



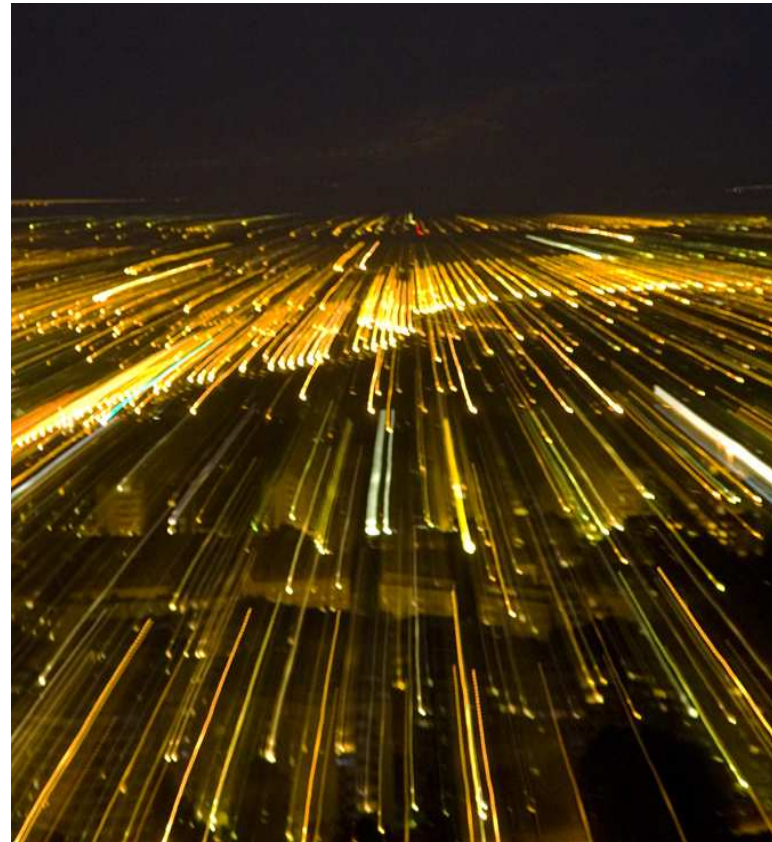
PÖYRY

Project Management for electrical Generation: Geothermal Energy in Combination with other Sources of Renewable Energy

Rüdiger Pötter
Business Line Manager Geothermal
Pöyry Energy GmbH, Hamburg

Global Experts in Consulting and Engineering

- Pöyry is a global consulting and engineering company, independent from supplier and manufacturers
- 7000 experts in about 50 countries
- Project experience in more than 100 countries
- 17 000 projects annually
- Net sales in 2009 EUR 674 million
- Listed on the NASDAQ OMX Helsinki since 1997



Office Network 50 Countries

Asia-Pacific

Australia, Brunei Darussalam, China, India, Indonesia, Malaysia, New Zealand, Philippines, Republic of Korea, Singapore, Taiwan, Thailand, Vietnam

Europe

Austria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Norway, Poland, Romania, Russia, Slovakia, **Spain**, Sweden, Switzerland, United Kingdom

