

Earth EnG

Company Profile 2023
My way into the Earth

About us

Earth EnG Co., Ltd

CEO: John JungHoon Park and Taegu Ji

Founded in 2010

Address

(Seoul Office) : 5th FL., 39 Yangje-dae-ro-66, Songpa-gu, Seoul 05703, Phone: +82 2-6956-3240

(Daejeon Office) : #202, 61 Daejong-no-517-beon, Jung-gu, Daejeon 34839, Phone: +82 42-623-3340

(Headquarters) : #305, 62 Sajikdae-ro. Heungdoug-gu, Cheongju 28641, Choongbuk-do, Phone: +82 43-905-5744

www.eartheng.co.kr

email: earth@eartheng.co.kr

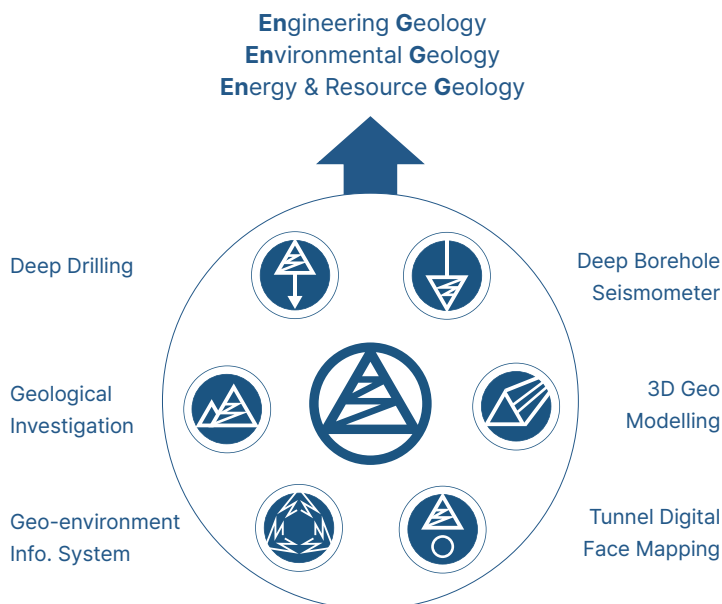
Business Registration No.: 305-86-05729

Corporate ID.: 160111-0282311

License and Registration

Engineering Service, Geologic Investigation, Survey & Digital Cartography

Construction (Drilling and Grouting, Groundwater Development), ICT (SW Development and Supply)



Business area

Enjoy Geology!

Earth EnG has solid expertise in geology-based technologies. We provide services in engineering geology, environmental geology, energy & resource geology.

We will provide our customers with new experiences in geotechnology based on our extensive experiences and knowledge in deep drilling, geology and geotechnical investigation, and geo-information technology.

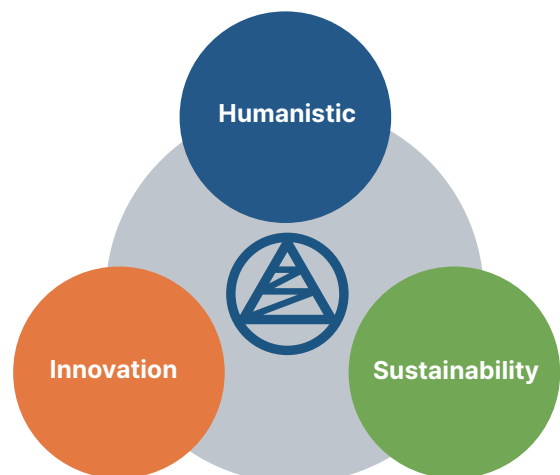
Corporate aim

Sustainability-Humanistic-Innovation

- Sustainability for preservation of environment to ensure optimal and healthy functioning of our ecosystem
- Humanistic management focusing on people-oriented management
- Innovation management with plans for organizing future growth milestones with an effort to fill customer needs

We aim for ESG management for clients, for employees, for our earth, and for our society.

