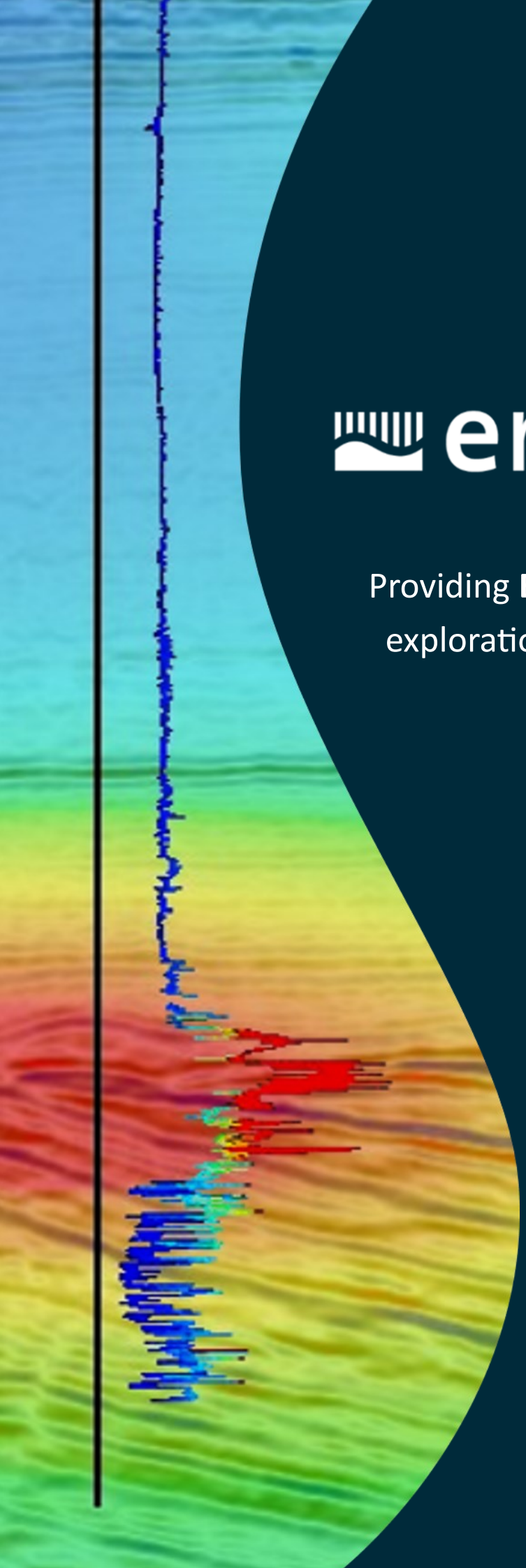


emgs

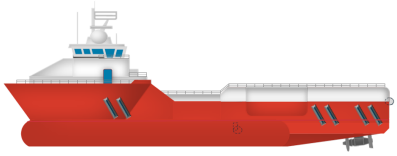
Providing **EM** data to increase success in exploration & development programs

Value of illumination.