Middle East and Africa

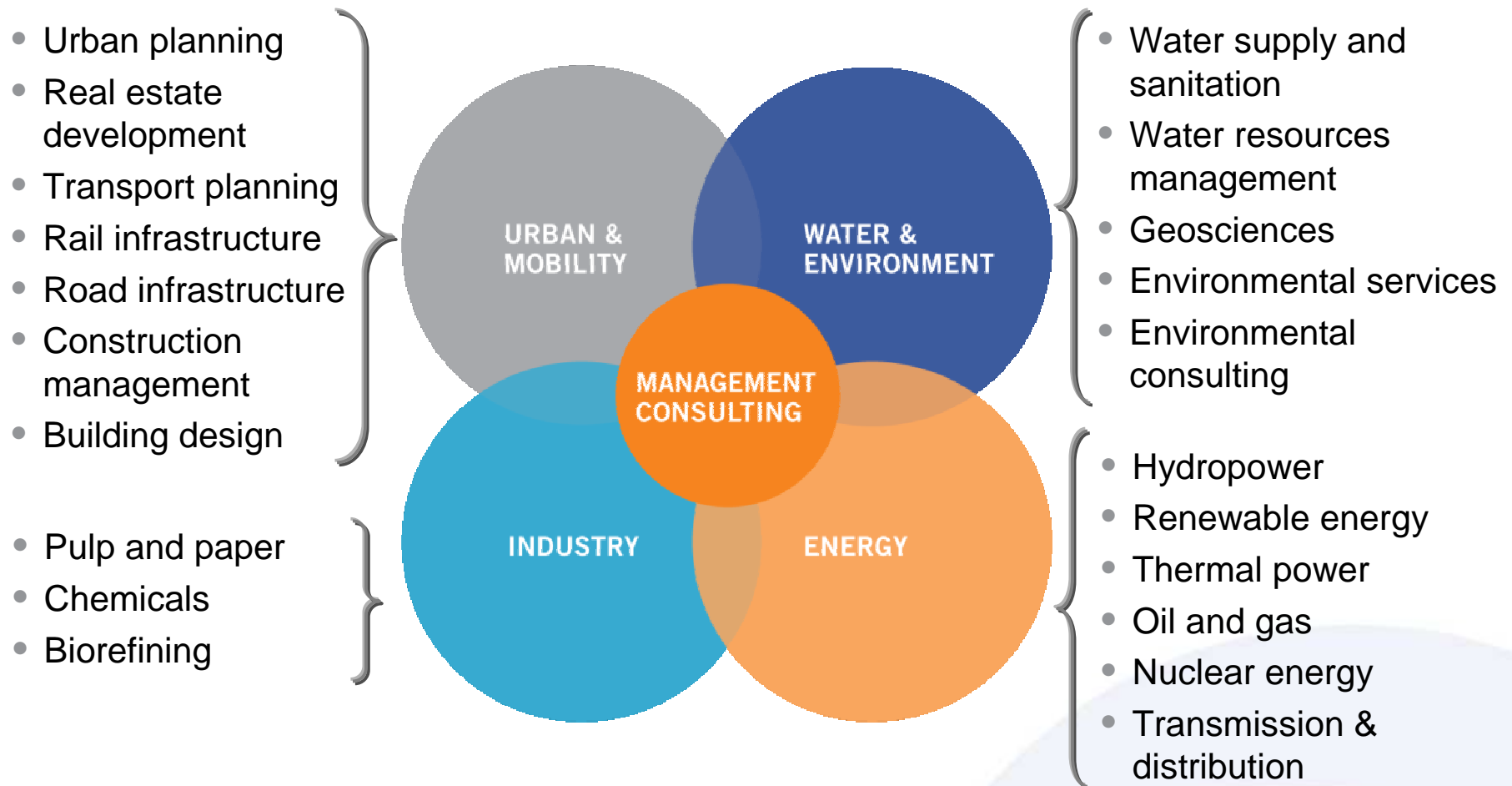
Iran, Saudi Arabia, South Africa, Sultanate of Oman, Tanzania, Tunisia, United Arab Emirates, Zambia