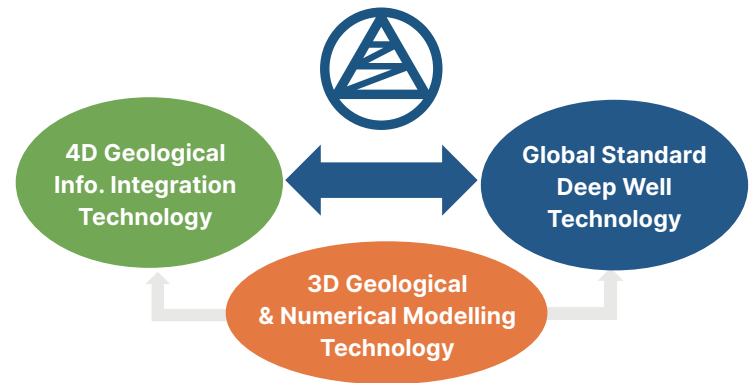
ISO 9001, 14001, 45001 Certified Management



EarthEnG Vision 2025

Global Innovator in Deep Geo-Technology

We aim to lead innovation in deep geo-technology through integration of deep well technology, 3D geo-modelling, and 4D geo-information technology.



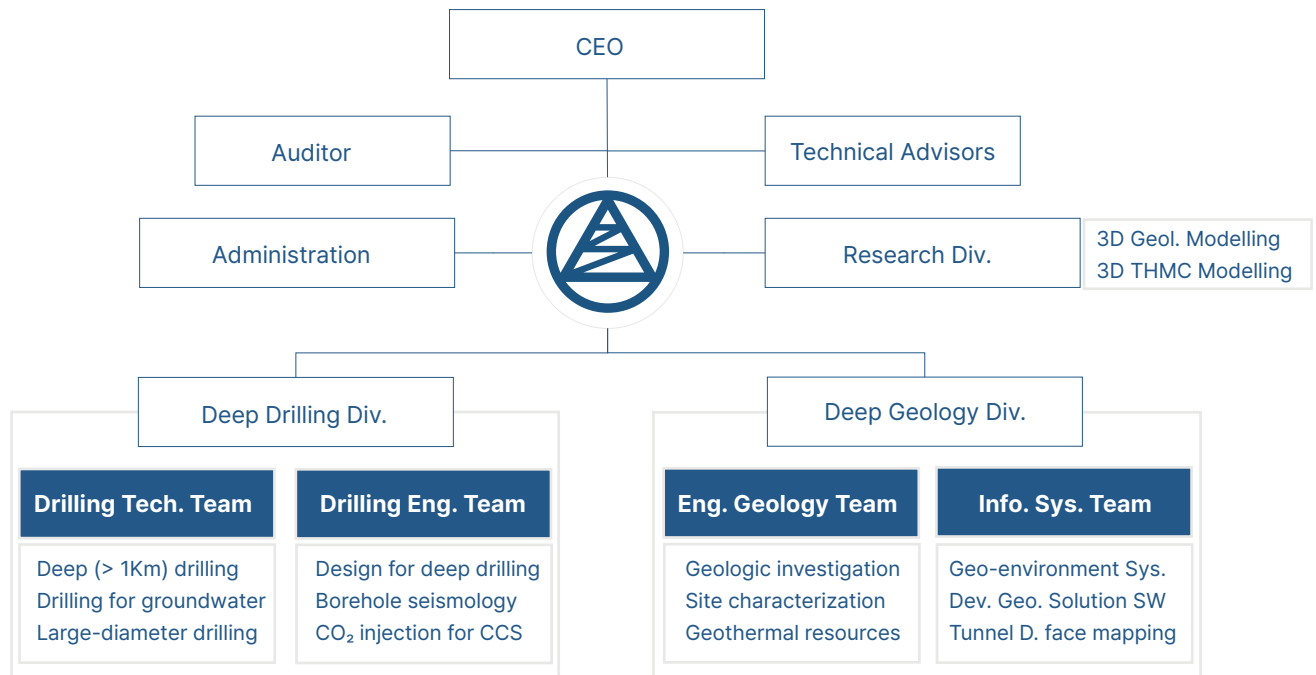
History

My way into the Earth

- 2023 **Awarded for Excellence in Exploration Technology - The Korean Society of Economic and Environmental Geology**
Geotechnical investigation for railways for GTX express train (Route B section 2)
Investigation and hydrologic modelling for mass transfer around the research reactor
- 2022 Deep well drilling and installation of geophysical monitoring systems
(at 0.5 & 1.0 Km depth for 6 sites) in southeastern Korea
Deep borehole drilling for geotechnical investigation and corrosion tests in the underground research tunnel facility at Korea Atomic Energy Research Institute
Development of DB system for radioactive waste disposal facility
Development of geotechnical & construction info. management system (Samsung C&T)
- 2021 **Certification: Technical Excellence - The Korean Soc. of Engineering Geol. (KSEG)**
Registration: Software & IT services, and Surveying (digital cartography)
Participating in the Government-funded research, 1) Site evaluation, 2) Geological site descriptive modelling, 3) Development of safety verification system for SNF disposal
Participating in Government-funded research, Enhancement of CO₂ injection efficiency and storage capacity
- 2020 GIS DB construction for National Groundwater Information Center
- 2019 Geotechnical investigation for TINA hydraulic power plant in the Solomon Islands
- 2018 Drilling for investigation of gas-bearing beds in Pohang and installation of B.O.P
Participating in research, Exploration drilling for shallow gas fields in lacustrine basins
- 2017 **Awarded for Excellency in Advancement of Drilling Technology - KSEG**
Registration: Research division & Research services in science and technology
- 2016 Drilling for site characterization for CO₂ underground storage
Drilling and site characterization for groundwater near large reservoirs
