Graz District Heating

Development, Decarbonization and Outlook

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ENERGIE GRAZ

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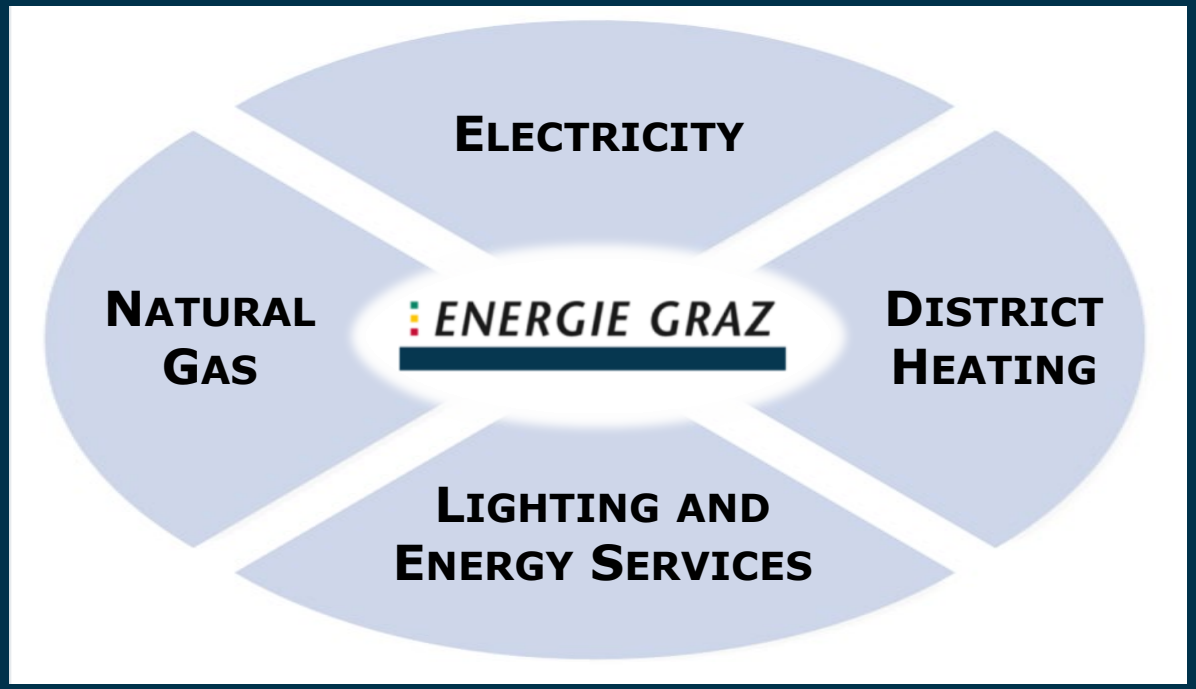
Energie Graz company profile



Key figures Energie Graz		2025	2024
Revenue	million €	approx. 341	approx. 368
EBIT	million €	approx. 15.9	approx. 20.2
Employees	-	341	332