Our experience — Key to a successful EM project

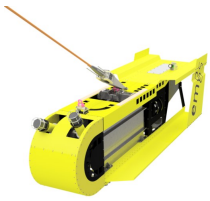
950

Surveys



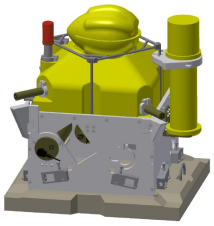
250,000 km

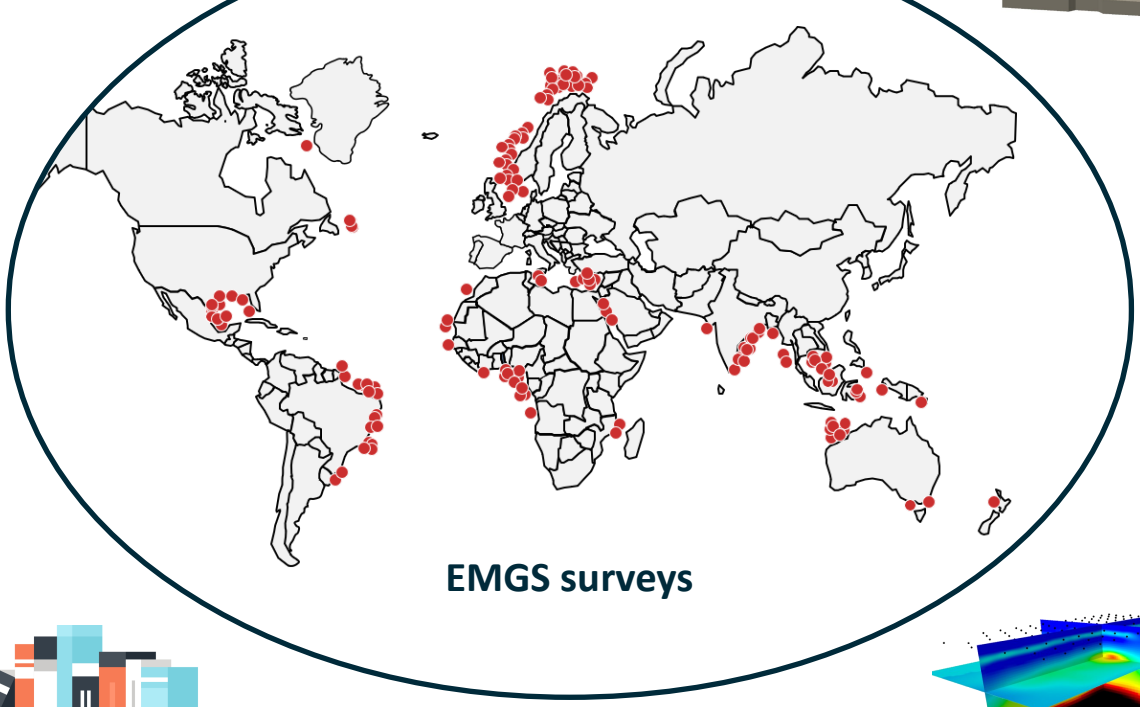
Source towing



60,000

Receiver drops

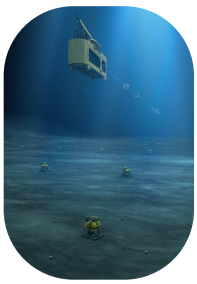




EMGS surveys

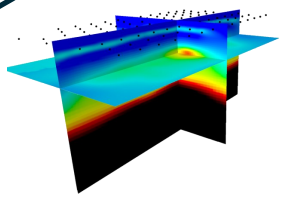
145,000 km^2

Multi-client library



18-3600 m

Water depth experience



180,000 km^2

3D inversion

Exploration value of EM

Resistivity from EM data is a completely independent measurement from seismic. Adding a "new dimension" to the Earth model reduces subsurface uncertainties across the entire E&P cycle.

APPLICATIONS

- Prospect evaluation
- Portfolio polarization
- Field delineation & appraisal
- Identification of upside and new leads
- Regional geology & play assessment

CSEM distinguishes low from high HC saturation

While seismic is ideal for structural and facies mapping, it often struggles to deliver reliable information on reservoir fluids. Well failure analyses demonstrate that prospect charge and seal are usually associated with much higher risk than trap and reservoir.

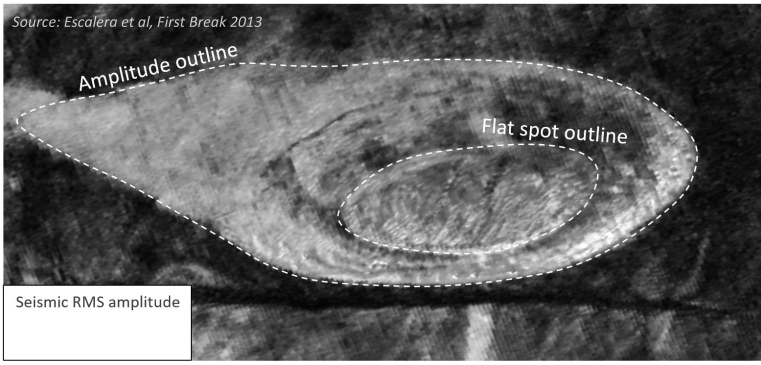
Resistivity from CSEM distinguishes low from high saturation reservoirs, thereby reducing uncertainties in charge and seal. By providing information on these elements of the petroleum system, CSEM provides an important puzzle piece to the prospect evaluation.