- 2015 Pilot drilling for geothermal resources at Ulleung island (1 Km depth)
Drilling survey for Dongnam mine (1.2 Km depth)
- 2014 Registration: The Korea Specialty Construction Association
- 2013 Registration: Geotechnical drilling and grouting & groundwater investigation
Drilling for U.S. Army Corps of Engineers at USFK site, Parcel 2b-1 & 2 sections
- 2012 Drilling for site characterization for Gyeongju radioactive waste disposal facility - stage 2
- 2011 Drilling for research of geological design technology for CO₂ storage
- 2010 **EarthEnG Establishment** / Registration: Groundwater prospecting and development



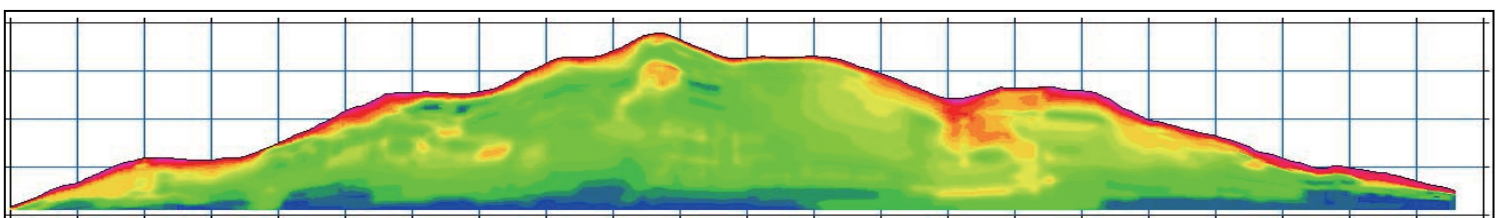
Organization chart



People in the company

Job Title	Name	Title, Field, Education and Past Experiences	Experience / ENG. Qualifi.
C.E.O	John JungHoon Park	CEO – Geotech. geothermal resources (M.S., Korea Univ.)	29 years / P.E.
C.E.O	Taegu Ji	CEO – Deep drilling (past exp.: CCS/deep seismic drilling)	41 years
Auditor	Woon-Sang Yoon	Geothermal energy Development (Ph.D., Seoul National Univ.)	30 years / P.E.
Technical Advisor	Kwang-moon Yoo	Drilling (past exp.: groundwater development in Africa)	47 years
Vice President	Yoosung Kim	Exploration geophysics (Ph.D., Seoul National Univ.)	31 years / S.E.
Director, Research Div.	Youngdo Park	Forward geological modelling (Ph.D., SUNY-Albany)	29 years / S.E.
Manging Director	Si-Young Choi	Large-diameter/special drilling (Ph.D., Seoul National Univ.)	20 years / S.E.
Manging Director	Haesik Jeong	Geotechnical investigation for SOC (Ph.D., Kumamoto Univ.)	18 years / S.E.
Executive Director	Gyohoon Lee	Administration (past exp: Loan Reviewer at Woori Bank)	39 years
Executive Director	Yang-Hee Kim	Information and Communication	28 years / S.E.
Director	HanKi Jang	Borehole seismometer (M.S., Kangwon National Univ.)	19 years / S.E.
Director	Yonghee Lee	Drill team leader: drilling (past exp: geothermal/CCS drilling)	45 years
Director	Jung-Hyun Park	Field Leader: geotech. investigation for SOC (road, railway, etc.)	27 years / S.E.
Director	Sun-Ju Park	SNF research and Geo-environment	21 years / S.E.

