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# Mine Water Modelling Tool - Integration of the Mines in the Thermal Network Model

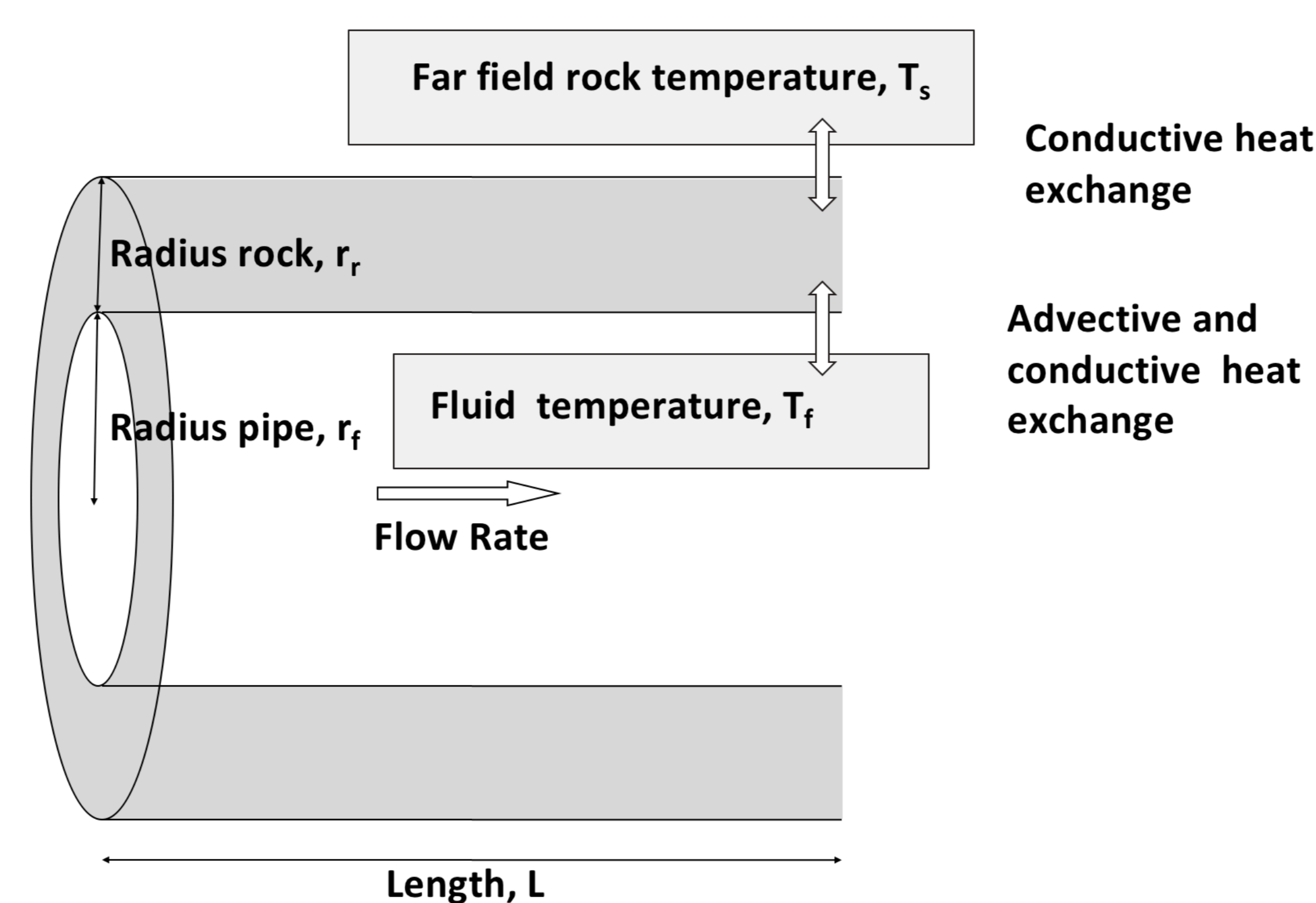
## -GeoWatt – Activity 3 – Preliminary Study of an innovative 4th Generation Thermal Network in Central Limburg

### Description

In the context of Mine water energy resource assessment, a methodology to evaluate the heat content and the sustainable heat extraction rate of abandoned mines in the Limburg region was developed. The assessment is made using a custom-made three-dimensional, coupled flow and thermal model. In the framework of the GeoWatt project, progress has been made to improve the modelling tool.

