Energetics developments of Miskolc City

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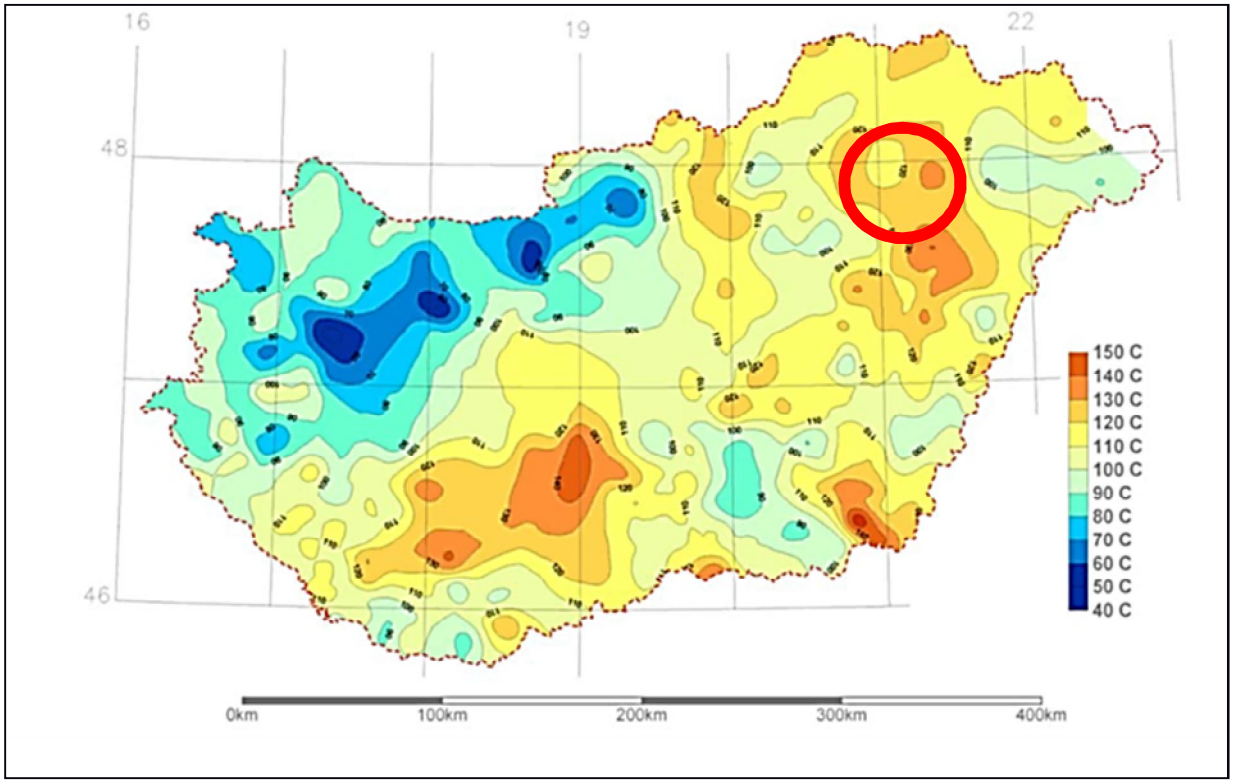
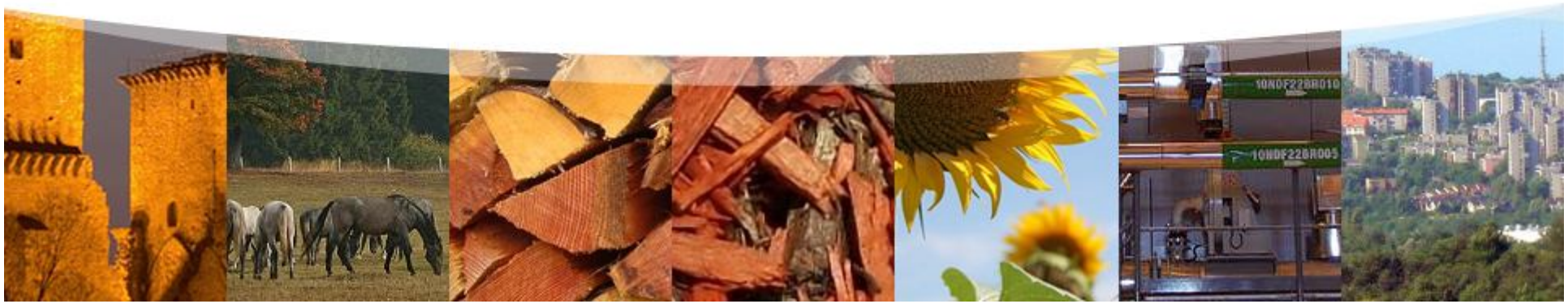
Peter Kokai
Project manager