S.E. (Special Engineer)	Expert Eng'r	Senior Eng'r	Junior Eng'r	Technicians	Manager	Total
12	5	7	8	12	4	48



License & Registration

License / Certification	Authority	Registration No.
Quality management (ISO 9001:2015)	Korea international standards certification (KIC)	QSC2608
Environmental management (ISO 14001:2015)	Korea international standards certification (KIC)	ESC2797
Occupational health and safety (ISO 45001:2018)	Korea international standards certification (KIC)	OSC0734
Research division (affiliated with company)	Korea industrial technology association (KOITA)	2017113094
Engineering business (civil & geotechnical engineering)	Korea engineering & consulting association	E-09-003982
R&D Service	Ministry of Science and ICT (MSIT)	20172200
Groundwater investigation	Local government of Cheongju	Cheongju2015-1
Groundwater prospecting & development	Local government of Cheongju	Cheongju2015-2
Construction (engineering)	Local government of Chungcheong-buk-do	Chungbuk-2-148
Construction (geotechnical drilling and grouting)	Local government of Dong-gu, Daejeon	Dist. office 20131201
Construction equipment rental	Local government of Cheongju	4312-00088
Construction (ICT)	Local government of Chungcheong-buk-do	430261
Software Provider	Korea software industry association (KOSA)	B23-259129
Surveying (digital cartography)	National geographic information institute (NGII)	09-000784

Equipment & Software

Used for	Equipment name	Features and Characteristics
Drilling	D&B 60W+	for large-diameter drilling, 288 HP, max pull-back: 90 ton, 1,500m depth@5"DP
Drilling	SPA-5500SDA	for exploration drilling , 273 HP, max pull-back: 12 ton, 1,500m depth@NQ
Drilling	D&B 30W	for groundwater development, 293 HP, max pull-back: 30 ton, 1,500m@NQ
Drilling accs.	DeviCore BBT and DeviSHOT	oriented core drilling device and borehole inclinometer for measuring deviation
Exp.Geophysics	Supersting SAS100SP	electrical resistivity meter
Exp.Geophysics	Geoed 24ch	24 channel seismograph
Exp.Geophysics	Borehole CCTV	borehole CCTV
Surveying	SINCON S	GNSS RTK receiver
GIS work	ArcGIS Desktop	GIS SW with extensions, server, SuperGISv3.3
Database work	Oracle, Tibero, SQL Server	SW for database
Database work	ERWIN	SW for database modeler
Geo-modelling	SKUA-GOCAD	three dimensional geological modelling SW
Groundwater	Visual MODFLOW	modeling SW for groundwater flow

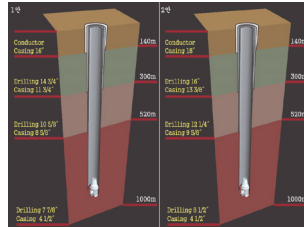
Intellectual property rights

TYPE	Title	Registration No.
Patent	Cement slurry mixing system and method for cementing	No.10-1439098
Patent	Soil sampling device	No.10-1463185
Patent	Geothermal heating and cooling system utilizing filtered water	No.10-1491552
Patent	GIS-based geo-environmental information retrieval system	No.10-1585402
Patent	Mortar grout injection equipment and in situ ground reinforcement method	No.10-1848732
Patent	Kick prevention drilling system	No.10-2032129
Copyright	Digital face mapping system	No.C-2022-032844

Deep Drilling



Earth EnG provides the best deep-drilling services in Korea. Our deep drilling services include large-diameter drilling for CO₂ sequestration, installation of deep (> 1 Km) seismometers, exploration drilling for natural resources. We are equipped with a variety of drill rigs suitable for the needs of our customers. Our drilling team with decades of field experiences provide excellent services.



