GREEN TECH 2012

GREEN MARINE ANNUAL CONFERENCE

GREEN TECHNOLOGIES AND INNOVATION IN MARITIME TRANSPORTATION

MAY 29 & 30, 2012

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QUÉBEC CITY

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- St. Lawrence Seaway Management Corporation

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- Association of Canadian Port Authorities
- Canadian Shipowners Association
- Chamber of Marine Commerce
- Chamber of Shipping of British Columbia
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- Comité sectoriel de main d'œuvre de l'industrie maritime
- Corporation des pilotes du Saint-Laurent Central
- Georgian College's Great Lakes International Maritime Training Centre
- Laurentian Pilotage Authority
- Maritime Innovation
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- Comités ZIP :
  - Les Deux Rives
  - Lac Saint-Pierre
  - Jacques-Cartier
  - Saguenay
  - Ville-Marie
  - Québec Chaudière-Appalaches
- Ducks Unlimited Canada
- Great Lakes United
- Les Amis de la vallée du Saint-Laurent
- Nature Québec
- ONE DROP
- Sedna Foundation
- Stratégies Saint-Laurent
- World Wildlife Fund Canada

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"Green Marine is a unique program that promotes a culture of environmental sustainability and continuous improvement. Through their commitment to values like corporate leadership, cooperation and transparency, Green Marine participants are changing the face and perception of the marine industry."

WELCOME

I am very pleased to welcome you to Québec City for the 5th edition of Green Marine's annual conference. It is no coincidence that we chose this venue for Green Tech 2012. It was here that Green Marine was born in a media launch on October 23, 2007, five years ago already.

We've come a long way since then! In terms of membership, environmental program development, recognition, credibility and visibility, at home and abroad, Green Marine has made remarkable progress since its beginnings.

Mirroring this evolution, the annual conference has grown annually in status and 2012 promises to be a vintage year! More than 25 speakers from throughout North America and even Europe have agreed to share their knowledge, thereby enhancing participants' understanding of many environmental aspects affecting the marine industry.

In organizing the conference program, we used the tried-and-true formula that has served us so well in the past, namely alternating plenary sessions and parallel sessions on more specific subjects.

In a bid for ongoing improvement (a Green Marine core value), we have introduced new elements intended to make your experience even more rewarding over the next two days: a rapid-format technology session, allowing exhibitors to take turns presenting their environmental products and solutions for sustainable development, and an expert panel on waste management, whose discussions will be used directly to further develop Green Marine's Environmental Program.

As I write these lines, this event already promises to be the greatest success of our short history in terms of numbers of participants registered. I would like to extend my thanks in advance to all of our sponsors, who make this conference possible every year. Special thanks to Croisières AML, Green Marine's newest member, which offered a free cruise on May 28 to all those registered for the conference.

Enjoy!

David Bolduc
Green Marine Executive Director

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PROGRAM I TUESDAY, MAY 29 2012

7:30 Registration and breakfast (Exhibition Hall)

8:30 Welcoming address (Krieghoff Room)

8:45 **CREATING SYNERGIES TO ACHIEVE A BETTER ENVIRONMENT** (Krieghoff Room)

Capt. David Condino, U.S. Coast Guard
John O'Connor, Langlois Kronström Desjardins

10:00 Networking break and exhibition visit (Exhibition Hall)

10:30 **NEW PERSPECTIVES TO ADDRESS AIR EMISSIONS FROM SHIPS** (Krieghoff Room)

- **Canadian Shipping: Evaluating Marine Exhaust Emissions in the Real World**
  Mark McCurdy, Environment Canada
- **LNG Fuel – Sharing our Experience**
  Tony Teo, DNV North America Maritime
- **The Greening of the Tugboat: Options for Reducing Emissions and Fuel Use**
  Fuzz Alexander, Robert Allan Ltd.

ADAPTING TO CHANGE: SUSTAINABLE MANAGEMENT IN PORTS AND TERMINALS (Leduc/Fortin Room)

- **How a Vancouver Marine Terminal is Moving toward Environmental Excellence**
  Tony Di Nino, Envirochem Services Inc.
- **Being a Good Green Marine Neighbor: Effective Measures to Manage Conflicts of Use**
  Robert Cole, EEM Sustainable Management
- **Identifying the Economic Implications of Climate Change in the Great Lakes: Evaluating Threats to Critical Infrastructure, Equipment and Operations**
  Dale Bergeron, University of Minnesota

12:00 Panoramic lunch at the restaurant L'Astral

1:30 Speech by the Honourable Régis Labeaume, Mayor of Québec City (Krieghoff Room)

1:45 **ENVIRONMENTAL AND SOCIAL VALUES IN SHIPPING GOVERNANCE** (Krieghoff Room)

- **Corporate Ocean Responsibility: Industry Leadership and Collaboration in Ocean Sustainability**
  Paul Holthus, World Ocean Council
- **Using Social Licence to Build Reputational Capital**
  Don Krusel, Prince Rupert Port Authority
- **Sharing a Common Resource – Water**
  Bernard Filion, Ducks Unlimited Canada

3:00 Networking break and exhibition visit (Exhibition Hall)

3:30 **ENVIRONMENTAL TECHNOLOGY FORUM** (Krieghoff Room)

Brief presentations on new technologies: monitoring systems and web tools, ballast and bilge water treatment systems, marine coatings,fuel efficiency, ship design and optimization and lubrication.

GREEN MARINE ANNUAL GENERAL MEETING (Leduc/Fortin Room)

CEOs from all participating companies in the Green Marine program are invited to attend Green Marine's first annual general meeting.

5:30 **CERTIFICATION CEREMONY AND COCKTAIL DINNER**

Musée national des beaux-arts du Québec

PROGRAM I WEDNESDAY, MAY 30 2012

7:30 Breakfast (Exhibition Hall)

8:30 **TRENDSETTERS IN ENVIRONMENTAL LEADERSHIP** (Krieghoff Room)

- **The New LNG Powered Ferry Generation**
  Martin Lepage & Étienne Duplain, Concept Naval
- **Port of Long Beach: Going Green**
  Heather Tomley, Port of Long Beach
- **Working Together for Improved Environment: Lessons Learnt Developing Incentives at the Port of Gothenburg**
  Sara Sköld, Port of Gothenburg

10:00 Networking break and exhibition visit (Exhibition Hall)

10:30 **AQUATIC INVASIVE SPECIES: LATEST DEVELOPMENTS** (Krieghoff Room)

- **Ballast Water Management — a Regulatory Road Map**
  Colin Clark, Lloyd's Register
- **A Decade of Accumulation of Sediments in the Ballast Tanks of a Bulk Carrier**
  André Rochon, ISMER-UQAR
- **Risk Assessment for Ship-Mediated Introductions of Aquatic Nonindigenous Species to the Canadian Arctic**
  Farrah Chan, University of Windsor, Great Lakes Institute for Environmental Research