Miskolc City



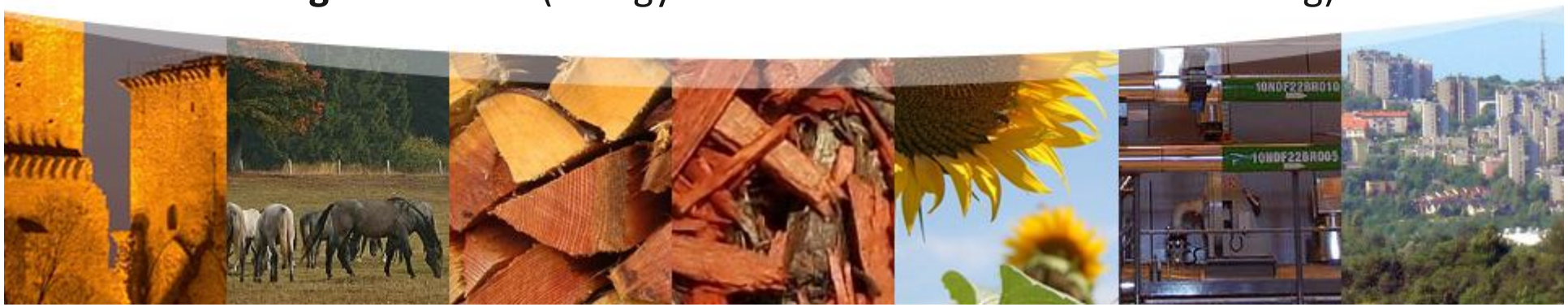
Temperature distribution on Hungary's area 2000 meters deeply

- Population: ~165,000 (4th)
- 2nd largest district heating system in the country
- Earlier 100% fossil energy production
- Adverse smog situation
- Good geothermal and biomass potential
- Commitment for the change



Energy Strategy of Miskolc City

- Goals
  - Improve the **quality of air** in the city
  - Utilisation of **local conditions and possibilities**
  - Minimisation of **energy costs**
  - Implementation of **modern technologies**
  - **Utilisation of funding opportunities**
  - **Cooperation with national** and international **enterprises**
  - Promotion of **national** and **EU objectives** (increase of the proportion of renewable energy)
  - Decrease of dependence from import, **natural gas replacement**
  - Utilisation of the University's **intellectual potential**
  - **Raising awareness** (energy- and environment-awareness raising)



Renewable energy utilisation – Geothermal energy

- **Well parameters**

Production wells (2)

MAL-PE-01	depth: **2,305 m**	water temperature: **105 °C**	yield: **6,600-9,000 l/min.**
MAL-PE-02	depth: **1,514 m**	water temperature: **95°C**	yield: **8,000 l/min.**

Reinjection wells (3)

KIS-PE-01	depth: **1,737 m**	absorbing capacity: **1,600 l/min.**
KIS-PE-01B	depth: **1,093 m**	absorbing capacity: **5,600 l/min.**
KIS-PE-02	depth: **1,058 m**	absorbing capacity: **7,000 l/min.**

- **Output:** **2 x 30 MW; ~800,000 GJ/year**
  - Primary utilisation: District Heating System (~95/55 °C)
  - Secondary utilisation Industrial Park heating (~80/45 °C)
    Agricultural heat supply (~55/30 °C)

Renewable energy utilisation – Geothermal energy

- **Project data:**
- Project companies: members of the PannErgy Group

  Miskolc Geotermia Plc. (90 % - PannErgy Plc., 10 % MIHŐ Ltd.)

  KUALA Ltd. (90 % - PannErgy Plc., 10 % MIHŐ Ltd.)
- Long-term heat supply contract → **25 years**
- Heat service launch date:

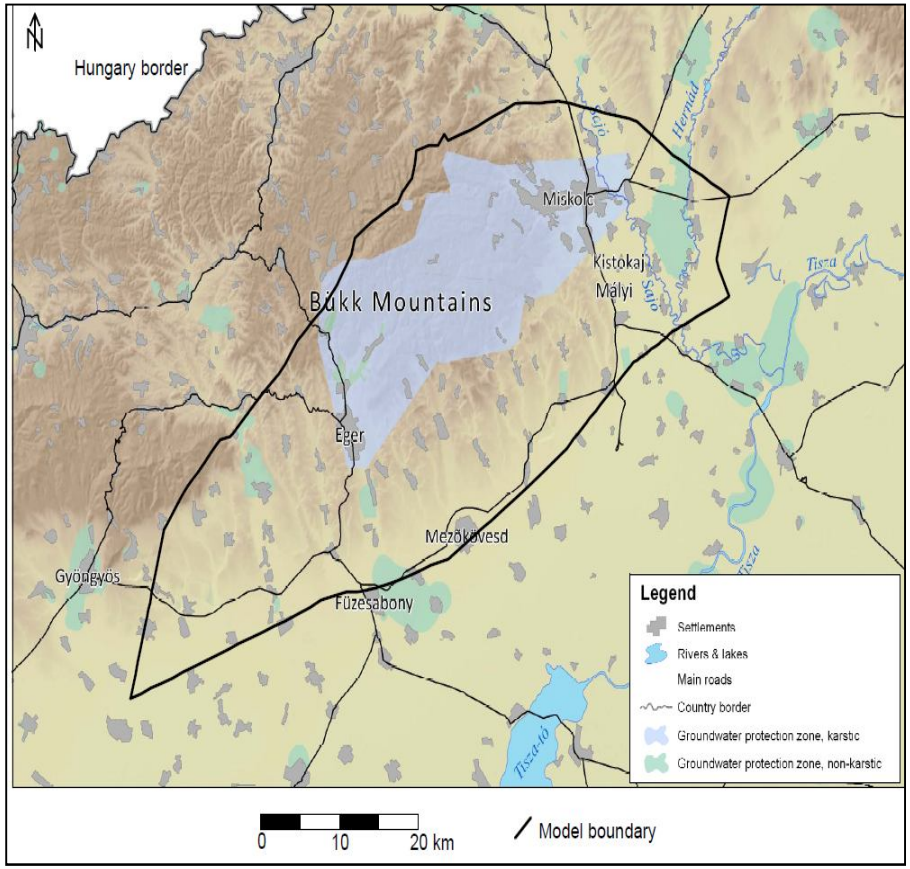
  Phase I. : 4 May 2013 – AVAS District Area (12,167 homes)

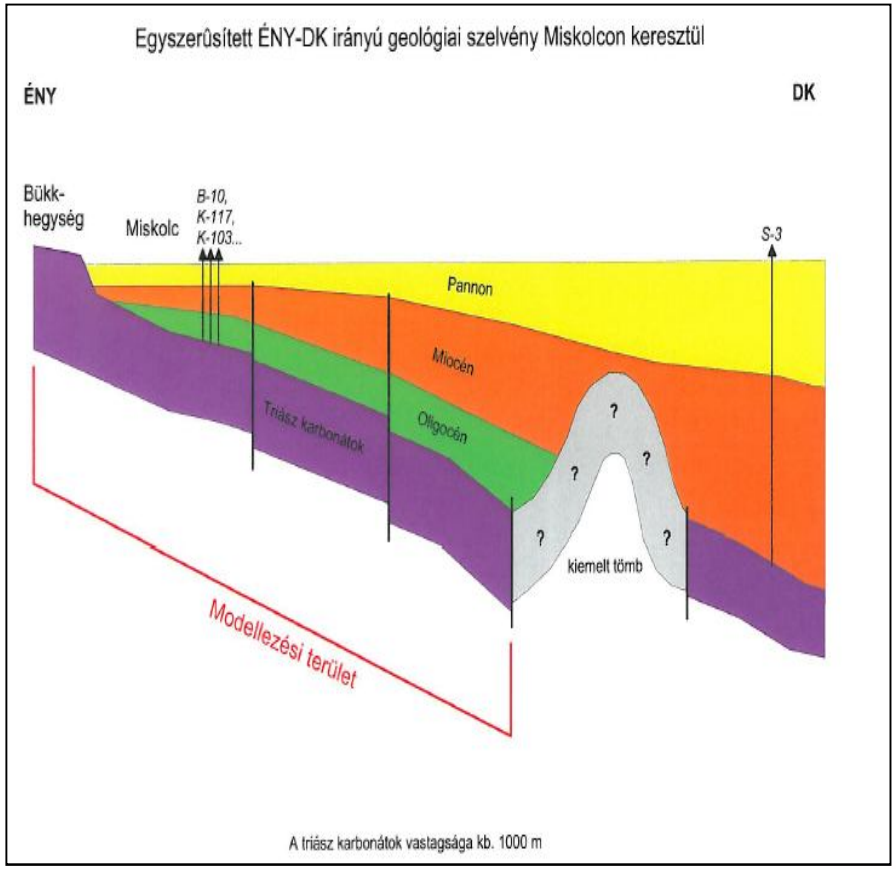
  Phase II.: 1 September 2014 – Downtown (14,559 homes)