North and Latin America

Argentina, Brazil, Canada, Colombia, Mexico, Peru, USA, Venezuela



Wide Range of Deep Expertise

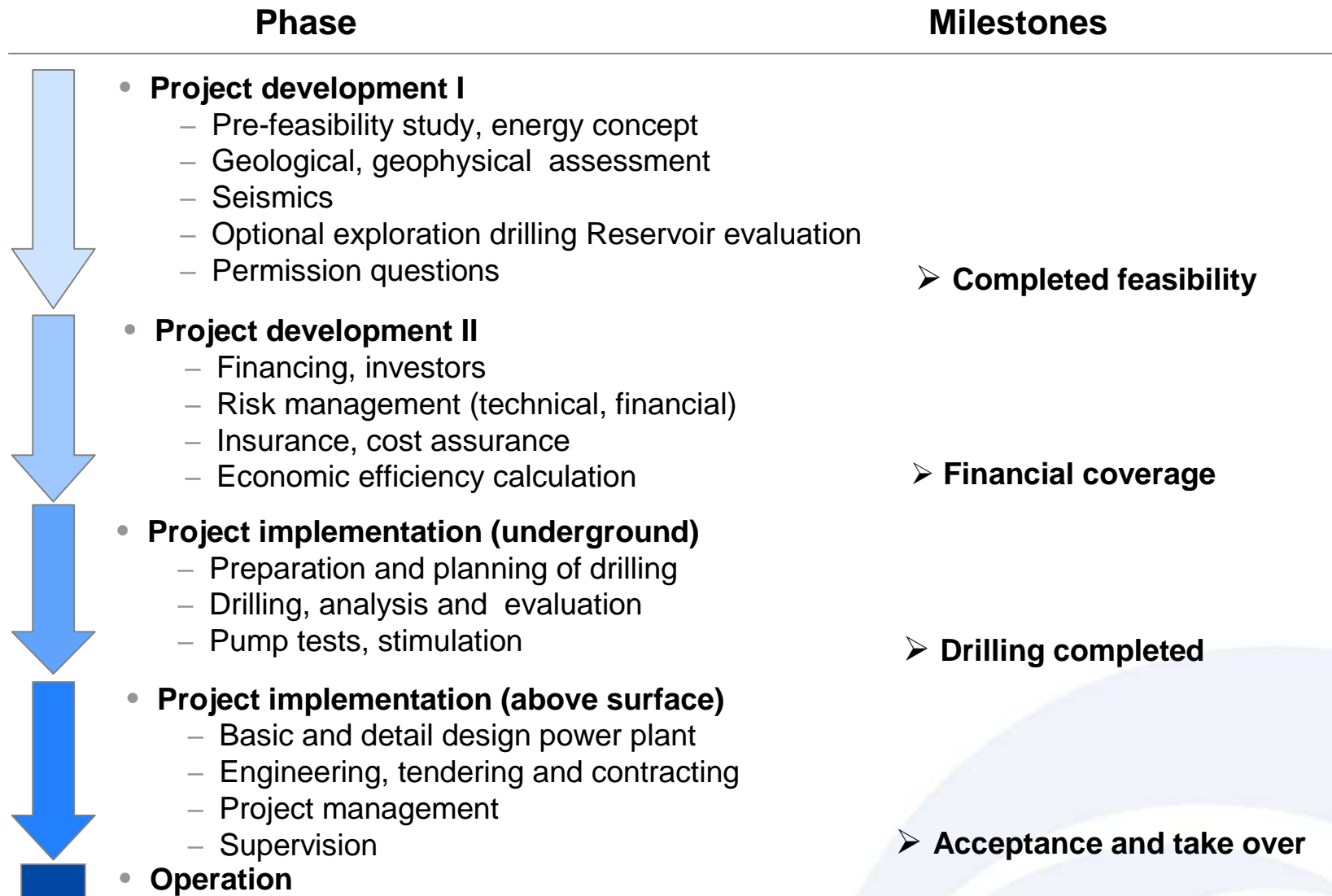


Energy Business Area

1.800 experts in 29 countries

<p>Hydropower BA Vilho Salovaara</p>	<p>Renewable Energy BA Patrick von Essen</p>	<p>Power & Fuels BA Angel Rodero</p>	<p>Nuclear and T&D BA Philipp Elkuch</p>
<ul style="list-style-type: none"> • Reservoir storage schemes • Pumped storage schemes • Cascade schemes • Run-of-river schemes • Multipurpose schemes • Dam safety & environmental assessments • Technical & financial due diligence 	<ul style="list-style-type: none"> • Biomass-to-Energy • Waste-to-Energy • Solar Energy • Wind Power • Geothermal Energy • Technical advisory services • EPCM services 	<ul style="list-style-type: none"> • Condensing power • Cogeneration/CHP • District heating and cooling • Power & desalination • Multi-discipline engineering • Offshore facilities • Onshore facilities • Specialist consulting services 	<ul style="list-style-type: none"> • Nuclear energy <ul style="list-style-type: none"> - Development & pre-construction - Project implementation - Assets operation - Decommissioning • Transmission and distribution <ul style="list-style-type: none"> - Grid studies - Project development - Project execution - New technologies
<p>> 100.000 MW of installed capacity</p>	<p>> 3,000 MW of carbon neutral or carbon free installed capacity</p>	<p>> 40,000 MW of installed capacity > 1,000,000 bpd of upstream production</p>	<p>Leading consultant for European new-builds</p>

