



Explore **better**



Worldwide Integrated
**Geophysical and Geotechnical
Services**


GEOFIZYKA TORUŃ
GRUPA **PGNiG**

business areas

Our innovative solutions successfully address a broad scope of targets. Hydrocarbon & minerals exploration, mining industry, underground storages, geothermal energy, wind farms and power plants are some of the sectors we excel off.

key facts & figures



Hydrocarbons
Exploration

Multi-source operations

Operations on **4** continents & in more than **30** countries

Largest Processing Centre in CEE



Wind Farm
Energy



More than
65
vibroiseis units

More than
40 000
sq km and
160 000
lkm acquired

55 years
of worldwide
experience



Geothermal
Energy

GT QHSE
Management System
certified in compliance
with **4** norms:
ISO 9001:2015
ISO 14001:2015
ISO 45001:2018
PN – N – 18001



Construction & Mining
Industry



More than **50** campaigns with the use
of nodal seismic systems completed

More than **200** different processing
software tools developed by GT's R&D

who has
chosen us?

- Cairn Energy
- CEPetroleum
- CEPSA
- Chevron
- ConocoPhillips
- EBN
- Ecopetrol
- Edison
- Eni
- ExxonMobil
- GSPC
- INA
- MOL
- Oil India
- OMV
- ONGC
- ORLEN Upstream
- Parex Resources
- Petr leos Sudamericanos
- PGE
- PGNiG
- RAG
- RAK Gas
- Repsol
- Sasol
- Shell
- Total
- Wintershall Dea
- Vermilion Energy



