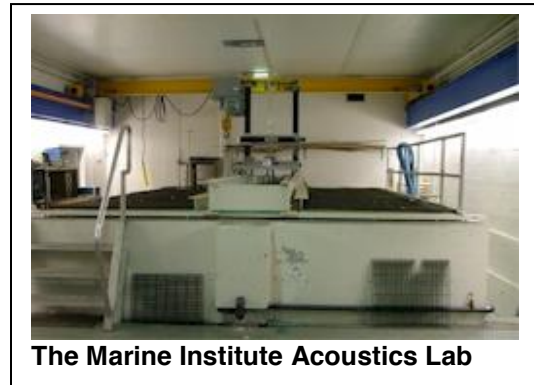


UNDERWATER ACOUSTICS LABORATORY

The MI Underwater Acoustics Laboratory is designed for calibration of underwater acoustic devices and/or systems and for applied research and development related to underwater acoustics. Operated by the Centre for Applied Ocean Technology, it is located at the Marine Institute, Memorial University of Newfoundland in St. John's, Newfoundland, Canada.

Specifications. The acoustics tank is a poured concrete structure with 30-cm thick walls. Its inside dimensions are 5.5 m in length (x-axis), 4.0 m wide (y-axis), and 4.0 m deep (z-axis). Normally, the tank is filled to a nominal depth of 3.85 m, with approximately 3.0 m below floor level. Although the water temperature cannot be controlled, it is generally maintained at an ambient temperature of approximately 17 degrees Celsius.

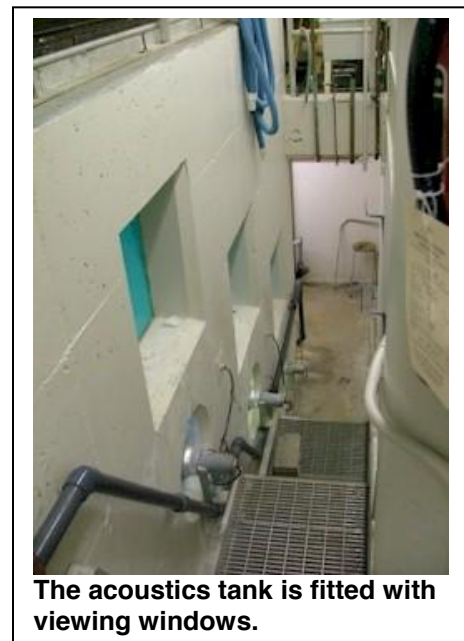


The Marine Institute Acoustics Lab

Features. Features of the tank include underwater lighting (consisting of three mercury vapor lamps, each with a diameter of 45 cm) and three large viewing ports installed in the west wall. At present, all underwater acoustic research is performed in fresh water from the city main water supply. The water is chemically treated to maintain neutrality and clarity and a re-circulating filter system removes sediment and other floating debris.

To facilitate easy access to equipment under test and to provide a safe working surface, the tank is covered by sections of steel grid work that may be easily removed. A two-stage transducer positioning system has been installed on a pair of fixed I-beams that traverse the longitudinal x-axis of the tank. The first stage of this system allows for 360 degrees of rotational motion about the z-axis, while the second stage provides translational positioning capabilities along the x- and z-axis with a distance of travel up to 0.5 m in either direction. DC stepper motors drive all movements. Both stages are free to move independently over the entire length of the tank but may be fixed rigidly in place.

The tank is also equipped with a 1.8 tonne capacity overhead crane, which can be positioned anywhere in the x-y plane above the tank. The only physical restriction on bringing large objects into the tank for testing is the entrance to the facility, comprising of a set of double doors with an overall width of 2 m.



The acoustics tank is fitted with viewing windows.

Equipment. The stepper motor sub-systems on the tank carriage are controlled through a Velmex VXM-4 4 axis stepping motor controller. This is an intelligent microprocessor controlled unit with a full duplex RS-232C interface port.

Some of the equipment available at the facility includes:

- Bruel & Kjaer
 - Dual Channel Signal Analyzer (Model 2032)
 - Sine Generator (Model 1051)
 - Measuring Amplifier (Model 2636)
 - Miniature Reference Hydrophone (Model 8103)
 - Spherical Reference Hydrophone (Model 8105)
 - Hydrophone Calibration Kit (Model 4223)
 - Signal Gating System (Model 4440)
 - Precision Conditioning Amplifier (Model 2650)
 - Conditioning Charge Amplifier (Model 2635)
 - Power Amplifier (Model 2713)
- Tektronix AC Current Probes with Amplifiers (Model P6022)
- Reson
 - Pre-amplified Broad-band Spherical Hydrophone (Model TC4014)
 - Spherical Reference Hydrophone (Model TC4033)

Contact:

For further information or to book time in this facility please contact:

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