year]: 12.700
 CO₂- saving potential [t/a]: 120
 (conversion factors: 0,7 kg CO₂ / kWh; 0,14 kg CO₂ / kg pellets;
 2,6 kg CO₂ / l heating oil)

Investment costs [Euro]: 111.000
 Pay-back time [Years]: 8,7
 Chance of implementation:
 () high (X) middle () low