  Phase III.: 1 November 2014 – Industrial consumers

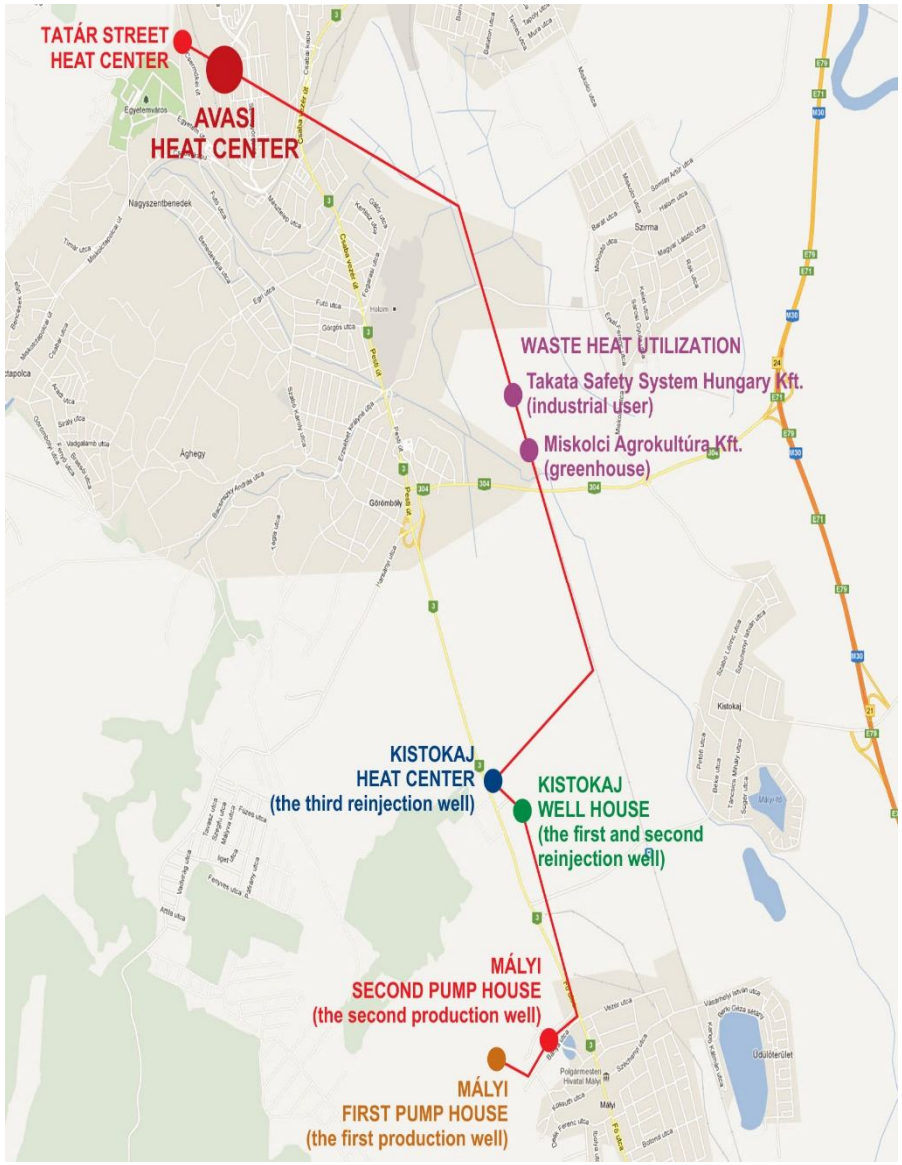
  Phase IV.: on process – new local district heating area - Kistokaj
- Investment cost: ~28 million €
- Built transmission line length : 3,1 km + 9,2 km
- Green house gas emission reduction : ~35,000 tons/year

