

GEOMELETI



GEOTECHNICAL ENGINEERS & GEOLOGISTS

RENEWABLE ENERGY PROJECTS

*...committed to the Art and Science
of Geotechnical Engineering*

*...aiming for maximum quality
through simple and cost-effective solutions*



GENERAL

GEOMELETI is a Consulting Engineering Company managed and operated by experienced engineers / geologists committed to the art and science of Geotechnical / Infrastructure engineering, **always aiming in giving high quality, simple and cost-effective solutions to the projects undertaken.**

GEOMELETI, is staffed with experienced Engineers and Engineering Geologists and managed by **P. Laskaratos** and **T. Katsoularis**, having extensive experience respectively, among others, in all aspects of Geotechnical / Infrastructure Engineering (Railway Projects, Hydraulic works, Road and Bridge design, Building foundation design, Tunnels, Slope design etc).

The Company owns modern equipment including drilling-rigs, in situ and laboratory testing devices and with the use of specialized software, can give reliable, fast and economical design solutions.

The experience of our company in the field of investigations and design of **Renewable Energy Projects**, is extensive and includes, during the past 10 years, a significant amount of similar projects such as Wind Farms, Photovoltaic Plants, Small Hydroelectric Units and Hydrothermal Power Plants.

Our company has the ability to prepare, the Geological and Geotechnical Investigation and Design, as well as the Structural Design of the W/T's Foundations, the Flood Risk Assessment and Stream Delimitation Hydraulic Design, as well as to provide Consulting Services during the construction phase.

OUR CLIENTS - COLLABORATIONS

GEOMELETI provides design, supervision and consulting services to the main organizations, managing infrastructure projects in Greece and abroad, such as:

- Greek Ministry of Public Works and Transportation,
- Greek Railways and Metro Authorities,
- Greek Highway Authorities,
- Infrastructure, Building and Industrial Contractors (Hochtief, AKTOR, GEK - TERNA, J&P, ABENGOA, VINCI, PORR, etc)

Our collaborations also include major international engineering firms, such as, W.S. Atkins (UK), Faber-Maunsell (UK - USA), Hochtief (Germany), 3P (Austria), SSF and ISP (Germany), DBI International (Germany, Qatar), etc.

MANAGEMENT

Petros Laskaratos:

Geotechnical - Civil Engineer M.Sc, having more than 35 years of working experience in Engineering Projects, offered Consulting Services to the owners of the major highway authorities in Greece (Attiki Odos, Athens - Thessaloniki Highway, Egnatia Odos) and the Athens Metro, having extensive experience in design of all types of infrastructure engineering projects, including building foundations, ground improvement, tunnels, bridges, dams, motorways, etc.

Tassos Katsoularis:

Engineering Geologists, having more than 30 years of working experience in investigations, quality control and geological and geotechnical design for all types of infrastructure engineering projects, including buildings, tunnels, open-cuts, dams, bridges, motorways, railway lines, etc.

- Programming of Investigations
- Inspection of Geotechnical Works
- Interpretation of Investigation Results
- Sampling Boreholes: On-shore / off-shore
- Trial Pits
- Special Sampling Works
- In situ permeability Testing
- Standard Penetration Tests (S.P.T.)
- Plate Loading Testing
- Wagon Drillings
- Cone Penetrometer Testing
- Pressuremeter Testing
- Trial Embankments
- Borrow Areas Investigations
- Geological Mapping
- Geophysical Investigations
- Physical Properties Laboratory Testing
- Engineering Properties Laboratory Testing
- Chemical Properties Laboratory Testing

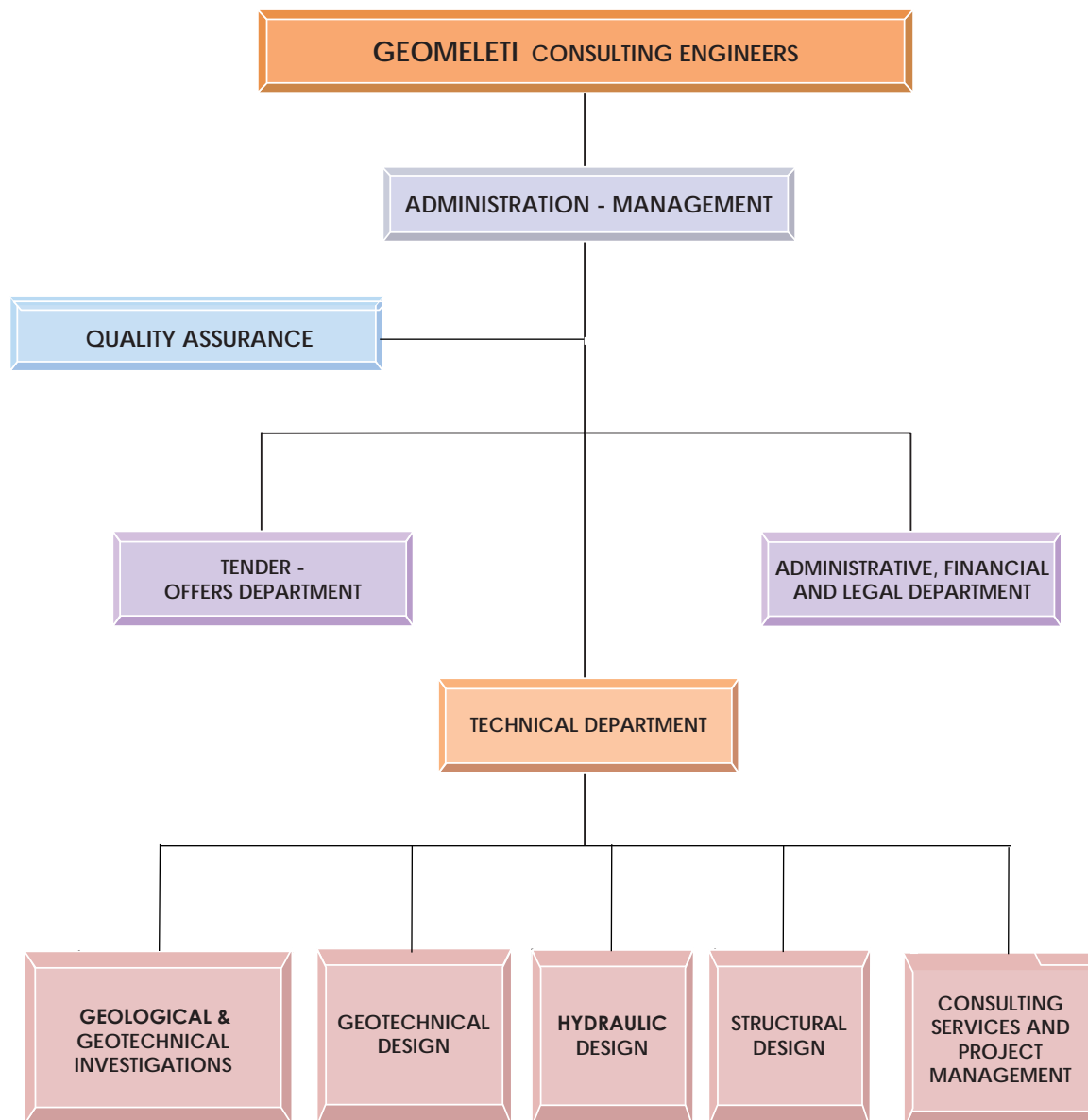
- Shallow - Deep Foundations
- Ground Improvement / Treatment
- Underpinning
- Dams - Hydraulic Projects
- Borrow Areas - Damping Sites
- Embankments
- Excavations
- Slopes and Landslides
- Geosynthetics (Design and Application)
- Retaining Structures
- Road / Airfield Pavements
- Tunnels - Underground structures
- Stream Delimitation
- Flood Risk Assessment
- Water Filtration and Drainage
- Port Structures / Offshore Geotechnics
- Instrumentation
- Landfills
- Bridges
- Industrial / Residential Buildings
- Ground Water Management