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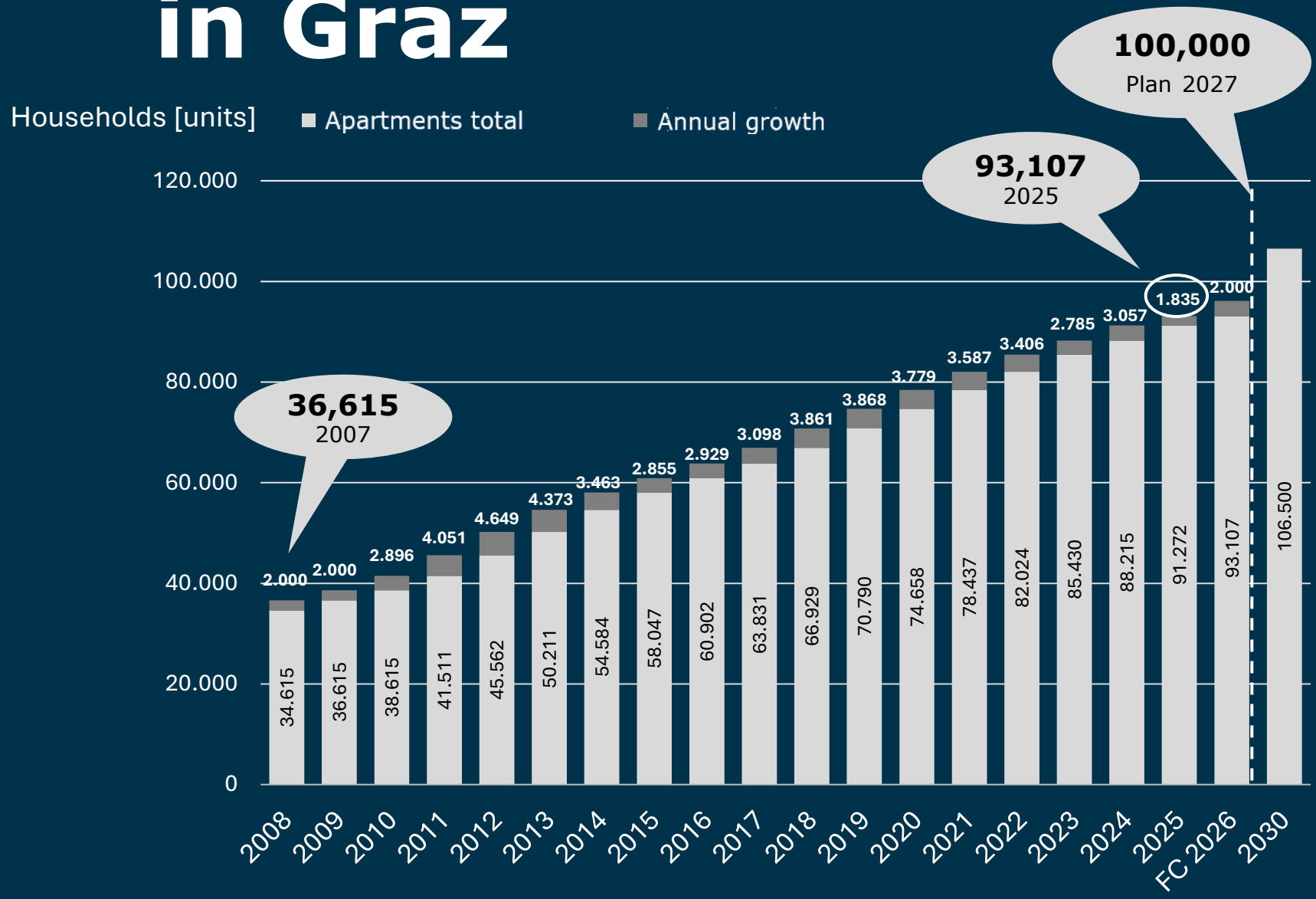
Development of district heating in Graz



Households	
Total: 93.107	
Is 2025	**Plan 2026**
1.835 households	2.000 households

Connected capacity	
Total: 818 MW	
Is 2025	**Plan 2026**
120 hh. 14,1 MW	200 hh. 20 MW

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Key features of the Graz district heating system

- Investments by Energie Graz amounting to approximately € 200 million (2007 to 2025)
- Planned investments of approximately € 55 million in the years 2026 to 2030 (excluding EWG and EKV)

District heating system		2008	2025	Increase
Connected capacity	MW	534	819	+53,4% net
Route length	km	284	468	+64,8%
Heat generation	GWh	840	1.174	+39,8%
Connected households	hh.	36.600	93.100	+154%

* net: capacity increases from new connections minus capacity reductions due to energy efficiency measures in existing buildings