IMPROVING ENVIRONMENTAL QUALITY IN PORTS: LAND, WATER AND AIR (Leduc/Fortin Room)

- **Dredging Sludge Decontamination: How to Achieve Efficiency, Cost Reduction and Reuse**
  Marie-Josée Lamothe, Northex Environnement Inc.
- **Cities and Harbors: Best Practices for Sustainable Rainwater Management**
  Pascale Rouillé & Marie Dugué, Vinci Consultants (Presentation in French)
- **Air Emission Inventories in Canadian Ports Using Transport Canada's Model**
  Bryan McEwen, SNC Lavalin

12:00 Panoramic lunch at the restaurant L'Astral

1:15 **SHIP GARBAGE MANAGEMENT: IMPROVING SEA/SHORE INTERFACE** (Krieghoff Room)

Improving Garbage Reception Facilities in Ports: Challenges and Possible Solutions

- **The EU Experience with 10 Years of Implementation of the Directive on Port Reception Facilities: Regional Legislation versus International Standards and Further Challenges Ahead**
  Roel Hoenders, European Maritime Safety Agency (EMSA)
- **Port Reception Facilities: a Key to Green Ships and Clean Ocean**
  Capt. David Condino, U.S. Coast Guard
- **A Collaborative Platform to Improve Ship Waste Quality & Traceability**
  Sylvain Perrier, Ship Waste Agency

2:30 **DISCUSSION PANEL** (Krieghoff Room)

The panel will discuss ways to improve sea/shore interface in Canadian ports to ensure that ship generated garbage is managed in an environmentally friendly manner, from segregation on board to collection in ports and final disposal.

Panelistes : Paul Mudroch, Transport Canada — **Karlee Andrews,** Marine Clean Ltd. — **Daniel Côté,** Groupe Desgagnés inc.
Sylvain Perrier, Ship Waste Agency — **Roel Hoenders,** EMSA — **Capt. David Condino,** U.S. Coast Guard

3:00 Closing Remarks (Krieghoff Room)

SPEAKERS

TUESDAY, MAY 29 8:45 — BORDUAS/KRIEGHOFF ROOM

CREATING SYNERGIES TO ACHIEVE A BETTER ENVIRONMENT

Capt. David Condino, U.S. Coast Guard

Capt. David Condino, Master Mariner, USMM, has over 20 years experience at sea as a deck officer. He attended the University of Connecticut early in his career and attended Glasgow Nautical College prior to receiving his UK CEC. He holds a BSc., Hons, in Environmental Management from University of Maryland. His shore-side experience includes general manager of a shipyard and principal of a marine consulting firm. As a Maritime Transportation Policy Specialist at U.S. Coast Guard HQ in Washington, DC, Capt. Condino represents the U.S. Coast Guard on regulatory, policy and program matters relating to safety, security and marine environmental protection. From 2007 to 2009 he chaired IMO's FSI Sub-Committee correspondence group on port reception facilities, and in 2009 he was invited to chair the ISO work group (TC8/SC2/WG4) with the goal of publishing two international standards on management of wastes from ships. ISO 21070 Shipboard Waste Management Standard was published in 2011.

John O'Connor, Langlois Kronström Desjardins

John O'Connor holds a Master's Degree in Public Law and an extensive experience in maritime and commercial law. He has handled all types of marine insurance claims including P&I liability, environmental liability and general average, as well as ship financing, maritime accidents and salvage matters. He has been especially active in the energy sector and involved in the international carriage and sale of oil, gas and other bulk commodities. He also has extensive experience in marine, errors & omissions and protection & indemnity insurance. In 2007, John received a BV Peer Review Rating from Lexis Nexis Martindale-Hubbell. John is cited as a leading lawyer in Shipping and Maritime Law by the Canadian Legal Lexpert® Directory 2008. He is also recommended in that area by Legal Who's Who. He was recently selected to be included in the 2011 and 2012 edition of The Best Lawyers in Canada in the specialty of Maritime Law.

TUESDAY, MAY 29 10:30 — BORDUAS/KRIEGHOFF ROOM

NEW PERSPECTIVES TO ADDRESS AIR EMISSIONS FROM SHIPS

- **Canadian Shipping: Evaluating Marine Exhaust Emissions in the Real World**

  Air pollution and climate change are challenges facing every country in the world, and Canada has committed to participating in emissions reduction programs in support of international agreements and regulations. The Federal Government's Clean Air Regulatory Agenda (CARA) provides a framework to promote reductions in emissions of greenhouse gases and air pollution from industrial sources and mobile sources, including rail, aviation, and marine. In support of this program, Environment Canada has been conducting research programs to evaluate emission control strategies, develop sampling methodologies, update national emission inventories, and compare results with existing emissions factors. A portion of this work has involved studying marine vessels, including Great Lakes ships, under regular operation. The exhaust emission rates of greenhouse gases and air pollutants were determined, including detailed analysis of gaseous and particulate emissions. This presentation provides an overview of the background, methodologies, and results of studies performed in partnership with various Canadian ship owners and operators.

  Mark McCurdy, Environment Canada

  Mark McCurdy has been a Project Engineer with Emissions Research and Measurement Section of Environment Canada for over four years, largely spent working on mobile source field testing programs. He has been involved with and managed several sampling campaigns looking at real world emissions from cars, trucks, buses, locomotives, marine vessels, and aircraft engines. Prior to Environment Canada, he spent seven years as a mechanical engineer in motorsports and manufacturing.

- **LNG Fuel – Sharing our Experience**

  A short description on how it all began in the Geiranger Fjord in Norway when cruise ships started visiting. The prototype pax ro-ro ferry "Gultra" followed by Bergen Fjord ferries, OSVs, high speed light crafts and coastal cargo vessels are described. Today there are 29 in operation with 26 on order, mostly in Norway. Twelve years ago there were no rules for building these ships. Jointly with the Norwegian Maritime Directorate (NMD), DNV developed the rules in parallel to the construction of "Gultra". Some requirements from the rules will be illustrated in this presentation. To inspire the industry in meeting the stringent air emission regulations, DNV has developed concepts on ocean going vessels propelled by LNG fuel. The key challenges related to LNG Fuel remains to be competence of the crew in the safe handling of the fuel. This is important in order to maintain the excellent safety record that the LNG industry has achieved over the past 50 years.

