Newsletter – *May 2015*

ASB Systems Pvt. Ltd.

What lies beneath…

Dread not, this is not about the "para-normal", this is about the "para-sounder" ☺

As per NOAA, 95 percent of the oceanic realm remains unseen by the human eyes, and 99 percent of the ocean floor remains unexplored!

Some underwater facts…
- The longest mountain range in the world is under water. Called the Mid-Oceanic Ridge, this chain of mountains runs through the middle of the Atlantic Ocean and into the Indian and Pacific oceans. It runs more than 35,000 miles long, has peaks higher than those in the Alps and it comprises 23 percent of the Earth's total surface
- There are such deep trenches in the deep sea that a mountain like Everest could disappear into them without a trace!
- Sailors and other mariners have reported, that the ocean often emits a visible glow, or luminescence, which extends for miles at night
- Life within the ocean evolved 3 billion years prior to life on land
- Almost half the air we breathe, is the courtesy of the microscopic, oxygen-producing phytoplankton floating on the ocean surfaces
- Only three people in the world, one of them being James Cameron, have made it to the bottom of the Mariana trench, the deepest point in the world's oceans

In this issue…

Amazing underwater facts

Innomar New OEM representation - Innomar

.Ocean nautical innovations — Products for Dredging industry

Hemisphere New releases from Hemisphere

Customer satisfaction is our prime objective
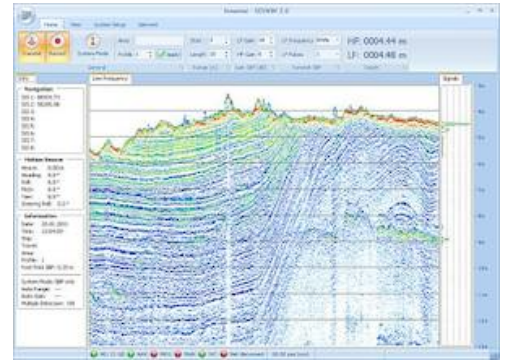
Sub-bottom profiling

Sub-bottom Profiling is a geophysical technique that can be used to determine sub-bottom stratigraphy (a branch of geology which studies rock layers (strata) and layering (stratification)). Sub-bottom profiling can return information from tens to hundreds of meters below the seafloor. These systems have received a lot of development owing to their use in the hydrocarbon industry for mapping oil and gas deposits below the seafloor. They can be divided on the basis of the wavelengths and strengths of the emitted sound into "sparkers", "chirps", "pingers", "boomers" and "air guns".

Parametric sub-bottom profiler: Innomar

Another technology employed to achieve high resolution sub-bottom profiling is called as parametric sub-bottom profiling. Common linear sub-bottom profilers (e.g. Pinger, Boomer) generate low frequency sound pulses directly. Transducer dimension and transmit frequency determines the beam width, the appearance of side lobes, the footprint and in turn the lateral resolution. Limitations of linear sub-bottom profilers are: the requirement of a large transducer size, and poor vertical resolution.

"Non-linear" or parametric technology has the capability to overcome the above mentioned problems.
The parametric effect is to generate a low frequency secondary signal by emitting two primary signals of higher frequencies. With parametric technology, narrow sound beams with a total beam width of less than four degrees for all frequencies are produced in spite of small transducers. Ping rates of up to 30 pings per second independent of water depth are especially useful for the detection of small-scaled morphological structures or embedded objects within the sediment.

For more than 10 years now the German company Innomar Technologie GmbH has offered parametric sub-bottom profilers for different applications and a wide range of water depths including shallow-water (1 to 500 m) and deepwater operation (down to full ocean depth). These systems are widely used for numerous inshore and near-shore applications. This includes the determination of silt layers for dredging purposes and waterway maintenance as well as the search for and thickness determination of sand layers for dredging and marine construction purposes, like during the Palm Island project in Dubai.
A common task is the detection of buried objects, like pipelines or archaeological artefacts and structures. This application requires high resolution, especially close to the seabed, where common linear systems are quite limited in their usability. Furthermore, the scientific community successfully uses the SES-2000 systems, especially when the application requires high mobility, for example during climate research in remote areas.

ASB Systems pvt. ltd. now represents Innomar Technologie GmbH in India. Do contact us for further information on the Innomar product-line

Graviprobe Free Fall Penetrometer

The GraviProbe is a free fall impact instrument, analyzing the underwater sediment layers during intrusion. Under its own weight it accelerates and penetrates fluid and consolidated mud layers. The rheological and density conditions of the soil layers determine the probe's dynamical behavior. The data acquired from on-board accelerometers, inclinometers and pressure sensors is feeding a dynamical model which determines the rheological parameters of the intruded medium (depth, undrained shear and viscosity). As a result the GraviProbe is able to very accurately distinguish the depth of the fluid mud and consolidated mud layers, even in gassy environments.

Due to its light weight the probe can be operated manually from a small vessel, platform or quay and thus limits the operational costs.

DensX density X-ray profiler

The DensX is a high accurate in situ mud density measurement system. The technology is based on X-ray and is a direct measurement method. With a sampling speed of 10 Hz the system supports fast profiling. The X-ray technology does not suffer from strong legislation restrictions like radioactive density measurement systems. The system weighs 70 kg and is able to deeply intrude in soft sediment layers.

It measures mud densities between 1.0 T/m³ and 1.5 T/m³ with an accuracy of 0.25 %. The DensX is applied in ports and access channels to characterize mud layers, to measure density based nautical bottom criteria and to prepare and evaluate dredging works. The accurate density measurement capability allows to determine precisely the ton dry weight of dredging material.

iCone – Cone penetration resistance measurement

With this manual mud or sediment profiler it is possible to analyze underwater soil layers in small waterways and rivers by manually pushing the instrument in the soil. This results in a full profile of the soft underwater layer from fluid mud to the hard bottom. The instrument can measure cone penetration resistance in fluid mud and consolidated mud.

The ICone is equipped with a Bluetooth connection for real time visualization of measured data on a ruggedized tablet (included).

Connection with standard GPS devices is supported or optionally an embedded highly accurate GPS can be installed.

With the collected data it is possible to constitute an accurate planning for dredging and maintenance of small waterways.

New releases…

Hemisphere GNSS Releases New Innovative, World-Class GNSS RTK Engine, known as "Athena"

Hemisphere has designed its new core engine to maximize the company's ability to excel at the rigorous GNSS requirements of multiple market segment customers in Machine Control, Survey and GIS.

The Athena RTK engine provides precise, reliable, and repeatable positions. Athena exceeds or matches the performance of all other GNSS receivers it has been tested against. Amongst its outstanding capabilities are:
1. Low initialization time of < 15 seconds at better than 99.9% reliability
2. Robustness in very difficult operating environments
3. Performance on long baselines
4. Performance under scintillation – Sustained accuracy under ionospheric scintillation activities

Before the end of this month, Athena will be included in all Hemisphere multi-frequency, RTK-capable products, such as the A325, R330, S320, and VS330.

Vector V320 GNSS Compass

Hemisphere GNSS has announced a top-of-the-line, RTK-enabled Vector V320 GNSS Compass. The first of its kind, the Vector V320 smart antenna supports multi-frequency GPS, GLONASS, Galileo (future firmware upgrade required), and BeiDou.

Designed for the professional marine and marine survey markets, the Vector V320 is the only multi-frequency, multi- GNSS, all-in-one smart antenna capable of both RTK-level positioning accuracy and better than 0.2° heading accuracy in a simple-to-install package.

Do contact us for further details….
Ciao!!