- Checking of Design
- Expert Evaluations
- Inspection of Works
- Material Quality Control
- Observation / Interpretation of Instruments
- Modification of Design During Construction
- Preparation of Tender Documents
- Evaluation of Contractors' Offers

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GEOTECHNICAL -STRUCTURAL!<MBF5I @7 DESIGN

CONSULTING SERVICES



EXPERIENCE IN

RENEWABLE ENERGY PROJECTS

Wind Farms, Solar Power Plants, Hydropower Stations,
Photovoltaic Parks.



WIND FARM AT "VOSKERO" AREA, HERAKLIO PREFECTURE, CRETE ISLAND, GREECE

Client:
DOMIKI KRITIS S.A.

Geotechnical Investigation and
Geotechnical Foundation Design
for a wind farm consisting of 7 Wind
Turbines, (50m high).



"AGIOS IOANNIS" WIND FARM, LASITHI AREA, CRETE ISLAND, GREECE

Client:
PLASTIKA KRITIS S.A.

Geotechnical Investigation and
Geotechnical Foundation Design
for a wind farm consisting of 9 Wind
Turbines, (47m high).



**17MW WIND FARM OF
SIDIROKASTRO AREA,
MACEDONIA PREFECTURE,
GREECE**

Client:
AIOLIKI SIDIROKASTROU S.A.

Geotechnical Investigation and
Geotechnical Foundation Design for
a wind farm consisting of 20 Wind
Turbines, (55m high).



**SOLAR THERMAL POWER
PLANT OF 25 MW
MUNICIPALITY OF LEFKI,
CRETE ISLAND, GREECE**

Client:
ABENGOA SOLAR

Geotechnical, Geological and
Geophysical Investigation.
Preliminary Foundation Design
of a 200m high Power Tower and
5 Industrial Building Complexes.



**CONSTRUCTION OF A PV PARK
TEGEA AREA,
ARKADIA PREFECTURE, GREECE**

Client:
ITA S.A.

Geotechnical Investigation and
Foundation Design of the PV Systems.
Specific issues / difficulties encountered
during the works for the PV Park,
included the foundation on soft subsoil
with high ground water level.
Foundation measures were proposed
including the distribution of the loads via
micropiles to a deeper layer consisting
of gravely material, which also operates
as "conduit" for the discharge of the
ground water.
Programming of Geotechnical Field
and Laboratory Investigations,
Supervision of Field Investigations,
Geotechnical Interpretation Report and
Geotechnical Foundation Design.



WINDFARM AT "BOURLARI" AREA, EVIA PREFECTURE, GREECE

Client:
ITA S.A.

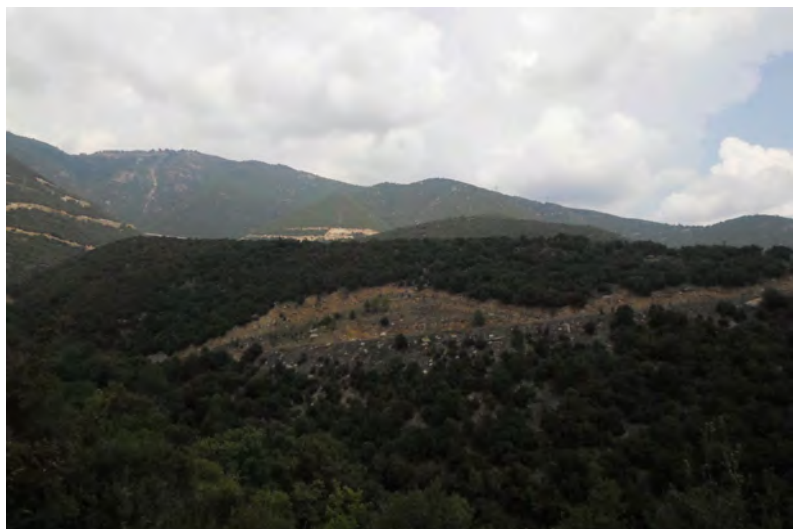
Geotechnical Investigation and Foundation Design of the 13 Wind-turbines of the Wind-farm, as well as Consulting Services during Construction.
Specific issues / difficulties encountered during the works for the wind-farm included the presence of underground water at various foundation locations. Special drainage measures were constructed in order to resolve the issue.
Programming of Geotechnical Field and Laboratory Investigations (combination of Coring and Non-coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Geotechnical Foundation Design, Slope Stability Design, Consulting Services during Construction Phase.



PHOTOVOLTAIC POWER PLANT - CHATZIGOGOU PROJECT, VEROIA, GREECE

Client:
ENEL Green Power Hellas S.A

The photovoltaic project site is located at the area "Agios Ioannis" in Veria municipality of Imathia Regional Unit, at the border with Kozani Prefecture.
The project included excavation of Trial Pits, execution of Horizontal Pull out test & compression tests, Ground Electrical Resistivity measurements, Soil' s samples Laboratory tests and drafting technical report.



**“ADERES” WINDFARM, TRIZINIA,
ATTICA PREFECTURE, GREECE**

Client:
BUSINESS ENERGY TRIZINIAS S.A.

Geotechnical Investigation and Foundation Design of the 5 Wind-turbines of the Wind-farm.
Specific issues / difficulties encountered, from a geotechnical point of view during the works at the wind-farm included existence of karstic voids at the limestone substrata and differential settlement issues at the area of some of the Wind-turbines. The issues were treated by relocating the Wind-turbines at a safe location and design of a specialized subsoil consolidation system.

Programming of Geotechnical Field and Laboratory Investigations (combination of ERT and GPR Geophysical Investigations with Coring and Non-Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Geotechnical Foundation Design, Slope Stability Design, Quality Control during Construction Phase.



