



RES technologies/systems in Municipalities

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RES technologies/systems in Municipalities

- Geothermal Heat Pumps
- Solar Thermal (mainly for Domestic Hot Water)
- Biomass Pellet / Biogas Boilers
- PV on roofs
- Hybrid systems - combining of all RES technologies = Zero Energy neighborhoods

RES technologies/systems in Municipalities

- Compliance to the EU RES and Energy Efficiency in Buildings 2030 and 2050 directives
- Increased Security in energy supply
- Reduction of costs of energy
- Increase of local employment
- Creation of Sustainable communities

RES in the Built Environment

RES technology

- Geothermal heat pumps
- Solar Thermal Systems
- Biomass pellets
- PV on building roofs

Pros and Cos in brief

- Available, if desired, 100% of time no back-up system needed
- High initial cost but small payback period
- Available 25% of time, needs back-up system
- Available most of the time, needs storage
- Possible supply shortage
- Available 20% of time, produces electricity
- Excellent in Hybrid systems for nZEBs

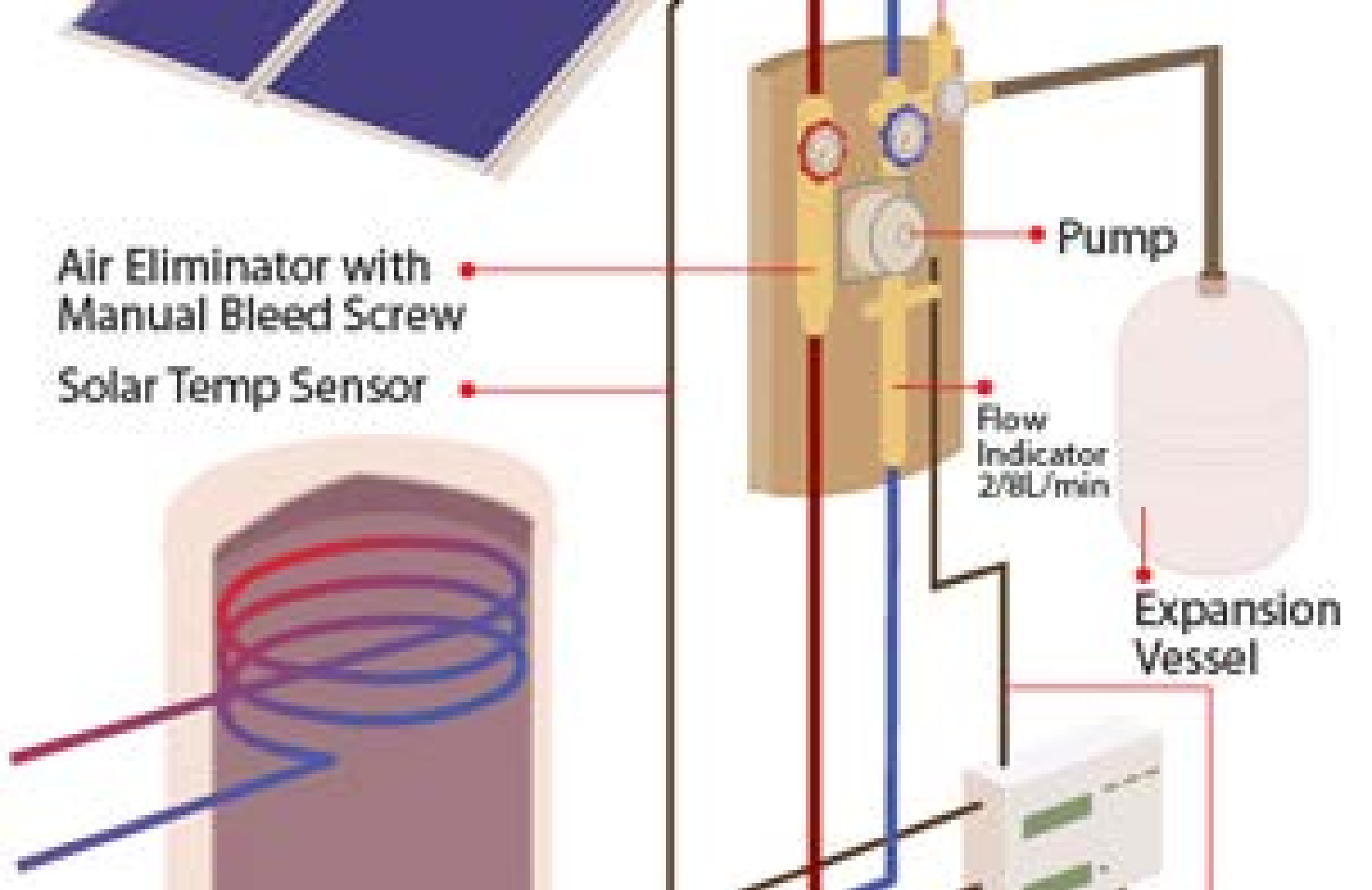
Geothermal Heat Pumps in Public Buildings

