Encom™
Geophysics

Advanced Geophysical Modelling
and Visualisation Software
Applications

Encom™ Geophysics

Advanced geophysical data modelling and visualisation software applications used by geophysicists worldwide.

The detection and assessment of geological anomalies and natural or unnatural subsurface hazards are vital to the prosperity of the natural resources industry and the safety of the people who work in it.

Pitney Bowes Business Insight is working with scientists, mathematicians and engineers who are at the forefront of research into geophysical phenomena in order to provide the most innovative geophysical solutions. Our solutions assist geoscientists in every sector of the natural resources industry enabling you to collect, process and better understand the complex relationships between physical anomalies and the geophysical fields they create. We have the tools you need to handle airborne and field-based magnetic, gravity, seismic and electromagnetic surveys used in mineral, petroleum and natural gas exploration, mining operations, environmental, engineering and the construction industry.

With a network of over 60 resellers worldwide and customers in 100 countries, the Natural Resources division of Pitney Bowes Business Inisght is now a leading innovator and major supplier of specialist geophysical software to a range of industries located throughout the world.

Technology

Designed by geophysical interpreters for geophysical interpreters. Our technology provides access to some of the most advanced geophysical solutions available today. Whether you work in mineral, diamond or petroleum exploration, environmental geophysics, engineering, unexploded ordinance or underground hazard assessment, our applications are suitable for your project.

Leading edge technology. The geophysical research and development team at Pitney Bowes Business Insight is continually responding to industry challenges to provide new features and integration with other industry software products. You will benefit from over 25 years of continuous improvement.

Complete your software library. Our software excels in areas other developers pay less attention to. Whether this be the high-end advanced solutions or the ease of use through drag and drop of data files onto the window of interest, our interactive modelling, visualisation and interpretation tools will improve your productivity and assist in the integration and interpretation of datasets from other specialist software.

Mineral and Petroleum Exploration

Use our magnetic and gravity modelling products to aid in the exploration for base metals, gold and other precious metals, diamonds and mineral sands. Encom ModelVision can model complex geological shapes in three dimensions from both magnetic and gravity data with a minimum of effort. Encom QuickMag can be used by diamond explorers to model magnetic targets believed to be associated with kimberlite pipes. Use Encom PA Professional for integrating 3D exploration models of the earth to help influence exploration decisions and enhance your primary data.
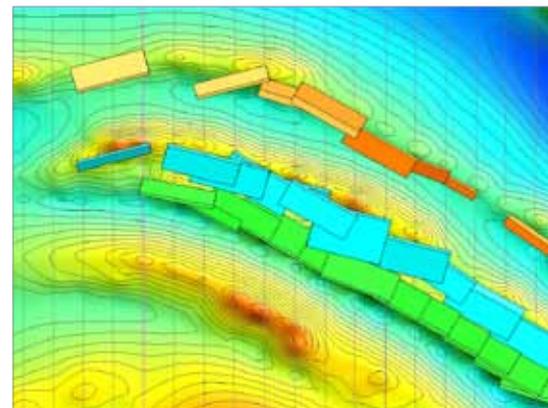
Hazard Assessment

Intrusions within coal mines cause major disruption to coal production and degrade coal quality. Early detection through the use of magnetic data can save millions of dollars in lost production drilling in uneconomic areas or unnecessary seismic survey coverage. Our modelling software can be used to assess intrusive dykes, sills, plugs and diatremes. Use Encom PA, our visualisation and analysis product, to aid the interpretation of landfill, buried drums and UXO investigations to ensure effective decision making and communicate your interpretations to colleagues. QuickMag can also assist identification of UXO by using its automatic remanence analysis.
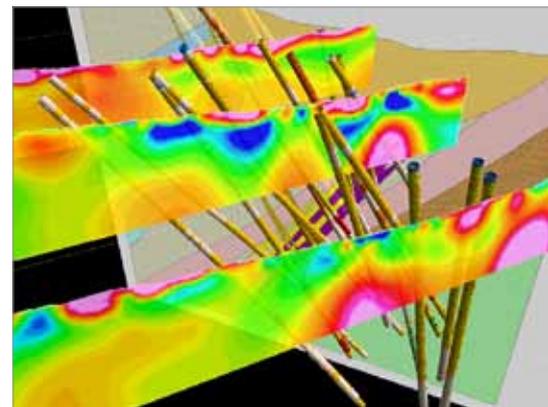
Environmental Studies