Workflow of Geothermal Projects



Our Services along the Project Workflow

Project Development	Project Implementation		Operation
	Exploration	Power plant	
<ul style="list-style-type: none"> • Technical pre-/ feasibility study • Energy concept • Geological feasibility study • Calculation of profitability • Permission relevant support 	<ul style="list-style-type: none"> • Pre-concept drilling area preparation • Supervision and monitoring of drilling • Supervision and monitoring stimulation • Supervision and monitoring pumptests 	<ul style="list-style-type: none"> • Power plant design • Pre-dimensioning ORC/ Kalina-cycle • System planning, e.g. cooling system • Planning district heating and power connection • Balance of plant 	<ul style="list-style-type: none"> • Supervision and monitoring
Project Realisation			
Consultancy project workflow		Project management	
Preparation of tender documents and evaluation of bids			
Supervision and guidance of the works		Quality management und documentation	

Selection of Geothermal Projects

- Geothermal assessments and studies
 - Geothermal Project Inn, Austria
Assessment of the effects on the aquifer due to extensive usage, Feasibility study with assessment of the geothermal capacity
 - Katharinen Tal, Diessenhofen
Assessment of viability of usage of the geothermal capacity of a 800m deep drilling for heating purposes
 - Geothermal Project Tiefenbrunnen, Zurich
Assessment of viability of usage of the geothermal capacity for heating purposes
 - Low enthalpy system analysis
(Client: Research Fund of Swiss Utilities)



Selection of Geothermal Projects

- Geothermal resource (heat pumps, heating/ cooling systems)
 - Expertise for geothermal heating/ cooling for 2008 Summer Olympic village in Beijing, China
(Client: Government, 2005 – 2007)
 - Technological advisory for a leading chinese geothermal enterprise
(2002 – 2007)
 - Knowledge transfer: Introduction of geothermal heat pumps
(Client: New Energy Development Organization, Japan, 2002 – 2010)

