



Issue Two
Spring 2003

Underwater Solutions

Leaders in the supply of marine survey equipment

Providers of:

- Acoustics
- Geophysical Systems
- Floatation
- Subsea Tracking/Location
- Hydrophones
- TCM2 Compasses
- Oceanographic Systems
- Mooring Systems
- AUV/ROV
- Cameras
- Consumables
- Software Packages

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First Sea Trial A Success For New Benthos C3D

Benthos recently completed the first of a series of at-sea tests of its new C3D swathe Bathymetry system. The C3D integrated mapping system will provide a cost-effective high resolution tool for surveying the ocean floor.

The C3D design is centred around groundbreaking sonar technology called SARACAATI. This method is similar to interferometry, with the *huge* advantage that it can resolve concurrent arrivals from different angles i.e.: corners! For this reason, the system designers have described the technique as 'beyond interferometry.'

This was demonstrated in the sea trial, which took place at Fairhaven Massachusetts, where the tow vehicle (pictured right) passed between the vertical walls of the Harbour entrance. The results clearly defined the vertical walls of the harbour entrance and the sidescan data was also of a high standard. To see

the data examples please contact us or visit the Benthos website at www.benthos.com.

The intention is to produce a wholly integrated package that will save operational costs associated with separate data integration. Cost savings will also be realised with the omittance of hull mounted multibeam systems.

The tow vehicle is designed with stainless steel and a fibreglass shell, for stable operations at 1-10kts. The vehicle is also highly modular allowing for the use of a wide variety of industry standard sensors, such as:

- Motion Reference Unit
- Pressure Sensor
- Magnetometer
- CTD
- Altimeter

The C3D is also available in an over-the-side mount, or AUV

configuration, and future plans to include a sub bottom profiler option provide yet further system flexibility.

MK Services plan to have a demonstration of the C3D later in 2003, for further details please contact us.



Deployment of The C3D Tow Vehicle During Sea Trial

MK Services New Website Now Online!

MK Services is pleased to announce that our new website is now officially online. Customers can find information on all of our product range, including photographs and downloadable pdf data sheets.

We understand that customers don't want to waste time waiting for flash intros to

download. For this reason, our website has been designed to be easy to use, and highly functional. There will be access to recent newsletters and the usual updates on new products and current offers on consumables

Why not visit us now at: www.mkservices.co.uk

Special Offer On Coring Consumables

Our Spring special offer is on all our coring consumables product range.

We can offer a full range of core cutters and core catchers at discounted price, whilst our stocks last. Please visit our website for further details.

RAFOS-1 Hydrophone Used In Primayer Leak Locators

For over five years the RAFOS-1 hydrophone has been the tool of choice for Primayer's range of leak location equipment. Primayer are one of the international leaders in this field specializing pipe leak, and detection technology.

Since 1998 MK Services have supplied well over 250 hydrophones to Primayer. With their unique technology now well established in the marketplace numbers are set to rise steadily.

The RAFOS hydrophone con-

sists of a rugged, low cost cartridge with an integral mechanical thread mount and O-ring seal. This makes it ideal for bulkhead mounting, as in the Primayer "Eureka" range of leak locators. Like all Benthos hydrophones the RAFOS-1 offers high sensitivity over a large frequency range.

The principle method behind the Eureka device is Leak noise correlation. Two sensors, with RAFOS hydrophones mounted in them, are positioned either side of the suspected leak position and the

time it takes the leak noise signature to reach the sensors is measured. By knowing the distance between the sensors and the sound velocity in the pipe, the leak position is accurately calculated.

The use of the RAFOS-1 hydrophone, in this application, demonstrates the flexibility and appeal of Benthos products to a wider variety of customers.



Primayer's pipe leak detection and location equipment

British Antarctic Survey Orders Bottom Finding Pingers

MK Services have recently received an order for two Deep Sea Bottom Finding Pingers from the British Antarctic Survey (BAS). The Pinger is to be added to the constantly evolving equipment pool managed by BAS, and is to be used in deep sea Geology applications.

The main function of the Pinger is to monitor height above seabed of subsea equipment, however it can also act as a beacon for site relocation. Altitude informa-

tion is determined aboard ship by measuring the time difference between the pingers direct pulse and reflected pulse off the ocean floor. Both signals are received on the ship via a standard echo sounder.

When the signals are received and displayed on recording equipment, a succession of the direct and reflected pulses generates two lines whose distance apart represents the Pinger altitude.

The deep sea Pinger relies on a highly stable repetition rate, to limit interference, and a short pulse length to obtain good bottom resolution. With a stainless steel housing, the bottom finding pingers are rated to 12,000m to make them suitable for a wide range of applications.