- Administration Buildings
- Educational buildings (schools-nurseries etc)
- Cultural and Social Activity Buildings
- Elderly homes
- Health centres and hospitals
- Museums
- Sport Halls and Swimming Pools
- Other Municipal Buildings

Provides Heating, Cooling and Domestic hot water
Savings of over 50% compared to Natural Gas

Perfect combination with Solar Thermal and PV
on roof tops leading to Zero Energy Buildings

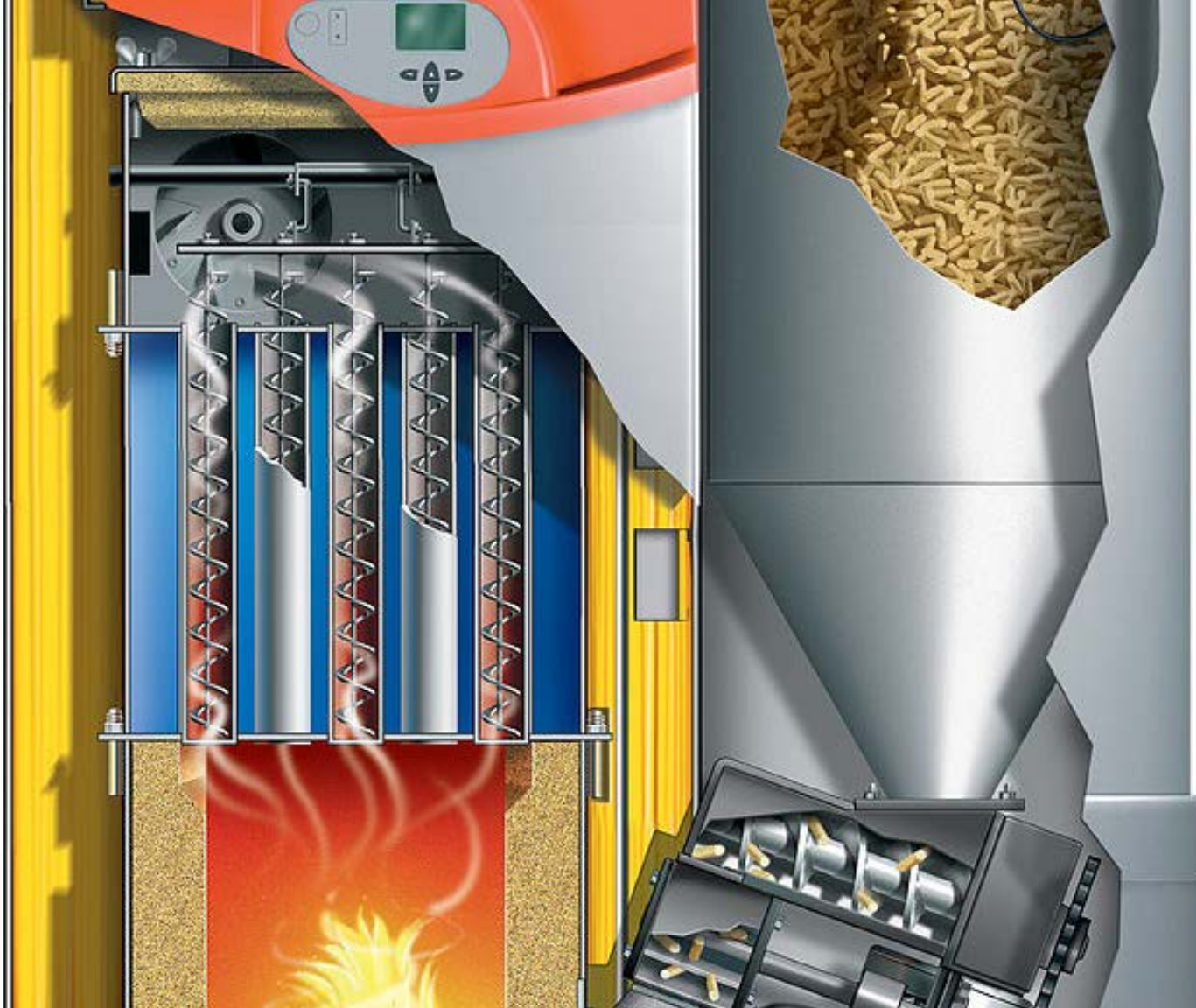




Solar Thermal system for Domestic Hot water

PVs on roof tops Buildings, Hospitals etc.





