

# MOBILE GEOPHYSICAL TECHNOLOGIES

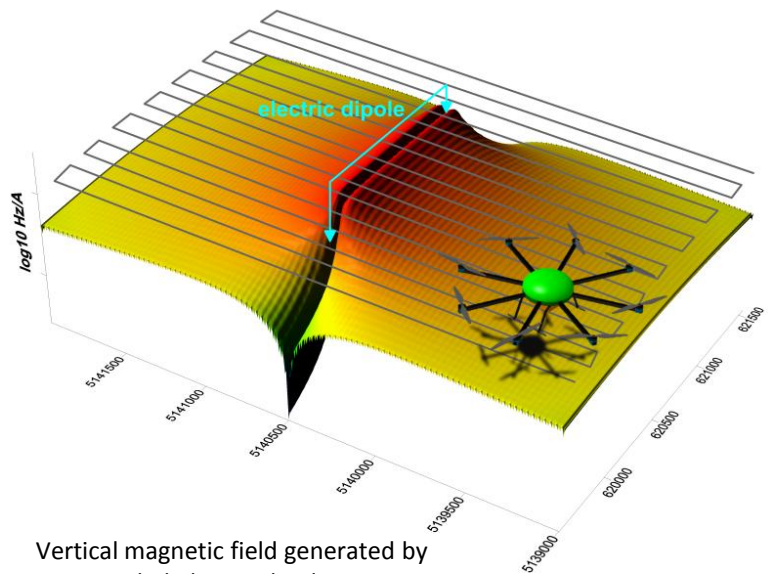
## UNMANNED AIRBORNE ELECTROMAGNETICS

MINERAL EXPLORATION | GROUNDWATER | GEOLOGICAL RECONNAISSANCE

FAST SURVEY COMPLETION  
IDEAL FOR PROSPECT SIZED SURVEY AREA  
DOUBLES THE DEPTH OF INVESTIGATION

**Airborne Electromagnetics (AEM)** are an efficient way in geological surveying and have been widely used in mineral exploration, and environmental monitoring. MGT has developed a Multicopter borne AEM technique that uses an electromagnetic source on the ground and the receiver is transported by the Multicopter along flight lines.

### THE UAV SEMI-AIRBORNE EM SYSTEM



Vertical magnetic field generated by an extended electric dipole source

### AEM SYSTEM: OCTOCOPTER

- 25 kg MTOW Octocopter carrying the EM system
- Speed: hovering to 12m/s
- Induction Coils Hx, Hy, Hz, GPS synchronized
- frequency range: 10 Hz – 60 kHz
- sample rate: up to 130 kHz
- production rate: 3-6 sqkm/day or 60 line km/day



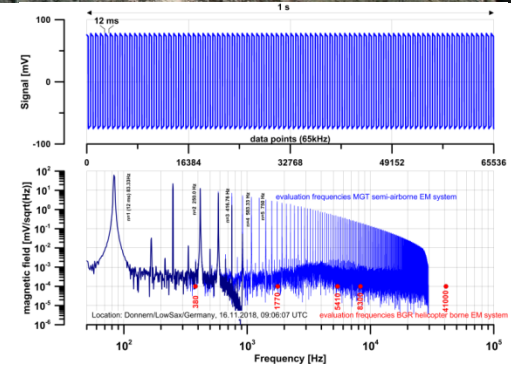
**UAV SEMI AIRBORNE ELECTROMAGNETICS**



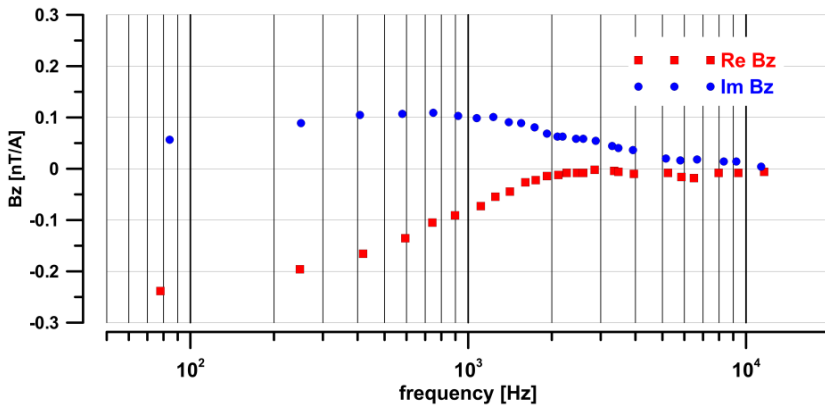
“Semi Airborne EM combines the features and advantages of ground and airborne methods. Its design allows to look deeper than all airborne EM methods”

MGT has engineered the next generation of an airborne geophysical electromagnetic system designed specifically to increase the exploration depth while delivering both cost effective and time-saving solutions. The method uses the signals generated by an extended electric dipole on ground. This source generates the fundamental frequency signal and a large number of harmonics in a wide frequency band. The technical benefits are:

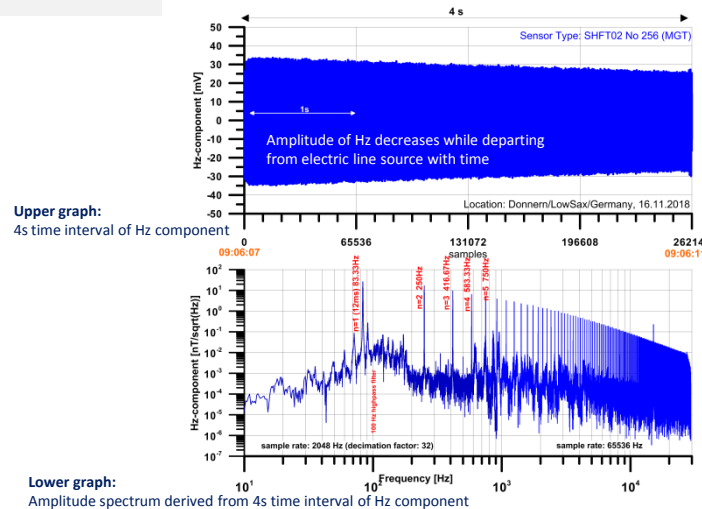
- High spatial resolution due to the low speed of the octocopter.
- High resolution of conductivity changes at depth.
- This technique doubles the exploration depth of other airborne EM methods.
- Semi Airborne EM is ideal for mining projects on prospect scale.



Upper graph : Transmitted signal; 10mV=1A  
Lower graph: Amplitude spectrum of 1s time interval



Transfer function, that describes the response of the transmitted signal and the receiver coi in the range between 100Hz and 10kHz



Upper graph:  
4s time interval of Hz component

Lower graph:  
Amplitude spectrum derived from 4s time interval of Hz component