Tony Teo, DNV North America Maritime

Tony Teo is DNV's North America's, Business Development Director. A senior principal surveyor with 27 years in DNV, he has worked in Singapore, Qatar and now Houston with experience from Marine Warranty, Ship Classification, Management, Business development, LNG and CNG technologies. The best part of his career was as a diver surveying ships underwater. He graduated with 1st class honors in Naval Architecture & Ocean Engineering from Glasgow University and has been trained in Executive Business Program at International Management Development (IMD), Switzerland and Relationship Based Selling at Cap Gemini, France. He has delivered over 60 presentations on a wide range of LNG and other maritime subjects at major conferences.

- **The Greening of the Tugboat: Options for Reducing Emissions and Fuel Use**

The presentation introduces Robert Allan Ltd. as Naval Architects and Marine Engineers with a long history of designing a wide variety of workboats. The focus of the presentation is "green" design and "green" operation of ship handling tugboats for harbour and escort duty. The talk overviews the typical mission operating profile of this type of tugboat and depicts various conventional and emerging propulsion power technologies that may be considered during modern vessel design. The relative operating efficiencies of different propulsion power arrangements are reviewed for the potential to achieve reduced engine exhaust emissions, reduced fuel usage, and reduced operating cost. Alternative low-emission fuels and alternative vessel operating conditions are also presented and discussed for implications to emissions and vessel operating costs. Propulsion power options addressed include mechanical and electrical driven propulsors, biodiesel and natural gas fuels, and hybrid power systems both with and without energy storage. The viable vessel powering options are summarized with the potential implications to "green" factors including exhaust emissions as well as "greenbucks" considerations of tugboat capital and operating costs.

Fuzz Alexander, Robert Allan Ltd.

Fuzz Alexander is a professional engineer registered in British Columbia. Fuzz graduated from the University of Saskatchewan in mechanical engineering (1965) and has spent most of his career associated with application engineering of diesel, gas, and gas-turbine engines for power generation and marine propulsion. Fuzz is a senior project engineer with the naval architecture and marine engineering firm Robert Allan Ltd. of Vancouver BC. The company provides design services for a variety of marine vessels with the majority of its designs being for workboats such as ship handling tugboats for harbour and escort service. Company designs are built in worldwide shipyards and operate in all regions of the world. Fuzz has participated in studies and concept/detail design for several innovative "green tugboat" projects including diesel-electric, electro-mechanical hybrid, and natural gas fuelled (CNG and LNG) vessels.

TUESDAY, MAY 29 10:30 — LEDUC/FORTIN ROOM

ADAPTING TO CHANGE: SUSTAINABLE MANAGEMENT IN PORTS AND TERMINALS

- **How a Vancouver Marine Terminal is Moving toward Environmental Excellence**

This presentation provides a brief history of events which shaped environmental laws in Canada and thus the progressive migration of companies from a compliance driven philosophy, to moving beyond compliance and implementing management systems, to strategic sustainability. This is discussed in the context of a BC terminal operation, and how software tools can be used as a management system framework providing timely tracking of monitoring date and due diligence reporting to boards, in addition to customizing an organizations audit program to incorporate findings related to ecological sustainability.

Tony Di Nino, Envirochem Services Inc.

Mr. Di Nino is a Manager at Envirochem Services Inc. and is a professional engineer with over 16 years of environmental consulting experience in the industrial sector. Mr. Di Nino is also a certified Environmental Auditor and EMS Lead Auditor and is often seconded by a registrar to conduct ISO14001 and 18001 registration and surveillance audits and energy audits. Mr. Di Nino has also assisted industrial clients to developed and implement management system and continues to act as the primary EMS service provider for Mercedes Benz Canada.

- **Being a Good Green Marine Neighbor: Effective Measures to Manage Conflicts of Use**

Green Marine's conflicts of use performance indicator is relatively non-technical compared to the other environmental indicators. There is however a hard science to what is often perceived as a "soft" skill. EEM Sustainable Management's presentation will examine recent usage conflict cases and provide affordable and effective measures for port, terminal, shipyard and seaway operators to meet community expectations and manage social risks. Specifically, the session will present the rationale behind good conflict of use management, interpret the nuisance aspects of regulation (e.g. Article 20 of the Quebec Environment Quality Act) and reflect on the relevance and applicability of other industry standards and best practices in stakeholder engagement (e.g. IAP2, SA1000SES, MAC TSM). It will also provide practical ways to identify, map and analyze stakeholders, to assess community impacts, and to design appropriate community engagement, response and follow-up mechanisms. Case studies will present good usage conflict programs, complaints management processes, and consultative committees in action (e.g. Sept-Iles, CSL) and cover the precedent-setting legal proceedings that underscore the rational for strong usage conflict management.

SPEAKERS

Robert Cole, EEM Sustainable Management

Robert has over ten years experience as a management and sustainability consultant. Since 2006, he has worked for EEM, a Montreal-based sustainable management consultancy where he is Director of Sustainable Business and Communities. Mr. Cole has extensive experience engaging communities and First Nations, facilitating business/community partnerships, conducting community consultations, assessing social impacts and providing training in stakeholder engagement and multi-sector partnering. Prior to joining EEM, he was a management consultant in the field of business strategy and performance, and worked for three years in marketing communications. Robert Cole holds an MBA specialized in Organizational Change Management, is a trained facilitator and an accredited Partnership Broker under the Partnership Broker's Accreditation Scheme (PBAS). He speaks English, French and Spanish.

- **Identifying the Economic Implications of Climate Change in the Great Lakes: Evaluating Threats to Critical Infrastructure, Equipment and Operations**

  Case study results of port attitudes towards climate change. Relevant climate change issues for Great Lakes ports. Economic tools to evaluate potential impacts finding partners to address climate change challenges. The presentation focuses on the development of the Great Lakes ports and harbor infrastructure matrix and dredging cost database. It is applied to the Great Lakes Ports of Duluth/Superior, and Toledo. The matrix gives coastal communities and maritime interests a tool to better understand what critical port and harbor infrastructures are vulnerable to climate variations, and assigns a range of possible economic impacts so that planners and developers can prepare, and begin to make the case for local, regional, and national resources to proactively implement measures to prepare coastal communities for predicted climate change impacts. The matrix allows for the projection of specific "real world" climate variation impacts and costs. The economic assessment matrix can be applied to any commercial port or harbor within the Great Lakes region.

  Dale Bergeron, University of Minnesota

  For nearly a decade, Dale Bergeron has been focused on Great Lakes Ports and Shipping issues. He has extensive previous experience as a business consultant in strategic planning and business sustainability. Currently he is the Maritime Transportation Specialist for MN Sea Grant and the Great Lakes Sea Grant Network. Recently Dale Bergeron received the "Outstanding Program Award" by the Great Lakes Sea Grant Network, for his efforts with the Great Lakes Ballast Water Collaborative.