Drilling design (1km)



Offshore drilling for CO₂ injection

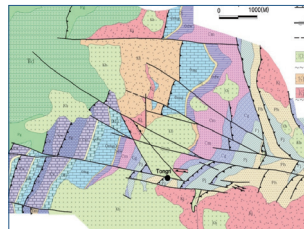


Large-diameter (φ900mm) drilling

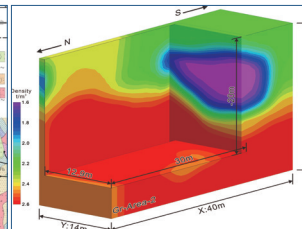
Geological Investigation



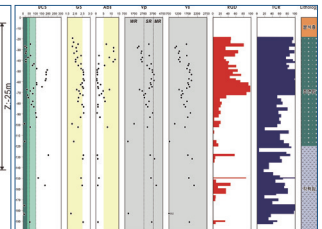
We have the highest-level experts to provide services of geological and geotechnical investigation, site characterization, and safety impact assessment for optimal design and safe construction for large-scale SOC such as railways, roads, plants, and nuclear facilities. We also provide services of comprehensive exploration and feasibility assessment for geothermal energy resources.



Detailed geological survey

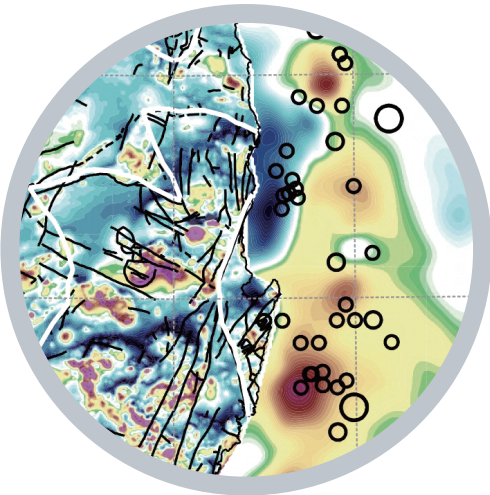


3D Geophysical exploration

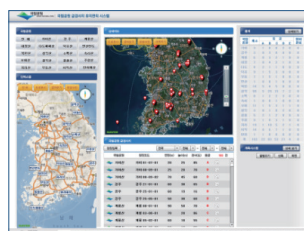


Characterization of rock mass

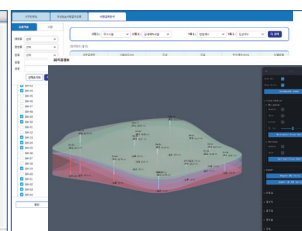
Geo-environment Information System



We build GIS-DB systems for geological resource information management for natural resources and groundwater. We also build systems for geological & environmental information management for pinpointing sources of contamination in groundwater and soil. We provide services in 3D geotechnical information analysis, geo-hazard monitoring, and site monitoring for nuclear disposal facilities.



Slope information management system



Digital analysis system for geotechnical information



Site monitoring system for nuclear disposal facility

Deep Borehole Seismometer



Earth EnG is the sales rep of ASIR, a Colorado-based manufacturer of seismic sensors with exceptional waterproof capabilities. We have installed six deep (> 1 Km) borehole sensors for KIGAM since 2019. They provide invaluable scientific data for earthquake research by detecting microseismic tremors in the area with active Quaternary faults. (Worldwide ASIR sensors: Anatolian fault zone in Turkey, micro-seismic monitoring in geothermal fields in Sweden/Finland)



