



Geothermal District Heating in Aarhus – from plans to delivery

Utrecht, 4/12/2025: Dag van de Warmtetransitie
Malte Nyenhuis – Head of EU Affairs



Background Denmark: District heating & geothermal

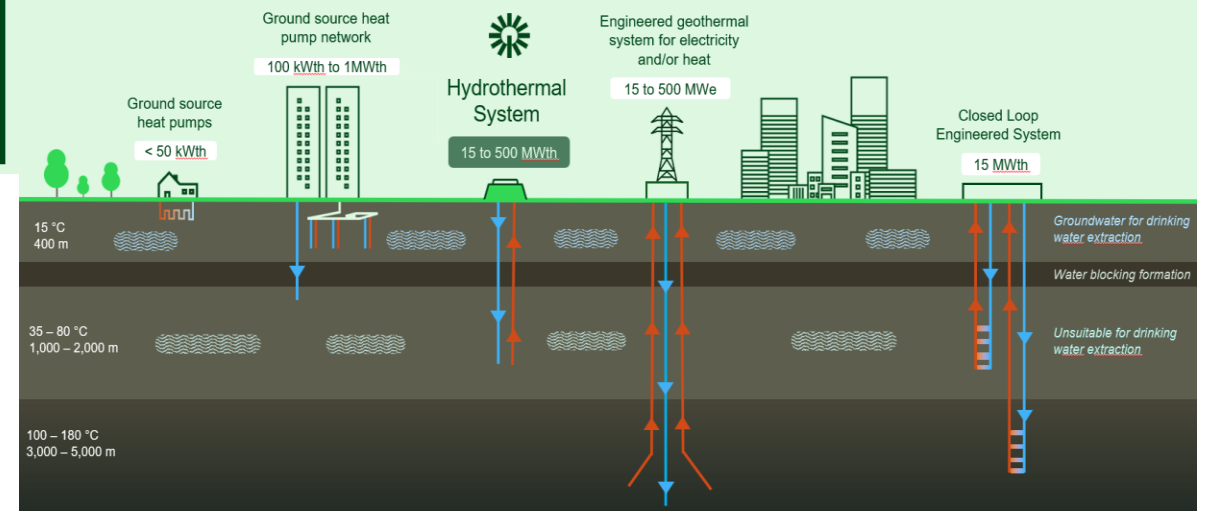
- 70% of households connected (2025)
- 377 DH companies: 81% consumer-owned, 15% municipality
- 78% renewable energy; overall 39% wooden biomass (2023)
- Only one small geothermal facility (Thisted 7 MWth) in operation, some failed projects executed by district heating operators
- Danish Heat Act: Cheapest relevant source as ongoing benchmark (Substitution Price Principle)
- Special geothermal regulation to enable high CAPEX long-term investments put in place



About Innargi

| A.P. Moller Holding Founder and co-owner | ATP Co-owner since JAN/2022 | NRGi Co-owner since JAN/2022 |
|--|---|--|
| <p>Privately held investment company</p> <ul style="list-style-type: none"> A.P. Moller – Maersk Danske Bank Maersk Drilling (now merged with Noble Corporation) Faerch Group KK Wind Solutions Nissens Cooling Solutions Maersk Product Tankers Maersk Tankers A.P. Moller Capital <p>A.P. MOLLER</p> | <p>Denmark's largest pension and processing company</p> <p>ATP Livslang Pension</p> <p>Established by the Danish Parliament by law in 1964</p> <p>atp=</p> | <p>Customer owned utility company</p> <p><u>225,000 unit</u> owners</p> <p>One of Denmark's largest energy suppliers (Wind & Solar)</p> <p>NRGi</p> |

Types of Geothermal Systems



Our business model

We Take The Initial Risks



- People, technical heritage and experience from Maersk Oil and Maersk Drilling increases our chance of success and allows us to manage subsurface risk with our own capital.
- Our owners make it possible that we have the funding to take the risk, see things through, and invest in long-term partnerships

We deliver 30 years of dependable heat on-demand



- Our customers don't need to think about running the facility
- We operate it for 30 years and guarantee the heat availability and performance when it's up-and-running.
- Geothermal heat is base load – its 'ON' whenever you need it.

We guarantee a competitive price



- Before Innargi, all geothermal projects were one-offs. Our mission is to industrialise geothermal to drive down costs and leverage the learning effect.
- No payment until the heat flows

We engage locally to make it happen



- We understand the concerns of local communities and pro-actively address them in communications
- We take charge of the environmental and social integration of the geothermal facilities.