our values



Our people



Innovative approach



Client's satisfaction



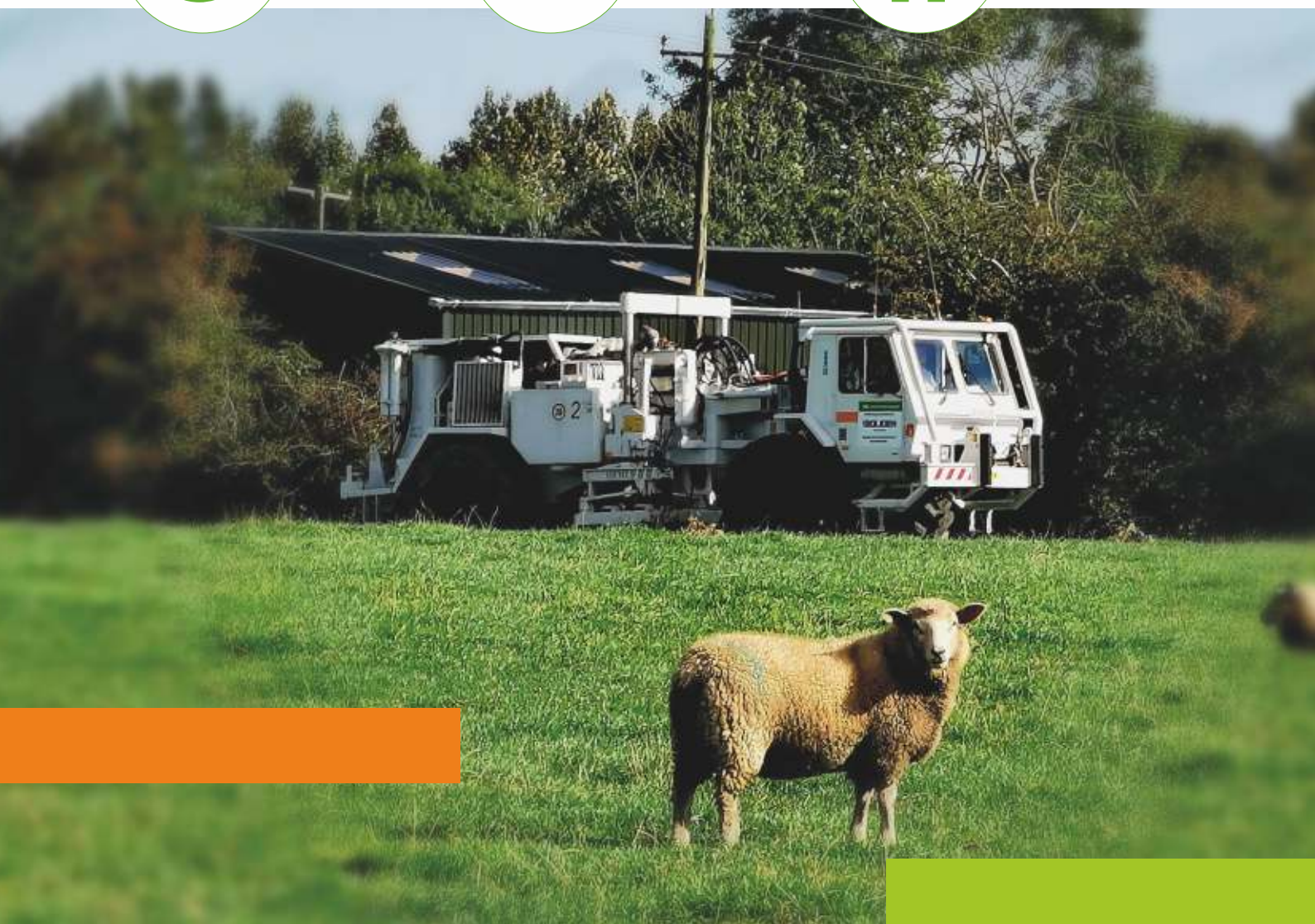
Health & Safety



Service quality



Social responsibility



QHSE Management System

As a company rich in experience with several decades of work in almost every corner of the world, GT is committed to supporting sustainable development, defined as the economic and social development connected with environmental protection, and recognizes also the need for ensuring diverse opportunities to improve society development.

Geofizyka Toruń is a company whose strategy constitutes responsible business in line with principles of sustainable development.

We believe that not only can the Company create value for owners, but also be a leader which contributes positively to the natural environment and society.

Our projects are carried out in full compliance with the individual objectives, expectations and QHSE requirements of every Client and in line with industry (IOGP / IAGC) HSE standards, ensuring safe and efficient operations.

We have international experience in managing various HSE hazards related to diverse terrain and climate conditions, operational needs and challenges, multicultural aspects.

We put an emphasis on detailed HSE risk assessment and adequate work planning, and committed day-to-day cooperative HSE and operational management.

Our visible proactive approach and culture of continuous improvement allow us to set goals and comprehensive solutions to minimize incidents risks, improve work standards and engage all employees as we believe that safety and quality of works starts with each of us in our "Mission Zero" – striving after injury free workplace and QHSE excellence.

- **ISO 9001:2015**
for Quality Assurance
- **ISO 14001:2015**
for Environmental Protection
- **ISO 45001:2018 and PN-N-18001**
for Occupational Health and Safety

Everyday performance under challenging conditions proves that GT's recognition among the oil majors is well deserved.



seismic data acquisition surveys

Whatever challenges of land or transition zone environments a particular survey brings, Seismic Data Acquisition Division handles them successfully with proven know-how and its own resources based on the leading technology. We provide upscale solutions that are beyond the reach of smaller geophysical players. GT's one of a few innovative international suppliers of integrated seismic data acquisition services, where supreme geoscience expertise goes together with tremendous operational flexibility of petabyte-scale projects. Having varied worldwide track record since 1966 and capacity to run simultaneously multiple seismic crews, we are able to perform the most challenging surveys safely and with minimal impact to the environment.

Our interdisciplinary teams continuously put into practice all new developments of the Next Generation Seismic technology based on Quantum nodes, which together with broadband solutions made an unprecedented industry breakthrough. We offer the exploration solutions of the future and make them available today. Surely, we will keep pushing the limits of cost-effective and tailored performance.

Everywhere, we provide agile solutions and successfully acquire petabyte-scale data volumes in a low impact and reduced time manner. With the use of nodal systems, GT is able to push the boundaries of seismic method, where urban, agricultural or environment related challenges have to be faced. We are experts in complex, sensitive and operationally challenging tasks addressing hydrocarbon & minerals exploration, mining industry, underground storages, geothermal energy as well as power plants.

From survey design to In-field and Fast Track processing we come up with the most tailored and goal oriented acquisition campaigns. Various customers, from medium-size companies to the industry majors, trusted us repeatedly. Let us help you precisely reach your goals and finally reduce exploration risks and costs. Let us surpass your expectations!