Anomaly size provides valuable information on prospect area, helping to assess prospect resources and identify prospects with highest chance of commerciality.

CSEM is therefore an excellent tool for de-risking AVO and seismic amplitude driven prospects, as well as stratigraphic traps.

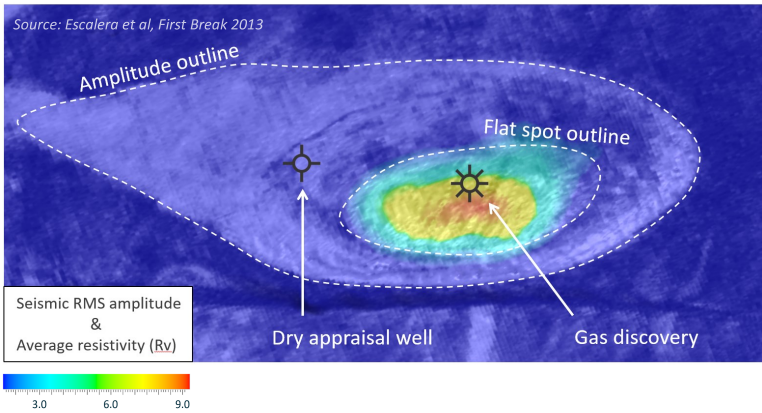
Through downgrading and upgrading of prospects, the portfolio becomes polarized, allowing for better informed drilling decisions and providing a fresh view of the potential of different plays.

Since saturation depends on reservoir quality and hydrocarbon column height, CSEM also brings new reservoir characterization possibilities to quantitative interpretation (QI).

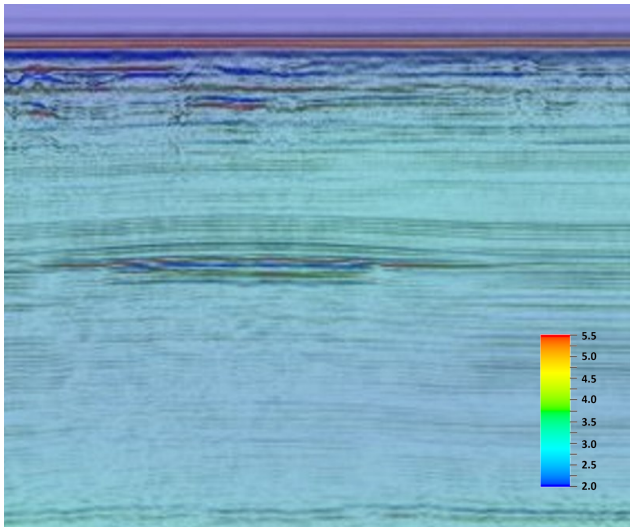


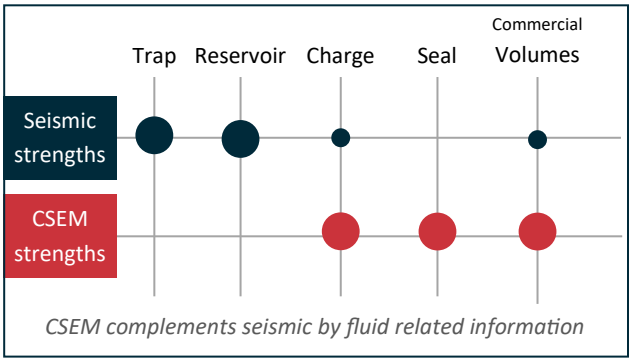
Seismic only interpretation *— Bright spot suggests potential for oil below a gas cap for this anticlinal trap in the Mexican Gulf of Mexico.*

Integrated interpretation with CSEM *— Hydrocarbons below flat spot are only residual.*
Drilling confirmed the CSEM interpretation.