**“ADERES” WINDFARM
SUBSTATION, TRIZINIA,
ATTICA PREFECTURE, GREECE**

Client:
NOEL S.A.

Geotechnical Investigation and Foundation Design of the Substation of the Aderes Wind-farm, including the surrounding area and heavy fencing.
Specific issues / difficulties encountered, from a geotechnical point of view included risk assessment of differential settlements due to the existence of backfill under parts of the foundation area, as well as difficulties due to the proximity to steep ground slopes.

Programming of Geotechnical Field and Laboratory Investigations, Supervision of Field Investigations, Geotechnical Interpretation Report, Geotechnical Foundation Design, Slope Stability Design.



“PEFKIAS” WINDFARM, VIOTIA PREFECTURE, GREECE

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A.

Preliminary Geotechnical Investigations and Foundation Design of the 3 Wind-turbines of the “Pefkias” Wind-Farm, as well as its detail foundation design. The wind- turbines area is located at the “Pekfias” ridges near Thisvi town, at an altitude of approximately 550m. Specific issues / difficulties encountered from a Geotechnical point of view encountered during the works at the “Pefkias” Wind-Farm included the existence of karstic voids and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines.

Programming of Geotechnical Field and Laboratory Investigations (combination of ERT and GPR Geophysical Investigations with Non-Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



“KOKKINOLAKAS” WINDFARM, ARTA PREFECTURE, GREECE

Client:
BUSINESS ENERGY S.A.

Preliminary Geotechnical Overview of the Foundation locations for the 25 Wind-turbines of the Wind-Farm, which is located at an altitude of 1750m on the Pindos mountain ridge.

Specific issues / difficulties encountered at the Wind-farm included karstic voids at the limestone substrata, “mixed” foundation formation layers consisting partly of solid and partly of loose formations and existence of very steep slopes in some Wind-turbine foundation areas.

Preliminary Geotechnical Overview of the locations of Wind-turbine foundations, calculation of optimal road access routes to the Wind-farm location, estimation of the Geotechnical Field Investigation to be required in the next stages.



“GERAMPI” WIND-FARM, ARTA PREFECTURE, GREECE

Client:
BUSINESS ENERGY S.A.

Preliminary Geotechnical Overview of the Foundation locations of the 12 Wind-turbines of the Wind-Farm, which is located at an altitude of 1500m on the Pindos mountain range.

Specific issues / difficulties encountered from a Geotechnical point of view included karstic voids at the limestone substrata and existence of very steep slopes in some Wind-turbine foundation areas.

Preliminary Geotechnical Overview of the locations of Wind-turbine foundations, calculation of optimal road access routes to the Wind-farm location, estimation of the Geotechnical Field Investigation to be required in the next stages.

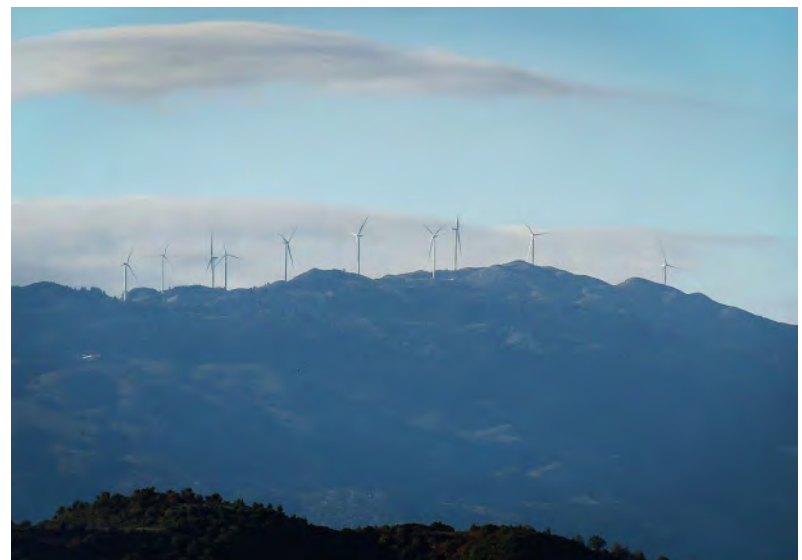


“GAVROVO” WINDFARM, AETOLOAKARNANIA PREFECTURE, GREECE

Client:
BUSINESS ENERGY S.A.

Geotechnical Investigations and Foundation Design of the 10 Wind-turbines of the “Gavrovo” Wind-Farm, as well as its detail foundation design. The wind- turbines area is located at the Pindos mountain range, at an altitude of approximately 1750m.

Specific issues / difficulties encountered from a Geotechnical point of view encountered during the works at the “Gavrovo” Wind-Farm included the existence of karstic voids, dolines and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines. Programming of Geotechnical Field and Laboratory Investigations (combination of ERT and GPR Geophysical Investigations with Coring and Non-Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



“PLATY VOUNO” WIND-FARM, EVIA PREFECTURE, GREECE

Client:
AIOLIKI AIGAIU S.A.

Geotechnical Investigation and Foundation Design of the 2 Wind-turbines of the Wind-Farm. Specific issues / difficulties encountered from a geotechnical point of view during the works at the Wind-farm included existence of karstic voids at the marble substrata and differential settlement issues at the area of the Wind-turbines. Programming of Geotechnical Field and Laboratory Investigations (combination of ERT and GPR Geophysical Investigations with Coring and Non-Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Geotechnical Foundation Design, Slope Stability Design, Consulting Services during Construction Phase.



“CHIONAKI” WINDFARM, AETOLOAKARNANIA PREFECTURE, GREECE

Client:
BUSINESS ENERGY S.A.

Geotechnical Investigations and Foundation Design of the 7 Wind-turbines of the “Chionaki” Wind-Farm, as well as its detail foundation design. The wind- turbines area is located at the Pindos mountain range, at an altitude of approximately 1550m. Specific issues / difficulties encountered from a Geotechnical point of view encountered during the works at the “Chionaki” Wind-Farm included the existence of karstic voids, dolines and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines. Programming of Geotechnical Field and Laboratory Investigations (combination of ERT and GPR Geophysical Investigations with Coring and Non-Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



“AERAS” AND “AFENTIKO” WINDFARM, THESSALY PREFECTURE, GREECE

Client:
PUBLIC POWER CORPORATION S.A.

Geotechnical Investigations and Foundation Design of the 15 Wind-turbines of the “Aeras” and “Afentiko” Wind-Farm. The wind- turbines area is located at the Pindos mountain range, at an altitude of approximately 1500m. Specific issues / difficulties encountered from a Geotechnical point of view encountered during the works at the Wind-Farm included the existence of extremely weathered/fragmented rockmass at some of the foundation locations of the Wind-turbines and the possibility of karstic features. Programming of Geotechnical Field and Laboratory Investigations (combination of MASW and GPR Geophysical Investigations with Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



“KALOGEROVOUNI - POULOS” WINDFARM, LAKONIA, PELOPONNESE PREFECTURE, GREECE

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A.