Renewable energy utilisation – Geothermal energy



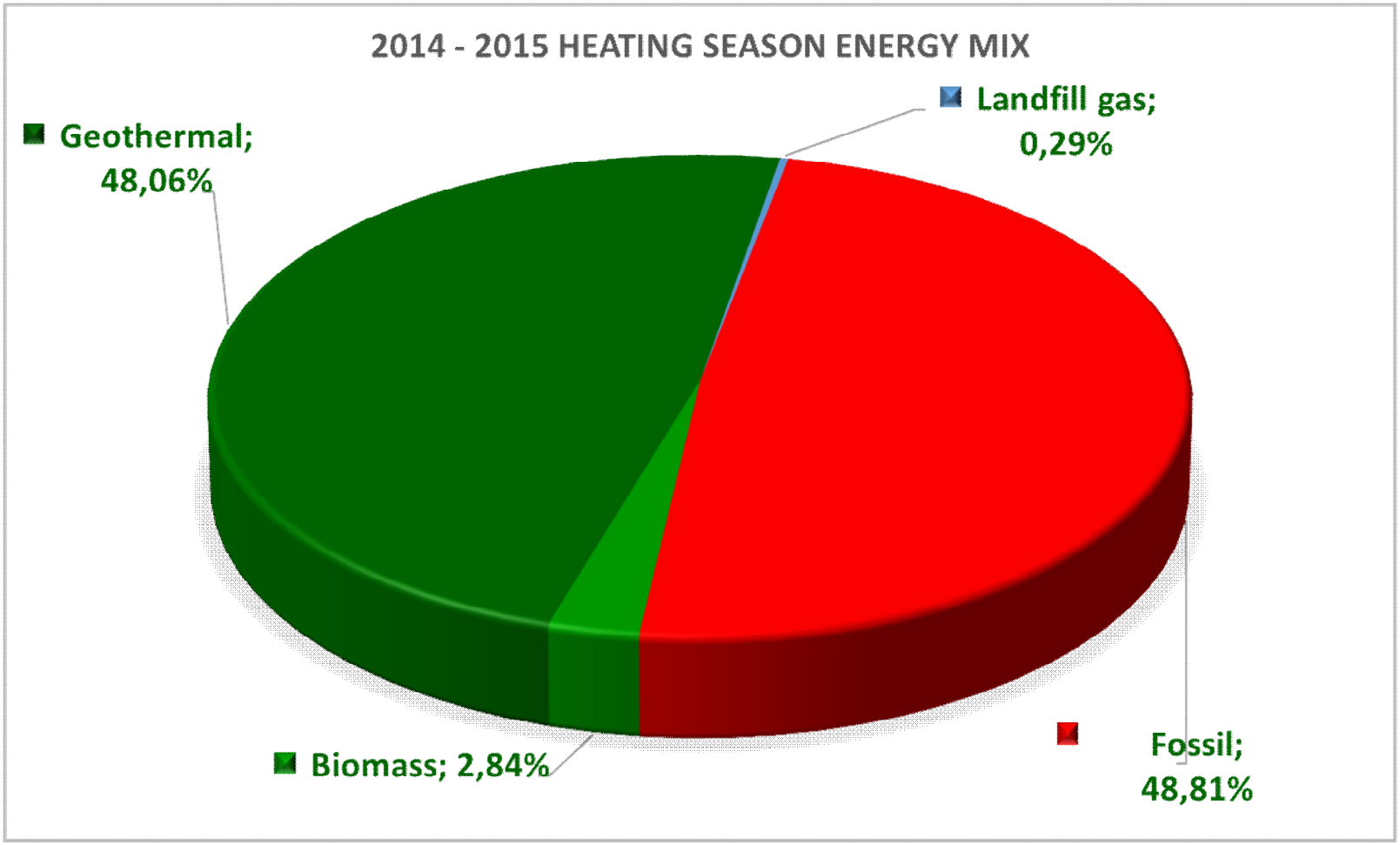


Renewable energy utilisation – Geothermal energy



Renewable energy utilisation – Geothermal energy

Results



Landfill gas	3,542	GJ	0.29%
Natural gas	600,454	GJ	48.81%
Biomass	34,995	GJ	2.84%
Geothermal	591,194	GJ	48.06%
Total	1,230,185	GJ	100.00%

Natural gas	20,810,681	m^3
redemption	707,563	GJ
CO_2 savings	39,496	tons

Summary

- **Our goal is**
  - To provide competitive energy and district heating service to the consumers of the city of Miskolc
- **Means for implementation**
  - Utilisation of landfill gas, biomass and **geothermal energy sources**
  - Exploiting tendering opportunities
- **Achievements**
  - Utilisation of **three different renewable energy sources**
  - In Miskolc **51.19% of the consumers** (~32,000 houses and ~1,000 other consumers) have been supplied with **renewable energy for heating in 2014 – 2015 heating season,** resulting in triggering **20,810,681 m^3 natural gas** and the reduction of **CO_2 emission by 39,496 tons**.

Miskolci Geotermia Zrt.

Member of PANNERGY Group

MISKOLC HOLDING

ÖNKORMÁNYZATI VAGYONKEZELŐ ZRT.

KUALA

Member of PANNERGY Group

MISKOLC

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Thank you for your kind attention!

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