TUESDAY, MAY 29 1:45 — BORDUAS/KRIEGHOFF ROOM

ENVIRONMENTAL AND SOCIAL VALUES IN SHIPPING GOVERNANCE

- **Corporate Ocean Responsibility: Industry Leadership and Collaboration in Ocean Sustainability**

  The ocean is an interconnected global ecosystem supporting a wide range of uses. Maintaining ocean health requires responsible stewardship by all users. Many companies are working to address ocean sustainability. However, the best efforts by a single company or industry will not be enough. International, cross-sectoral leadership and collaboration are needed. Responsible companies from a range of industries - shipping, oil/gas, fisheries, aquaculture, mining, renewable energy, etc. - are working together through the World Ocean Council (WOC) to achieve a shared vision of healthy and productive seas and their sustainable use and stewardship by a responsible ocean business community.

  Paul Holthus, World Ocean Council

  Paul Holthus is the founding Executive Director of the World Ocean Council, the international business leadership alliance on "Corporate Ocean Responsibility". The WOC brings together oil/gas, shipping, fisheries, aquaculture, tourism, offshore renewables and other ocean industries – creating an unprecedented ocean business community and private sector leadership in addressing shared marine sustainability challenges. He has held senior positions with the UN Environment Program and international environment organizations. Since 1998, Mr. Holthus has worked with the private sector to develop practical solutions to sustainable marine environmental development. He has worked in over 30 countries with companies, communities, industry associations, UN agencies, NGOs, and foundations.

- **Using Social Licence to Build Reputational Capital**

  The Port of Prince Rupert impacts its host community. The future will bring continued expansion and growth. However, the increased development and waterfront activity has the potential to create conflicts over issues including noise, dust, congestion, emissions and access to the waterfront. The Prince Rupert Port Authority (PRPA) understands that it must take a leadership role in the community with environmental and social projects linked to the port's environmental footprint. The PRPA established a Community Investment Fund (CIF) to provide financial support for projects and initiatives that enhance the quality of life or contributes to a lasting legacy. In a short period of time, this fund has already affected positive change due to the PRPA's understanding of the community's needs. Other projects outside of the CIF look to improve on the environmental impact of the port. An Environmental Benchmark study is underway to determine the current conditions prior to future development and establishing an Environmental Stewardship System. A shore power project for container ships has been completed to reduce emissions at the dock. A road and rail corridor will divert port traffic away from town and reduce the driving distance. The Port of Prince Rupert will continue to use its social licence, through social and environmental contributions, to build

reputational capital. The future holds increased constructive engagement and collaboration with the community. The continued achievements of the Port of Prince Rupert are linked with the success, desires and expectations of the citizens of the local area and the region.

Don Krusel, Prince Rupert Port Authority

Mr. Krusel was appointed to the position of President and Chief Executive Officer in February of 1992. He began his career with the Port Authority as Manager of Finance and Administration in 1987. Mr. Krusel holds a Masters Degree in Business Administration from the University of Western Ontario and is a Certified Management Accountant. Before joining the Prince Rupert Port Authority, he held positions within the financial planning and analysis function of a major financial institution in Vancouver. He is a past Director of the British Columbia Trade Development Corporation in Vancouver, the former Chairman of the Canadian Delegation of Ports for the American Association of Port Authorities and served as Chairman and Director of the Association of Canadian Port Authorities from 1999 - 2001. He is a current member of the Board of Governors of the Business Council of British Columbia and a director of the Western Transportation Advisory Council.

- **Sharing a Common Resource: Water**

The St. Lawrence / Great Lakes Seaway is an international waterway between production and living areas and, both for millions of birds that travel the Atlantic Flyway and for thousands of ships that use this unique waterway. Unfortunately, over the years, the development of human activities irreversibly affected many habitats along the St. Lawrence River. The successful voluntary initiative started under the leadership of Green Marine offers a unique opportunity to share this resource and help protect and restore critical habitats along the Seaway. By joining forces with Ducks Unlimited Canada Canfornav has protected the batture aux Loups-Marins, an important nesting habitat and migration for waterfowl, in the middle of the St. Lawrence River below Quebec. Its financial contribution has also helped restore the Cooper Marsh on Lake St. Francis, near Cornwall. Such partnerships between the maritime industry and conservation organizations as DUC are likely to make a real difference in the conservation of wetlands and water of the St. Lawrence Seaway.

Bernard Filion, Ducks Unlimited Canada

Holding bachelor's degrees in Biology and Agronomy and a master's degree in Plant Biology, Bernard Filion has been working for Ducks Unlimited Canada for 35 years. He held several positions, notably Field Biologist, before becoming the Director of Ducks Unlimited for Québec in 2002. Ducks Unlimited Canada's mission is to partner with government, industry, non-profit organizations and landowners to conserve wetlands that are critical to waterfowl, wildlife and the environment. Among many other things, DUC has piloted a conservation project of two key wetland areas along the St. Lawrence Seaway thanks the financial support of $ 400 000 provided by Canfornav.

WEDNESDAY, MAY 30 8:30 — BORDUAS/KRIEGHOFF ROOM

TRENDSETTERS IN ENVIRONMENTAL LEADERSHIP

- **The New LNG Powered Ferry Generation**

Two dual-fuel (natural gas and diesel) electric powered ferries, designed by the Concept Naval/ STX Canada Marine consortium, will operate between Tadoussac and Baie Ste-Catherine (TBSC) across the Saguenay River on a 0.8 NM route. Both ferries will provide 24 hours a day, 365 days a year service considered essential by the Quebec Government as the route is the main access across the Saguenay River. Each year the ferries carry over 1.1 million vehicles where harsh conditions prevail during the winter with 0.5m level ice and 60 knots winds. After presenting the general characteristics of the new vessels in terms of performance, capacity and machinery arrangement, the presentation will focus on the challenges faced during the design stage such as selection of the propulsion plant, incorporating the chosen dual fuel propulsion system, and selection of LNG tank size versus bunkering capabilities. Specific issues on the selected dual fuel engines related to the operating profile of the TBSC ferries will be discussed such as low engine load, switching time from gas to diesel and back to gas, and arrangement challenges of the LNG propulsion system while still meeting the client's particular requirements. The presentation will also discuss some of the important aspect of the regulations governing gas fuelled ships and their impact on these ferries.

Martin Lepage & Étienne Duplain, Concept Naval

Holding degrees in Materials and Metallurgical Engineering (Université Laval) and Naval Architecture (University of Southampton), **Martin Lepage** began his career as a shipbuilding project leader and has worked in the field of marine equipment distribution for the past decade. He joined the Concept Naval team as Director of Business Development in October 2011.

Holding a degree in Ocean and Naval Architectural Engineering (Memorial University of Newfoundland), **Étienne Duplain** has extensive naval design experience. He started out with Kvaerner Masa Marine, now STX Canada Marine, specializes in advanced studies and is a structural analysis expert. He joined the Concept Naval team in 2005 as a partner and Head Naval Architect.

