

Accelerating the Heating and Cooling Transition



Joint Call 2021
Kick-off meeting of granted projects

Project presentation pitch

17 November 2021



PERFORM II

Improving Geothermal System Performance
Through Filter Technology Development



Intro

- Project Coordintaor
 - Hadi Dashtaki Hesari, Project Manager, TNO (NL)
- Consortium

11 Partners
(NL, DE, DK)

TNO innovation
for life

BÈTA
industrie

Ammerlaan
Geothermie

RUHR
UNIVERSITÄT
BOCHUM **RUB**

GFZ
Helmholtz-Zentrum
POTSDAM

GEUS

NRG

Fraunhofer
IEG

Hydroisotop

ecw energy

RAMBOLL

Cooperation Partners

Floricultura
ORCHIDACEAE & ARACEAE

VULCAN ENERGY
ZERO CARBON LITHIUM™

Aardyn
Geothermie ontwikkeling & beheer

hvc.
energie en hergebruik

DANGO & DIENENTHAL

INNARGI

BES
Berliner Erdgasspeicher

SIBELCO

CWK
Weil die Chemie stimmt.

Challenge you are tackling

- Problem:
 - Scaling, corrosion and associated Naturally Occurring Radioactive Materials (NORM) in geothermal plants hinder the acceleration of deployment of geothermal energy in the built environment for direct heating/cooling and other industrial applications.
 - These issues are mitigated by inhibitor injection with undesirable environmental impact increased operational cost.
- Who is impacted?
 - All geothermal operators → heating/cooling industry
- How to impact it?
 - The innovative filter technology removes ions to prevent scaling and corrosion, and reduces NORM containing waste and may potentially extract valuable metals

Solution to be provided

- **PERFORM II** will further develop filter technology using zeolite and chitosan based filters examined in the previous PERFORM (achieved TRL4) project to
 - Prevent scale deposition and corrosion while minimizing inhibitor injection
 - Reduce interventions on geothermal plants, costs and the environmental footprint.
 - Extract adsorbed metals to reduce the volume of costly waste streams under NORM.
 - Investigate ways to separate valuable metals from the waste stream
- **PERFORM II** will combine results of previous project with
 - Numerical Models
 - laboratory tests
 - And pilot tests to validate the filter technology