KMS Technologies, an electromagnetics technology provider, has teamed up with Geosyn International that has over 20 years of ocean bottom seismic operations and integrated interpretation experience. This results in novel patented technology in electromagnetics and ocean bottom seismics that uses well proven components.

We are providing, VectroSeisEM, a broad-band (BB) 4C seismic/ 6 C electromagnetic node for shallow and deep-water geophysical applications. The BB Seismic/EM system can be operated in a passive or active mode. Active source operations require an air gun or controlled EM source of appropriate frequency band.

KMS initially developed the EM sensor technology as marine cable, implementing this in the KMS-820 land wireless array magnetotelluric system, which is commercially used in more than a dozen countries.

GEOSYN provides the BB seismic sensor, marine packaging and based on over 20 years of shallow and deep-water seismic operation experience.

The BB Seismic/EM system is mechanically optimized to satisfy all technical requirements for simultaneous acquisition of seismic and electromagnetic data. This technical advancement permits a tuned modeling and interpretation procedure of both data sets at the same time, minimizing acquisition cost.

**Highlights**

- Broad band seismic / electromagnetic receiver
- Seismic: 1Hz to 300 Hz or 60 s to 50 Hz
- Electromagnetics: DC – 180 Hz
- 4C seismic sensors
- 5 (6) C electromagnetic sensor (2 or 3 E-fields and 3 H-fields)
- Low noise input: 0.3 nV/sqrt (Hz)
- Memory: 32/64 GB standard SD card
- Telemetry wireless or cabled for onshore operations
- Battery life sufficient for 2 months continuous recording, extendable if requested
- Atomic clock synchronization with GPS before and after deployment
- Acquisition scheduler file saved in SD card enables flexible operation

**Applications**

- Oil exploration
  - Sub-basalt and sub-salt imaging
  - Basin mapping
- Reservoir monitoring
- Crustal studies
BB Seismic/EM system Technical Specifications

| Frequency bandwidth | Seismic: 1 Hz – 300 Hz or 60 s to 50 Hz  
Electromagnetic: DC - 180 Hz |
|----------------------|--------------------------------------------------------------------------------|
| Sampling rate        | Seismic sensor: variable selectable  
EM sensor: up to 4 kHz customizable selectable |
| A/D resolution       | 32 bit |
| Input range          | -2.5 V ~ + 2.5 V |
| Communication protocol | Long-range wireless |
| Supply voltage       | +5 – 24 V DC |
| Power consumption    | Typical < 2.5 W |
| Operating temperature range | -25° to 85° C |
| Packaging            | Glass sphere |
| Water depth          | Up to 9000 m |
| Recording time with refloating | 2 months |
| Timing accuracy      | ±10⁻⁹ s |

Patents

- Patents and derivative patents are filed also in other geographic territories.