- **Port of Long Beach: Going Green**

In 2005, the Port of Long Beach adopted the Green Port Policy which outlined environmental directives, established goals and metrics, and firmly identified the protection of the environment as a top priority going forward. The following year, the Port adopted the landmark Clean Air Action Plan (CAAP), which outlined specific strategies and established goals for dramatically reducing air quality impacts and health risks to the community from port operations. While implementation of these strategies has been met with many challenges, over a five year period since the CAAP was adopted, diesel particulate emissions from port operations were dramatically reduced by over 70%. The Port continues to push further, identifying additional opportunities to move toward meeting its long term air quality and health risk reduction goals.

SPEAKERS

Heather Tomley, Port of Long Beach

Heather Tomley serves as an Assistant Director of Environmental Planning for the Port of Long Beach. She currently provides leadership for the port's air quality and water quality efforts, managing a team of seven technical staff. Heather is responsible for co-writing the San Pedro Bay Ports Clean Air Action Plan (CAAP) and the 2010 CAAP Update, and developing and implementing programs such as the Ports' Technology Advancement Program, the Vessel Main Engine Fuel Incentive Program, and the air quality monitoring program. In addition, she has assisted with development of the Ports' Water Resources Action Plan, Clean Trucks Program and the annual port-wide emissions inventory. Heather received her Bachelor's degree in Chemistry at Cal Poly, San Luis Obispo and her Master's degree in Environmental Science from the University of North Carolina at Chapel Hill.

- **Working Together for Improved Environment: Lessons Learnt Developing Incentives at the Port of Gothenburg**

  This presentation provides a brief history on how the port of Gothenburg has worked with environmentally differentiated port dues by encouraging development of the programs together with the clients, refund investments program for improved fuel quality, refunds for good performing ships according to the Clean Shipping Index and investments in more Onshore Power Supply. The presentation will highlight the conclusions to be drawn from working with the reference group for environmentally differentiated port dues.

Sara Sköld, Port of Gothenburg

Sara Sköld is a consultant at Port of Gothenburg and the director of the Clean Shipping Index, which she has worked for since 2010. She has 7 years of experience from the transport industry, of which she spent 2 working for a large multinational ship operator. She has a master's degree in environmental science and a masters degree in physical geography with focus on climate change.

WEDNESDAY, MAY 30 10:30 — BORDUAS/KRIEGHOFF ROOM

AQUATIC INVASIVE SPECIES: LATEST DEVELOPMENTS

- **Ballast Water Management — a Regulatory Road Map**

  Ballast Water Management is becoming more and more of an issue for ship owners and managers, as we move from an "exchange" to a "treatment" process. As D2 performance standards become the new yard stick by which compliance will be measured, it is critical that we come to a full understanding of the steps involved in managing ballast water. Ballast water treatment is an issue that needs to be considered for all stages of the vessel lifecycle, including new construction and existing ships. A sustainable strategy for compliance with D2 performance standards must incorporate a host of factors. Owner's must navigate evolving regulatory requirements within reasonable commercial restraints. Industry has risen to meet this challenge with several technology providers offering ship owners with products aimed at achieving D2 performance. Within a regulatory framework, a lot of questions need to be addressed. What is the best system, or combination of systems to meet a particular vessel's needs? What is the regulatory process for incorporating ballast water treatment onboard a new or existing vessel? What is the certification process, testing procedures, and enforcement regime going to look like? What are the operational implications for maintenance or trading patterns going to be long term? Now is the time to establish a pragmatic approach to implement controls and systems on vessels to achieve D2 Ballast Water Management Performance Standards. Through applying a road map to Ballast Water Management, we can create a clearer understanding of the challenges and establish a clear way forward.

Colin Clark, Lloyd's Register

Mr. Clark is a graduate of Naval Architecture from Memorial University of Newfoundland. He has been involved in classification of various new construction and major modification projects in North America, ranging from containerships, general cargo, bulk carriers, tugs, and seismic vessels. Most recently, he has been involved with managing classification during the construction of nine Hero Class, Mid-Shore Patrol Vessels for the Canadian Coast Guard. Mr. Clark has worked in Classification for 8 years, progressing through technical roles, up to Senior Surveyor, before assuming his current position as Business Development Manager, Atlantic Canada.

- **A Decade of Accumulation of Sediments in the Ballast Tanks of a Bulk Carrier**

  Ballast sediments pumped in shallow coastal/port areas can contain dinoflagellate cysts (dinocysts), which can survive several months/years in cold, dark and low oxygen conditions, and then germinate if environmental conditions are favorable. During deballasting, the pumps remove most of the water but sediments may accumulate over time in areas further away from the pumps. A 20-cm long sediment core representing ~12 years of sediment accumulation (1997 to 2009) was collected in the no. 1 starboard tank of a bulk carrier performing regular trips between Europe (Rotterdam) and Canada (Sept-Îles, QC). The objectives of the study were to: 1) Document the dinocyst assemblages; 2) Determine the age of the sediments; 3) Assess the viability of dinocysts with cell content. A total of 46 taxa, including 6 non-indigenous taxa, were identified in all the samples. Concentrations of dinocysts with cell content varied between 41 and 1854 dinocysts/g and the viability varied between 38 and 47% (average 40%). The reservoir contained approximately 1810 kg of sediments. Approximately 72 kg of sediments containing ~17.4 million cysts with cell content are released during deballasting, suggesting that ~6.96 million of these cysts will potentially germinate once released in their new environment. These values highlight the threat posed by dinoflagellates as invasive organisms. Although ballast water exchange was performed (flow-through technique), sediment accumulated for long periods of time at the bottom of ballast tanks, despite regular maintenance and cleaning schedules. Therefore, additional ballast water/sediment treatments are necessary to reduce the risk of invasions.

André Rochon, ISMER-UQAR

André Rochon is an expert in dinoflagellata, microscopic unicellular algae responsible for toxic or "red" tides. Dinoflagellate cysts, (dormancy stage in the dinoflagellate life cycle) are used as paleoenvironmental indicators, notably in the Canadian Arctic. André Rochon has been working with dinoflagellate algal lab cultures since 1997, and, more recently, in the context of NSERC-funded Canadian Aquatic Invasive Species Network research, has been studying their transport in ship ballast tanks and their potential for invading Canadian coastal waters.