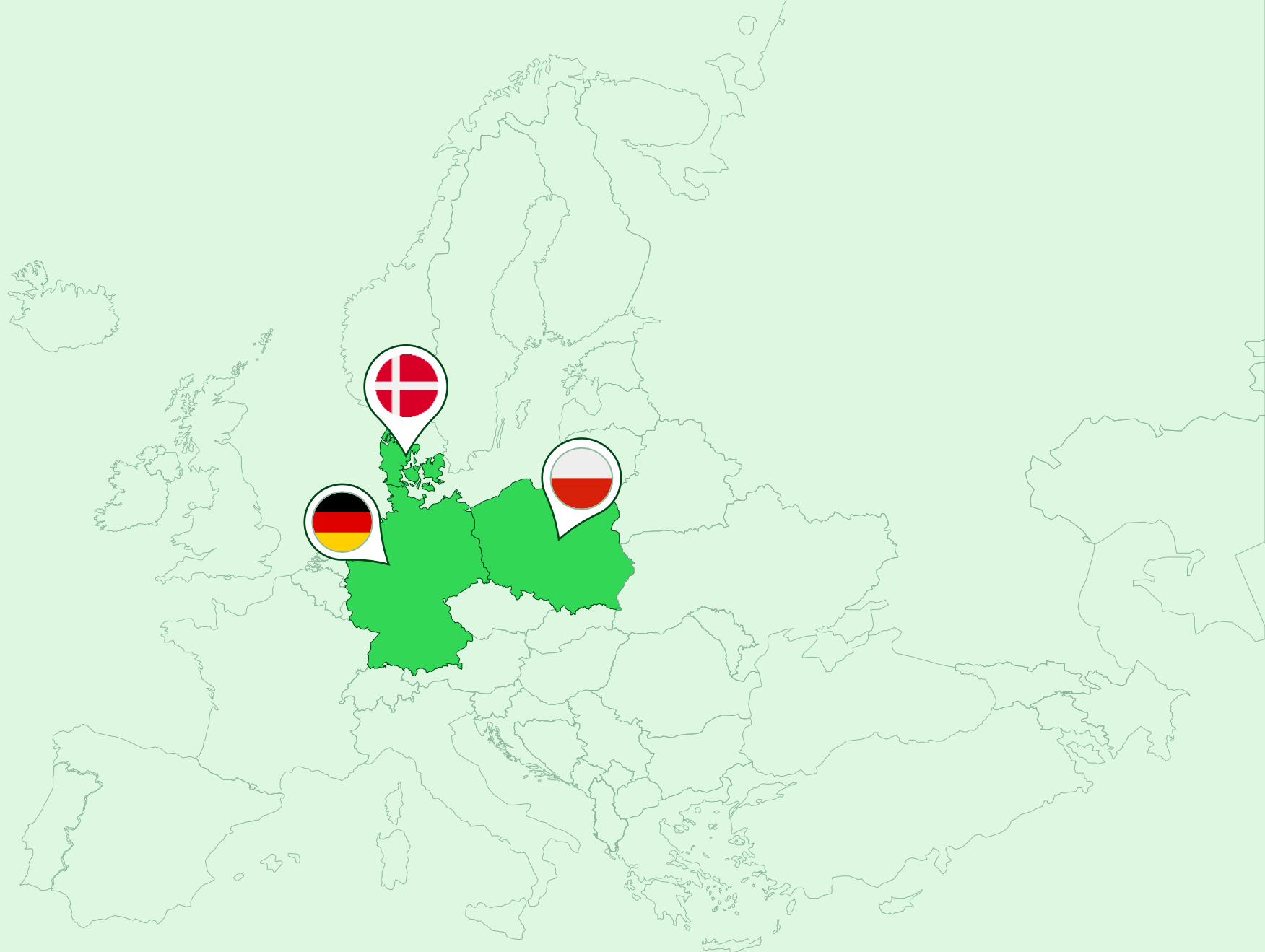
Projects so far

Contract signed

-  **Aarhus:** 110 MW
Heat delivery started in 10/2025
- Vestforbrænding:** 26 MW

Projects under development

-  **Copenhagen:** 240 MW
- Horsens:** tbc
- Hørsholm:** 150 MW
- Hillerød:** 20-40 MW
-  **Poznan:** 100 MW
- Lodz:** 200 MW
-  **Kiel:** 50 MW