Geotechnical Investigations and Foundation Design of the 19 Wind-turbines of the “Kalogerovouni-Poulos” Wind-Farm. Specific issues / difficulties from a Geotechnical point of view encountered during the works included the existence of karstic voids, dolines and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines. Programming of Geotechnical Investigations (Non-Coring boreholes, geological mapping, discontinuities orientation measurements), as well as investigations for the Quality Control with DCP of the backfill layer at the Wind Turbines Base Areas, Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



MAKROCHORI II SMALL HYDROELECTRIC POWER PLANT, VERIA, GREECE

Client:
PUBLIC POWER CORPORATION S.A.

Geotechnical Investigations and Design of the Deviation Canal for Electric Power Production.

Programming of Geotechnical Field and Laboratory Investigations (Coring Boreholes, Trial Pits), Supervision of Field Investigations, Geotechnical Interpretation Report, Foundation Design Report.



“GROPES – RACHI GKIONI” WINDFARM, LAKONIA, PELOPONNESE PREFECTURE, GREECE

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A.

Geotechnical Investigations and Foundation Design of the 21 Wind-turbines of the “Gropes – Rachi Gkioni” Wind-Farm. Specific issues / difficulties encountered from a Geotechnical point of view during the works included the existence of karstic voids, dolines and sinkholes in the limestone substrata.

Programming of Geotechnical Investigations (Non-Coring boreholes, geological mapping, discontinuities orientation measurements), as well as investigations for the Quality Control with DCP of the backfill layer at the Wind Turbines Base Areas, Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



GERAMPI" WIND-FARM, ARTA PREFECTURE, GREECE"

Client:
AKTOR S.A.

Geotechnical Investigations of 4 Wind-turbines of the "Gerambi" Wind-Farm in Arta Prefecture. The highest altitude of the ridge is approximately 1772m. The aim of the investigations carried out was to collect data regarding the definition of the foundation conditions at each wind turbine base. The investigation included micro-tectonic measurements of rockmass discontinuities, Non – Coring Boreholes, Coring Boreholes with laboratory testing in order to determine the rockmass quality and strength regarding the windturbines foundation conditions, geophysical survey with ERT tomography in order to define the extension of the underground limits of the dolines close to foundation areas and internal road's embankments, Supervision of Field Investigations and Geotechnical Interpretation Report.



"TRAGOUDISTIS" WINDFARM SIFNOS ISLAND, GREECE

Client:
ENERCON GmbH, GREEK BRANCH

Geotechnical Investigations and Foundation Design of the 2 Wind-turbines of the "Tragoudistis" Wind-Farm. Specific issues / difficulties from a Geotechnical point of view encountered during the works at the "Tragoudistis" Wind-Farm included the existence of karstic voids, in the marble substrata as well as the existence of very steep slopes near the foundation locations of the Wind-turbines. Programming of Geotechnical Field and Laboratory Investigations (combination of resistivity measurements with Wenner method and GPR Geophysical Investigations with Non-Coring boreholes, geological mapping, discontinuities orientation measurements), Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design



"DESFINA" WIND PARKS OF FOKIDA PREFECTURE, GREECE

Client:
ENERCON GmbH, GREEK BRANCH

Geotechnical and Geophysical Investigation and Geotechnical Interpretation Report of two Windparks: W-11338, consisting of eighteen (18) Wind Turbines and Windpark W- 02798, consisting of seventeen (17) Wind Turbines. Specific issues / difficulties from a Geotechnical point of view encountered during the works included the existence of karstic voids, dolines and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines. Programming of Geotechnical Investigations (Non-Coring boreholes, geological mapping, discontinuities orientation measurements), as well as investigations for the Quality Control with DCP of the backfill layer at the Wind Turbines Base Areas, Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



"ALONIA" WINDFARM, MONEMVASIA, PELOPONNESE PREFECTURE, GREECE

Client:
WRE S.A.

Geotechnical and Geophysical Investigations and Geotechnical Interpretation Report for a Windfarm consisting of 6 Wind-Turbines. Specific issues / difficulties from a Geotechnical point of view encountered during the works included the existence of karstic voids, dolines and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines. Programming of Geotechnical Investigations (Non-Coring boreholes, geological mapping, discontinuities orientation measurements), as well as investigations for the Quality Control with DCP of the backfill layer at the Wind Turbines Base Areas, Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



“KASIDIARIS I” WINDFARM, IOANNINA REGION, GREECE

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A.

Geotechnical Investigations of 8 Wind-turbines of the “Kasidiaris I” Wind-Farm. The Wind farm is located approximately 25km NW of Ioannina city on the ridge Kasidiaris (1,300m). The aim of the investigations carried out was to collect data regarding the definition of the foundation conditions at each wind turbine base. The investigation included micro-tectonic measurements of rockmass discontinuities in order to define stability conditions to the nearby foundation area and slopes, Non – Coring Boreholes, Coring Boreholes with laboratory testing in order to determine the rockmass quality and strength regarding the windturbines foundation conditions, Supervision of Field Investigations and Geotechnical Interpretation Report.



KASIDIARIS II” WINDFARM, IOANNINA REGION, GREECE”

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A

Geotechnical Investigations of 11 Wind-turbines of the “Kasidiaris II” Wind-Farm. The Wind farm is located approximately 25km NW of Ioannina city on the ridge Kasidiaris (1,300m). The aim of the investigations carried out was to collect data regarding the definition of the foundation conditions at each wind turbine base. The investigation included micro-tectonic measurements of rockmass discontinuities in order to define stability conditions at the nearby foundation area and slopes, Non – Coring Boreholes, Coring Boreholes with laboratory testing in order to determine the rockmass quality and strength regarding the windturbines foundation conditions, Supervision of Field Investigations and Geotechnical Interpretation Report.



ANATOLIKO ASKIO - MAESTROS" WINDFARM, WEST MACEDONIA REGION, GREECE"

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A.

Geotechnical Investigations for 10 Wind-turbines of the "Anatoliko Askio - Maestros" Wind-Farm, in the Voio Municipality on the ridge Askio. The highest altitude of the ridge is approximately 2100m. The aim of the investigations carried out was to collect data regarding the definition of the foundation conditions at each wind turbine base. The investigation included micro-tectonic measurements of rockmass discontinuities in order to define stability conditions to the nearby foundation area and slopes, Non - Coring Boreholes, Coring Boreholes with laboratory testing in order to determine the rockmass quality and strength regarding the windturbines foundation conditions, Supervision of Field Investigations, Geotechnical Interpretation Report.