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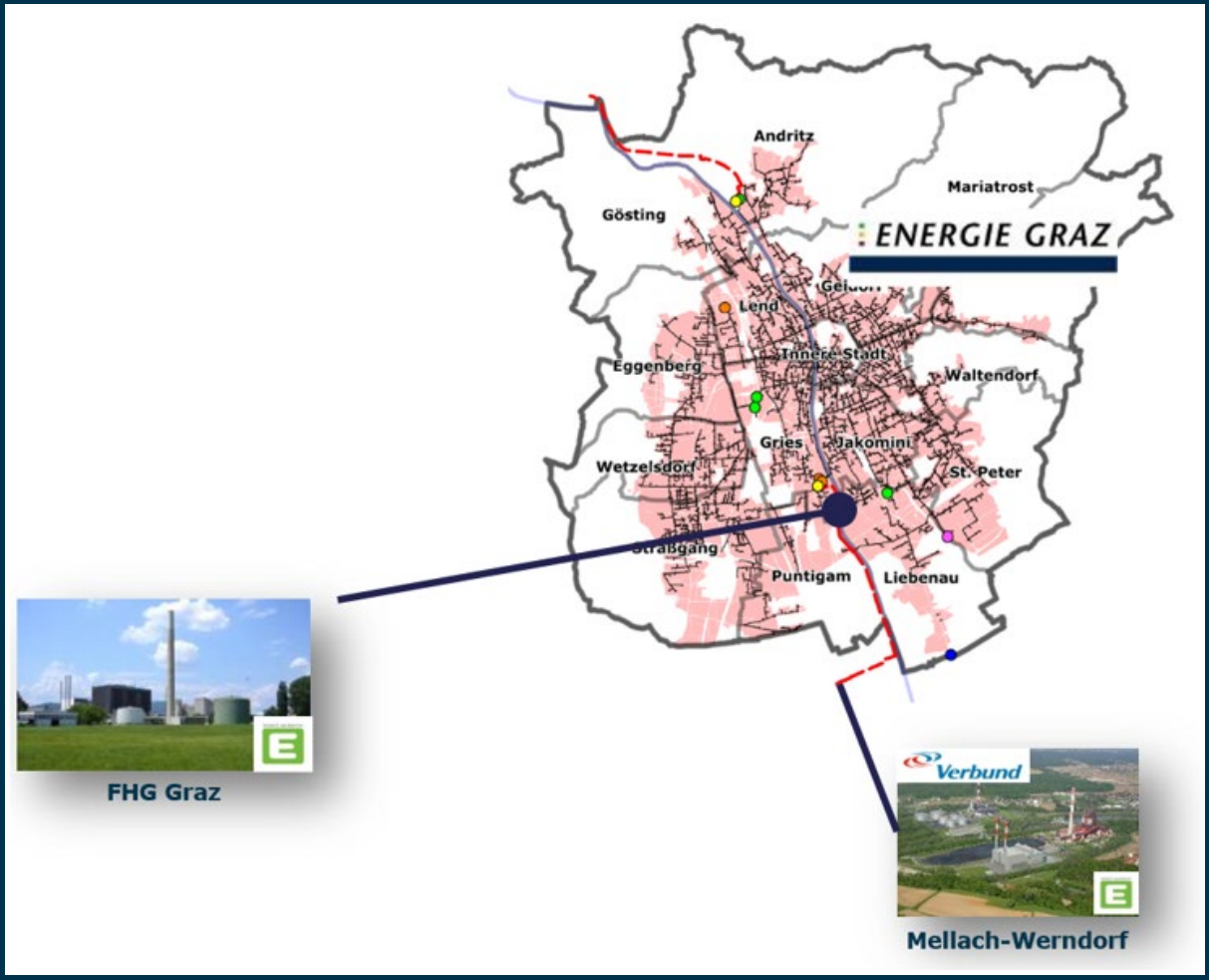
Initial situation of the Graz district heating supply



until approximately 15 years ago, predominately central heat generation from mainly fossil-fuel-based heat generation facilities

- supplied by Energie Steiermark from the district heating plant „Graz"
- from 1987: additional CHP waste heat from the „Mellach-Werndorf" power plant complex (coal phase out in 2020), powered by Verbund and Energie Steiermark

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Challenge and motivation

- Social/Ecological/Economic
  - Decentralization and ecological transformation driven by shifts in energy policy and growing awareness of climate- and environmental protection (Paris Agreement, energy crisis, global warming, reliance on fossil fuels, etc.)
  - Uncertain future CHP heat supply from Mellach due to the termination of the heat supply contract between Verbund and Energie Steiermark
  - Enormous investments are required for decarbonization
  - Meeting the funding requirements
- Legally
  - Fulfilment of ecological criteria at EU, federal and state level (EU Green Deal, Energy Efficiency Directive (EED), Renewable Energy Directive (RED III), etc.

→ Decarbonization of district heating within the triangle of energy policy goals (security of supply, affordability/economic efficiency and environmental sustainability)