- **Introductions of Aquatic Nonindigenous Species to the Canadian Arctic**

Ballast water has historically been the predominant ship-mediated vector for aquatic non-indigenous species (NIS) introductions to Canada, while hull fouling is recognized as a leading sub-vector for the introduction of marine aquatic NIS worldwide. To the best of our knowledge, there has been no ship-mediated NIS established in the Canadian Arctic. However, if shipping activities increase as expected with a warming climate, introduction effort will also increase and the Arctic will be more vulnerable to future invasions. The goal of the study was to conduct a relative risk assessment of ship vectors (ballast water and hull fouling) to Canadian Arctic ports. First, the probability of introduction was estimated by combining the individual probabilities of successful transition through each stage of the invasion process (i.e., arrival, survival and establishment), based on ship arrival/ballast water discharge data and environmental conditions at Arctic and potential source ports. Second, the potential magnitude of consequences of introduction was estimated based on the number of high impact ship-mediated NIS recorded for eco-regions of ports directly connected to Arctic ports through shipping activities. The probability of introduction and potential magnitude of consequences were then combined for a final relative invasion risk rating. Our study highlighted Churchill, Manitoba at higher risk than other Canadian Arctic ports for both ballast- and hull- mediated invasions.

Farrah Chan, University of Windsor, Great Lakes Institute for Environmental Research

Farrah Chan received her Bachelor of Science degree from the University of Waterloo in 2008. She is currently a Ph.D. candidate at the University of Windsor Great Lakes Institute for Environmental Research, under the supervision of Drs. Hugh MacIsaac and Sarah Bailey. She examines the risk of introducing aquatic non-indigenous species to the Canadian Arctic through shipping activities in her dissertation.

WEDNESDAY, MAY 30 10:30 — LEDUC/FORTIN ROOM

IMPROVING ENVIRONMENTAL QUALITY IN PORTS: LAND, WATER AND AIR

- **Dredging Sludge Decontamination: How to Achieve Efficiency, Cost Reduction and Reuse**

Over the past 15 years, NORTHEX' expertise in the decontamination of soils, using the chemical oxidation process, either in situ or in piles, has lead to an important reduction of the soils and the groundwater ecotoxicity in a short time frame. The contaminated dredging sludge is a good candidate for remediation by such a process. With the use of geosynthetics such as the TenCate Geotube®, the dredge sludge pumped from the seabed is pushed into the geotube for dewatering and the treatment solutions are then directly applied within the accumulated dredge sludge. The collected water from the dewatering process is carefully filtered and treated by a mobile system on the barge itself, so it can safely be eturned to the river. Once dewatered, the packed dredge sludge inside the geotube turns into a powerful reactor where the solid components of the treatment solution increase the temperature to accelerate the degradation of the contaminants creating non harmful sub-products. Generally, following a 60 to 90 days monitoring period, the dredge sludge is decontaminated and can be reused near the shore as an erosion barrier for example, or disposed at the lowest cost (as it's already decontaminated), thus avoiding high transportation fees to dispose it at an authorised landfill site.

Marie-Josée Lamothe, Northex Environnement Inc.

Marie-Josée Lamothe, businesswomen and trained geologist, founded Northex Environnement, a pioneer in soil decontamination through chemical oxidation. Located on Montreal's South Shore, Northex boasts Québec's largest contaminated soil treatment plant, which combines chemical processes and biological polishing to treat organic and mixed contaminants. Growing steadily, Northex differs from its competitors in its innovative, cost-effective solutions. Soon, it will be the only Canadian inorganically-contaminated soil/sediment treatment and rehabilitation operation.

- **Cities and Harbors: Best Practices for Sustainable Rainwater Management**

Best rainwater management practices (BMP) to promote ties between cities and their trading ports: Environmental, Landscape-related, Economic, Social, Heritage and Educational ties. Tools supporting BMP incorporation into port areas: Cost of BMP construction and operation versus traditional systems, Quantitative and qualitative contributions and performance to best rainwater management practices, Regulatory land-use planning (municipal, regional and national) and regulatory land-use planning: master plan (multi-partner, multi-scale). Specific features to take into account in incorporating BMPs into the port environment: Highly waterproofed area, Traffic / handling / storage, Different types of pollutants present in runoff waters and Main outlet and waterfront discharge site.

(Presentation in French)

Pascale Rouillé & Marie Dugué, Vinci Consultants

Currently in charge of urban planning design at Vinci Consultants and a member of the Office Professionnel Qualification des Urbanistes de France, **Pascale Rouillé** has worked on various land-use planning projects over the past three years: space analysis and socioeconomic dynamics surrounding development of the Port du Légué district; stock-taking, analysis and diagnosis for implementing a land-use strategy and planning guide for the Port de Lorient; and production of a practical guide on water and development for the Agence d'Urbanisme et de Développement Économique de Lorient.

Marie Dugué has been in charge of sustainable rainwater management and R&D at Vinci Consultants since 2008. An Engineer, she also holds a Master's degree in Research on Adapting Rain Gardens in Québec (École Polytechnique de Montréal). Since 2005, she has taken part in a dozen LEED-certified projects (or ventures for which certification is in progress) and many green projects in Québec and France.

- **Air Emission Inventories in Canadian Ports Using Transport Canada's Model**

  Development of a formal air emissions model for North American ports (Ports Model) was achieved through a project with Transport Canada in 2009-2010. The model provides comprehensive estimates of GHG and CAC emissions from ships, locomotives, trucks, cargo handling equipment and administration that can be used by port officials for environmental planning purposes, such as emission reduction projects. The background experience leveraged for the model development, including developed methods and tools, was gained through a number of previous projects and assessments that involved members of Transport Canada and Environment Canada as well as port officials from Port Metro Vancouver (PMV) and the Port of Montreal. The Ports Model is fully activity-based, meaning that development of a port inventory occurs through an activity data collection period involving the port and its tenants. The expected use of the Ports Model includes the participation of a port representative in the role of 'local expert' to establish an effective and comprehensive means of collaborating with the port tenants to complete activity data collection. Participation is voluntary. The presentation will identify the model functionality and outline the history of its use in Canada, including experiences gained collecting detailed information from the port tenants at several Canadian ports.

  Bryan McEwen, SNC Lavalin

  Bryan McEwen has worked with Canadian government on marine and port emissions models since 2004. Model development work includes versions of Canada's 'Marine Emissions Inventory Tool' (MEIT) and Transport Canada's Ports Emissions Inventory Model. He began his formal port emissions model work for Transport Canada in authoring the Transport Canada Port Emissions Inventory Protocol (2009). Since this time, the Protocol and ports model have been applied to several of Canada's largest ports. The model estimates energy (fuel) consumption and emissions of GHGs and CACs, as well as select air toxics.

