The world’s highest-resolution AGG system

**FALCON** is the only purpose-built airborne gravity gradiometer (AGG) system. Unlike similar competitor systems, our AGG is not an adaptation of legacy submarine navigation systems. **FALCON** provides the highest sensitivity and best spatial resolution data of all commercial airborne gravity gradiometers.

All our systems flying globally come with the reassurance of:

- Industry-leading technical, operational and interpretation personnel
- Safety, Quality and Project Management expertise
- Mature and reliable technology commanding the dominant market share of all surveys flown in the last decade
- Time- and cost-effective non-invasive data acquisition over prospective zones
- Addition of complementary data, e.g. magnetic, electromagnetic and radiometric, providing further insights into the geological challenge
- Full 3D earth model interpretations available

Magnetic data are acquired as standard on all **FALCON** surveys.

**FALCON Plus: halving the noise of the world’s best AGG system**

Multiple improvements in hardware, software, and data acquisition technology enable **FALCON Plus** to deliver half the noise of the **FALCON** system. In addition, **FALCON Plus** provides 20 times better spatial resolution (150 m vs. 3000 m) and up to 10 times higher accuracy (0.1 mGal vs. 1.0 mGal) than conventional airborne gravity. Because of its higher accuracy, **FALCON Plus** can be considered for detailed mapping of near-surface geology, particularly for velocity and thickness variations which play a major role in the accuracy of seismic static corrections computation.

CGG has 3 **FALCON Plus** systems ready for worldwide deployment.

Simulated vertical gravity gradient response from near-surface geology and deeper basement sources degraded with the noise characteristics of (a) **FALCON** and (b) the recently released **FALCON Plus** system. Color code: blue represents low-value gravity gradient, red represents high-value gravity gradient.
FALCON removes ambiguity in correlation of structures between 2D seismic lines
Identification of transform structures, Ungani North, Australia

The figure below shows two alternative and equally valid correlations of structures on adjacent seismic lines. It is not possible to determine which of the NW/SE or N/S orientation of structures is correct using the seismic alone.

Ambiguity in the interpretation of wide-line-spacing 2D seismic data.

When the seismic interpretation is considered in conjunction with the FALCON data, the correlation of the structures becomes clear. Transfer structures not previously recognized from the seismic data become obvious. FALCON provides valuable input into the interpretation of seismic data, effectively turning 2D seismic into 2.5D seismic for a fraction of the cost of the original seismic survey.

FALCON data removes ambiguity in seismic interpretation.
3D integrated basin model with FALCON
Joint interpretation of FALCON, magnetic, 2D seismic and well data, King Sound, Canning Basin, NW Australia

Integrated interpretation of FALCON, magnetic and seismic data was used to generate the 3D geological model of the sediments and basement in the King Sound region of the Canning Basin in northern Western Australia.

The area comprises carbonate, carbonate clastic and siliciclastic rocks. Comparison of the FALCON data with the 2D seismic profiles shows that the high-density areas coincide with carbonate buildup on the margin of the shelf, the intermediate-density areas coincide with fore-reef debris and carbonate clastics, and the low-density areas coincide with siliciclastic and turbidites.

Therefore the distribution of carbonate, carbonate clastic and siliciclastic rocks along with intra sedimentary structures were mapped. Basement structures were mapped using the magnetic data collected at the same time as the FALCON data.
A 3D geological model was built by integrating the 2D seismic profiles with the intra sedimentary and the basin information from the potential field data. In particular, the 3D distribution of the sediments was defined via a voxel model. Forward modeling and 3D inversion of the FALCON GDD data were performed to provide geologically realistic updated densities which minimize the misfit between the computed and the observed data. The final 3D model was then printed by making use of modern 3D printing technologies.

With thanks to Buru Energy for granting permission for the data to be published.