Because salty groundwater is a better conductor of electricity than fresh groundwater, electromagnetic maps of the electrical conductivity of the ground can indicate areas of both saline and fresh groundwater. By combining the airborne survey data with a drilling program, a three-dimensional interpretation can reveal salt stores and the pathways of groundwater flow that are most likely to deliver water and salt to streams. Use EM Flow to process airborne electromagnetic (EM) data and display this in Encom PA in vertical sections of conductivity-depth images or maps of variations in the subsurface electrical conductivity.
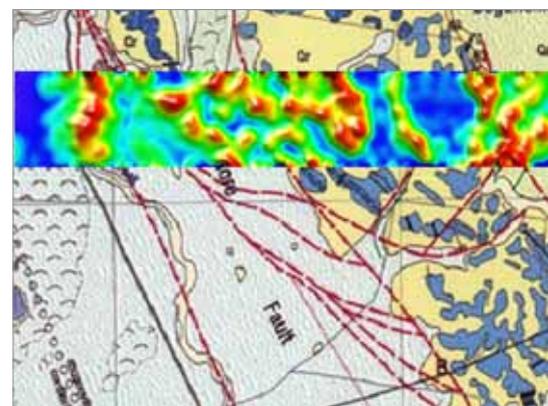
Encom™ PA™

Encom PA is an interactive interpreter's tool for the analysis of data in profile, map and 3D display formats. The information that can be analysed by this software includes single or multi-channel data acquired from airborne or ground surveys, including electro-magnetics (AEM), potential field (gravity or magnetic) data or a combination of these and many other data types.

Encom PA also provides advanced visualisation using both 2 and 3 dimensional displays. 3-dimensional presentations of images, sections, graphs, flight paths and data objects provides interactive display manipulation with zooming, pan and fly-through.

Templates allow fast creation of application-specific displays for magnetic, gravity, EM and spectrometer data. The template capability of Encom PA enables combinations of various display types. For example, you can easily combine profiles, sections, maps and graphs together for high quality printed output. The routine production of maps, sections and profiles is simple when templates are used. Templates are easily populated with your data by simply dragging and dropping the relevant file onto the desired view.

Encom PA Explorer

How Easy is it to Visualise your Data Models in 1D, 2D and 3D?

With Encom PA Explorer, you can visualise and compare all your line data, profiles, grids, modelling, images, drilllholes, maps and 3D visualisations in a single interactive interpretation environment.

Encom PA Explorer contains all visualisation methods for single or multiple curve profiles, section profiles, 2D maps and 3D displays.

This package also allows data linking between profiles and 2D maps and you can easily pick a feature in one view and have its location show in another. Various data import and basic processing utilities include:

- Simple survey line processing and filtering

- Grid processing and filtering (FFT and Convolution filters) for very large grids (>1.0GB)

- 2D gridding of line or point data

- Simulate geophysical airborne surveys over arbitrary terrain

- Drillhole visualisation in 1D, 2D and 3D

- Create 3D fly-through videos for presentations

- Preserve your processes with templates

Encom PA Professional

How Easy is it to Enhance your Data?

Encom PA Professional includes all modules available in PA Explorer plus a number of additional utilities for extending the interpretation functionality of Encom PA, such as digitising features in 1D, 2D and 3D.

Encom PA Professional provides a method of accumulating geophysical knowledge by using databases to store details of interpreted features. Access to this geophysical knowledge can be made directly in Geographic Information Systems (GIS) such as MapInfo/Discover and ArcView.

Extended functionality includes:

- Create 3D fault surfaces and volumes

- Create interpretation objects in sections, 2D maps and 3D displays

- Geologically enhanced grid filtering

- Interactive 3D voxel gridding

- Produce grid sections of conductivity/resistivity or IP data

- Design drillhole collar locations and drill depths

Encom PA Viewer

How Easy is it to Communicate your Presentations and Interpretations?

With the separate free-to-use Encom PA Viewer installation, any packaged session file from Encom PA Explorer or Encom PA Professional can be displayed and the views manipulated, including turning datasets on and off.