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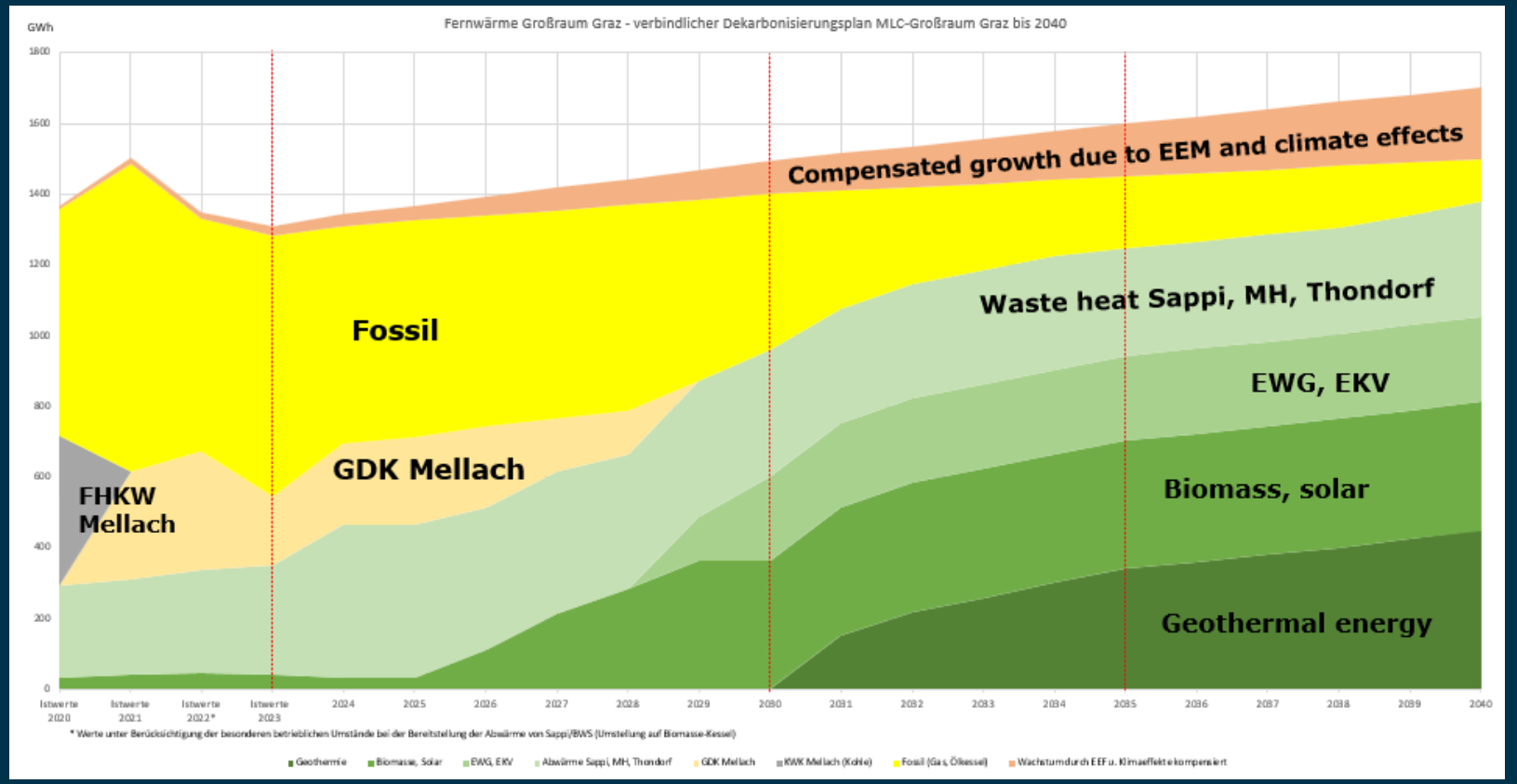
Binding decarbonization plan for the greater Graz area

Aim: Permanent assurance of quality-assured district heating with 80% from the year 2035!



