

MAPPEM GEOPHYSICS

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□ Key words

Advanced engineering (including robotics / control systems) - Communications - Sensors / instrumentation / electronics - Software engineering / development

□ Description

The MAPPEM instrument is a **new marine sub-bottom profiler, based on electromagnetic techniques**. This innovative technology provides a new vision of the structures and the localization of buried objects in the sediment, particularly in areas where acoustic techniques cannot provide enough information (gas, acoustic masks,...).

Applications

- Geophysical surveys,
- sub bottom structures, geology
- Gas detection and risk assessment
- Buried objects 3D localization (Pipe lines, UXOs, Cables,..)
- EM Impact assessment of marine power plants & cables



Picture of the “mappem survey system”

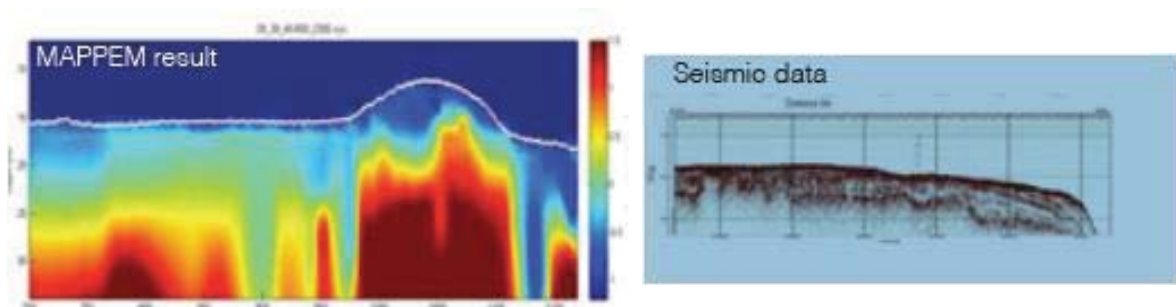
- ★ 20 simultaneous electric sensors
- ★ 0.5s acquisition rate
- ★ 24 bits resolution data acquisition
- ★ Navigation sensors (depth, altimeter, compass, tilts), GPS localisation

Innovative Features

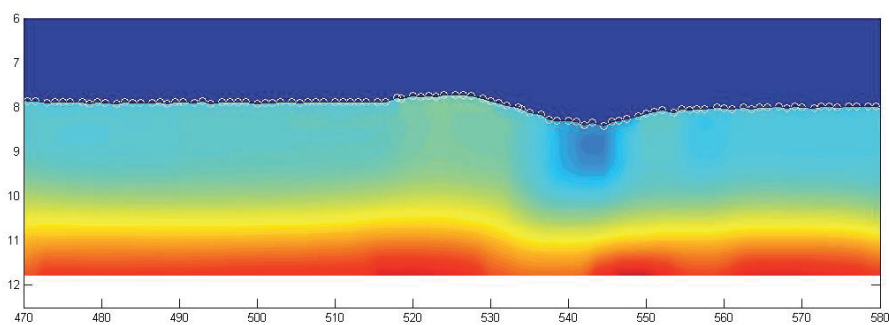
- Resistivity mapping with penetration to 10-50m below seafloor (depending on targets)
- «Colored» acoustic profiles with new physical added value information
- Submeter 3D resolution
- Real time data visualization

Examples

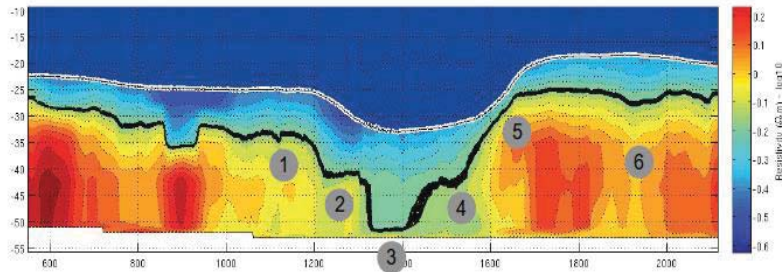
- Seismic masks: When the sediments include biogenic gas, seismic techniques are blind. Electromagnetic technology enable visualising the gas distribution in the sediments. The resistivity values give access to sediment porosity and gas content.



- Burried objects: research of an old pipe. A local local survey with Mappem product show differences of resistivity. The pipe here appears in blue, as more conductive than the surrounding materials as being metallic with an altered coating (old pipe)



- Sediment deposits: Mappem results show deeper structures (down to about 40m deep). The black line represents the sediment bedrock limit.



□ **Applicability of Technology to Maritime SMES**

Geophysical Surveys, site investigation for buried objects, defence and security industries, oilfield exploration and aquifer detection.