"DYTIKO ASKIO - MAESTROS" WINDFARM, WEST MACEDONIA REGION, GREECE

Client:
ELLINIKI TECHNODOMIKI ANEMOS S.A

Geotechnical Investigations for 9 Wind-turbines of the "Dytiko Askio - Maestros" Wind-Farm, in the Voio Municipality on the ridge Askio. The highest altitude of the ridge is approximately 2100m. The aim of the investigations carried out was to collect data regarding the definition of the foundation conditions at each wind turbine base. The investigation included micro-tectonic measurements of rockmass discontinuities in order to define stability conditions to the nearby foundation area and slopes, Non - Coring Boreholes, Coring Boreholes with laboratory testing in order to determine the rockmass quality and strength regarding the windturbines foundation conditions, Supervision of Field Investigations, Geotechnical Interpretation Report.



**"FOUNTOUKIA" WINDFARM,
RODOPI PREFECTURE, GREECE**

Client:
INFRATEC S.A.

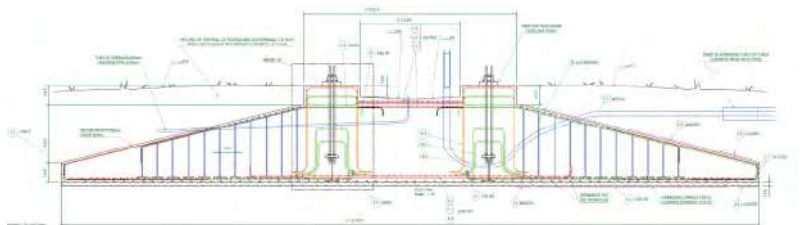
Geotechnical Investigations and Geotechnical Interpretation Report for a Windfarm consisting of 2 Wind-Turbines. Specific issues / difficulties from a Geotechnical point of view encountered during the works included the existence of karstic voids, dolines and sinkholes in the limestone substrata as well as the existence of very steep slopes at some of the foundation locations of the Wind-turbines. Programming of Geotechnical Investigations (Non-Coring boreholes, geological mapping, discontinuities orientation measurements), as well as investigations for the Quality Control with DCP of the backfill layer at the Wind Turbines Base Areas, Supervision of Field Investigations, Geotechnical Interpretation Report, Slope Stability Design.



**FOUNDATIONS STRUCTURAL
DESIGN**

Our office has prepared seven structural designs of Wind Farm Foundations, which include full dimensioning as well as value engineering of the foundations.

The designs, which were based on National (EKOS – EAK) and International Standards (EN), considered the loads applied on the foundation due to the superstructure as calculated by the WT provider.



**“GAVROVO” AND “CHIONAKI”
WINDFARM AETOLOAKARNANIA
PREFECTURE, GREECE –
CONSULTANT SERVICES DURING
CONSTRUCTION**

Client:
RESTEC RENWABLE TECHNOLOGIES S.A.

Our office was appointed as Geotechnical Consultant during the construction phase of the “Gavrovo” and “Chionaki” Wind Farms at the Pindos mountain range. Specific issues / difficulties encountered from a Geotechnical point of view encountered during the construction at the “Gavrovo” and “Chionaki” Wind-Farm included the existence of karstic voids, dolines and sinkholes in the limestone substrata, the quality control of the square embankments, slope stability issues, etc. Quality control of the contractor's geotechnical works during construction, design check of the Geotechnical Interpretation and Study Reports.



**CONSULTING SERVICES DURING
CONSTRUCTION OF
"GERAMPI" WIND-FARM,
ARTA PREFECTURE, GREECE**

Client:
AKTOR S.A.

Geotechnical Consultant during the construction phase of the “Gerambi” Wind Farm. Specific issues / difficulties encountered from a Geotechnical point of view included the existence of karstic voids, dolines and sinkholes in the limestone substrata. Quality Control with DCP, DPL and PLT of the backfill layers of the square, the roads and slope stability issues of the embankments



GROUNDING OF THE SUBSTATION HV OF NORTH DESFINA

Client:
ENERCON GmbH, GREEK BRANCH

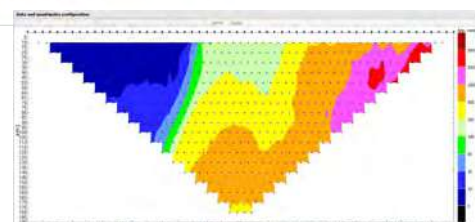
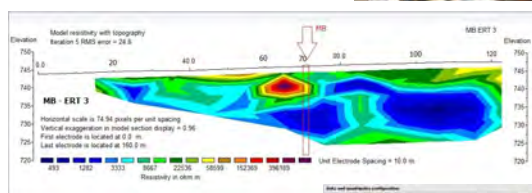
Grounding Boreholes at the Substation Area of the "Desfina" Wind-Farm. The project area is located at the North part of the "Desfina" peninsula. Specific issues / difficulties encountered concerning the execution and maintenance of the open holes due to the extremely fragmented rockmass encountered in combination with the boreholes extended depth (270 and 280m). Programming and execution of three Grounding Boreholes for the installation of electrodes for S/S grounding purposes.



**"GRATSIANI" SUBSTATION OF THE
"ASKIO - MAESTROS" WINDFARMS,
WEST MACEDONIA REGION,
GREECE**

Client:
ELLAKTOR S.A.

Geophysical Investigation and construction of three grounding boreholes for the Medium voltage substation of Askio -Maestros Wind farms. The substation is located approximately 15km north of Kozani city. Determination of the electrical resistivity distribution below the project area using the Wenner Method and construction of ERT tomographies for down to a depth of 190m for the selection of the most suitable in terms of subsoil conductivity locations for grounding boreholes. Three earthing boreholes were executed and three grounding electrodes were constructed.



**EARTHING BOREHOLES FOR NEW
SUBSTATION OF GREENHOUSES,
DRAMA, GREECE**

Client:
WONDERPLANT GREENHOUSES S.A.

Two grounding boreholes of 150m deep each were executed at certain locations within the project area.

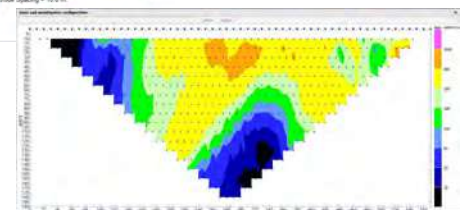
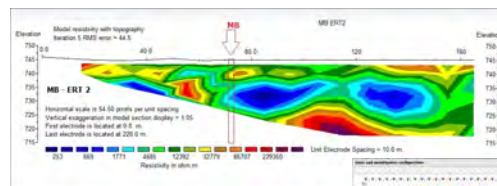
The earthing construction process includes initial drilling of relatively large diameter of the borehole, filling of the drilled borehole with proper cement mixture, re – drilling of the borehole with smaller diameter drill bit, installation of suitable galvanized steel casing and copper electrode rods and final filling of the borehole with bentonite grout.