GT's one of a few innovative international suppliers of integrated seismic data acquisition services, where supreme geoscience expertise goes together with tremendous operational flexibility of petabyte-scale projects

Our scope of services:

- Onshore seismic surveys
- Transition zone seismic operations
- Offshore seismic surveys
- 2D/3D/3C seismic surveys
- Large-scale 3D seismic campaigns

Range of our solutions:

- Seismic survey area scouting
- Survey design & pre-planning
- Pre-permitting & permitting
- Land surveying & GIS

- Wireless and cable seismic data acquisition
- Multisource operations: heavy & medium vibrators, light minivibrators, explosives, weight drops, and air-guns
- High productivity operations, flip flop, slip-sweep and simultaneous shooting seismic operations
- Drilling and explosives operations by manual, portable, rig solutions
- Near surface survey & interpretation, refraction, upholes
- Quality control & quality assurance
- Data transcription, harmonic removal & final format conversion
- In-field and Fast Track seismic data processing

seismic data acquisition surveys

Our solutions

GT's seismic surveys bring increased confidence in evaluation of prospects. Our innovative solutions efficiently address a broad scope of targets. Hydrocarbon & minerals exploration, mining industry, underground storages, geothermal energy and power plants are some of the sectors we excel off.

NEXT GENERATION SEISMIC

Next-generation seismic data we acquire is characterized by greater spatial sampling and better distribution of offsets and azimuths. Acquisition requirements for complex areas can only be met by autonomous nodal systems, which are characterized by low weight, long battery endurance and large memory. Furthermore, the large amount of recorded data implies a change in the philosophy of quality evaluation in the direction of statistics rather than excessive care for the quality of a single record.

Our new generation nodal-based seismic allows to:

- Challenge terrain access
- Increase trace density and spatial sampling
- Increase productivity
- Reduce hazard situations
- Reduce the footprint on the environment

The advent of autonomous nodes has greatly reduced the risk of contiguous channel data loss. Therefore, by eliminating the challenges related to the quality control of active spreads, GT seismic crew may focus fully to quality assurance in the deployment and retrieval of nodes.

The key competitive advantage of our nodal surveys is proprietary data retrieval, pre-processing and format conversion solution. It quickly drives raw, unsorted, continuously recorded data together with metadata to generate final field records. We keep pushing boundaries of this leading industry solution by developing dedicated hardware and software. This is based on a pioneering solution - Graphics Processing Units (GPU), which proved to be faster than an equivalent solutions based on CPUs.



Technology:

Recording Systems:	Vibroseis	Other equipment:
Nodal systems: <ul style="list-style-type: none"> ■ Quantum / iX1 (INOVA) 	Ultra-Light: <ul style="list-style-type: none"> ■ Univib PLS-326 (INOVA) 	<ul style="list-style-type: none"> ■ Transcriber equipment for nodal systems
Cable systems: <ul style="list-style-type: none"> ■ 428XL (Sercel) ■ 408UL (Sercel) 	Light: <ul style="list-style-type: none"> ■ Hemi-50 (IVI) 	<ul style="list-style-type: none"> ■ Mechanical drilling units mounted on 6x6 trucks, tractors & pick-ups
Wireless System: <ul style="list-style-type: none"> ■ UNITE (Sercel) 	Heavy: <ul style="list-style-type: none"> ■ Nomad 65 (Sercel) ■ ATS (IVI) ■ Hemi-60 (IVI) ■ AHV-IV PL-364 Commander (INOVA) ■ AHV-IV PL-362 (INOVA) 	<ul style="list-style-type: none"> ■ Manual drilling tools ■ Weight drop ■ Air-guns

seismic data processing & imaging

GT is an acclaimed international provider of time & depth data processing and imaging solutions. Progressing since 1973, we have become one of the biggest seismic data Processing Centre in the world. Having impressive track record and capacity to process parallelly several multi-petabyte-scale projects at unprecedented turnaround, we are able to perform the most challenging tasks onshore and offshore.

What's more, vast geoscience expertise as well as multidisciplinary approach, enables us to extract the best value of the acquired seismic data, no matter how challenging geological conditions we have to face. Applying our know-how, resources and passion to individual sets of seismic data we can reliably visualize various plays to reduce exploration risk and operational costs. We integrate multi-physics, well log and geological information into our imaging workflows and provide reservoir products offering the best understanding of the subsurface geology available in the industry.