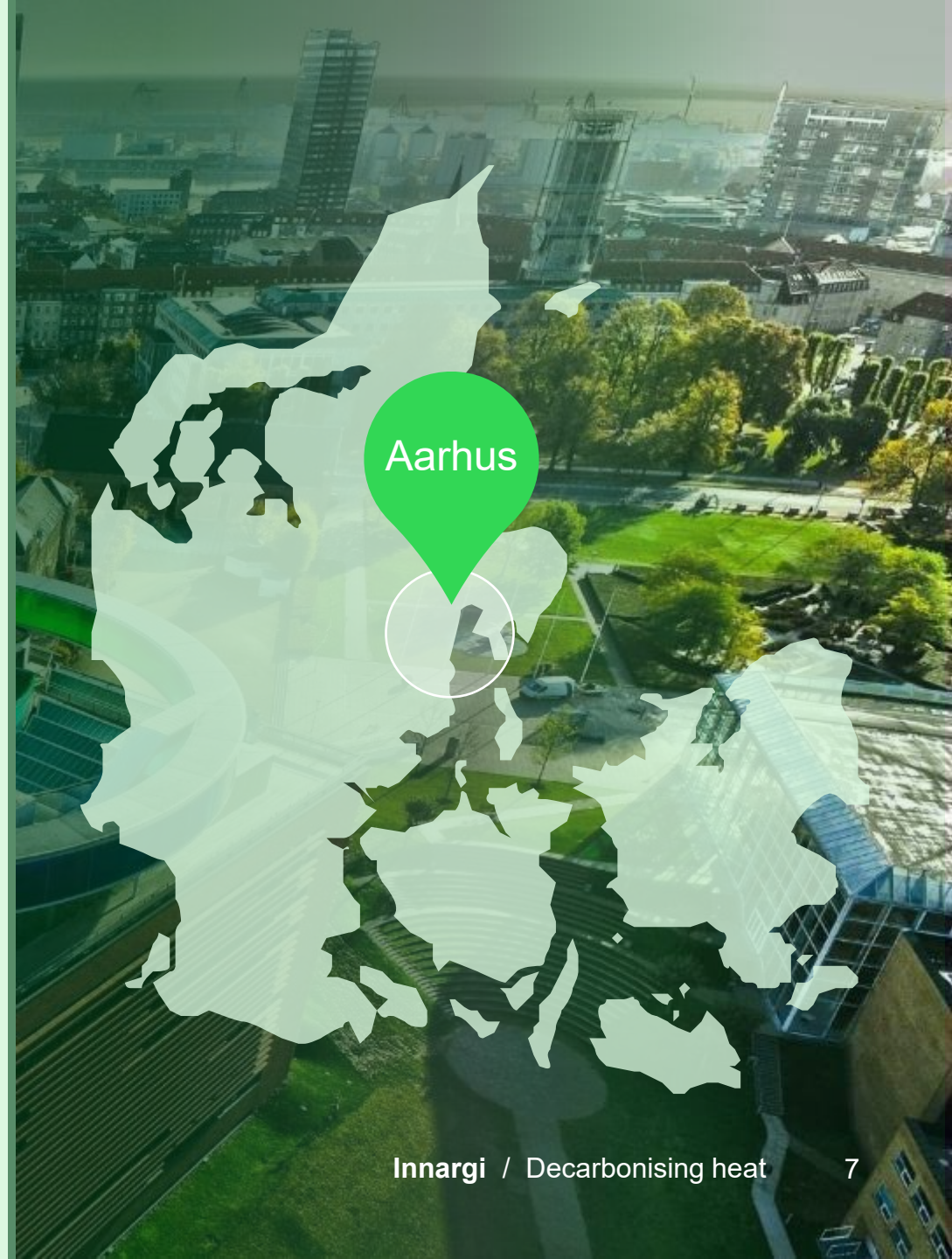
The Aarhus case

- Denmark's second largest city with a **population of 350.000 people** (180.000 households)
- District heating peak demand around **1.100 MWth** (2021)
- **95%** of the city is **connected to district heating** networks through 2.260 km of pipes
- The city followed a “**carbon neutral**” approach to heating via: Biomass (66%), Waste (24%), Coal (5%), Other (5%)

Challenges:

- Need to stabilise heat prices
- Does not benefit from periods of cheap electricity
- Achieve a truly zero-carbon & future proof energy mix