WEDNESDAY, MAY 30 — BORDUAS/KRIEGHOFF ROOM

SHIP GARBAGE MANAGEMENT: IMPROVING SEA/SHORE INTERFACE

1:15

IMPROVING GARBAGE RECEPTION FACILITIES IN PORTS: CHALLENGES AND POSSIBLE SOLUTIONS

- **The EU Experience with 10 Years of Implementation of the Directive on Port Reception Facilities: Regional Legislation versus International Standards and Further Challenges Ahead**

  EMSA's presentation will highlight the role of the European Maritime Safety Agency in assisting the European Commission and the 27 Member States in developing and implementing EU legislation on enhancing maritime safety and prevention of marine pollution in the European seas. It will further focus on the current EU policy in these fields, and notably on the objective of attaining 'zero-emission, zero waste' maritime transport. To achieve this, the experience with the implementation of the European Directive 2000/59 on Port Reception Facilities for Ship Generated Waste and Cargo Residues will be further explained, especially in relation to garbage and MARPOL Annex V. Finally the presentation will highlight the challenges ahead in managing an efficient port reception facility management within the European Union and demonstrate some available tools to achieve that.

  Roel Hoenders, European Maritime Safety Agency (EMSA)

  Roel Hoenders has an academic background in international and European environmental law complemented with additional studies in environmental sciences. Mr. Hoenders started working in the transport sector for DHL in the Netherlands, but moved soon after to Brussels to pursue a career in EU policy and decision making. For three years, Mr Hoenders worked as policy advisor for the European Sea Ports Organisation (ESPO) – the representation of the European port authorities to the EU Institutions – where he was advising on maritime safety issues and port environmental affairs. After that experience he started working in the European Commission where he was responsible for EU external cooperation on transport matters in Europe's neighbourhood region which notably addressed issues related to the shared Mediterranean and Black Seas. In 2011 Roel Hoenders joined EMSA (European Maritime Safety Agency) where he works on EU policy related to port reception facilities, ship recycling and air pollution.

- **Port Reception Facilities: a Key to Green Ships and Clean Ocean**

  Capt. David Condino from the U.S. Coast Guard will cover U.S. approaches to implementing MARPOL; some practical tools available for the management of ship's waste; and the New Annex V Regulations and how they will affect waste management aboard ship and at port reception facilities.

- **A Collaborative Platform to Improve Ship Waste Quality & Traceability**

  Ship Waste Agency offers brand-new e-services to improve the quality, traceability and management of ship waste in compliance with international regulations. The implementation of Port Reception facilities in commercial ports presents an efficient way to minimize illegal or accidental discharges of oil and garbage from ships into the marine environment. Ship Waste Agency purpose is to give ship operators trough an Eco-responsible and cooperative platform (SWANET platform) the needed quality level for Port Reception facilities and to comply with additional obligations in a better way to what authorities could expect. The main goals of the embarked and ashore solutions (SWABOARD and SWASHORE) are to allow: issuance of electronic Advanced Notification Form for waste unloading, Waste Unloading Request, Waste Delivery Receipt, follow up of the unloaded waste up to the treatment center, provide an updated list of operators within each port of call (including category/type of waste and available tools for unloading), selection of an operator who can prove that all unloaded waste will be treated adequately, day to day online waste management and numbers of unloading within the Port. This platform is based on a collaborative action: each operator will be able to describe live what he had realized and will be able to valid online, the good ending of the operation. The Ship Waste Agency provides these easy set-up eco-friendly services to any actor involved in waste management chain; on the basis of a yearly subscription.

Sylvain Perrier, Ship Waste Agency

Sylvain Perrier founded in 2009 Ship Waste Agency, an eco responsible platform for optimisation and management of ship waste through the collaborative action of all involved actors (SWANET Platform). Based on Web Services to improve Ship Waste traceability and quality, this innovative application is operational on SAAS since April 2012. Between 1998 and 2008 Sylvain Perrier started his career and his experience on ship waste management at SERMAP, the #1 maritime waste collector with a strong market position in France. He held various positions as Project Manager on modular units development, relied on distillation process, to treat locally oily waste from ships. Then moved to the role of Operational Manager and Commercial Manager for set-up and implementation of maritime wastes collection and treatment solutions in several countries (Europe, Middle east, West Africa, China and India). Sylvain Perrier is an active member of the Euroshore Association (European PRF's association) and French Maritime Cluster for all ship waste management topics.

2:30

DISCUSSION PANEL

The panel will discuss ways to improve sea/shore interface in Canadian ports to ensure that ship generated garbage is managed in an environmentally friendly manner, from segregation on board to collection in ports and final disposal. The panelists will address different aspects: International vs. regional regulations, U.S. and Canadian approaches to comply with MARPOL Annex V, European experience with port reception facilities, shipowner's and supplier's perspective, future challenges and collaborative solutions.

PANELISTS

- **Paul Mudroch,** Transport Canada

  Paul Mudroch has worked for various Federal Departments in all the regions of Canada. His areas of expertise include waste management, sewage management, sediment quality assessment, environmental management systems and the application of associated Acts and Regulations. He has worked with municipalities, non-government organizations, First Nations and other Federal Departments and Agencies. He has also been part of Canadian delegation to the International Maritime Association, taking part in discussions dealing with waste management, ship recycling and effect of noise from shipping onto the marine environment.

- **Karlee Andrews,** Marine Clean Ltd

  Karlee Andrews joined Marine Clean Ltd. in 2005 upon graduating from Niagara College. Since 2005 she has worked throughout the company in various capacities gaining valuable insight into the Marine Industry. In 2008 she moved into the role of Waste Services and Logistics Manager, managing and developing the Waste Management Services department and also the day-to-day logistics of the business.

- **Daniel Côté,** Groupe Desgagnés inc.

  An Engineer, Chemist and MBA (Business Management) graduate (Université Laval), Daniel Côté has held various technical and management positions which have allowed him to get an overview of businesses' operating realities. An environmental consultant with Transports Desgagnés since 2009, he is mandated to ensure that the company meets its environmental obligations in addition to being an involved, environmentally-proactive player within the marine industry.

- **Sylvain Perrier,** Ship Waste Agency

- **Roel Hoenders,** European Maritime Safety Agency (EMSA)

- **Capt. David Condino,** U.S. Coast Guard

EXHIBITORS

#1

Urgence Marine Inc. was founded in 1979 and has played since then, an increasing role in the PORT of MONTREAL and the St Lawrence River. The company, which has been granted operating permits by Federal and Provincial Governments, has focused primarily its activities on mooring and unmooring services, hold cleaning, de-icing, spill clean-up and waste removal and transport. It owns specialized equipments as well as trained personnel to meet and exceed the many Government standards, as to be able to service the clientele with the highest degree of efficiency.

#2

ABB Turbocharging is the world leader in turbocharging diesel and gas engines. ABB operates over 110 certified turbocharger service stations in more than 55 countries. Fast, direct access to the case history of every one of the more than 180,000 turbochargers ensures proactive support in real time. ABB Turbocharging is a division of the ABB Group, an international leader in power and automation technologies that enable customers to improve their performance while lowering their environmental impact.