EARTHING BOREHOLES FOR NEW SUBSTATION NEAR STANOS, AMFILOCHIA MUNICIPALITY

Client:
KIEFER TEK LTD

Geophysical investigation and construction of two grounding boreholes for a medium voltage substation, which is located approximately 800m south of village Stanos of Amfilochia Municipality. Determination of the electrical resistivity distribution below the project area for down to a depth of 270m and the selection of the most suitable in terms of subsoil conductivity locations for grounding boreholes.



Geomeleti Experience in Photovoltaic Parks Design/Consulting

Project	Awarding Authority	Execution Period	Project Description
P/V PARK IN LOS LAGOS, CHILE	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 60,000m ² area and 2,47MW power
P/V PARK IN LOS LAS CABRAS, CHILLE	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 60,000m ² area and 3,00MW power
P/V PARK IN MACAO, CHILE	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 180,000m ² area and 10,00MW power
P/V PARK IN EL CASTANO, CHILE	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 160,000m ² area and 8,63MW power
OLIVARES P/V PARK, SPAIN	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 810,000m ² area and 50,00MW power
ILIAKO VELOS II P/V PARK, GREECE	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 300,000m ² area and 15,00MW power
JWANENG P/V PARK, BOTSWANA	ASD SQUARE DMCC	2020	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 1,000,000m ² area and 64,00MW power
SELEBI PHIKWE P/V PARK, BOTSWANA	ASD SQUARE DMCC	2021	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 1,000,000m ² area and 64,00MW power
RUCASOL P/V PARK, CHILE	ASD SQUARE DMCC	2021	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 280,000m ² area and 10,10MW power
EL BLANCO P/V PARK, CHILE	ASD SQUARE DMCC	2021	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 60,000m ² area and 3,00MW power
GERA PIANCO P/V PARK, BRAZIL	ASD SQUARE DMCC	2021	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 80,000m ² area and 1,80MW power
ANTA ROSA P/V PARK, ARGENTINA	ASD SQUARE DMCC	2021	Evaluation and Interpretation of Geotechnical Investigations Data, Foundation Design and Pile Dimensioning of PV Solar Panels for a P/V Park of 130,000m ² area and 6,22MW power
P/V PARK IN TEGEA AREA, ARKADIA PREFECTURE, GREECE	ITA S.A.	2008-2009	Geotechnical Investigations and Foundation Design
CHATZIGOGOU P/V PARK IN VERIA, IMATHIA PREFECTURE, GREECE	ENEL GREEN POWER HELLAS S.A.	2016	Geotechnical Investigations and Soil Resistivity Measurements of P/V Stations
P/V PROJECT OF LIGHTSOURCE BP IN KOZANI, GREECE	SKPLUS OE	2021	Hydrological and Hydraulic Design against Flood Risks (FRA) for 13 separate Parks
MARGARITI P/V PARK, IGOUMENITSA MUNICIPALITY, THESPROTIA PREFECTURE, GREECE	PARALOS ENERGEIARI PC	2021	Geophysical Investigation for the determination of electrical conductivity of subsoil down to a depth of 150m for the selection of a substation construction site
OMAN P/V PARKS	ASD SQUARE DMCC	2021	Hydraulic and Hydrogeological Design for the Flood Risk Assessment of two P/V Parks in Oman, 12.165sq.m. in total area
P/V PROJECT OF ENEL GREEN POWER, IN KOZANI, GREECE	KEIFER TEK Ltd	2021	Hydrological and Hydraulic Design against Flood Risks (FRA) for 8 different P/V Parks
"ARKADIKOS ILIOS I & II" P/V PARKS OF PPCR IN ARKADIA PREFECTURE, GREECE	SKPLUS GP	2021	Hydrological and Hydraulic Design against Flood Risk (FRA)
P/V PROJECT OF DEPA, IN KOZANI, GREECE	KIEFER TEK Ltd	2021	Hydrological and Hydraulic Design against Flood Risks (FRA) for 16 separate P/V Parks

Project	Awarding Authority	Execution Period	Project Description
HIGH VOLTAGE CENTER OF LIGHTHOUSE BP, KOZANI PREFECTURE, GREECE	KIEFER TEK Ltd	2021	Hydrological and Hydraulic Design against Flood Risk (FRA) - Geotechnical Investigations/ Foundations Design for the foundation of Substation Facilities
"STANOS" AREA SUBSTATION IN AMFILOCHIA, AETIOLOAKARNANIA PREFECTURE, GREECE	KIEFER TEK Ltd	2021	Geophysical Investigation for locating the groundwater level in a 150/20KV Substation for a P/V Park
Geotechnical Investigations and Designs for the Construction of a New 550MW Photovoltaic Power Plant in Ptolemaida (Area P1)	PPCR	2022	Geotechnical Investigations with Coring Boreholes, Trial Pits, CPT Tests, Pile Pull Out Tests, Geophysical Investigations, Laboratory Tests of Soil - Rock Mechanics, Chemical Analyses, Geotechnical Factual Report, Geotechnical Investigations Report, Geotechnical Foundation Designs, Geotechnical Slope Stability Designs, Geotechnical Settlement Designs

EXPERIENCE IN

GEOTECHNICAL INVESTIGATIONS



More than 50,000m of coring boreholes, both on-shore and off-shore with laboratory and in-situ testing, for more than 500 different projects.



Our company has the capability and experience to execute a wide range of field and laboratory testing / investigations.

Our experience includes execution of more than 50,000m of coring boreholes, both on-shore and off-shore, for more than 500 different projects, with corresponding laboratory testing and evaluation of their results. For these projects programming and inspection of the works were included in our scope.