Deep drilling (1km)
for borehole sensors

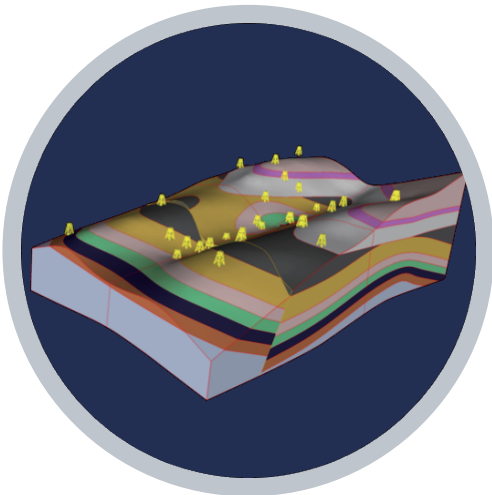


Installation of deep
borehole seismic sensors

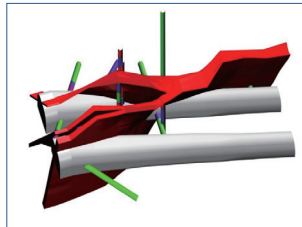


Deep borehole
seismic station

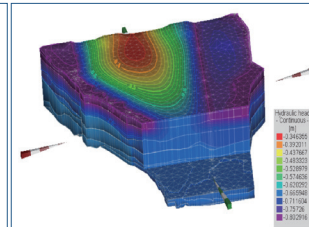
3D Geo Modelling



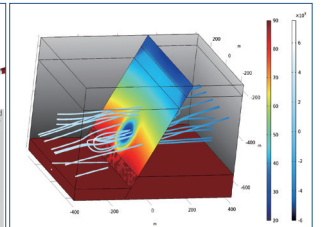
We provide high-quality services in 3D geological modelling. Our services include 3D geologic modelling for civil engineering and hydrogeology. We also participate in Government research project for building 3D geological site descriptive model for deep nuclear repository. Numerical modelling is also carried out, for example, coupled model for fluid and heat flow for geothermal energy resources.



Fault model for tunnels

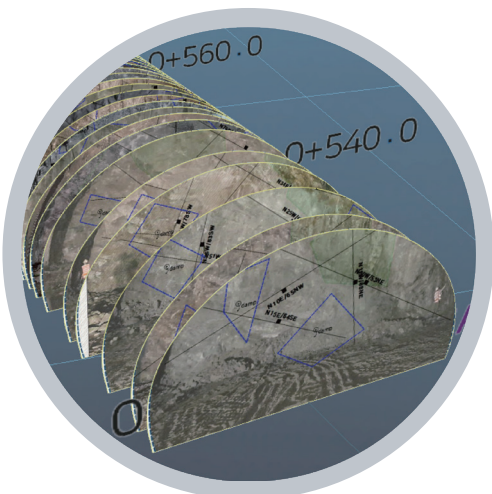


3D hydrogeologic
modelling

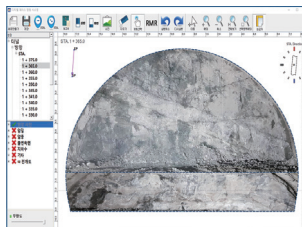


Coupled model for subsurface
fluid and heat flow

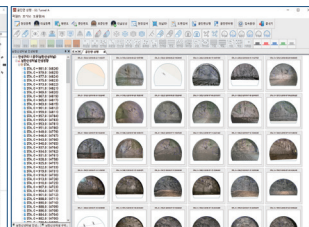
Tunnel Digital Face Mapping (EG Tunnel)



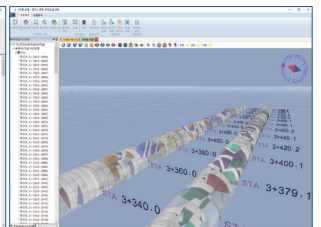
We develop and supply the EG Tunnel program. The program is developed for computer-aided mapping of 3D tunnel geology and construction information management for tunnel engineers. The program is used with the tunnel design, thus the program can be used as a GeoBIM SW. The EG Tunnel program has been adopted in tunnel sites in Korea.