➡ **Solution: 20% of DH mix will come from geothermal!**

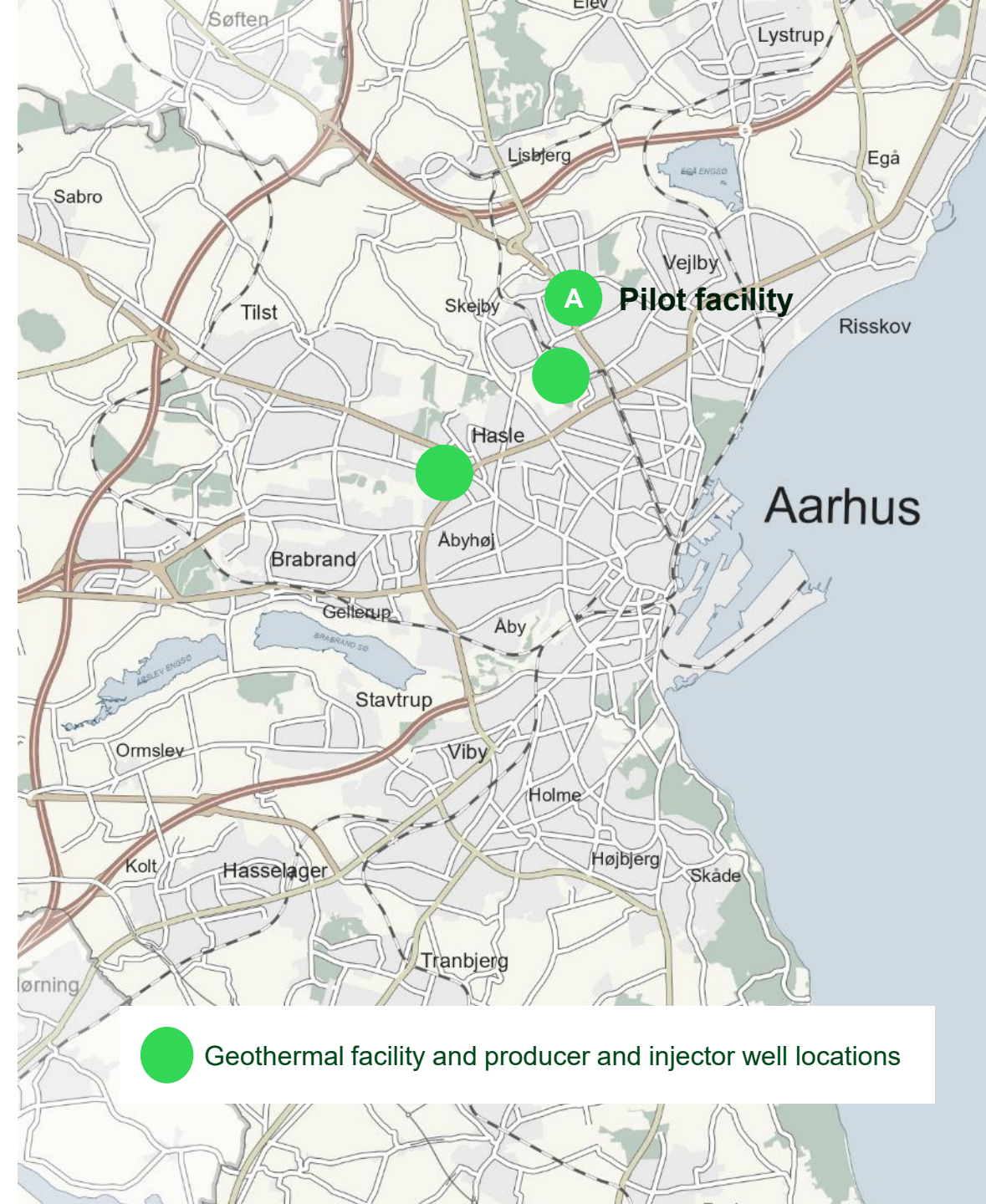


Aarhus project

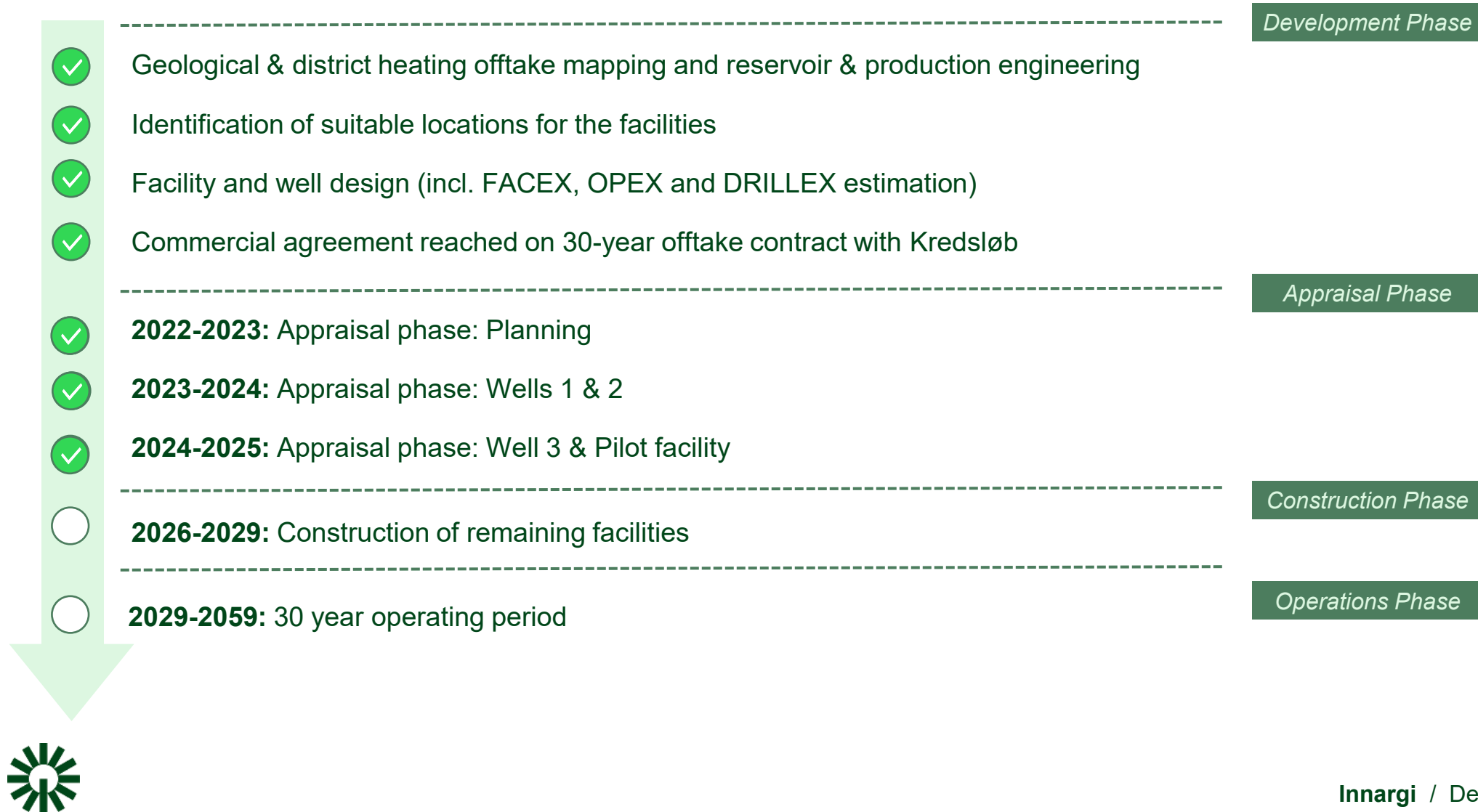
- Expected production capacity: **110 MW thermal**
- **3 production facilities** – each ca. 400 m²
- The appraisal phase consists of 3 wells and a pilot facility
- First heat: **October 2025**
- Project Completion: 2029