Fly-Through animations created in Encom PA Explorer or Professional can be executed in a loaded packaged session file and any display windows in a session can be printed or saved as a high resolution image.

Use the Encom PA Viewer to collaborate ideas with colleagues or clients or to convey your information to joint venture or investment partners.
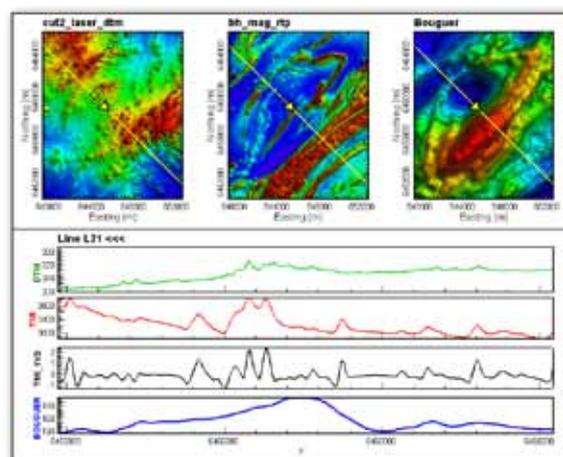
Encom™ ModelVision™

Reduce your Exploration Costs

Encom ModelVision will help you reduce your exploration costs. Simulate a complete aeromagnetic, magnetic gradiometer or airborne gravity survey of any commercial airborne instrumentation system and reduce your cost by optimising the survey parameters. Reduce the number of drillholes required to test your targets through precision modelling.

Better Drilling Decisions

Get beyond the simple automated inversion techniques through the application of geological constraints to reduce the inherent ambiguity in potential field modelling. If you use magnetic and gravity data to support targeting, either directly or indirectly, the precision 3D modelling and inversion system will help you optimise your drill targets.

Solve your Geological Problems

ModelVision is your potential field laboratory. It allows you to investigate new airborne and ground systems such as the BHP Falcon and Bell Geospace gravity gradiometer systems. Model simple geometric shapes, complex mine plans or sedimentary basins, all in the one system.

Encom™ AutoMag™

Automated Depth Analysis

Encom AutoMag is an optional extension for ModelVision performing rapid depth-to-magnetic source estimation and fast processing of large surveys. AutoMag uses the full precision of original line data to increase the data accuracy of the inversion. A refined version of the Naudy automatic inversion method, AutoMag bridges the gap between automated depth to magnetic source methods and pure interactive modelling.

Individual solutions with properties of X, Y, Depth, Susceptibility, Thickness, Dip and Azimuth and correlation coefficients are displayed in cross-section or map displays. Dynamic filtering of these solutions based on reasonable geological criteria while receiving immediate feedback allows you to quickly generate large numbers of magnetic solutions simultaneously over large survey areas.

AutoMag uses the azimuth and confidence grids generated from the included trend gridding application for strike correction and filtering.

UBC MAG3D, GRAV3D

Constrain your UBC Voxel Inversions

With this optional extension, ModelVision allows you to create UBC MAG3D and GRAV3D models and control files quickly and conveniently with complete control of the geological constraints. Save time by creating all datasets, mesh, topography, model and run the programs directly from ModelVision. Populate your starting model mesh with your current ModelVision model set. Run trial meshes to test your run times and prevent wasted runs. Once the mesh design has been completed, the mesh, properties, data and terrain are automatically exported to create each of the files required to run the UBC-GIF programs.
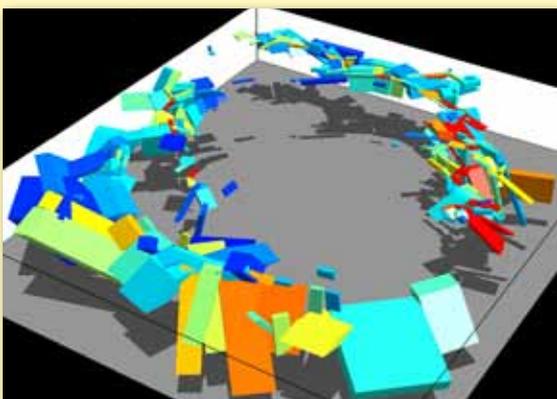
The Industry Standard

A potential field workbench with a comprehensive suite of tools. Use ModelVision to visualise, process, analyse, model, simulate and invert data from almost any ground or airborne instrument. Algorithms have been developed and refined for over twenty years with many firsts such as full tensor modelling and jointly inverting multiple tensor channels for both gravity and magnetic 3D models.