Flat spot in the North Sea downgraded by absence of an EM anomaly.





CSEM complements seismic by fluid related information

Data acquisition

2D

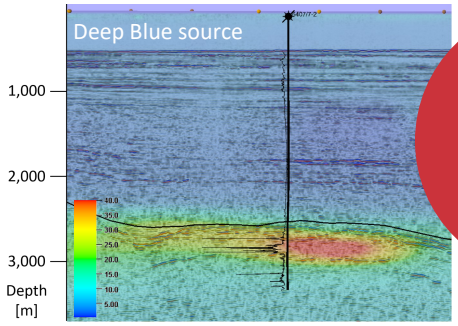
3D full-azimuth

EMGS offers nodal EM data acquisition services for CSEM and MT. Our nodal EM technology offers highest possible data quality and survey design flexibility. Offset & azimuth ranges can be chosen to achieve the sampling and illumination set by the survey objectives. EMGS vessels have capacity for several hundred nodes and deployment modes for efficient acquisition of dense and large regional surveys. Operations can be carried out in water depth ranging from 20 to 4,000 m. Our global track record spans from shelf to ultra-deep water surveys in tropical and arctic environments.

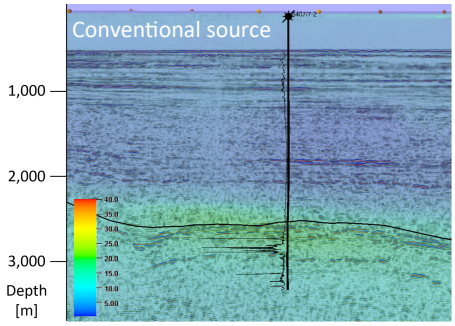
MINIMAL ENVIRONMENTAL IMPACT

Marine EM is an environmentally benign exploration technology, supported through environmental impact studies as published by the International Association of Geophysical Contractors.

EMGS continuously seeks to minimize the environmental footprint of its operations , e.g. by using dissolvable concrete anchors.



Demonstration of the increased sensitivity of the Deep Blue source over the Njord field in the Norwegian Sea. The field has been in production since 1997 and is therefore considered a challenging target for CSEM.



Most powerful sources in the industry

We operate the most powerful, accurate and reliable EM sources in the industry, bringing together innovations in subsea high-power electronics and navigation.

The combination of high power and broad frequency bandwidth enables deep and detailed imaging, resulting in increased confidence and making integration with other geophysical data simpler.

Both deep-towed and surface-towed sources are available to provide optimal acquisition solutions for all water depths.

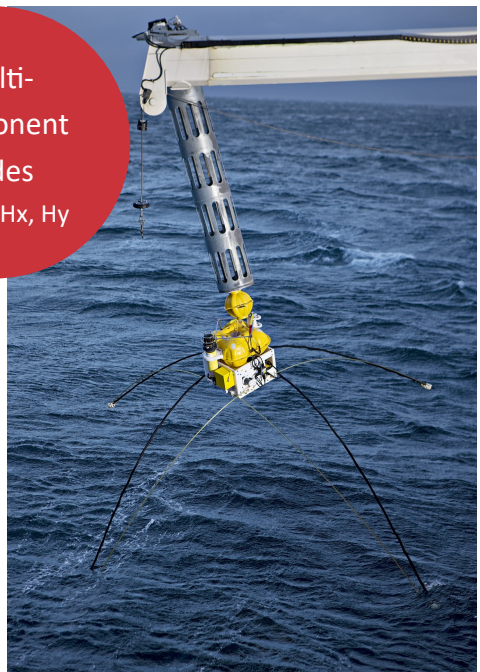
Our multi-component nodes measure both electric and magnetic field data. The sensors and receiver electronics have ultra-low noise and are specifically designed for CSEM and MT. Sensor calibration on seabed ensures the highest possible data accuracy. The mechanical design minimizes vibration due to water currents and ocean swell.