On-Shore Boreholes



Off-Shore Boreholes



Wagon-Drilling



Laboratory Testing



Trial Excavation



Static Plate Load Test Equipment



Dynamic Plate Load Test Equipment



Dynamic Cone Penetrometer Equipment



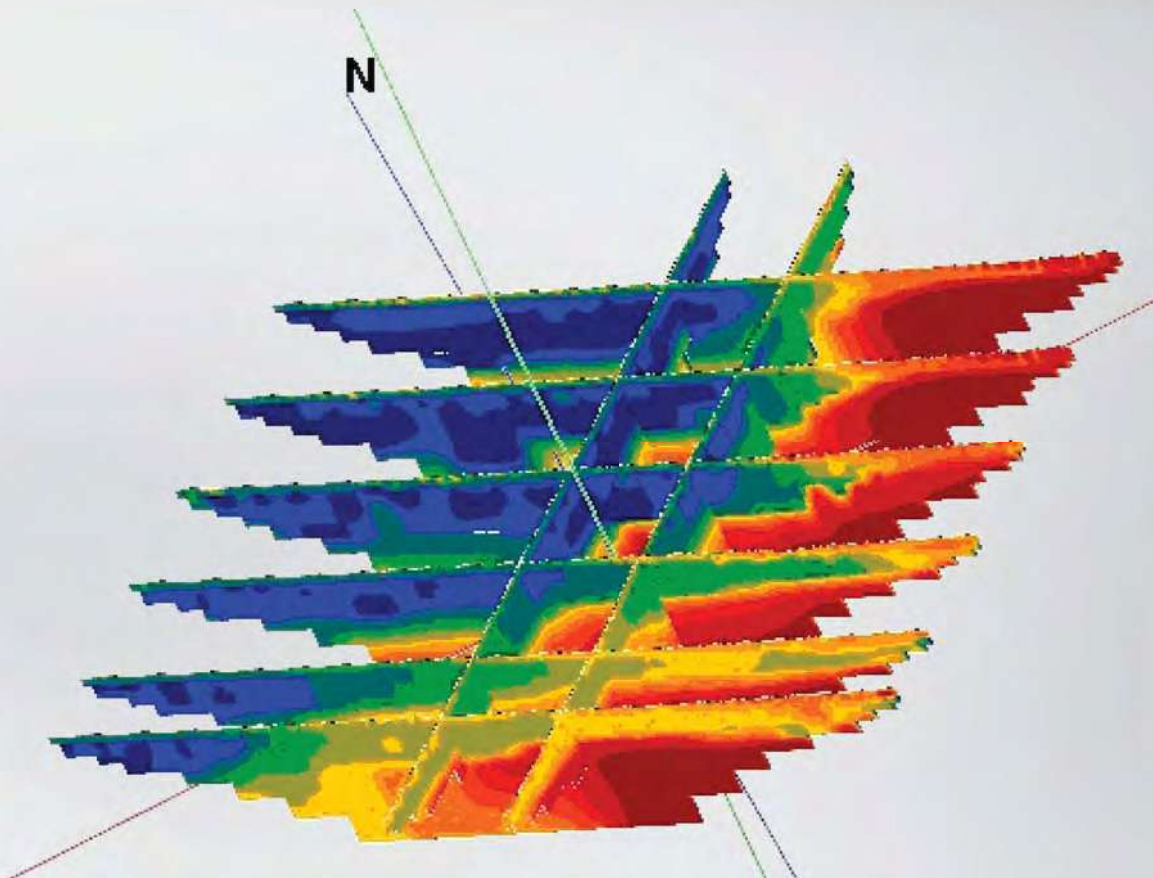
Soil Sampling

EXPERIENCE IN

G E O P H Y S I C A L I N V E S T I G A T I O N S



Karsts - Cavities - Sinkholes - Fracture Zones,
Utilities - Buried Structures,
Reinforcement - Voids of Concrete,
Seismic/Dynamic Properties of Subgrade Materials,
Unexploded Ordnances (UXO's), Marine - Hydrographic Services
Environmental Applications, Parameters for Grounding Design



KARSTS - CAVITIES - SINKHOLES - GROUND WATER TABLE - FRACTURE ZONES

Project:
"KTENIAS", TRIPOLIS GREATER AREA,
PELOPONNESSE, GREECE

Scope:

- Detection of cavities-karsts, sinkholes and fracture zones with non-destructive geophysical methods

Geophysical Methods:

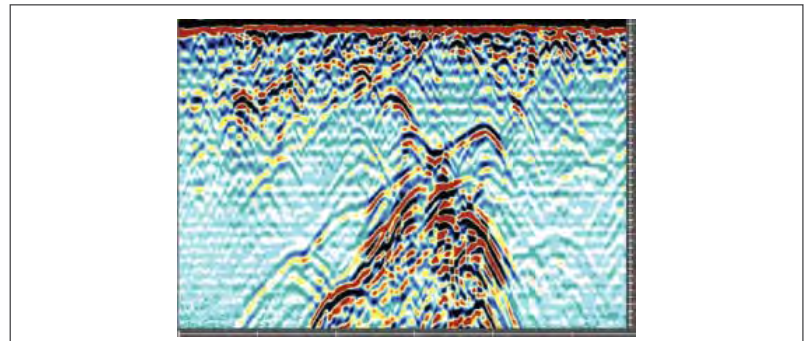
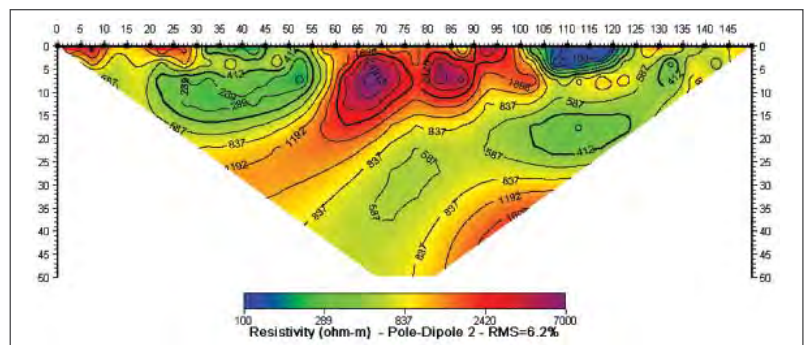
- Ground Penetrating Radar (GPR)
- Electrical Resistivity Tomography (ERT)

Geophysical Equipment:

- Mala Geoscience GPR (ProEx Control Unit, shielded antennas of 500, 250 MHz and unshielded of 100, 50 & 25 MHz central frequency, XV11 monitor, Trimble RTK GPS)
- Terrameter LS 16 channel resistivity meter, multicore cables, electrodes

Depth Range:

- 0 - 15m (GPR Method)
- 0 - 80m (ERT Method)



THESSALONIKI METRO, GREECE

Project:
THESSALONIKI METRO, GREECE

Scope:

- Detection of buried structures (water pipes, cables, sewer pipes, ancient remains, etc.), along the Metro Alignment using non-destructive methods

Geophysical Methods:

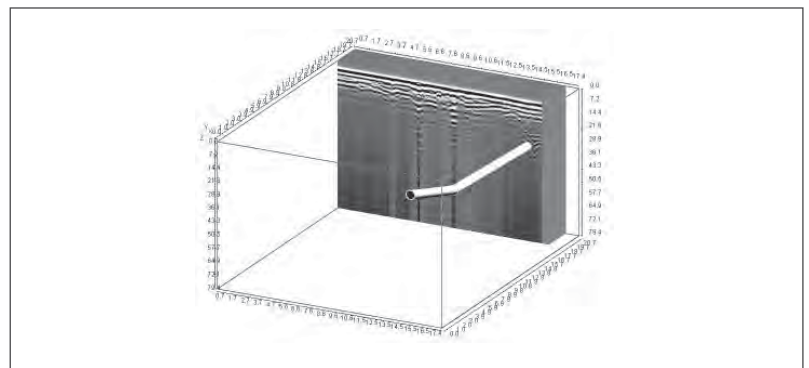
- Ground Penetrating Radar (GPR)

