

MARINE DELIVERS ... progress in the fight against invasive species

The Great Ships Initiative (GSI), founded with seed money from the marine industry, is the world's only freshwater ballast treatment technology test centre. Through the work of its research scientists, GSI promises to accelerate the development and deployment of effective ballast water treatment systems on commercial vessels.

HELPING TO BRING BALLAST WATER TREATMENT EQUIPMENT ON BOARD

Today, vessels entering the Great Lakes region undergo the most stringent ballast management and inspection regulations in the world. Since the latest measures were introduced in 2006, there have been no reports of new aquatic nuisance species introductions in the Great Lakes System due to shipping. The marine industry, however, is committed to eventually eliminating any risk in the future and therefore supports international regulations requiring installation of ballast water treatment technology aboard all ocean-going vessels.

Unfortunately, ballast treatment technology is in its infancy and only now becoming available to ship owners. Much of it has yet to be tested and validated – particularly in freshwater conditions like those in the Great Lakes.

Launched in 2006, the Great Ships Initiative (GSI) is a partnership between the marine industry, academia, government and non-governmental organizations to accelerate research and development of effective ballast water treatment technology.

GSI provides independent research and testing facilities and services to treatment system developers with the goal of bringing effective products to market as soon as possible. It will also provide technical expertise to encourage the early installation of ballast-water treatment equipment on vessels operating within the Great Lakes and Seaway and entering the System from abroad.

The Northeast-Midwest Institute manages the initiative with scientific and technical support from the University of Wisconsin-Superior and the University of Minnesota-Duluth. The marine industry provides technical expertise and ships for testing prototypes to help determine whether they work to expectation in real-world conditions.

Funds to support GSI have been assembled from the marine industry, federal grants, Congressional appropriations, state governments, and foundations.

STATE-OF-THE-ART FACILITIES

Paired with the laboratories of the University of Wisconsin and University of Minnesota, GSI's test facility in Superior, Wisconsin, provides cutting-edge infrastructure to evaluate treatment systems and determine if they can perform to meet international standards.

Candidate treatment systems are evaluated at three sequential levels:

- Bench-scale tests (in laboratory) determine whether a system concept works. If a system uses chemicals, researchers first isolate and verify the treatment process. Next they determine the dose required for a system to be effective in an array of conditions against a range of test species. The scientists also study whether any chemical being proposed for use has potential residual toxicity, as well as how long it takes for the chemical to safely degrade. Any problems identified at this stage would generally mean redesign or re-evaluation of the system's prospects for its intended use.
- Land-based tests are made available to those technologies that show promise in the laboratory. GSI's land-based test facility is designed to simulate real-world conditions, including water flow rates, water volumes and diversity of organisms. Land-based testing will also detect any defects in mechanical systems.
- Shipboard tests – the most expensive and difficult of the evaluations – are reserved for the systems with the greatest promise. These tests confirm whether a system's biological and operational performance meets expectations on a vessel in the wide range of conditions likely to be encountered during a voyage. A number of Great Lakes vessel operators have volunteered ships to be used as test platforms. Because vessels are – by their very purpose - constantly in motion, GSI owns and operates a mobile laboratory specifically to enable researchers to “follow” vessels as they move throughout the region.

INDEPENDENT RESEARCH

GSI testing and evaluation services are made available to technology developers free-of-charge based upon an independent evaluation of product viability. In exchange, companies must agree to public release of test results. All testing protocols are consistent with those established by the International Maritime Organization, an agency of the United Nations. More information on the Great Ships Initiative can be found on the project's web site: <http://www.nemw.org/GSI/index.htm>

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