



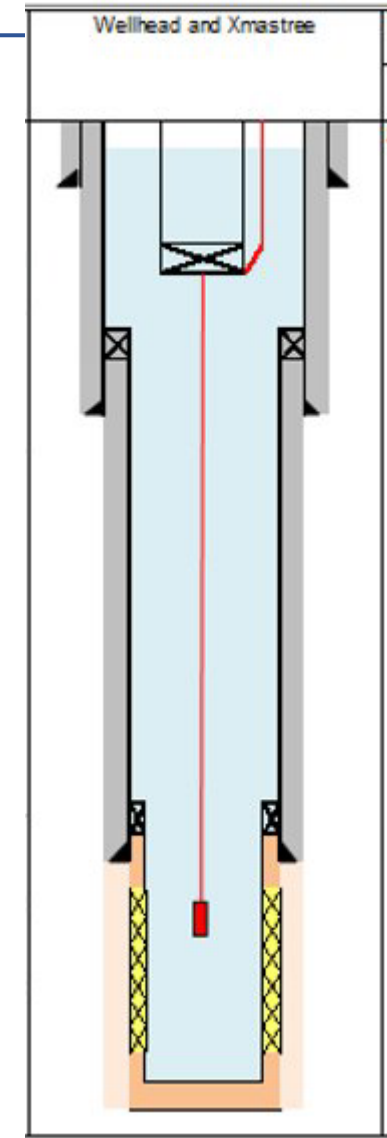
Breakout session: DRA in Geothermal

Yearly event 2022, April 14th

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Impact on geothermal well design

- What are the potential cost reduction by adding DRA?
- How can it be applied on existing geothermal wells?
- Any consideration to be taken into account for new well designs?



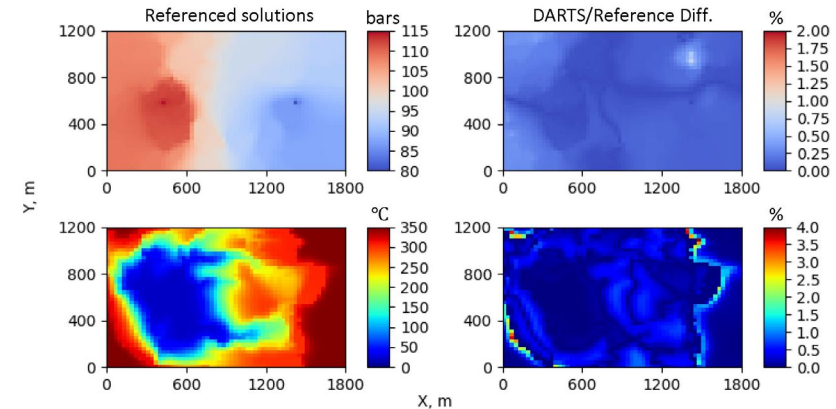
Impact on a geothermal project



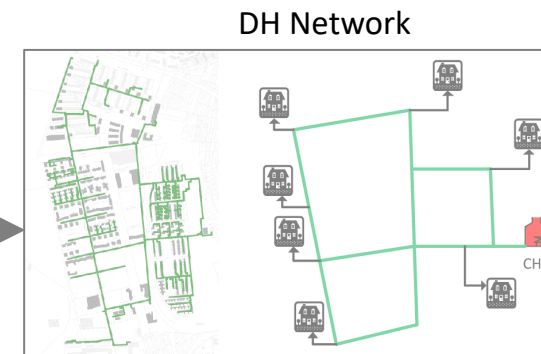
- Which operational issues can be expected by adding DRA?
- What are the potential environmental impact?
 - In terms of power consumption savings and chemical material footprint
- Any extra permit required?

Impact of DRA-geothermal system in a network

- What is expected effect of DRA injection on geothermal well in a heat network?
- Effect of DRA mixture on dynamic well and reservoir pressure loss
 - Operational limits (Injection pressure, ESP design, erosional velocity, etc.)
 - Design guideline - parameters required to modify well designs – long term impact, cold water breakthrough
 - **Integration** with DH networks, input to DH modelling as boundary conditions (flowrate etc.)



Geothermal results as input
boundary conditions (P, Q)





For more information

<https://www.draglow.nl/>

Well perspective

- Cost effect of reducing diameter in range of ~ 500-800k per well
 - 9-5/8" -> 7" intermediate section

Production well:

- Injection line in producer well for maximum DRA effect
- In case of polymer, shear degradation in ESP
- Similar setup as currently used for inhibitor injection
 - Can DRA injected together with inhibitor?
 - Impact on the effectiveness of corrosion inhibitors

Injection well:

- Allowable injection pressure determines maximum system power output
 - Lower injection pressure -> higher output
- Need updated design guideline for wells and pipe lines for DRA

