

MARINE TECHNOLOGY

Marck Smit*, Henk de Haas and Hans van Haren

The Scientific Peer Review in 2005 was followed by a 'quick scan' review in 2006 by our NWO colleagues from SRON and NIKHEF. Again we were very happy with the outcome: the customer appreciation was "very good to excellent". This continues to support our vision that we are developing in the right direction – shortly expressed by our motto "Effective technology for excellent science".

About 20% of the department's capacity was used to support scientific research cruises at sea, a slight increase of 2% compared to 2005. In 2006 we worked on 306 projects, of which a few are highlighted below.

Installation of Multibeam Echosounder

One of M Tec's major projects was the installation of a deep-sea Multibeam Echo Sounder on the RV Pelagia. A Multibeam Echo Sounder is an "acoustic eye" that can look in the water and produce depth charts down to 6.000 m. (For scientific details see MCG)



Eddy Lund of Kongsberg (l) and Tjeerd van Weering sign the contract



Almost 1.000 m of electrical cables had to be laid in the vessel

After an extensive European tender procedure a contract was signed with Kongsberg Maritime A.S. in mid January to purchase the EM-300 Multibeam Echo Sounder. The installation was undertaken 2½ months after the contract was signed, presenting quite a challenge for Kongsberg to produce and deliver the hardware so quickly. They responded well to this challenge, and the installation was completed within just 2½ weeks. Tasks undertaken included



Multibeam training for technicians and operators in Norway



All sensors – in this case GPS antennas - had to be measured within a coordinate system having 1mm accuracy

the installation of the gondola, the mounting and alignment of transducers, and of course installation of a great deal of cabling.

Directly after the Harbour Acceptance Tests, the successful performance of the Sea Acceptance Trials completed our final step.

As a closing testament to the EM-300, an Electronics Engineer reported from the RV Pelagia: "It is surprising how little support multi-beam-operation requires".



Mounting of the sensor-array under the vessel



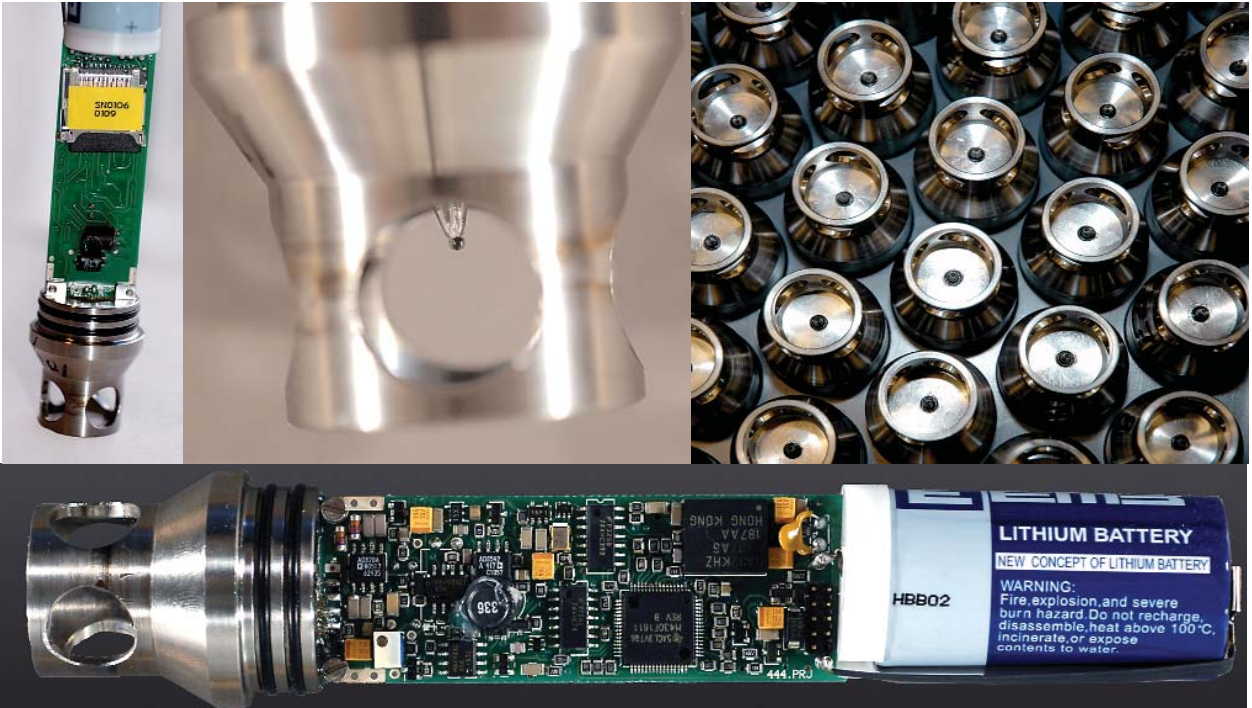
The T-shaped sensor-array mounted in a streamlined gondola under the ship's hull

