

Deep geothermal energy: An opportunity for Switzerland and the world

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Deep geothermal energy can be used directly as heat supply and converted to electricity, providing baseload and/or dispatchable thermal and/or electric power. At the same time, geothermal energy is typically largely CO₂-emission-free and constitutes a renewable energy resource that can in principle provide power for millions of years. Over 99% of Earth is hotter than 100°C. However, deep geothermal energy also faces several challenges for its widespread implementation in Switzerland and globally. The main challenges include detecting high temperatures of 100-200°C and, particularly, permeabilities of $>10^{-15}$ m² at 2-5 km depth and cost-effectively drilling to such depths. In this presentation, I will provide a brief overview of deep geothermal energy technologies and how the newest technologies may become gamechangers to provide power in concert with other renewable energy technologies in Switzerland and worldwide while reducing CO₂ emissions to net-zero.