The magnetic field data is essential for MT processing and enables advanced CSEM processing such as wavefield decomposition to enhance data sensitivity in shallow water.

The unique design and sensitivity of EMGS nodes make simultaneous acquisition of CSEM and MT data possible.

Multi-component nodes

E x, Ey, Hx, Hy

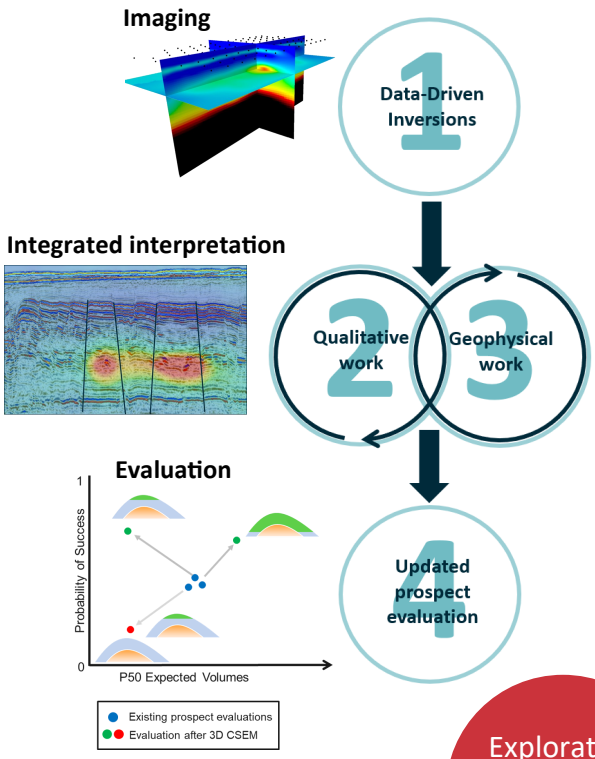


Imaging & integrated interpretation

EMGS offers a range of inversion products and interpretation services for EM data to maximize the value of EM data .

All our inversions use FWI methods. Our new generation inversion technologies — 3D Gauss-Newton inversion and 3D TTI inversion — define a step change in imaging quality. This increases interpretation confidence significantly.

Our services are combined into the **EMGS Exploration Solution** — a 4-stage workflow addressing client specific exploration challenges. EM imaging and interpretation methods are used in an interdisciplinary approach where CSEM experts and interpreters work hand in hand. The Exploration Solution produces an updated geological understanding of the studied acreage, e.g. in the form of revised risk and/or volume assessments for existing prospects or identification of potential upside and new leads.



Exploration Solution workflow

STAGE 1
Anisotropic 3D inversion (FWI type) that is as independent as possible from other geophysical and well data. A variety of geophysical and geological QC criteria are applied.

STAGE 2
Interpretation using resistivity attribute analysis (similar to working with seismic attributes), anomaly identification and delineation, anomaly significance tests, sensitivity assessment for depth intervals of interest, correlation of anomalies to seismic observations such as conformance to structure, seismic DHI and seismic indicators of lithological resistors.

STAGE 3
Modeling and synthetic data inversion tests in support of the interpretation process. Such tests serve to quantify the uncertainty of the EM observations and establish the likelihood of specific geological models.