Environmental considerations:

- ✓ Special well design across **drinking water** intervals
- ✓ Well cutting disposal according Danish environmental regulations
- ✓ **No hydraulic fracking** of the subsurface
- ✓ Production facilities are **emission free** and noise level **max. 35 dB** (equivalent to a whisper/library)



Project Timeline





Seismic campagain Started in Mai 2023

- Combination of seismic surves in Aarhus, Holbæk & Greater Copenhagen

Sumatravej site

Start drilling in November 2023

- Plot in harbour area of Aarhus
- Target depth: 2,500m
- Relocation of the test tanks to the neighbouring property





Skejby site – March 2024

- Drilling with target depth of 2,350 m
- 1st well drilled in 60 days
- 2nd well drilled in 45 days



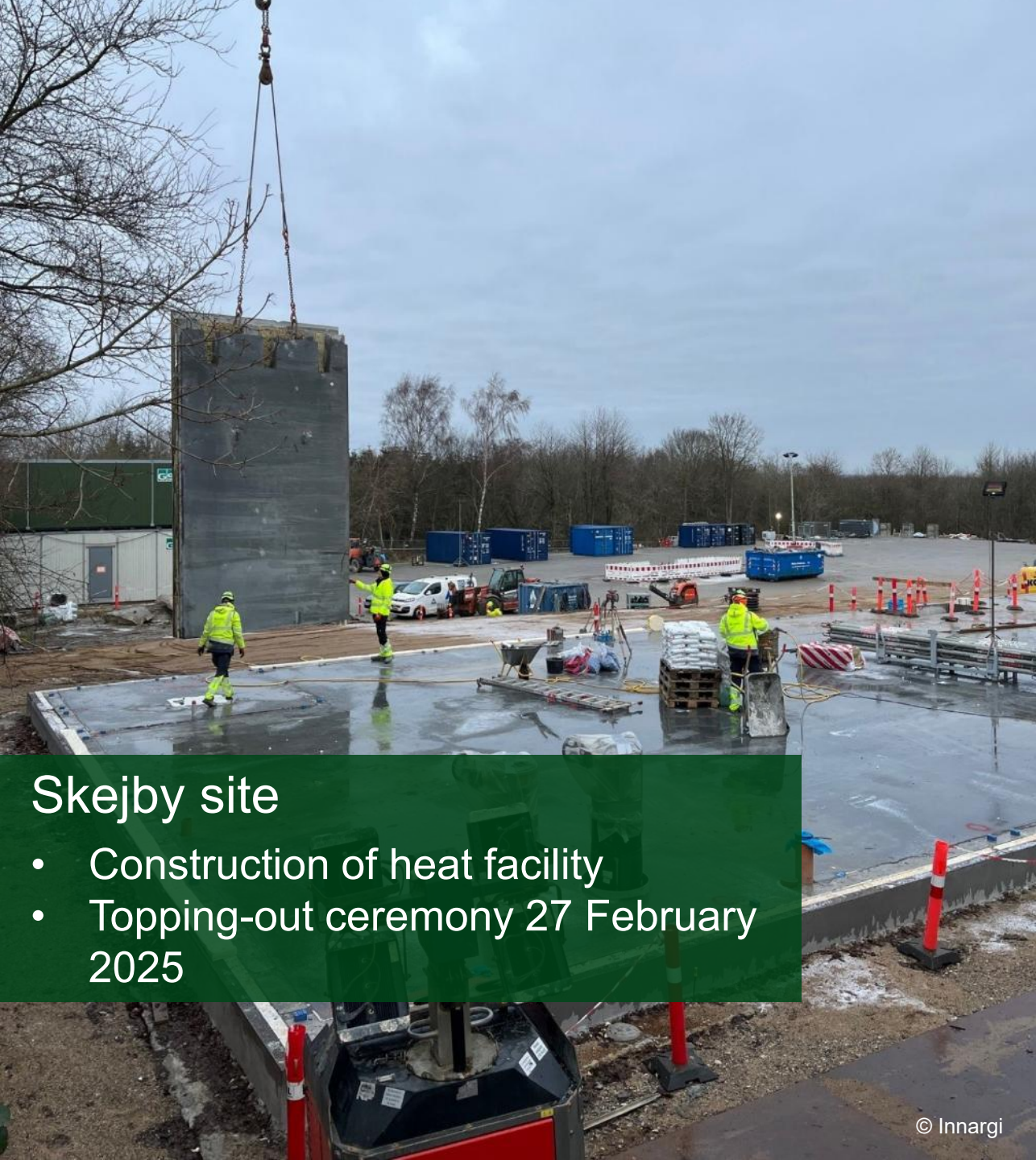
Skejby site – March 2024

- Successful perforation at the level of the water-bearing horizons
- Pump tests to determine flow rate and temperature
- constante temperature > 70°C