#3

Marine Clean Ltd. is a highly experienced Marine and Industrial Contracting Firm located in Niagara Falls, Ontario, servicing the Great Lakes since 1974. The core of its operations is cleaning, degreasing, and disposal of petroleum based products and tanks. Services also include specialized Waste Management Programs, Preparation and Application of Coatings Systems, Vacuum Services, Degreasing, Demucking & Demudding, Ballast & Potable Water Tank Linings, Sewage Services, Bulk Liquid Transport , Spill Response, Marine Gas Chemist Services and Skilled Labor Supply.

#4

NAVWARE's mission is to provide best-of-breed innovative technology and top-quality consulting services to the offshore and marine community. Among other products, Navware distributes the first hand-held waterproof tool for removing hull biofouling.

#5

Gaz Métro Transport Solutions has undertaken to develop a network of natural gas fuelling stations in Eastern Canada. It is working on developing a cleaner fuel for road, rail and water. It offers a wide range of services: evaluating the feasibility of projects, helping grants applicants, designing compression and/or storage installations, building, operating, maintaining and financing such installations, supporting the promotion of projects, supplying liquefied or compressed natural gas and metering.

#6

Amercoat Canada, based in Oakville, Ontario, is the licensed Canadian manufacturer of PPG Amercoat Protective & Marine Coatings, and also Distributor of PPG Sigma Marine Coatings for Bluewater Marine. Sales and Technical support is available through Amercoat Canada Warehouse/Distribution Operations in St. John's, Halifax, Montreal, Toronto, Sarnia, Vancouver and Victoria.

#7

KRAL-USA, Inc. is an international manufacturer of high quality positive displacement pumps and flowmeters for all kind of marine fuels and lube oils. KRAL pumps offer high capacity, high differential pressure and compact design. KRAL pump solutions can handle HFO as well as DMA and DMB fuels according to low sulfur fuel requirements in the USA and in Europe. The KRAL Volumeter® is a robust liquid flowmeter for accurate fuel consumption and lube-oil measurement even in harsh industrial applications.

#8

Industrial filtration specialist from coast to coast since 1988. Canadian master distributor of MAHLE Industrial Filtration, manufacturer of customized, highly efficient filtration and separation systems for a wide variety of marine applications: bilge water separation, ballast water treatment, engine maintenance, protection of hydraulic systems and pipelines, transfer and circulation systems, fuel and oil treatment.

#9

Vickers Oils, a private, independent company which formulates, manufactures and supplies specialised lubricants, was established in 1828 and continues to have its worldwide headquarters in Leeds, UK. Vickers Oils pioneered the introduction of biodegradable lubricants for the Marine Industry (winning the Seatrade Award in 2003) and is now the clear market leader, having supplied "bio-lubes" to more than 1,000 vessels worldwide, and having gained approvals and acceptances from many leading OEMs.

#10

VapCor Inc. specializes in selling and supporting hydraulic fluids which are water soluble (No Sheen), biodegradable and have low aqua toxicity; cleaners that do not interfere with the operation of an OWS, in fact enhance the operation; combustion additives that raise the Cetane value of fuels which promotes a more complete combustion at lower temperatures which reduces emissions; the only emission monitoring equipment made in Canada and tested by NETE that measures Nox, CO, CO2, O2, HC & Opacity. VapCor is also the Canadian Marine Distributor of Straub® Couplings and the HoldTight 102.

#11

CONCEPT NAVAL
EXPERTS-CONSEILS · GÉNIE MARITIME

Concept Naval has specialized in supplying naval architecture services since 1985. The company's portfolio includes many innovative designs, such as North America's first liquefied natural gas (LNG) passenger vessel.

#12

OpDAQ Systems

OpDAQ Systems is specialized in ship-board instrumentation systems. Through advance data analysis software, OpDAQ Systems is offering complete, cost effective instrumentation solutions including fuel consumption monitoring system and shaft power/torque.

#13

Technopole Maritime du Québec

The mission of Technopole Maritime du Québec (TMQ) is to promote and advance the development of marine sciences, technology and biotechnology in Quebec by increasing their visibility on Canadian and international stages, providing value-added services and supporting the progress of priority projects over the long term. Furthermore, the goal of TMQ is to position its member network as the leader in the marine sciences. It will enhance wealth creation and attract new investments to the sector's industries, institutions and organizations.

#14

Hermont Marine Inc. was formed in 1984 and services the domestic and international fleets with environmental expertise. Its wide range of services and products include RWO Bilge Separators and DECKMA Bilge alarms for Oil Pollution prevention, RWO CleanBallast Ballast Water Management System to supply an approved, freshwater tested solution, capable to work under most adverse condition. Hermont also supplies compliant sewage treatment systems, sterilization units, better garbage management with both compactors and incinerators, VAF viscometers, flow meters and torque meters to offer optimized fuel combustibility.

HERMONT MARINE INC.

#15

HullSpeed™.us
PERFORMANCE MARINE COATINGS

HullSpeed™ Performance Marine Coatings are a unique line of water-based, epoxy/silicone bottom paints. The coatings are designed to improve speed and fuel economy as well as ease of cleaning while remaining eco-friendly. HullSpeed™ technology provides a very hard/durable surface that contains low VOC's and is applied 50% faster than most coating systems. The company was established in 2002 and originated in the performance sailing markets but viable markets include recreational, commercial, industrial, aeronautics and energy industries.

#16

WÄRTSILÄ

Wärtsilä is a global leader in complete lifecycle power solutions for the marine and energy markets. Wärtsilä supports its customers throughout the lifecycle of their installations by providing Engine Services, Reconditioning Services, Propulsion Services, Operation & Management, Automation Services, Ship Services and Training Services. Through innovative products and services, Wärtsilä sets out to be the most valued business partner of all its customers.

#17

Hyde Marine
Ballast Water Management Technology

MARENER
ENGINEERED SYSTEMS

The IMO Type Approved Hyde GUARDIAN® Ballast Water Management System is a complete and automated treatment process, which combines efficient, automatic back-flushing disk filtration during ballasting and powerful, medium pressure UV disinfection during both ballasting and de-ballasting to inactivate marine organisms. It is available in Canada through MARENER Engineered Systems along with a number of equipment including marine fender and mooring systems, and Oil Spill Response Equipment including detection, containment and skimming equipment.

#18

SODES

SODES is a non-profit organization founded in 1985 and mandated to protect and promote the St. Lawrence's economic interests. It is the voice of the maritime community, whose interests it represents in all forums and before all authorities with regard to the future of the river and the marine industry. Through its members, SODES works to promote the St. Lawrence's development based on sustainable development principles. Promote responsible economic development of the River without compromising the future generation's quality of life is SODES long term challenge.

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