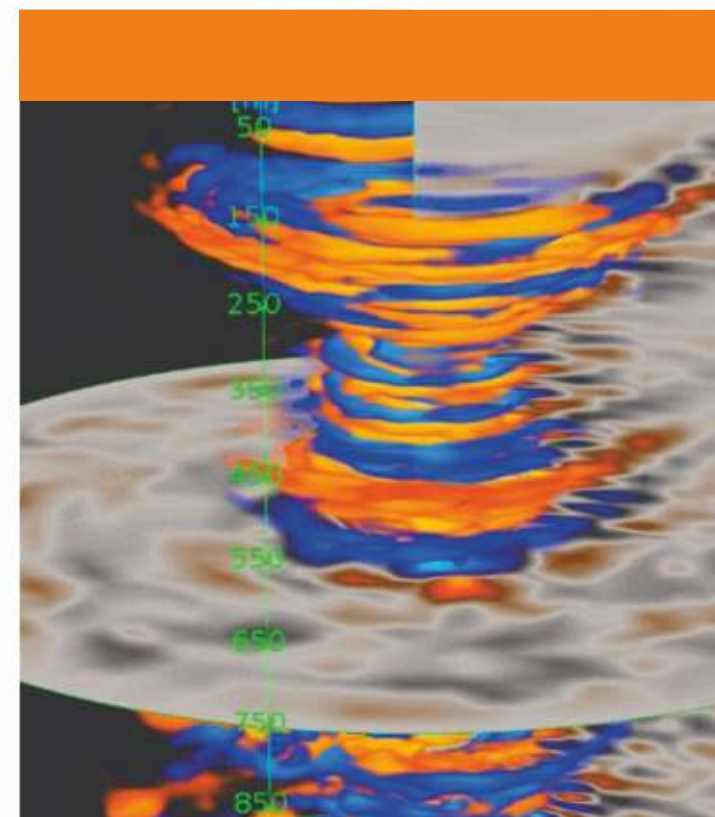
Our seismic imaging capabilities:

- Advanced 2D & 3D & 3C seismic data imaging in time & depth domain
- High Density (HD), Wide Azimuth (WA) and High-Resolution (HR) processing
- Pre-stack & Post-stack inversion, AVO, VVAZ, AVAZ analysis and multi-attributes reservoir characterization
- Borehole Seismic
- In-field QC & Fast Track processing with PreSTM during seismic data acquisition

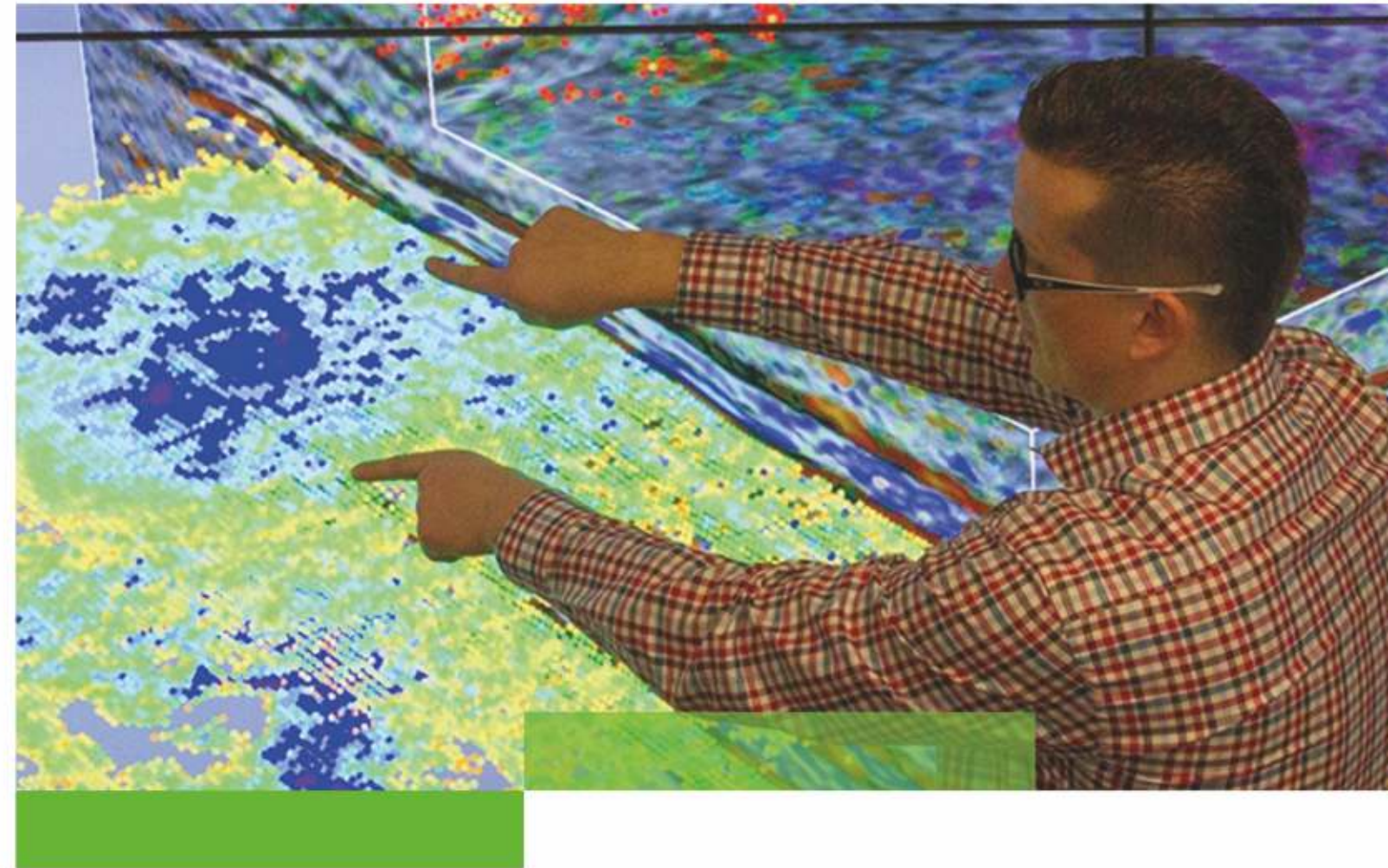
Our solutions:

We offer services using leading data processing software packages with unique advantage of dedicated tolls, algorithms and tailored workflows focused on the best imaging of land, marine, transition zone as well as borehole seismic data. This brings effectiveness in integrating modern methods of imaging for your seismic data. We are experts in advanced data processing where high-quality results are achieved through interactive solutions, instead of purely automated approach.

Our team can quickly respond to exploration problems, especially those involving complex geology, near-surface and multiples challenges like: fold and thrust belts, shale plays, fractured reservoirs, deserts, foothills, high/low near-surface velocity anomalies, Jurassic or Triassic grabens, salt domes, transition zones, wide-line studies, geothermal reservoirs, synthetic data generation, R&D projects and others.



*We are one of the biggest seismic data Processing Centres in the world
with the capacity to process parallelly several multi-petabyte-scale
projects at unprecedented turnaround*



Our proven know-how covers:

- Multi-survey matching with wavelet standardization
- Interactive Wavelet Shaping (IWS)
- Static corrections
- Seismic signal matching / merging / processing
- Coherent and random noise attenuation
- Reconstruction of true trace amplitude relations
- Q-compensation
- Multiple Attenuation
- 5D interpolation / regularization
- Signal to noise ratio improvement
- Advanced isotropic / anisotropic (VTI, TTI, HTI)
- Pre-stack time as well as pre-stack depth migrations
- Pre-stack time as well as pre-stack depth migrations
- Depth imaging with complex Velocity Model Building (VMB) as well as with FAZ tomography and especially from our individual approach to each area and customer requirements or full 3D Specular / Diffraction Imaging (DI)
- Full Waveform Inversion (FWI) for accurate images of complex reservoir
- Full azimuth on-fly sectorization and VVAZ / AVAZ attributes from ES360.
- GT's Enhanced Coherency Processing (ECP) and Virtual Ray Imaging (VRI) techniques

