Innovative solutions: integration shallow geothermal with PV and HESS in Romania

Joint Venture & Transfer Technology to Industry of Innovative Geothermal Solutions
• increasing **heating / cooling** demand for the buildings in the context of the energy crisis and the exponential rise in energy prices
• our planet`s critical decrease in fossil fuel
• becoming the world’s first climate-neutral continent by 2050 is the objective behind the European Green Deal the very ambitious package of measures that should enable European citizens and businesses to benefit from sustainable green transition.
Integration GSHP-boreholes, energy piles, slurry walls with PV and HESS on real use-cases in order to increase renewable energy production and local electricity consumption.

- Renewable electric energy production will be delivered with priority to GSHP resulting in increased local electricity consumption at the expense of that delivered to the public grid;
- Using GSHP for heating/cooling and DHW this means increasing energy production from renewable sources using shallow geothermal: classic boreholes and building infrastructures – energy piles, slurry walls.
• an innovative solution for a new 4,000 m² building heated/cooled by 150 kW GSHP and 200 kW Hybrid HP (back up) with primary energy: 230 energy piles, 600 mm diameter and 11 m depth.
Project 1: Emergency Hospital Oradea Romania

- Radiant heating and cooling on T.A.B.S. system
- PV pannels that deliver with priority electric energy to GSHP;
- The ground under the building is a large reservoir of energy due to energy piles becoming interseasonal storage, working on passive cooling on the T.A.B.S. system (see the graphic under in 4 different points);
Project 2: Hospital Judetean Oradea Romania

• an innovative solution for retrofit 20,000 m² building heated/cooled by 500 kW GSHP with primary energy: 80 boreholes 133 m deep,
Project 2: Hospital Judetean Oradea Romania

- Radiant gipsboard ceiling for heating and cooling
- PV – Photovoltaic Pannels that deliver with priority electric energy to GSHP, BESS (Battery Energy Storage System);
- The ground near the boreholes is a large reservoir of energy due to the boreholes becoming interseasonal storage (it work on passive cooling on the radiant gipsboard ceiling);
Integrated monitoring system for fully understanding the performance in operational environment.
we use Earth both as a **SOURCE** and as **interseasonnal STORAGE** of energy using passive cooling.

Our system heat pumps and boreholes/energy piles covers **100%** of the buildings thermal needs and use renewable energy from PV.
Our Team

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RESEARCH

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