



Great Lakes Maritime Research Institute

A University of Wisconsin - Superior and University of Minnesota Duluth Consortium

Quarterly Update (January-March 2012)

April 2012

Co-Directors: Richard D. Stewart & James P. Riehl

GLMRI co-hosts LNG Agenda for Cleveland Meetings with SNAME Section and GLWC

GLMRI coordinated a slate of speakers to host Liquefied Natural Gas (LNG) informational sessions with industry and provide a venue for discussion and exchange with agencies, maritime industry engineers and gas suppliers. At the Great Lakes Waterways Conference (GLWC), Dr. Richard Stewart, Co-Director of GLMRI moderated a panel titled "The Future of Maritime Fuels – Greening the Fleet". Dr. Stewart provided an overview for the discussion, and tied in the last historic fuel change from coal to fuel oil. Dr. Michael Parsons, faculty emeritus from the University of Michigan's



Naval Architecture and Marine Engineering Department presented a brief update on his research on converting the Great Lakes steamships to LNG. Mr. Frank Duffield provided a synopsis of LNG utilization in Europe, and discussed how some of the governments were incentivizing the fuel conversion. Mr. Duffield currently is employed as Senior Vice President of Argent Marine Companies, a U.S. based corporation with extensive experience in LNG shipping and is also a visiting Fellow at the University of Auckland, New Zealand, Business School.

The second venue was a 2-day technical session with the Society of Naval Architects and Marine Engineers (SNAME), Great Lakes and Rivers Section with over 100 attendees. Mr. Gary Van Tassel from Argent Marine provided a 2 hour class/general information session on Thursday afternoon, 23 February to allow for questions in an educational setting. Also, Mr. Bob Kamb, Marine Operations Consultant from Mystic River Partners, presented an overview of gas availability. On the second day, Dr. Parsons provided his preliminary findings on the GLMRI Study for converting the Great Lakes steamships to LNG. A panel of marine engine manufacturers discussed available technology, and on-going work in their companies.

Mr. Odd Magne Horgen, presented information from Rolls Royce/Bergen Engines and showed a brief video on the ferries that are operating in Norway. Mr. Chad Verret from Harvey Marine with Mr. Peter Jacobs from Wartsila Engines, discussed the building of the first U.S. Flagged dual fuel/LNG ship and the design parameters of the engine. Mr. Verret pointed out that they are addressing each of the issues as they present themselves, but are moving forward with the construction. Mr. Jonas Nyberg from Caterpillar, Inc. discussed what they are doing with dual-fuel marine engines. Mr. Ken Westcar from Toromont Power Generation Systems discussed the issues with capital costs and fuel infrastructure.

Speakers from the classification societies' business development departments also were present to address LNG. Mr. Stephen Gumpel from ABS and Mr. Tony Teo from DNV each spoke on their involvement in LNG fuel integration.

Also, a contingent of students from the University of Michigan's Naval Architecture and Marine Engineering program and the University of Wisconsin-Superior's Transportation and Logistics program attended.

Check out the LNG information at:

www.glmri.org/research/

We have added links to reports, articles, presentations (including the presentations from the Cleveland Meetings), YouTube videos and more to centralize information on LNG.

Mark Your Calendars!

K-12 Teachers' Summer Maritime Institute
in the Eastern Upper Peninsula of Michigan
16 – 20 July 2012

GLMRI Fall Meetings
Duluth, MN
27-28 September 2012

Ballast Tank Sampling Underway

The Lake Carriers' Association has contracted with GLMRI to sample and analyze the biological content in the sediment extracted from Great Lakes vessels' ballast tanks. The research is being conducted under the University of Minnesota Duluth's Biology Department. Dr. Donn Branstrator is leading the tests. The research team has taken samples from three vessels over two periods of time – once during active operations and a second sample while the ships were in winter layup. Dr. Branstrator is planning to get another set of samples during the spring season prior to initiating the biological analysis over the summer. (Photo of **Matthew TenYeck**, Associate Researcher)

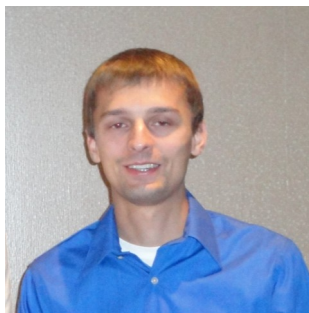


GLMRI Research Students Complete Degree Requirements

Simo Mäkiharju completed his PhD defense and the degree requirements in January. His work on the GLMRI Air Lubrication Drag Reduction Study is included in his dissertation. He is now working as a Research Fellow in the Department of Mechanical Engineering at University of Michigan, and will continue to work with Professor Ceccio until August 2013. Simo's post-doctoral project involves experimental work for Computational Fluid Dynamics (CFD) validation, and he will continue working on publications.



Ryan Oster completed his Master of Science in Water Resources Science with an emphasis in aquatic biology/microbial ecology this semester at the University of Minnesota Duluth. He presented his research thesis in January on his work with Dr. Randall Hicks, "Assessing Corrosion of Port Infrastructure in the Duluth-Superior Harbor: Microbiological and Water Quality Factors". His career goal is to work with governmental agencies which research and monitor pathogens in aquatic environments.



Key Outreach, Events, Presentation, Meetings

- Dr. Stewart presented an update on GLMRI at the Marine Club meetings in Toronto, ON. 19-20 Jan.
- Dr. Stewart and Ms. Wolosz participated in the annual Transportation Research Board conference. Dr. Stewart presented GLMRI updates at the Marine Environmental and the Ports & Channels Committees. Washington, D.C. 22-25 Jan.
- Dr. Stewart and Ms. Wolosz met with the Executive Director of the American Great Lakes Ports Association. Washington, D.C. 22 Jan.
- Dr. Stewart and Ms. Wolosz met with MARAD personnel (Mr. Carter and Mr. Yuska/telecom) to discuss the progress of the Repowering study, and provide initial books from the literature review for their use and needs. Washington, D.C. 23 Jan.
- Dr. Stewart and Ms. Wolosz met with the St. Lawrence Seaway Development Corporation administrator and staff to discuss on-going studies. Washington, D.C. 23 Jan.
- Dr. Stewart and Ms. Wolosz met with congressional members and staffers to provide an update on GLMRI along with an overview of the LNG study. Washington, D.C. 24 Jan.
- Ms. Wolosz met with researchers at the Lake Superior National Estuarine Research Reserve to discuss collaborative opportunities for studies. Superior, WI. 16 Feb.
- GLWC, SNAME and USACE Stakeholders meetings. (see front page) Cleveland, OH. 21-24 Feb.
- Dr. Branstrator, Ms. Wolosz and graduate researchers collected sediment samples in ships' ballast tanks. Silver Bay, MN, Superior WI and Duluth, MN. 4 Jan, 8 Jan, 15 Feb and 5 Mar.
- Ms. Wolosz attended the Harbor Technical Advisory Committee meeting. Superior, WI. 7 Mar.
- GLMRI conducted an MTS Recovery Plan Analysis scenario with USCG, Duluth Seaway Port Authority and Industry representatives. Duluth, MN. 9 Mar.
- Dr. Stewart presented on LNG as a transportation fuel at the Minneapolis Transportation Club. Minneapolis, MN. 20 Mar.

The 2011 GLMRI Annual Report was released in February 2012. If you would like additional copies please contact the GLMRI Program Office.



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