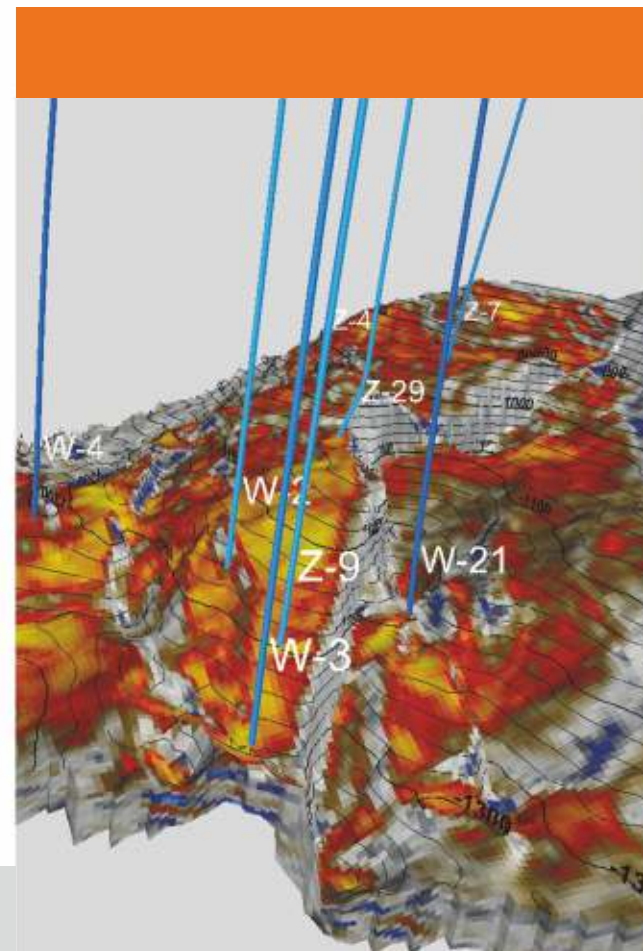
seismic data interpretation

Delivering more informed exploration decisions and exposing petroleum reservoirs' properties with advanced approach, have become the hallmark of our Seismic Data Interpretation Division. As an acclaimed international provider of integrated geological and geophysical interpretation of seismic and well data, we take full advantage of our experience and progress since 1973. Through all these years we have unlocked the hydrocarbon potential of various international petroleum basins onshore and offshore. Having impressive track record and capacity to evaluate plays at unprecedented turnaround, we are able to perform the most challenging tasks and produce a fast and clear view of difficult reservoirs.

Our innovative solutions successfully address a broad scope of tasks. Hydrocarbon & minerals exploration, mining industry, underground storages, geothermal energy and power plants are some of the sectors in which we have confirmed the crucial role of seismic methods. We keep progressing to solve new challenges.

Our primary scope of interpretation solutions:

- Qualitative and quantitative evaluation of processed seismic data for feasibility of designed interpretation tasks
- Comprehensive geological interpretation of 2D and 3D seismic volumes, construction of structural models
- Identification of sub-seismic faults and fractures based on geostatistical analysis of 3D seismic volumes using geometric attributes and spectral decomposition
- Creation of velocity models and time-depth conversion of seismic data
- Map construction in the time and depth domain
- Processing and interpretation of vertical seismic profiling



We are one of the biggest seismic data Processing Centres in the world with the capacity to process parallelly several multi-petabyte-scale projects at unprecedented turnaround

Our advanced scope of interpretation solutions:

- Anisotropy analysis - determination of intensity and azimuth of anisotropy using seismic and well data (AVO, AVAZ, seismic inversion)
- Assessment of variability of geomechanical parameters of a rock medium
- Geological, geophysical and petrophysical modelling of reservoir formations
- Estimation of hydrocarbon resources and geological risk assessment
- Seismic modeling (1D and 2D)
- Prestack and Poststack inversions, AVO analyses and multi-attribute characterization of geological media

Thanks to the extensive experience of our team we are able to carry out the most demanding tasks and obtain a clear picture of complex geological objects. Extensive geological knowledge and a multidisciplinary approach allow us to provide a comprehensive structural and facies interpretation leading to the determination of the paleogeographic conditions under which specific rock complexes were deposited. Applying our know-how, research and development, resources and passion to individual sets of seismic data we significantly reduce the risks and costs associated with exploration and production. Finally, we deliver the reservoir understanding as well as identification of potential drilling hazards.

We use advanced technology and dedicated workflows to efficiently handle large volumes of 2D and 3D seismic data. This approach enables geological tasks to be solved quickly, building accurate subsurface models and extracting the best value from input data, no matter how difficult the targets are.



Our scalable and innovative capacity as well as know-how have unlocked reservoirs' potential on various petroleum basins worldwide

well services, logging & perforating

We are an innovative international supplier of various well services including wireline logging services and perforating, providing a full understanding of a reservoir. Our solutions deliver vital drilling information and more accurate well data to better evaluate production potential and increase their return on investment. Our scalable and innovative capacity as well as know-how have unlocked reservoirs' potential on various petroleum basins worldwide since 1966. Having impressive track record and capacity to perform challenging tasks we are able to produce deeper understanding of the complex subsurface and maximize the reservoir value throughout its full lifecycle.

Our innovative solutions successfully address a broad scope of targets. Hydrocarbon & minerals exploration, mining industry, underground storages as well as geothermal energy are some of the sectors we excel off. GT also provides specialized services in deep as well as in shallow, slim-hole hydrogeological, geotechnical and geoengineering boreholes.