Geophysical Equipment:

- Mala Geoscience GPR (ProEx Control Unit, shielded antennas of 500, 250 MHz, 1.6 GHz central frequency, XV11 monitor, Trimble RTK GPS)

Depth Range:

- 0 - 6m



SEISMIC/DYNAMIC PROPERTIES OF SUBGRADE MATERIAL

Project:
DESIGN OF "ASOPOS" EARTH DAM,
GREECE

Scope:

- Detection of the dynamic elastic parameters of the subgrade materials in the foundation area for the a-seismic design of the dam (80m high)

Geophysical Methods:

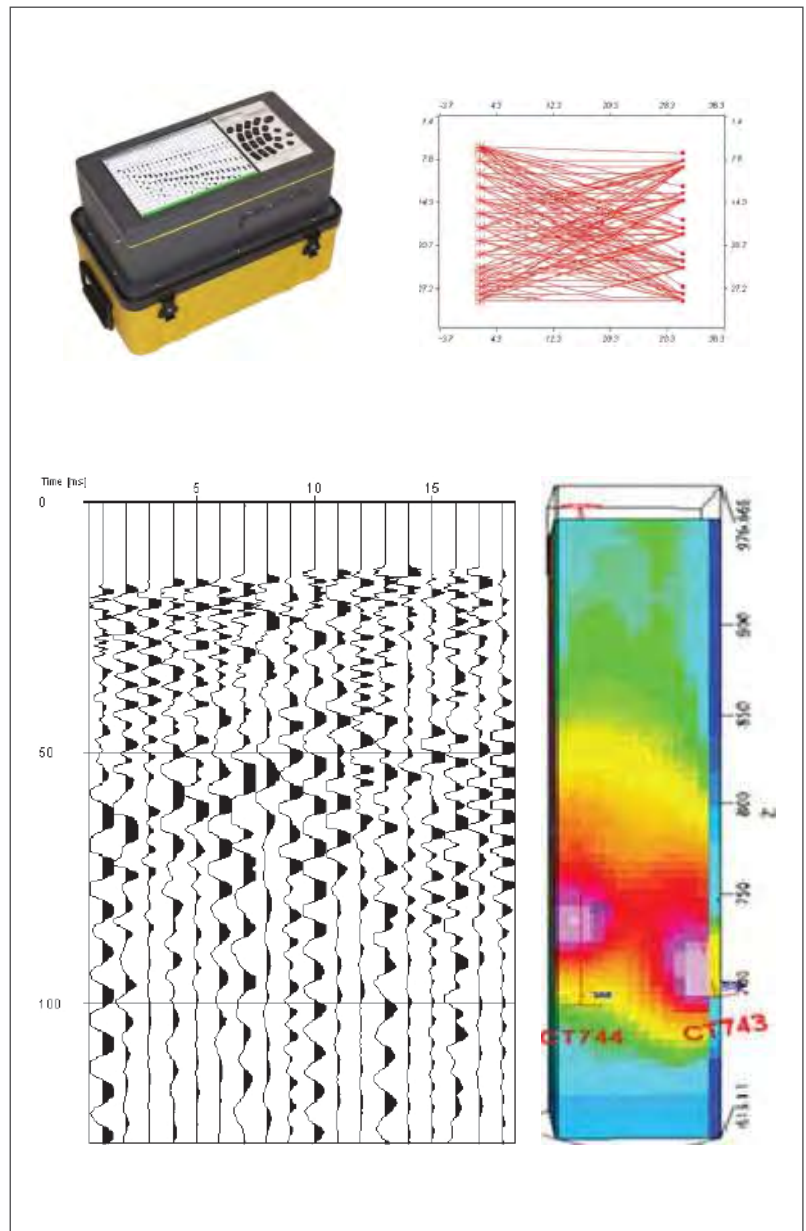
- Seismic Tomography (CSL Method)

Geophysical Equipment:

- Digital Seismic recorder with 24 channels of GEOMETRICS Company, model SMARTSEIS, with sampling ability of 32 ms.
- Mechanical seismic source, automatic, with applicability within the borehole. Type MH 60 of company VIBROMETRIC OY.
- Wooden beam for the production of S-waves in the multi-offset VSP method.
- Chain of eight (8) tri-axial geophones, with 5 meters spacing between geophones and ability to attach them to the walls of the borehole.
- Control Box for controlling the seismic source. Control Box for controlling the geophones. Laptop to control the data quality and their preliminary processing.

Depth Range:

- 0 - 100m



ENVIRONMENTAL APPLICATIONS - GROUNDING DESIGN

Project:
PETROLINA FACILITIES, CYPRUS

Scope:

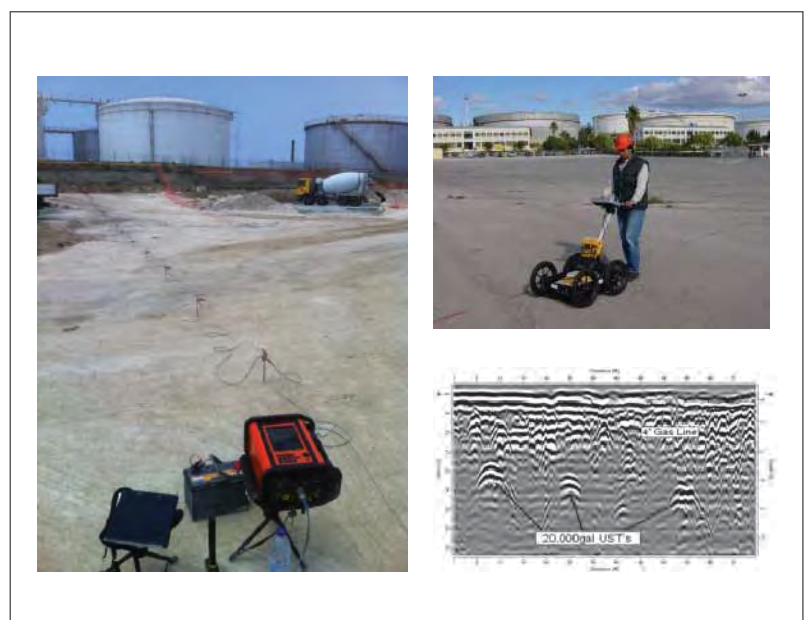
- Hazardous waste mapping, underground storage tanks (UST), Resistivity definition for Grounding Design

Geophysical Methods:

- GPR
- ERT

Geophysical Equipment:

- Mala Geoscience GPR
- Terrameter LS 16 channel resistivity meter, multicore cables, electrodes



EXPERIENCE IN

CONSULTING SERVICES

Checking of Design, Expert Evaluation, Value Engineering, Tender Documents, Risk Assessment, Independent Engineer Services.