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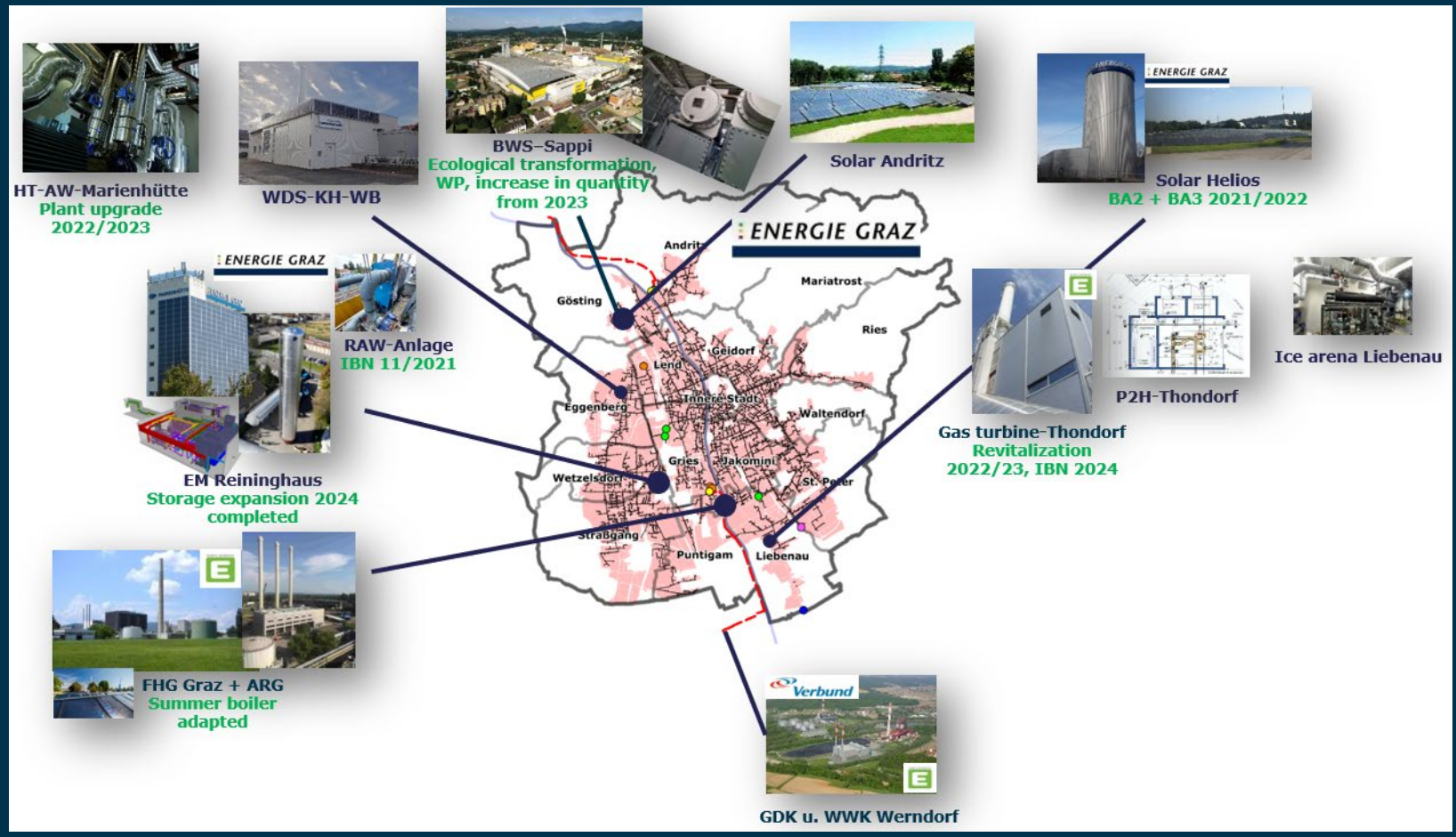
Graz´s district heating supply today

- Transition towards a decentralized supply landscape, with a share of approx. one-third renewable heat from Energie Graz´s own facilities and cooperation projects



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Best practice: Solar Storage Project „Helios“



- Innovative storage project
  - Temporal decoupling of energy generation and demand
  - Buffering of peak loads / Reduction of peak-load boiler operating times
- Combination of a non-pressurized heat storage tank (2,500 m^3) with
  - a large-scale solar thermal plant (6,000 m^2)
  - a landfill-gas-fired CHP unit (124 $kW_{el.}$, 170 $kW_{th.}$)
  - a P2H plant (90 $kW_{el.}$)
- Utilization of existing resources (landfill area / landfill gas)
- Commissioning in 2017, with plant expansions in 2021 and 2022
- District heating feed-in capacity
  - Regular operation: approx. 3.5 MW
  - Peak load supply: 10 MW
- Annual heat yield: approx. 3.5 GWh



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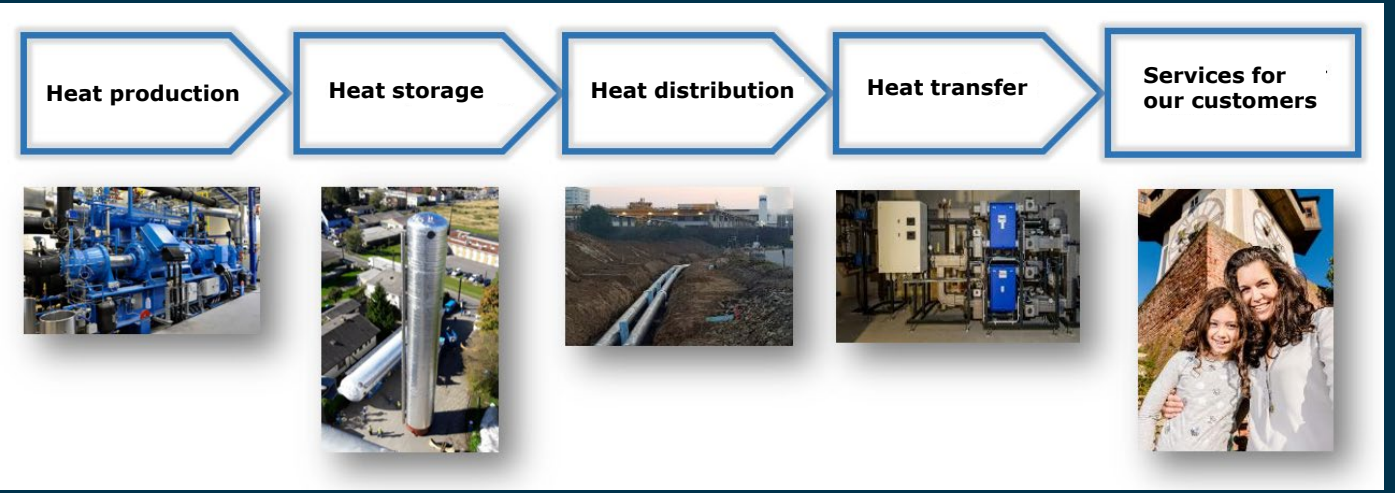
Best practice: Energy model „Graz Reininghaus“