Our well services and solutions:

- Formation Evaluation
- Formation Evaluation Behind Casing
- Surface Logging/Mud Logging Services
- Perforating services:
 - Expendable Hollow Retrievable Perforating Systems
 - Through Tubing Gun Systems
 - Horizontal Pump down Plug & Perf
- Propellant Stimulation Services
- Rig-Less Well Plug and Abandonment Services
- Pipe Recovery Operations
- Production Logging
- Well Integrity Logging



We perform challenging well data analysis and produce deeper understanding of the complex well environments to maximize the reservoir value throughout its full lifecycle

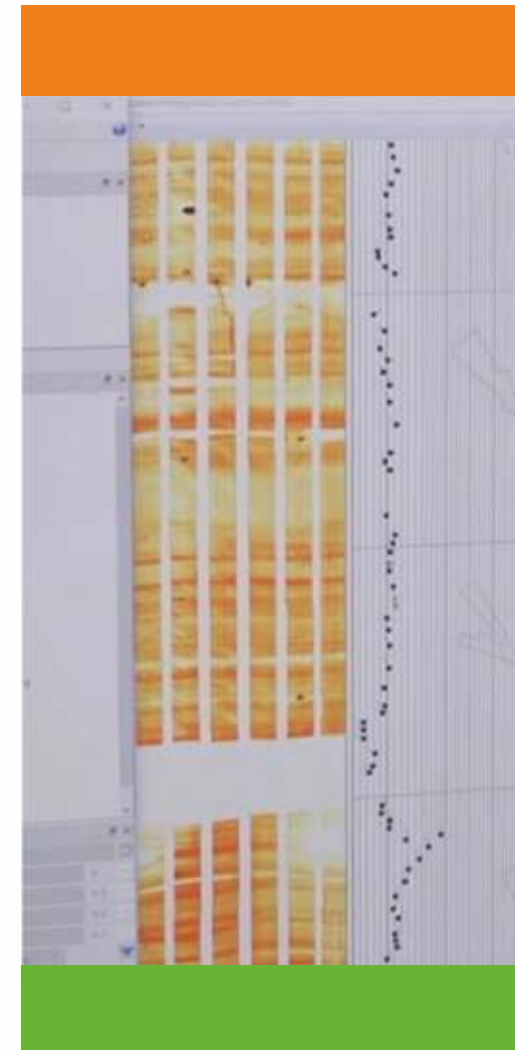
well log analysis

When accurate and timely well insight is a challenge, our Well Log Analysis Division delivers bespoke solutions for risk exploration and production management. As an innovative international supplier of services in the field of design, supervision, interpretation and documentation of well logging data we dedicate all our efforts on providing a full understanding of a reservoir.

Our continuous progress since 1966, enables us to provide powerful capacity as well as know-how unlocking potential of various international onshore petroleum basins. With our impressive track record and ability to perform challenging well data analysis we produce deeper understanding of the complex subsurface and maximize the reservoir value throughout its full lifecycle.

Our analysis of well logging data capabilities:

- Exploration of hydrocarbons in conventional and unconventional deposits (e.g. coalbed methane, tight gas, shale gas)
- Evaluation of resources and use of geothermal waters
- Exploration and documentation of mineral deposits (e.g. coal, salt, copper, sulfur, etc.)
- Underground storage of gas and fuels
- Technical measurements in deep boreholes, including reconstructed wells (e.g. cement evaluation, pipes/casing inspection)
- Geological and engineering studies
- Scientific research related to the identification and documentation of the geological structure of selected areas
- Multidimensional statistical methods using extensive sets of well log data (electro-facies, big data, machine learning)
- Preparation of well logs data for seismic purposes (well-seismic tie, check shot calibration with sonic logs)
- Archival analogue Russian style logs digitalization (logs standardization, reinterpretation, etc.)



*We have been in business since 1978,
being the leader of geological
and geotechnical services in Poland.*

geological drilling & geotechnical services

Our company has been providing geological and drilling services since 1978, offering a wide range of state-of-the-art, comprehensive surveys, including ground subsurface exploration for the needs of industrial and technical infrastructure, on land and at sea. **We also provide solutions for the offshore wind energy industry**, in particular, in the form of **geotechnical and geological seabed surveys**, to set out the environmental conditions for offshore wind farms, as well as to plan the routes for submarine power cables, connecting offshore wind farms with the coast.