Encom™ QuickMag™

Fast Geological Interpretation

Encom QuickMag is a high performance, 3D user guided inversion package that is easy to learn and fast to use. QuickMag provides new capabilities in automatically calculating the total magnetisation vector which can then derive the remanent vector. The remanent vector can be used to determine geological time constraints from apparent polar wander charts. No longer should you feel that there is useful geological information left untapped in your surveys. All you need is a grid of your magnetic data and optionally a grid of the survey terrain.

Direct Calculations

If you need to know how deep a source body is, where its sides are and what magnetic properties it has then QuickMag will provide these expert capabilities for you. It is as simple as choosing a geological model style, selecting the magnetic anomaly with your mouse and letting QuickMag do the rest.

Dykes, Magnetic Strata & Pipe

QuickMag is best suited to geoscientists who want to obtain quick results for a wide range of magnetic anomalies, without finessing the fine details of the anomaly. You can model pipes, plugs, sills, dykes, and folded magnetic strata with QuickMag.
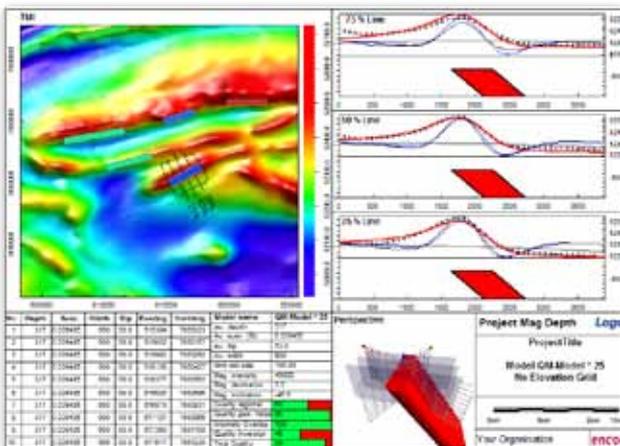
Estimate dip for magnetic strata to help separate synclines from anticlines. Changes in the dip of a source body which are difficult to detect through simple inspection of magnetic field imagery can be revealed by inversion of the data.

EM Flow

Resolve the Third Dimension

Simple presentation of your EM data is not sufficient. If you want to understand the electrical properties of the subsurface, then you will need our EM Flow product to provide you with a practical solution developed by world leading researchers in Australia and Canada for processing and visualising EM data.

Advanced Research

Encom EM Flow provides you with access to well over 100 man years of advanced EM research and development. These tools have been field tested by the leaders in mining and are used throughout the world in resource exploration.

Fast CDI Processing of Airborne TEM/FEM Data

EM Flow provides accurate and fast processing of EM data. Highly optimised routines developed by CRC-AMET researchers have revolutionised the speed at which airborne EM data can be processed to produce a conductivity-depth image of the subsurface.
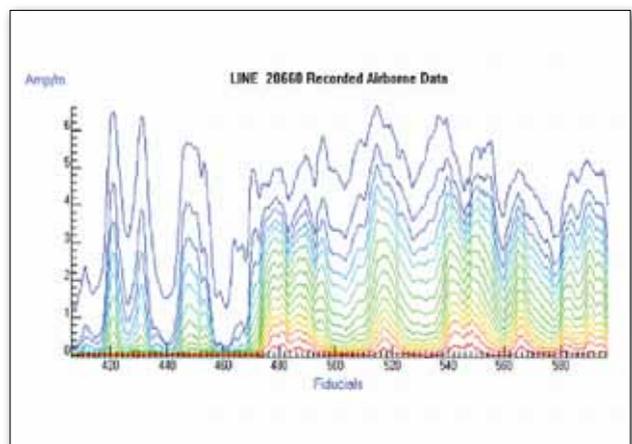
- Time and frequency domain systems (TEM & FEM)

- Specify the EM survey system and its parameters

- Graphical display of stacked conductivity-depth image sections

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