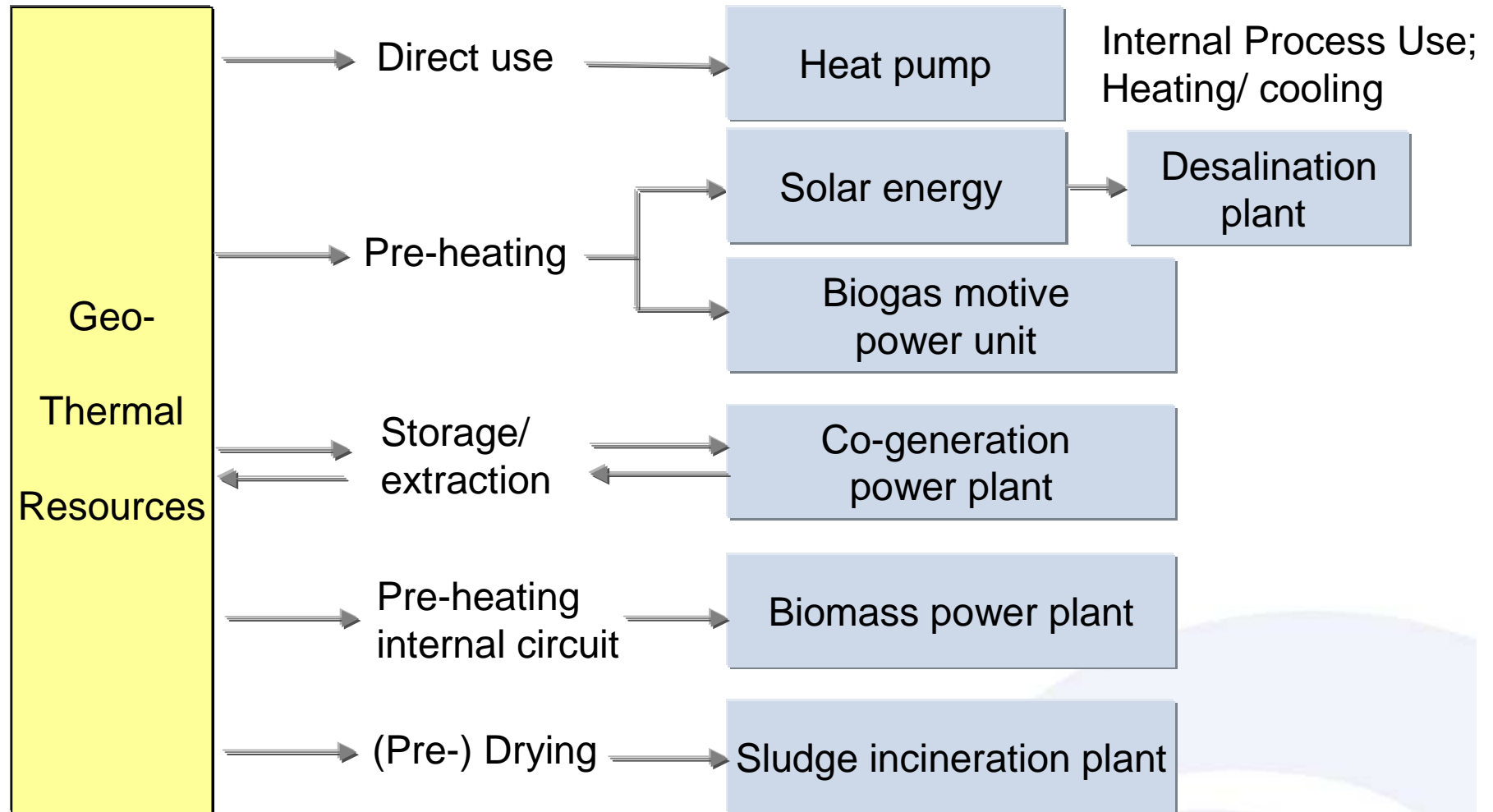


Selection of Geothermal Projects

- Geothermal project development and planning
 - Deep Heat Mining Project Häring, Basel, Switzerland.
Project consultancy, Preparation of site selection study
 - Geothermal Project Zurich, Switzerland.
Preparation of workflow and technical concept, Planning of the drilling site and the drilling works
 - Geothermal Power Plant Kilzidere, Turkey. (Lenders Engineer)
Project consultancy, Due Diligence, Approval processing
 - Geothermal Project Fabiansebestyen, Hungary.
Appraisal of existing data and planning of the project development, Development of a geophysical model, Conceptual study, Preparation of a business plan



Combination with other Sources of Renewable Energy



Motivation and Unique Selling Points

- Local presence in Spain combined with comprehensive knowledge in consultancy and engineering of geothermal plants
- Combination of technical knowledge with geological background in Pöyry business areas
- Size and experience of Pöyry organisation to manage complex projects also with the integration of external experts under one umbrella
- Wide range of know how in the field of renewable energy and the combination of different technology



Potential and declared intention to provide services for geothermal projects in Spain

Targets

- To publish Pöyry as expert in geothermal projects
- Building up new and cultivate existing customer relationship
 - Power provider, project developer, investor
 - Representative of government of autonomic departments
- Get knowledge about local approval and permission procedures
 - Representative of APPA, Permit Authority, Instituto Geológico Minero, Agencias del Agua, etc.
- Talks to independent consultancy and engineering companies experienced in geothermal/ geological/ drilling items

Thank you very
much for your
attention !



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