Skejby site – September 2024

- Demobilisation of the drilling rig
- Decommissioning of the drilling site
- Final borehole tests



Skejby site

- Construction of heat facility
- Topping-out ceremony 27 February 2025



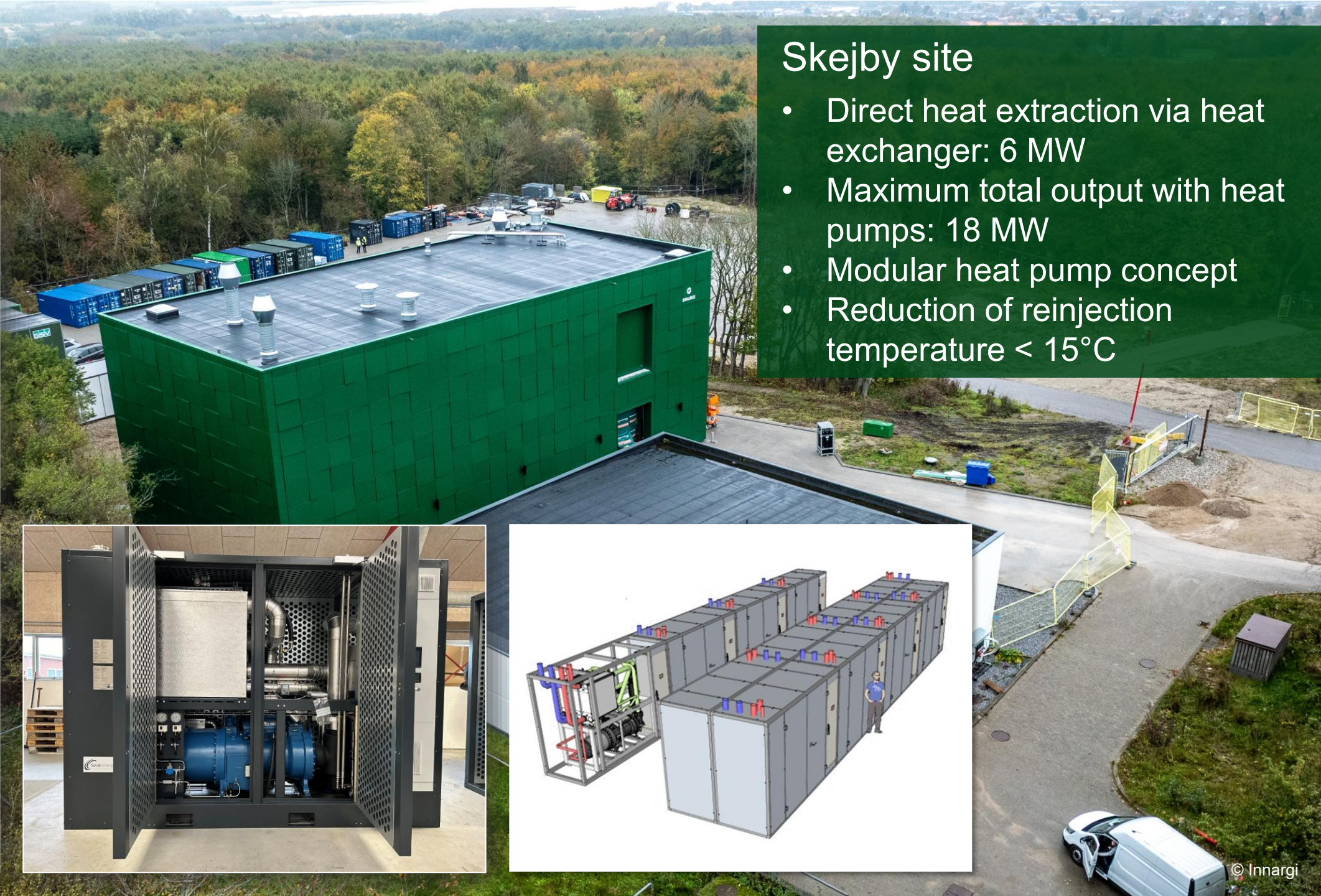
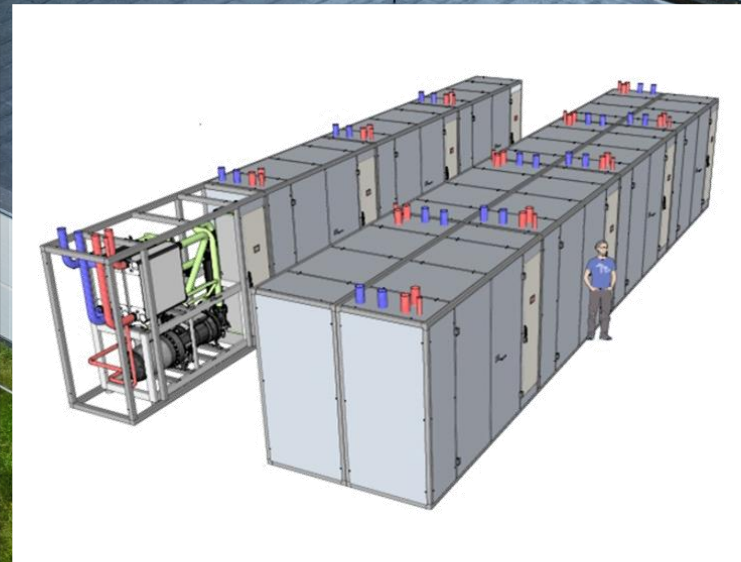
Skejby site