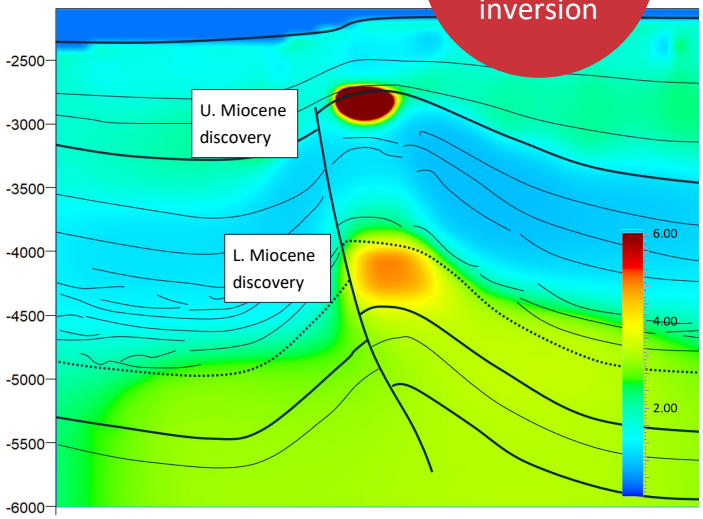
STAGE 4
Update to the geological model, e.g. prospect risk and volume, based on the outcome of the integrated interpretation.

IMAGING TECHNOLOGIES

3D Gauss-Newton inversion — Less start model dependency, better data fitting and improved model updates at depth.

3D TTI inversion— Correct inversion in complex structural settings such as fold and thrust belts.

New generation inversion



Unconstrained 3D Gauss-Newton inversion result with excellent structural conformance and high confidence imaging of two pay zones.

Multi-client library

Our clients use EMGS multi-client data to support decision making in licensing rounds, farm-ins and planning of drilling campaigns.

Our library contains more than 145,000 km^2 of multi-client data in the following countries: Brazil, Canada, Greenland, India, Indonesia, Mexico, Norway, Uruguay, US GoM. A complete, up-to-date overview is available on our website. Shape files are available upon request.

The library is maintained actively using our latest imaging technologies.

WORK PROGRAM UNITS

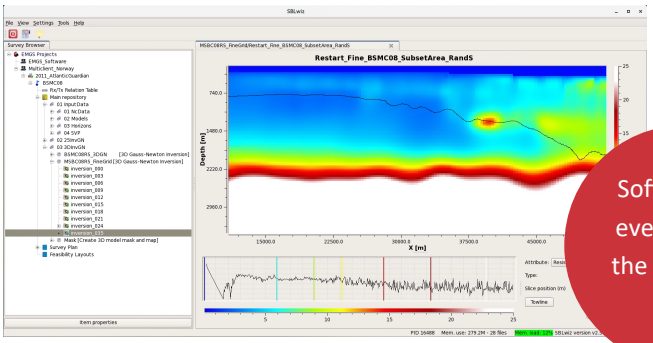
EM counts as work units in the following countries:

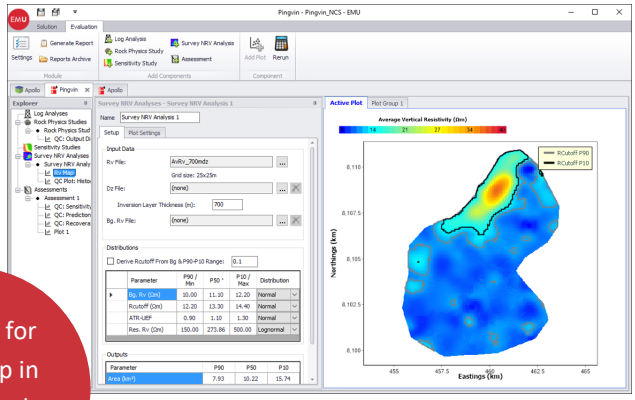
- Argentina
- Brazil
- Mexico
- Norway
- Uruguay

More and more regulators are considering work units and cost recovery for EM.

Software & cloud computing

We offer workstation and high performance computing software for all stages of an EM project: Feasibility studies, survey planning, processing, modeling, inversion and interpretation. EMGS software can be licensed or run in the *EMGS cloud*.





Software for every step in the EM workflow

Company profile

From pioneer to most experienced EM service provider

EMGS is a complete solution provider for marine CSEM and MT. We support every stage of the project, from survey planning and data acquisition to processing, imaging and integrated interpretation of the acquired EM data. Our products and services enable the integration of EM data with seismic and other geophysical and geological information to give asset teams a clearer and more complete understanding of the subsurface.