The pingers will be used by BAS to obtain altitude information of their range of corers and dredgers.

"The main function of the Pinger is to monitor height above seabed of subsea equipment"

In Profile: The AQ-2000 Hydrophone

The AQ-2000 hydrophone is well suited for both towed streamer and ocean bottom cable (OBC) applications that require stable operating performance over a wide range of water depths.

The AQ-2000 has excellent acceleration cancelling qualities and exceptionally wide frequency bandwidth. The AQ-2000 is ready for installation

into standard array mounting configurations or integration into custom moulded packages.

Performance Specs.

Sensitivity @100Hz:
-201 dB re 1V/ μ Pa \pm 1.5dB

Frequency Response:
1Hz - 1kHz \pm 2.5dB

Sensitivity vs. depth:
<0.5 dB to 1000m

Sensitivity vs. temperature:
<0.03 dB per 1°C change

Depth:
2km operational,
7km destruct

Size:
4.56cm x 1.32 cm



The AQ-2000 Hydrophone Cartridge

New ADCP Mooring Frame Available

A new type of subsea mooring frame for ADCPs has recently been released by Mooring Systems Inc. The mooring consists of stainless steel frame, surrounded by 4 syntactic foam spherical buoys. The vane is mounted to ensure stability in currents.

For over a decade, Mooring Systems Inc. (MSI) has designed, fabricated, deployed and recovered, from buoy to anchor, top quality mooring designs and buoy systems for the international oceanographic community. Their expertise is firmly established in

the fields of deep sea moored or bottom mounted instrumentation structures.

As well as being heavily involved in instrument frame designs for various instruments (including the ADCP), Mooring Systems Inc also manufacture other products including:

- Surface Buoys
- Bottom Tripods
- Sub-surface Buoys
- Trawl-Resistant Bottom Mounts
- Cable Systems & Components

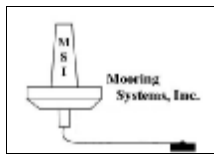
Mooring Systems Inc are also capable of carrying out custom analysis & design of moorings for all different types of application.

For any further information please don't hesitate to contact us.



ADCP Mooring Frame shown with Workhorse

Companies Represented By MK Services Ltd



General Response Form

Please indicate, by ticking the relevant boxes below, as to which line of products you would like more information.

Comments:

- | | |
|---|--|
| <input type="checkbox"/> GPS Intelligent Buoy (GIB) | <input type="checkbox"/> Oceanographic Instruments |
| <input type="checkbox"/> Telesonar Acoustic Modems | <input type="checkbox"/> REMUS AUV |
| <input type="checkbox"/> TCM2 Compass Module | <input type="checkbox"/> Floatation/Mooring Systems |
| <input type="checkbox"/> Geophysical/Geotechnical | <input type="checkbox"/> Geophysical software packages |

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**FIND US ON THE WEB AT
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M.K. Services are specialists in the provision of marine survey equipment to meet the precise needs of geophysical, hydrographic, surveying positioning and underwater inspection applications.

Representing some of the worlds leading manufacturers, M.K. Services is uniquely placed to provide a wide range of proven systems and services.

Above all we have developed a very close knit team of experts whose contribution to a client's operation goes far beyond expediting orders, since their expertise can help with choosing the correct combination of equipment for successful operation in the field.

For more details on any of the items listed in this newsletter, or for any general enquiries, please contact Sean Arnold or Nick Lawrence and we will be happy to provide you with all the information you require.

New 4.1 Mega pixel Digital Stills Camera Available

MK Services are now pleased to offer a 4.1 Mega pixel digital still camera for use in ROV, towed, bottom contact, and autonomous applications. The model DSC4400, manufactured by Ocean Imaging Systems, is capable of storing in excess of 500 images in its internal memory. A real-time video output makes image framing and camera control (via RS-232/485 link) easy. Image data is then offloaded via the externally accessible USB port.

Through-the-lens (TTL) light sensing permits the camera to be interfaced to flash units like the Model 3883 Auto-exposure strobe. The TTL sensor determines when the camera has received sufficient light then

commands the strobe to shut down for optimal image illumination.

Special power management circuitry makes the camera suitable for extended deployments. The camera can be programmed to go to sleep yet be triggered quickly by external switch closure or by its internal timer. It also has power control capability for the Model 3883 companion strobe.

Optionally, lasers create a 2-inch square target under software control for image measurement and scaling.

Housing selections include aluminium, stainless steel for 2000m depths and titanium for 7000m.



The DSC 4400 PCB board sets (above), and housing.