Introduction of MS Energy Solutions Ltd. and our unique WeHEAT Geothermal System

July 2021
Company Profile

- MS Energy exists since 2007 and is a **dynamically developing innovation company** that develops technological innovations primarily in the field of earth sciences. It provides permanent engineering services to hydrocarbon companies in Central and Eastern Europe and plays an active role in professional support for geothermal investments in the region.
- The special professional base of the company consists of **earth science and energy specialists, as well as reservoir engineers and drilling specialists**. The professional activity is complemented by economic and project management competencies related to the projects.
- The company has been operating successfully in the hydrocarbon industry since the beginning and is also of a **high professional standard** as a result of its services related to large geothermal investments.

- Project planning and design (engineering, permitting, etc.)
- Project development (built to turnkey condition)
- Operation & Maintenance support

- Deep drilling projects for O&G
- Waste management
- Mine surveying, right of possession

- **GEOTHERMAL FROM A TO Z**
  - New Geothermal Systems: drillings and repurposing, thermal water and EGS, full spectrum
  - Our own, unique P&H Technology and Solutions
  - Heat demand and consumptions, energy calculations, heat capacity

- **Geological expert tasks**
- Geochemical analyses
- Reservoir engineering and modelling for O&G

- Professional translations
- Event organizations
- Audit and due diligence
- PR & Marketing
- Large format scanning, digitalization
About the WeHeat technology

The WeHEAT technology is a DEEP geothermal probe operated in a fully closed loop system, implemented in the wellbore structure of deep dry holes or specially designed new deep drills.

VALUE PROPOSITION

- Cost-effective solution with a one-time investment and minimal operation and maintenance requirements
- By installing the system, the cost of recultivation of existing wells can also be saved
- Predictable and stable heating system with fully automatized modern control
- Fast and flexible installation, complete system in a few days*
- No water extraction, water treatment risks and costs, no hazardous materials in the closed loop system, no drilling*
- The technology is zero waste, zero carbon technology providing sustainable energy, which contributes to the achievement of zero carbon targets of the EU

300-900 kW automatic and programmable heating system with modern control, providing green energy without CO2 emissions

No need for expensive drilling of new wells, the technology can be installed in existing 1.5-2.5 km idle deep wells, the technology allows for deep dry holes and depleted deep wells to be reused again for energetic purposes.

The produced geothermal heat can be used for heating with a >96% efficiency and can be adapted to existing and new heating systems.

It is a fully closed system with normal water circulation and without extraction of the underground water.

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## Comparison of Available Geothermal Systems

**WeHeat technology has a lot of advantages against conventional geothermal system and the EGS**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Conventional geothermal system (shallow geothermal, thermal water utilization)</th>
<th>Enhanced Geothermal System (EGS)</th>
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</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
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<td></td>
<td>WeHeat</td>
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<tr>
<td><strong>Factors</strong></td>
<td></td>
<td></td>
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<tr>
<td>Unit cost - CAPEX (USD/kW)</td>
<td>1,500 – 2,400 USD/kW (existing well)</td>
<td>1,500 – 4,500 USD/kW (new drills)</td>
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<td>4,000 – 4,500 USD/kW (new drills)</td>
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<tr>
<td>System deployment lead time w/o licensing</td>
<td>&lt; 1 year (6-12 months)</td>
<td>&gt; 1 year (1-3 years)</td>
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<td></td>
<td>&gt; 1 year (18-24 months)</td>
<td>&gt; 1 year (1-3 years)</td>
</tr>
<tr>
<td>OPEX (USD/annum)</td>
<td>Moderate (3,500 – 17,000 USD)</td>
<td>Significant (35,000 – 70,000 USD)</td>
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<tr>
<td>Environmental impact</td>
<td>Significant (drilling, water extraction, -treatment, - injection)</td>
<td>Moderate (deep drilling, hydraulic fracking, filling and treatment, closed loop)</td>
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<tr>
<td>Available heat output (MW)</td>
<td>Moderate (1,5 – 4 MW)</td>
<td>High (10-15 MW)</td>
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<tr>
<td>Administrative procedures, licensing</td>
<td>Mining inspectorate and other authorities</td>
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<td></td>
<td>Building permitting only</td>
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<td>Utilization</td>
<td>Heating (heating and hot water)</td>
<td>Electricity generation and heating</td>
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<td></td>
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<td>Heating (heating and hot water)</td>
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<tr>
<td>Geological risk (geological probability)</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None</td>
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</tbody>
</table>

*CAPEX with new wellbore: 2,400-2,900 USD/kW, SD lead time w/o licensing: 3-4 weeks, new wellbore heat output: 0.8-1.2 MW*
Main credentials of MS Energy Solutions Ltd.

The company has been supporting the Hungarian geothermal sector for more than 8 years

The Geothermal Heating System of Mosonmagyaróvár

Geothermal Project - Győr (AUDI)

Mátészalka geoDH project

Geothermal Consultancy - geoDH surveys in several cities:
- Budapest
- Hódmezővásárhely
- Berettyóújfalu
- Salgótarján
- Eger
- Kecskemét
- Ozd

Kiskunhalas thermal opportunities for geoDH and the first WeHeat project (0.5 MW)

Szank - Secondary use of depleted wells

Geothermal Consultancy - geoDH surveys for dry holes and depleted wells:
- Szeghalom
- Ráckeve
- Tápióbicske
- Nagylengyel
- Szentgyörgyvölgy
- Hódmezővásárhely
- Kecel
- Nagykőrű
- Szolnok
- Tóalmás
- Tompa