Micro-Structure Turbulence Sensor Package for the Seaglider™ Autonomous Underwater Vehicle



KONGSBERG



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Presentation overview

- What is Seaglider™?
- Application for microstructure turbulence sensor
- Sensor integration
- Sea trials and performance

Seaglider™



An autonomous underwater vehicle that utilizes wings and small changes in buoyancy and attitude to achieve forward motion and navigation

- Very little energy is expended using this form of propulsion.
- No external moving parts are necessary, making it very robust.

Seaglider™







Why Gliders?

Benefits:

- Extended duration deployment
- Low capital cost
- Deployment costs are significantly less than traditional means of obtaining the data that is gathered
- Resulting data provides good temporal and spatial scales not possible with research vessels or traditional AUVs
- Most data is retrieved in near real time via satellite
- A wide range of sensors can be integrated into the vehicle depending on the application
- Vehicle is piloted remotely via the internet and satellite link



Study of Air-Sea Interaction & Heat Transfer in the Ocean

Micro-structure turbulence sensor is an ideal tool for this application





Maintaining Efficiency

- Seaglider is designed to be extremely efficient at moving through the water
- A large part of that is the low drag composite fairing
- It is important to minimize parasitic drag when integrating sensors





Sensor Integration

 Kongsberg worked closely with Rockland Scientific International in order to develop an OEM sensor package that would have minimal impact on vehicle flight performance



Standard RSI MicroRider

- Length: ~ 1 meter
- Weight: 5.5 kg in air



OEM RSI MicroPod package

- Length: ~ 27 cm
- Weight: 0.3 kg in air



Seaglider MicroPod Sensor Package

Complete package incorporates the following sensors

- Shear probe
- Fast thermistor probe
- Accelerometer

Main electronics located in pressure housing mounted in the aft payload bay







Sea Trials

Trials held in Puget Sound, Washington, USA and Loch Linnhe, Scotland show promising results





Performance

Lateral shear data (blue) from Loch Linnhe shows close correlation to Nasmyth spectrum up to 70 cpm



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