- Holistic energy concept from source to customer
- Utilization of process waste heat from the steel and rolling mill „Marienhütte“ for the new district „Reininghaus“
- Heat pumps in operation since May 2016
- Low-temperature network, including a residual waste heat recovery plant, in operation since November 2021
- Integration of heat storage units
- Comprehensive energy services for our customers



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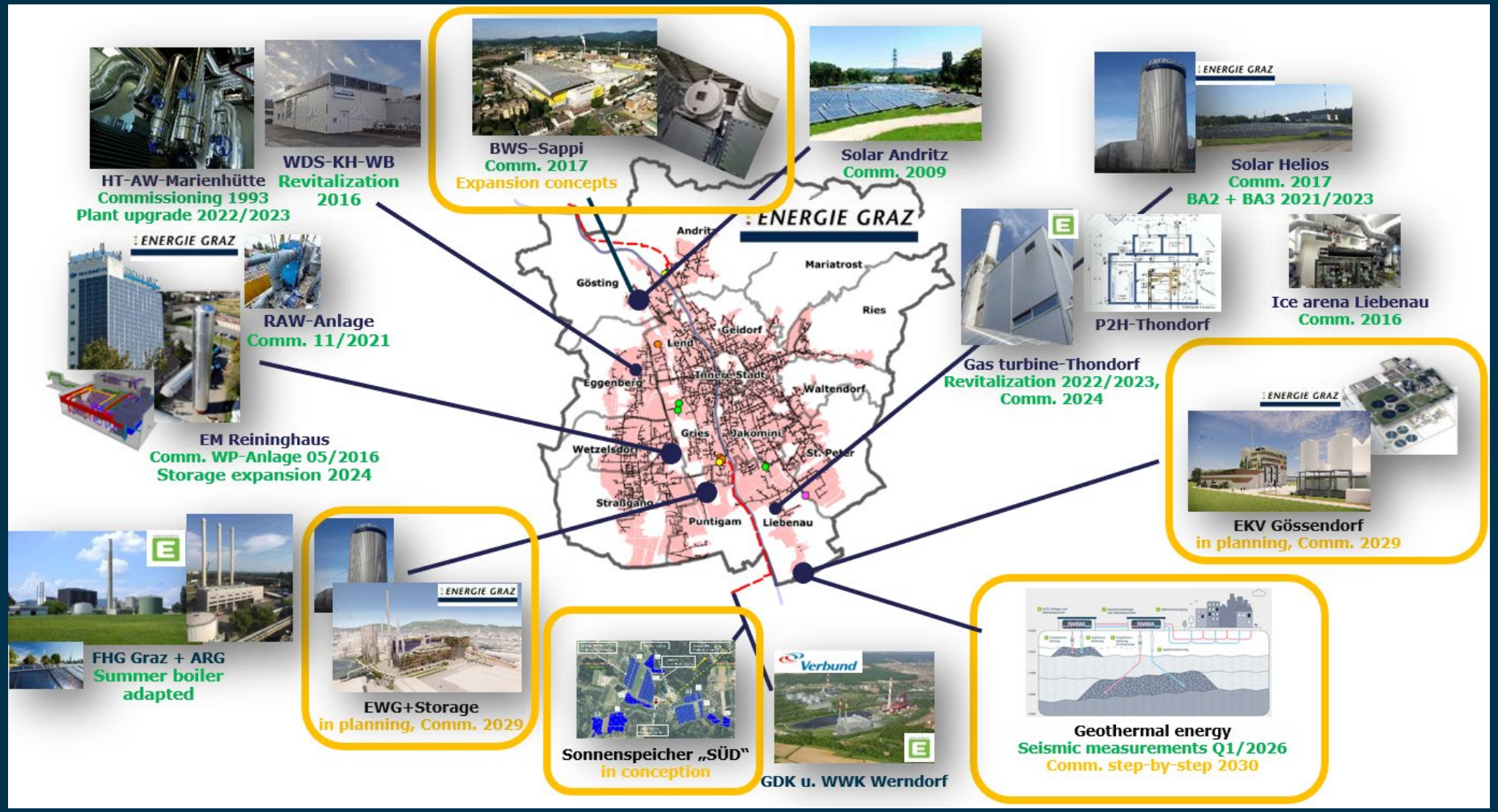
The future of Graz´s heat supply