Our assets are our team of geophysicists, geologists and hydrogeologists with many years of professional experience and proper licences, as well as the most advanced equipment, including:

- **CRS 170 XL DUO sonic device**
- **Seabed SVC 500E vibrocorer**
- **Geomil Manta 200 outboard probe**
- H61S2 – Wamet
- Delta Base 550
- JOY 3
- URB 2,5A
- KRETOMAX 150
- PAT DRILL 301

We provide our clients with all-inclusive services, starting from drawing up the geological report, which comprises specific geological and geotechnical solutions, through completing the works onsite, until the as-built documentation for the entire job is ready.

We offer comprehensive solutions in the field of:

- Geotechnical services
- Geological engineering services
- Geological services
- Hydrogeological services

engineering geophysics

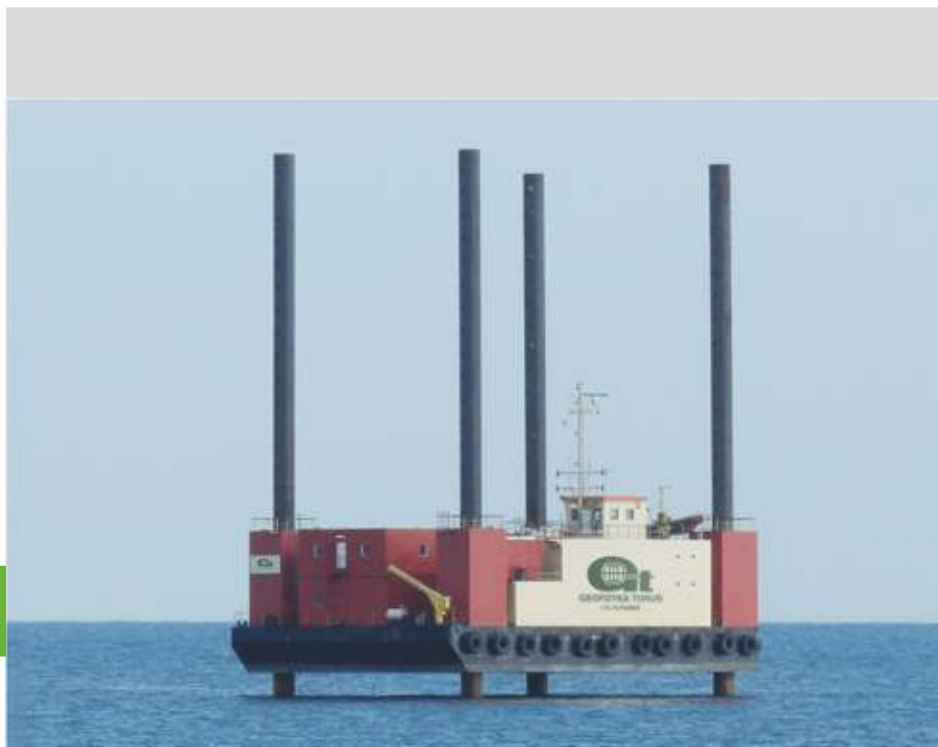
We have been offering comprehensive engineering geophysics services since 1996. We carry out a wide spectrum of innovative survey related to the exploration of the subsurface zone of any geological centre, necessary while designing and executing many tasks, such as geological and engineering, hydrogeological, geotechnical, construction, road and environmental protection ones. We are the leader of modern comprehensive solutions in the field of non-invasive engineering geophysical surveys which do not disturb the ground nor the infrastructure.

Our strength is a team of geophysicists, geologists and hydrogeologists with many years of professional experience supported by their licences. We make all kinds of geological, geotechnical and design documentation. We do measurements in various environments: on land, but also on rivers, lakes, swamps and at sea.

*Since 1996, we have been a leader of comprehensive
non-invasive soil subsurface exploring with the use
of the most modern methods and survey equipment
on land, rivers, lakes, swamps and at sea.*

Our solutions include scouting of the geological centre zone for:

- Linear projects
(roads, railways, gas pipelines, airports, dams)
- Setting out environmental conditions for offshore wind farms (OWF)
- Submarine mapping of power cable routes to connect offshore wind farms (OWF) with land
- Monitoring of the technical condition of building structures, roads, asphalt surfaces, embankments, flood embankments and dams
- Setting out ground-water and hydrogeological conditions (searching for drinking water)
- Monitoring of environmental conditions, landfills, setting out the range of: pollution and contamination zones, of migration of pollutants
- Underground HDD drilling both on land and in water
- Detection of underground metal objects
- Setting out the condition of slopes and landslides
- Archaeological exploration



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