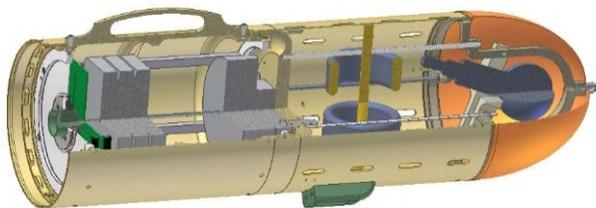


## STM – Sonar Transponder Module for AUV

### Transforming an Autonomous Underwater Vehicle to a Sonar Training Target

The STM is a module for receiving and retransmitting sonar signals. It is integrated as part of an AUV and is interfaced with the AUV's navigation and mission planning module. The resulting Sonar Training Target (STT) has the same functionality as the proven Scanmatic SONCAT system (Sonar Calibration and Training System), but with the added capability of being self propellant. This gives the possibility of giving correlation between Doppler (speed), distance and bearing to the target.

The STM consist of a flooded transducer compartment, an electronic compartment and a hydrophone that is towed 10 m behind the AUV platform.



*The STM*

The STM has so far only been delivered as part of the Teledyne Gavia (former Hafmynd Gavia) AUV. The module is however adaptable to other AUV's.

### Operation

The following operational modes are supported by the STM.

#### *Echo repeat mode*

The Sonar Training Target (STT) will for the sonar sensor look as a submarine travelling with the speed of the platform and with a maximum target strength of 20 dB, which is a typical medium size submarine.

#### *Store repeat*

When a sonar ping is detected by the STM, a pre-recorded echo is repeated. This mode gives the facility of full output power with no "sing around" problems, and a target strength of up to 40 dB can be achieved.

#### *Target highlights*

The echo can be manipulated the same way as a target with finite dimensions will do. Different targets can be defined and stored in a file with different aspect angle. When the platform is programmed to turn into a new leg of its sailing mission, an echo structure representing a different aspect angle of the target can be commanded to the STM.

#### *"Passive mode"*

The STM can output pre-stored pulses or pre-stored noise signals continuously or with intervals, and with varying level - either increasing or decreasing. This can be used for identifying a target among other targets, for simulating a torpedo attack or for warning surface ships when surfacing.

### *UWT commands*

An Under Water Telephone (UWT) can be used for commanding the STT . The UWT commands will be used for escape commands and change of modes only, as the STT shall normally carry out planned missions without interruptions from ships. The commands are relayed from the STM to the mission controller in the platform.

### STM Specifications

- Frequency range 5 - 50 kHz
- Noise transmit 3 - 20 kHz
- Programmable target highlights and echo stretch
- Programmable target size
- Programmable doppler



*STM as seen on a GAVIA AUV*