Flagship projects EWG and EKV

- Graz Energy plant (Energiewerk Graz - EWG)
  - Energy recovery from approx. 103,000 tonnes of non-recyclable residual materials
  - Local circular economy: climate protection, traffic relief, security of supply and disposal, jobs
  - Production of approx. 180 GWh/a of highly efficient/eco-friendly heat and approx. 50 GWh/a of electricity (CHP plant)
  - Feed-in capacity approx. 30 MW (incl. flue gas condensation and heat pumps)
- Energy recovery from sewage sludge (Energetische Klärschlammverwertung Gössendorf - EKV)
  - Utilization of approx. 9,000 tonnes of sewage sludge (dry solids) per year
  - Production of approx. 56 GWh/a of green heat
  - Plant capacity approx. 10 MW (including approx. 7 MW from residual heat recovery via heat pumps)





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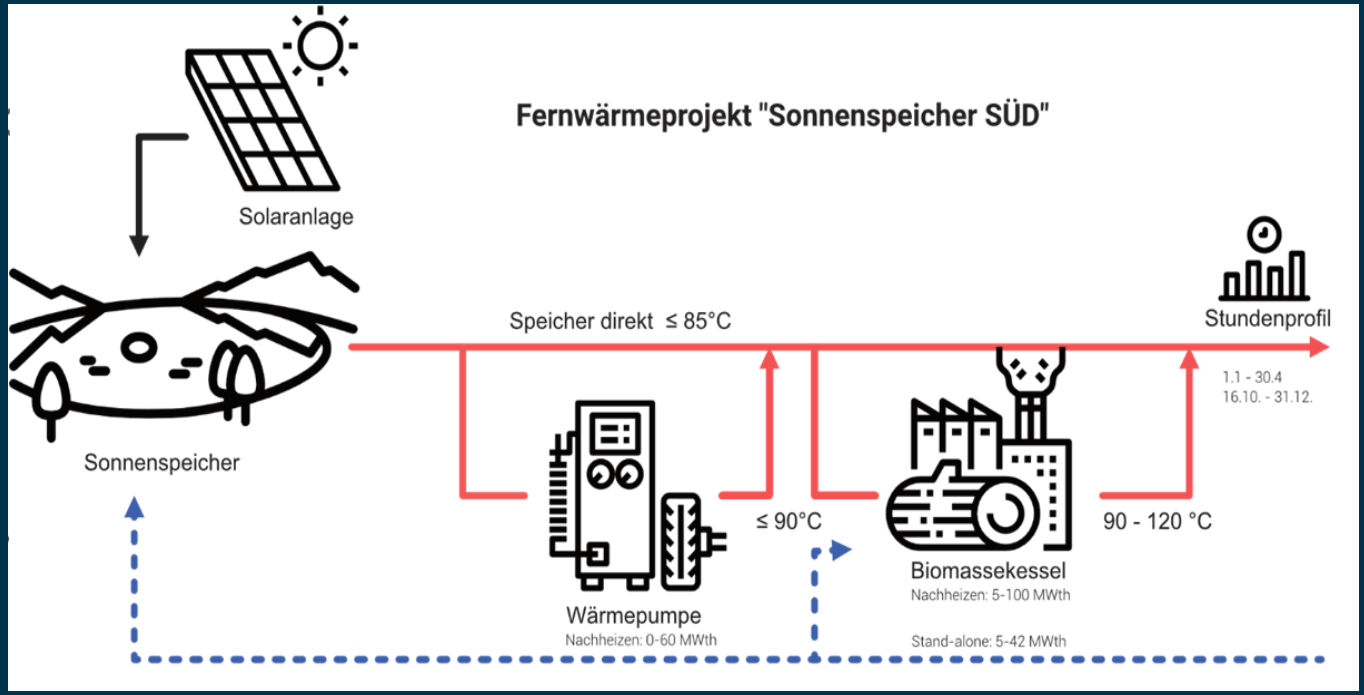
Flagship project „Sonnenspeicher Süd“

