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GEOTHERMAL ENERGY – A FUTURE OF SUSTAINABLE HEATING AND COOLING

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PROPOSAL

The global consumption of energy for the heating and cooling sector accounts for a sizable portion of total energy use, e.g., around 50% energy in buildings is consumed to cater for heating and cooling demands [1]. Moreover, traditional heating and cooling methods rely on burning fossil fuels, contributing significantly to greenhouse gas (GHG) emissions which exacerbate climate change and its associated impacts [2].

Geothermal energy stands at the forefront of sustainable solutions for heating and cooling demands, providing an eco-friendly alternative to conventional heating and cooling technologies [3]. Harnessing the Earth's natural heat and its ability to store it, geothermal systems offer a renewable and efficient way to regulate indoor temperatures, making significant strides in reducing carbon emissions and dependence on fossil fuels [4]. In recent years, geothermal energy systems have received significant attention in space conditioning. Some examples include utilizing structural foundations to exchange thermal energy with the ground, repurposing assets such as abandoned mines for geothermal exploitation, and incorporating geothermal systems in larger heating networks, as part of a larger solution.

Contributions in the areas of, but not limited to, modelling, simulation, experimental research, reviews, and real-world case analyses, with an emphasis on the practicality and scalability of such systems are invited for this mini symposium.

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