Geological mapping for
tunnel excavation surface



Data search for tunnel
excavation



3D geological information
analysis for tunnels

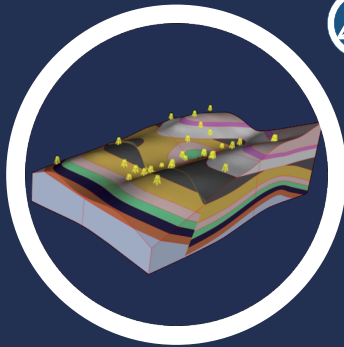


Earth EnG

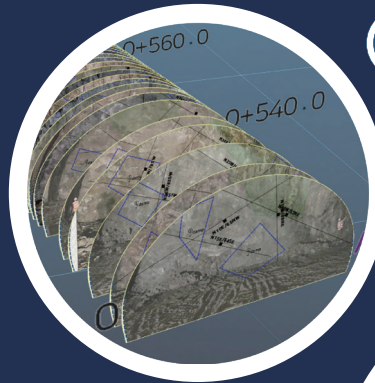
Earth EnG Co., Ltd



Deep Borehole Seismometer

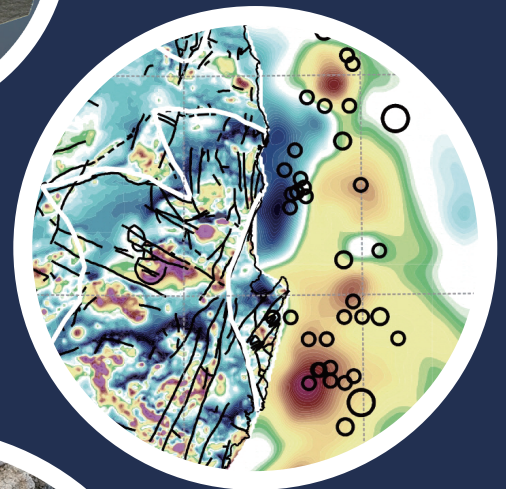


3D Geo Modelling



Tunnel Digital Face Mapping

Geo-environment Info. System



Deep Drilling



Geo Investigation

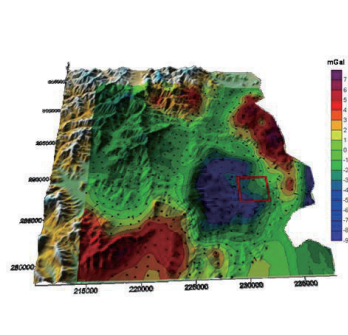


My way into the Earth

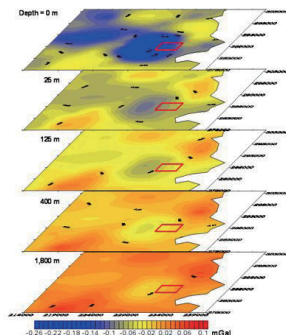
www.eartheng.co.kr / earth@eartheng.co.kr

References - Geothermal Projects (by Nexgeo)

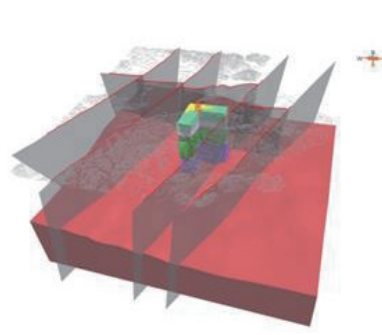
Project	Country	Capacity	Status of implementation	Remarks
Pohang EGS	Korea	7MW	F/S, Construction (95%)	Stopped by Earthquake near the site
Ulleng Island	Korea	12MW	Pre-F/S, F/S	Stopped by Pohang earthquake
Guam GPP	USA	10MW	Passed Technical Evaluation for bid	Abandoned by price negotiation
Crescent Valley	USA, Nevada	48MW	Review of preliminary study	Signed MOU
PGV GPP	USA, Hawaii	778MW	Proposal for preliminary study	
Berner Meriah	Indonesia		Pre-F/S	With Hyundai E&C
GUCI	Indonesia	55MW	Pre-F/S, F/S	Signed co-development with owner
Biliran	Philippines	93~371MW	Review of preliminary study	Negotiated for joint project with FEDCO
Mt. Natib	Philippines	40MW	Review of preliminary study	EGS, Poor feasibility
Daklan	Philippines	62 MW	Review of preliminary study	EGS, Poor feasibility
Mabini	Philippines		Review of preliminary study	Negotiated with Basic Energy
Mongolia	Mongolia		Nation wide Pre-F/S	Funded by Korean Gov.
Olkaria	Kenya	560 MW	Review of the project feasibility for bidding	For Korean bidders



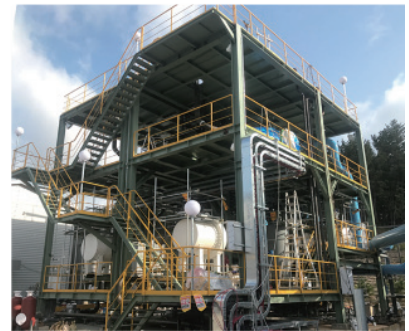
Bouguer Anomaly



3D inversion with topo



3D geological model



Geothermal power plant



MW Scale geothermal power plant at Pohang, Southeast Korea
 2 geothermal wells, PX-1 and PX-2, were terminated at 4,362 m and 4,348 m in depth respectively.