- Combination of a solar thermal plant, heat pumps, a large-scale heat storage unit and a biomass heating plant
- Delivery of up to 365 GWh/a of heat during the heating season
- Thermal output of up to 100 MW
- Feed-in to the existing district heating network at the Mellach power plant complex via an approx. 4 km long district heating pipeline
- Project consortium consisting of Wärmespeicher Weitendorf GmbH and BWE Energiesysteme GmbH



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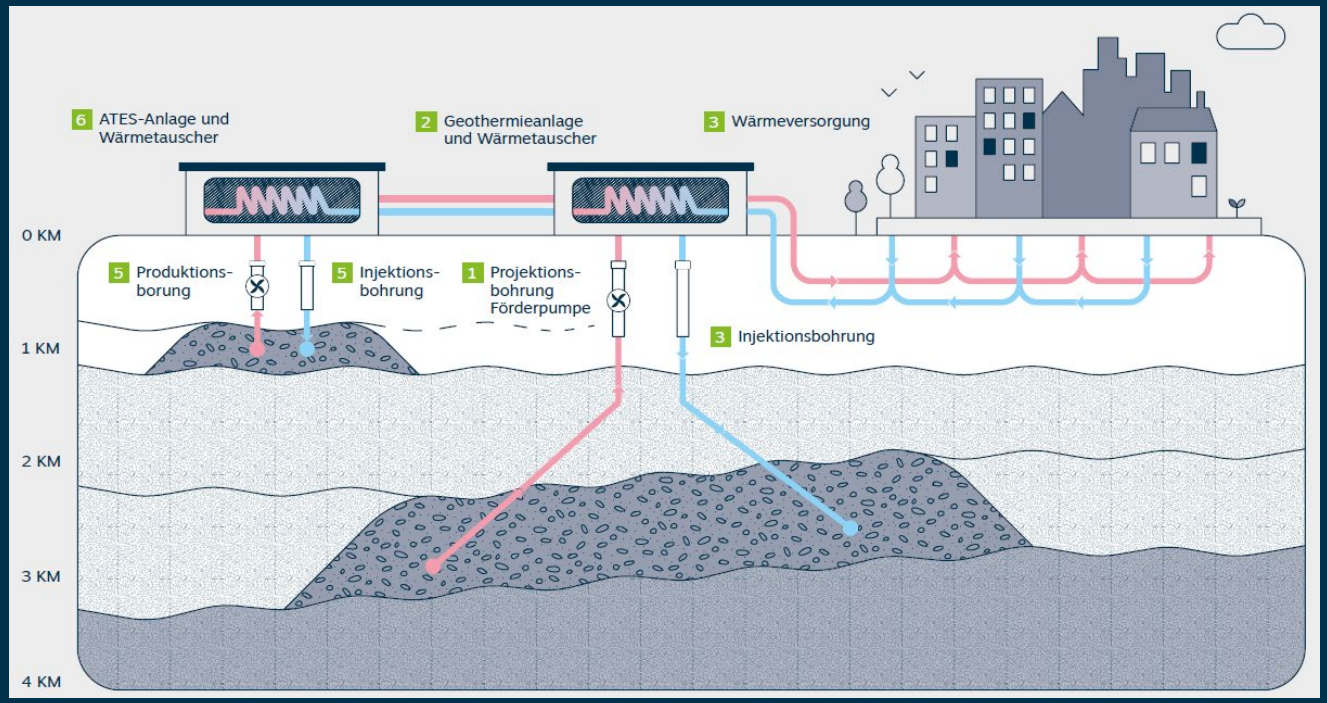
Flagship project „TIEFENKRAFT“

- Utilization of geothermal heat at temperatures of up to 130 °C
  - 4 geothermal doublets with a depth of 3,000 to 4,000 meters are planned
  - Additionally, two ATES (Aquifer Thermal Energy Storage) systems at a depth of approx. 700 – 800 m serving as seasonal thermal energy storage
  - Planned thermal capacity of up to 150 MW and planned heat output of up to 670 GWh/a
  - Transport pipeline approximately 25 kilometres long, running from the geothermal plant to the Graz district heating network
  - Cooperation project between OMV and Energie Steiermark
  - Total investment volume of approx. € 500 million
- Aim: First heat delivery to Graz in 2030



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Thanks for your attention!

Energie Graz
Corporate Video

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