Visualizing Internal Waves

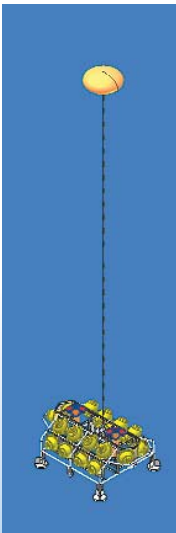
Temperature can be used as a tracer for large water masses. By using a series of fast sampling and accurate thermistors complex real-time dynamics within water masses can be visualized.

Thermistor String Model 3 is a good example of a short duration project. The time between the start of manufacturing and the first ocean deployment was only four months. A new concept resulted in a leading edge technology solution for the field of Physical Oceanography. The main charac-

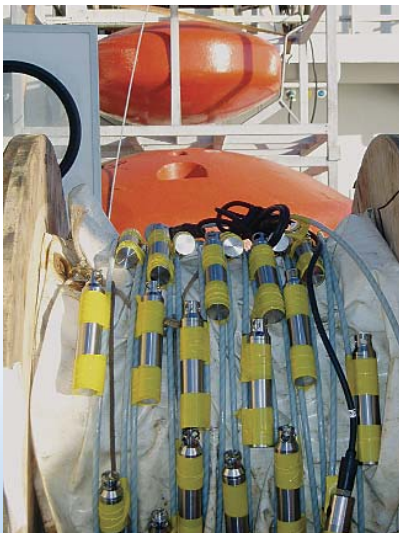
teristics of the instrument are: very accurate (better than 1 mK), no connecting electrical cables, inductive communication using a mooring cable and a 2 year stand alone endurance whilst sampling at a rate of 1 Hz.



Thermistors of Model 3



Lander configuration



On the mooring drum



Recovery during the LOCO-IW cruise



Interactive deep sea video images

For the BOBO Bottom Lander a controllable pan and tilt deep sea video system including lighting was developed to enhance the range of the covered area.

This system is particularly valuable as it aids in achieving interactive tasks with the deep sea Bottom Lander.



International outreach

INMARTECH (International Marine Technician Symposium) is one of the leading conferences in the field of marine technology for sea and ocean research.

At this conference at the Woods Hole Oceanographic Institution (USA) NIOZ presented 6 papers which all received a great deal of attention. The titles of the presentations were:

- * Pressure Retaining Deep-sea Sampler
- * A New Ultra Clean CTD-System for Sampling of Trace Elements and Isotopes
- * Fast Thermistor String model 3
- * Improved Mooring Cable Stopper
- * New Water Sampler Valve: High Opening Ratio and Inert Material
- * Hull Penetrating Instrumentation Platform for Ferries



Edwin Keijzer is approached by interested persons after his presentation of the latest model of the NIOZ Fast Thermistor String

Repair of Texel-ferry Scientific Sensor System

In 2005 the new Texel-ferry Dr Wagemaker was equipped with a Hull Penetrating Scientific Measurement Platform. Modifications and repair had to be executed during a dry-dock service of the vessel.



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Small men under a large vessel



Shipboard technical support

A busy schedule of Scientific Research Cruises was supported. Apart from the cruises on the RV Pelagia we supported cruises on the RV Discovery (UK), RV Universitatis (Italy) and MV Arca.



On the Rijkswaterstaat vessel MV Arca NIOZ-technicians deploy the Deep Digging Dredge during a combined BSIK and Marine Protected Areas cruise on the North Sea.