- 31/10/2025: Official opening

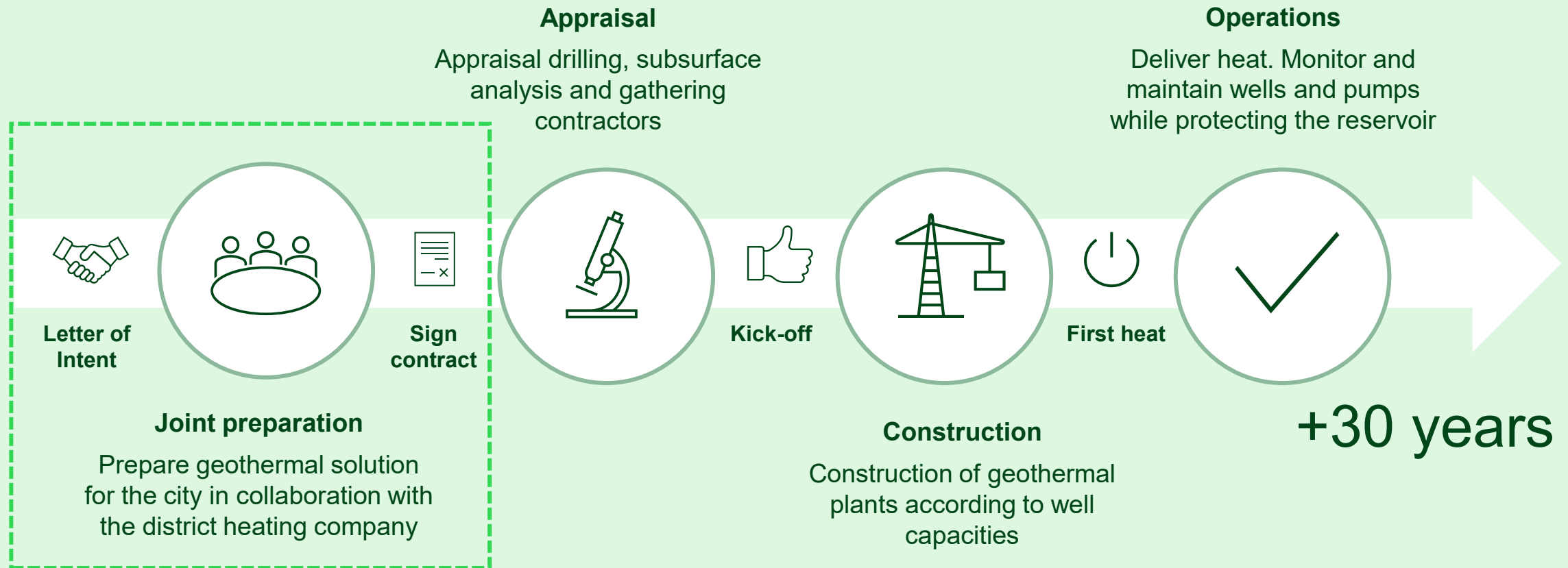


Skejby site

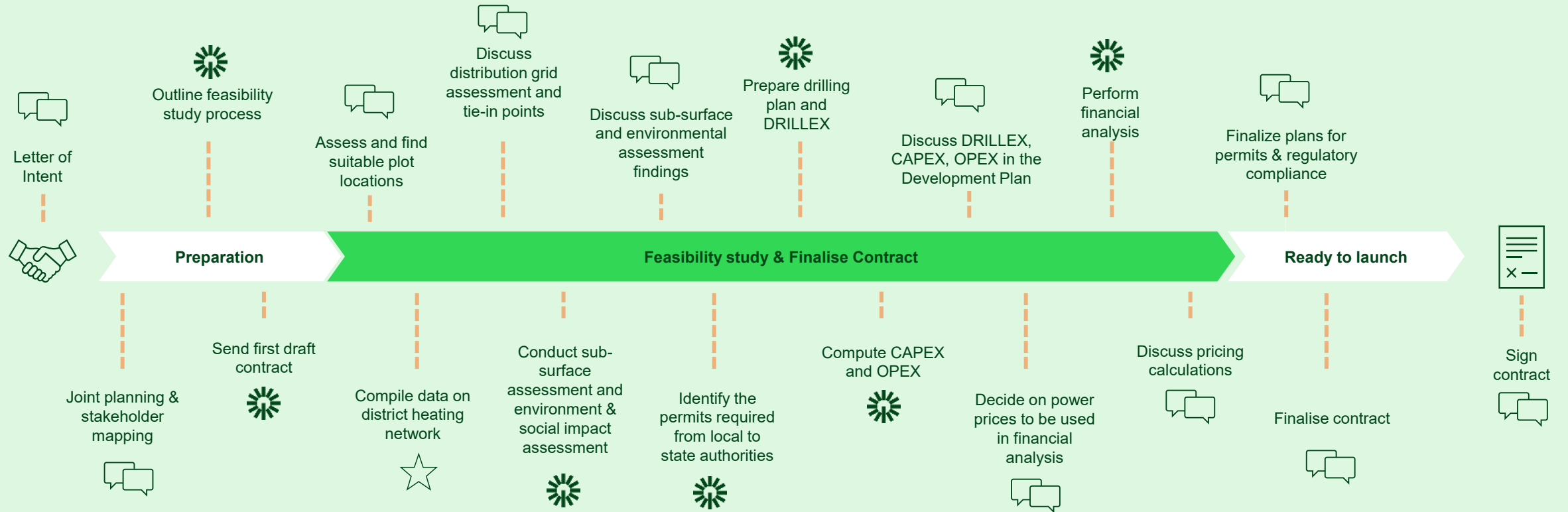
- Direct heat extraction via heat exchanger: 6 MW
- Maximum total output with heat pumps: 18 MW
- Modular heat pump concept
- Reduction of reinjection temperature $< 15^{\circ}\text{C}$



Success factors: End-to-end “heating-as-a-service” attractive for DH customer

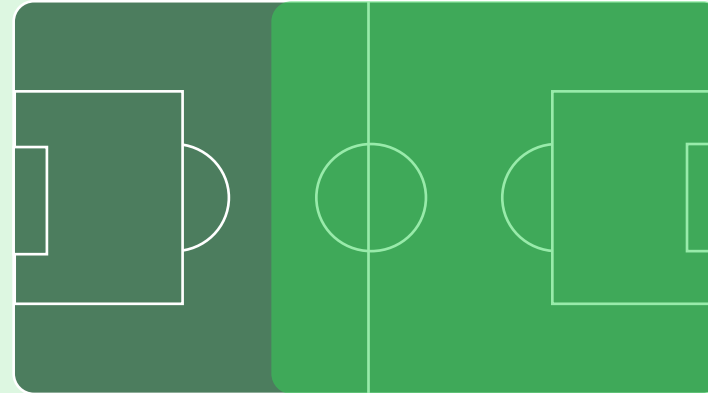


Success factors: A shared journey towards signing a contract

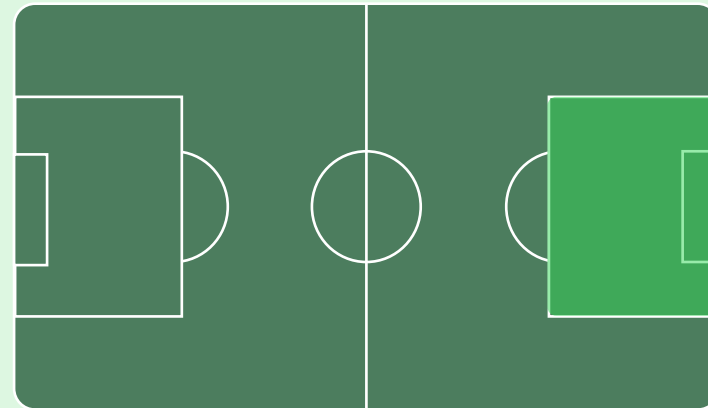


Success factors: Early dialogue & focus on local relevance

- Agree on roles & communication channels
- There is a formal and an informal process
- Worries must be acknowledged and handled
- Transparency in decision making is key
- Local availability – you need to be there
- Insistence on timely handling of complaints and willingness to learn from them



Drilling and
Construction
site size
5,000 m²



Facility size
5-600 m²



Success factors:

Political support & stable framework

1 Political support

- Confirm climate ambition & direction of travel
- Underscore relevance of decarbonisation of heating for top level EU priorities
- Highlight potential and benefits of geothermal & district heating across EU
- Level playing field among heat sources & technologies

2 Remove barriers & facilitate GT projects

- Faster permitting & license processes
- Better access to plots in urban areas
- Easier access to subsurface data
- Financing for geothermal & modernisation and expansion of district heating

Implementation Green Deal (RED, EED, ETS2 etc.)

EU Climate law & post-2030 framework

EU Heating & Cooling Strategy

Dedicated Geothermal Action Plan

Simplification: Energy / Environmental omnibus

Clean Energy Investment Strategy

MFF / EU funding instruments

Revision state aid framework

...





www.innargi.com

Amerika Plads 29

DK - 2100 Copenhagen, Denmark

Phone +45 32 26 88 00

