Celsius Energy: 
“industrializing” and “digitalizing” the GSHP systems

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European Shallow Geothermal Days 2022
Celsius Energy

- Spin out from Schlumberger in 2019
- Turnkey solution for collective building Heating & Cooling
- First installation in 2020:
  -90% CO₂ emissions
  -60% energy consumption
  80% renewable geoenergy

“We connect buildings to the Earth to reduce CO₂ emissions”
INDUSTRIALIZATION

• 100+ wells drilled
• 10 commercial projects
  (including 5 completed BHEs)
• Leveraging Schlumberger’s industrial expertise:
  • Directional drilling
  • Measurements and logging
  • Modeling and simulation
  • IoT/cloud solutions
• 100+ wells drilled
• 10 commercial projects (including 5 completed BHEs)
DIGITALIZATION

Native digital solution

- Proprietary ground-to-building models
  - Realtime optimizer & solver ($, energy, CO₂...)
  - Benchmarked against experimental data and reference software (EED, GLHEPro...)

- Digital Energy Management System
  - Instrumented with sensors and controls (fiber-optic DTS, BMS...)
  - IoT operations enabled
DIGITALIZATION

Benchmark results: excellent matches

- Experimental data over 1 year
- Reference software: (EED, GLHEPro…)

Temperature sortie sondes

\[ T_{in} \] [°C]

\[ T_{out} \] [°C]

time [years]
Thank you for your attention!

Do you want to become our local partner? Do not hesitate to contact us.

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