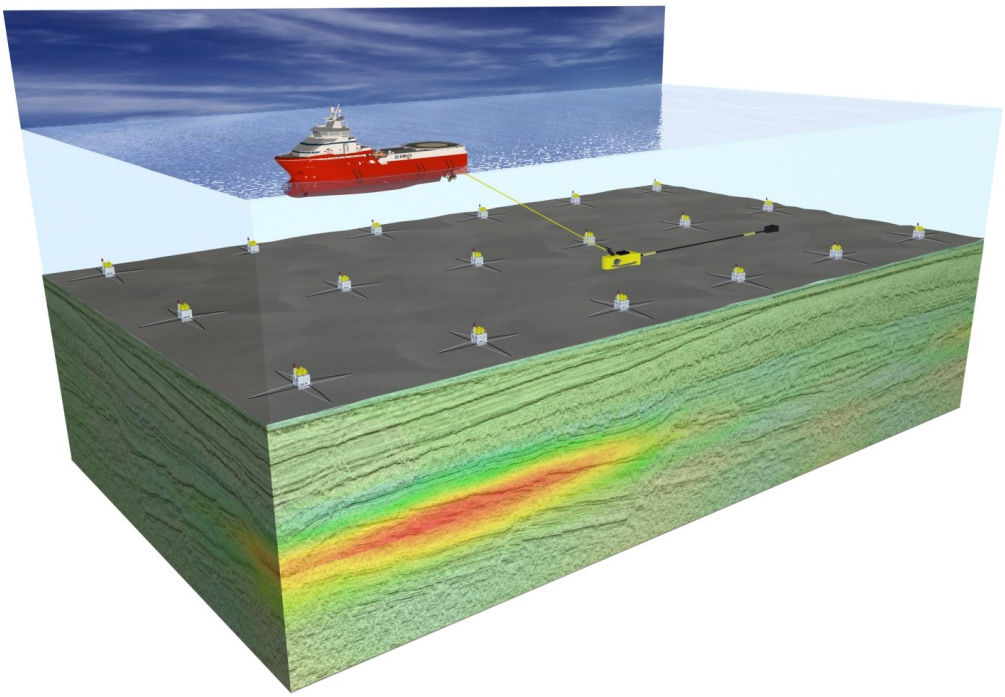
QHSSE is a strong focus in all aspects of our business operations. We have a culture of learning and provide training that motivates employees to take individual QHSSE responsibility. Our reputation depends on the quality of our products and services and the safety of our operations.

We are known for our drive to innovate. All EM hardware and software used in the delivery of our services are developed in-house and with selected industry partners.

The company was founded in 2002, pioneering the application of EM for offshore hydrocarbon exploration. Since then, we performed more than 950 surveys in frontier and mature basins across the world . EMGS is listed on the Oslo stock exchange.

What is EM?

Marine electromagnetic (EM) methods use electromagnetic field measurements performed on the seabed to determine the electrical resistivity of the formations underneath the seabed. Resistivity is an important rock property for hydrocarbon exploration since hydrocarbon charged reservoirs are characterized by high resistivity. Furthermore, structures that can be difficult to image reliably with seismic, like salt and basement, are associated with high resistivity contrast, making EM methods an excellent complementary measurement to seismic for structural and geological model building. EM methods have lower resolution than seismic due to the low frequency nature of the measurement, but higher resolution than potential field methods.



CSEM — Controlled-Source Electromagnetic: Active source EM method particularly well suited for detecting hydrocarbon charged reservoirs, which represent thin resistive layers.

MT — Magnetotellurics: Passive EM method for mapping basin geology and salt/basalt imaging. It measures natural EM fields generated by the interaction of solar wind with the Earth's Magnetosphere. MT can see very deep, but has lower resolution than CSEM.

EM – An integral part of the E&P workflow.

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