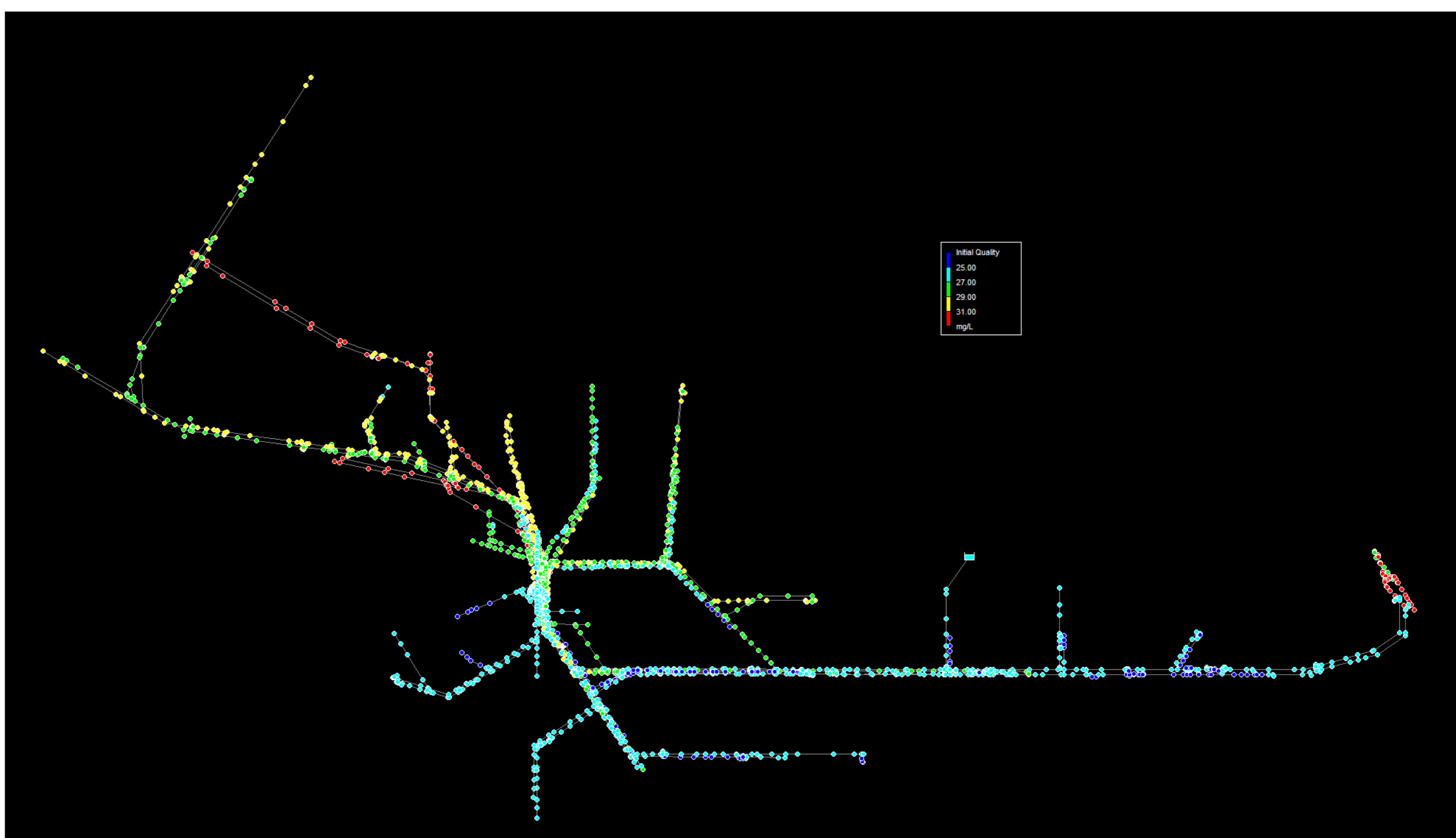
### Purpose

- The aim is to predict the long-term behaviour of Mine water geothermal systems in a reliable manner.
- The model integrates the complex geometry and advective flows as well as fluid/rock heat interaction.
- The tool predicts adequately the temperature changes through time and defines the capacity of the system in function of demand scenarios.



### Technical features

- The mine water management modelling tool consists of a fast-computing, flexible and accurate software that can handle the typical geometry of a mine, such as galleries, tunnels and shafts. It is a custom-made modelling tool based on the EPANET code from EPA (Rossman 2000).
- The novelty is that In the developed updated EPANET version, bilateral heat transfers between the rock and the fluid are taken into account.



Example of Winterslag minewater network