Biomass Pellet Boiler
By GUNTAMATIC Heiztechnik GmbH

Geothermal Heat Pump District Heating Systems

District heating system with Geothermal Heat Pumps

Heating of:

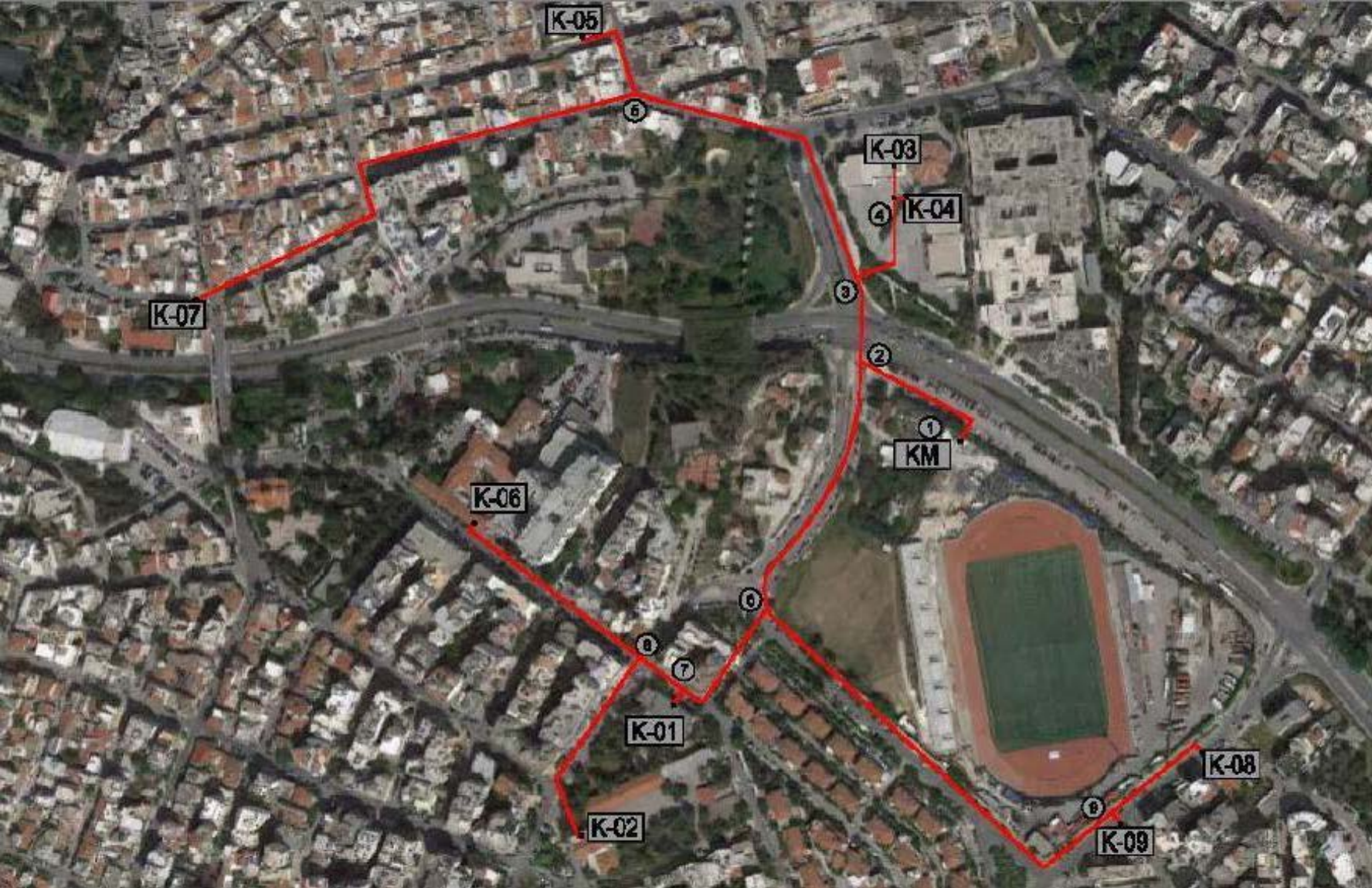
- 2 Schools
- 2 Administration Buildings
- Hospital

Hybrid system: a) Roof Top PVs and
b) Solar Thermal for DHW





Drilling of BHEs for Geothermal Heat Pump district heating system



Plan of Geothermal Heat Pump district heating system

Transportation driven by PVs on Roof Tops

- PV on Roof Tops
- Charging system for Municipal Electrical Bus and Motorcycles (rented by Municipality to users)





PV panels on Hospital Roof Top

Municipal buildings Heated and cooled with Geothermal Heat Pumps or Hybrid RES systems



**ΔΑ4-Ζ' Παιδικός Σταθμός
Αλεξανδρούπολης**



ΔΑ5-Β' Παιδικός Σταθμός Φερών



ΔΑ6-Πολυδύναμο Πολιτιστικό Κέντρο



ΔΑ7-ΣΤΑΥΡ.ΕΚΚΛ.ΙΔΡΥΜΑ ΑΓ.ΚΥΠΡΙΑΝΟΣ



ΔΑ8-ΚΑΠΗ Α' Αλεξανδρούπολης

Biomass (Pellets) Direct Heating Thermal Solar for Domestic Hot Water



Thanks for your attention