

## Setting the pace for green technology use in maritime transport

By Darryl Anderson  
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*We quickly learn that green values, company initiatives and improvements extend far beyond mere regulatory compliance.*

The Paris Agreement on Climate Change was signed by 175 countries in April 2016. The International Maritime Organization (IMO) Marine Environment Protection Committee meeting, which highlighted the shipping industry's path for smart, responsible sustainable development, overlapped with the signing. The work of this committee advances the IMO's vision for shipping that

follows the United Nations Conference on Sustainable Development, Rio+20 in 2013. IMO Secretary-General Mr. Kitack Lim has asserted that sustainability could best be achieved under the comprehensive regulatory framework developed and maintained by the IMO.

While the above achievements are indeed notable, the real test will come with implementation. By capturing industry insights and perspectives from

ship owners, container terminal operator, and supplier, the challenges and lessons learned for driving enhanced sustainability can be explored. We quickly learn that green values, company initiatives and improvements extend far beyond mere regulatory compliance. Sound governance structures, integrated team-based business processes, new technology and products are being used collaboratively to set the pace for an enhanced sustainability outcome.

### Bulk shipping company insights

Fednav Limited (Fednav) is Canada's largest ocean-going dry-bulk ship-owning and chartering firm. Their fleet consists of about 100 owned, long-term



*Photo source: [www.shipspotting.com/lappino](http://www.shipspotting.com/lappino)*

Fednav's newly built Federal Champlain has an advanced ballast water handling system — noteworthy to be mentioned when discussing green shipping.

chartered and spot chartered vessels and includes St. Lawrence Seaway-max-sized bulk carriers, Supramax and Panamax vessels.

For many shipping companies, the arrival of a new vessel, such as the *Federal Champlain* in 2016, with its advanced ballast water handling system, would be the most newsworthy item to be mentioned when discussing green shipping. A lively discussion with Fednav Limited's Marc Gagnon, Director, Government Affairs and Regulatory Compliance, revealed a more nuanced and holistic picture regarding the drivers behind the company's green initiatives.

Yes, the company has tackled significant environmental initiatives to address particular challenges such as ballast water, cargo residues, oily wastes, accidental oil spills/leakages, air emissions, energy efficiency and waste management. But Gagnon emphasized the fact that Fednav is a privately owned company where the organizational culture embodies and lives out one of their core values: "being the best we can."

From a green perspective, the company's environmental policy establishes the standard of conduct for the enterprise. More recently, the renewal of the company's workforce has resulted in an influx of new employees. Marc stressed the point that young people want to work for a company that shares their values. They don't want to work for a company that has always done business in a certain way and is not responsive to the environmental impact of their operations. Thus, internal company forces are driving green initiatives, and these are perhaps a stronger drive of change than the external forces that are shaping the business-to-business marketplace where their bulk ships operate.

When asked about insights gleaned from specific initiatives, Gagnon mentioned both the ballast water treatments systems onboard their new generation of ships and the Green Marine program that Fednav helped co-found.

The *Federal Champlain* is equipped with a ballast water treatment system,

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a first for a family of sister ships transiting the Great Lakes. Developed by JFE Engineering Corporation in Japan, the BallastAce system will be effective in both fresh and salt water. BallastAce operates through a sophisticated filter and sodium hypochlorite (bleach) injection mechanism in the ship's ballast system. Fednav is equipping 12 of its new ships with these systems, well before the

regulatory requirement. Gagnon spoke about the need for well-structured regulations but, for a company to be effective, there may be a need to act before regulations come into force.

Gagnon enthused about the value of having a platform for industry collaboration and mutual learning to both identify sustainability issues but share technical information with colleagues.

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Photo courtesy GCT

Global Container Terminals has implemented initiatives such as changing over the hydraulic fuel to Panolin, a more environmentally friendly solution.

For example, ballast water is a complicated and challenging issue to address, he noted. The ability to use the Green Marine Forum to share their thinking with colleagues and gather insights from others is of great value. Participants may not always agree with the perspective of other leaders in their industry, but Fednav always values the perspectives of others and the industry can and does learn from one another. For Fednav, one of the keys to an effective group is the trust that is built up over time.

A formal structure inside a company is most useful when implementing green initiatives. The corresponding technological solutions are critical to Fednav. Within the enterprise, there is an environmental committee headed by a vice-president that reports to the board on the progress of the company's environmental policy. Internally, Fednav has taken a team-driven approach toward green initiatives. Colleagues from their operation, fleet, and finance

departments amongst others are involved. Other environmental initiatives have the office, ship and terminal employees involved. Collaborative platforms, such as the Green Marine certification program, often provide more cost-efficient options for companies to implement their green initiatives than a stand-alone approach.

Looking ahead, the issue of carbon from shipping and maritime logistics operations, along with underwater noise from vessels, are on the immediate horizon.

### Container terminal operator, ferry operator and green product supplier insights

Few topics are as under-appreciated as the type of hydraulic fluid that supports the machinery responsible for the pulsating flow of traffic through a modern container terminal. When implementing a green substitute product, terminal operators are concerned with

equipment productivity and performance: particularly in situations where the original equipment was designed for a conventional product.

When Global Container Terminals' (GCT) predecessor company made a policy decision to implement environmentally friendly products, the transition to find a suitable replacement hydraulic fluid came with a learning curve, observed Serguei Bazov, Maintenance Superintendent at GCT's Vanterm operation.

Container handling equipment such as spreaders use hydraulic oil. Since the spreader is always in use, there is a risk that switching to a green alternative will cause the machinery to operate at a sub-par level. Conversely, some equipment is used during periods of peak demand and fluid degradation, and hence machinery readiness and reliability, are a concern.

Bazov's team implemented a year-long test of a green product called Panolin after experimenting with alternative products in previous years. Panolin is a product provided by B.C.-based Biodegradable, Natural, Alternative Chemistry Environmental Solutions (BNAC). This local firm provides alternative, environmentally certified products. Their product line includes hydraulic fluids, gear oils, greases, degreasers, bilge/deck cleaners and absorbents. The goods typically replace traditional toxic chemicals.

One of the most valuable lessons from conducting the pilot project was confirmation that even seemingly small organizational changes require attention. For example, Bazov commented: "It is expensive to change the fluid, especially when there could be up to 22 different pieces of equipment each requiring up to 150 litres of hydraulic fluid." Thus, it was important to record clearly, document and label storage drums and equipment with the type of hydraulic fluid.

Bazov also observed that when choosing a green alternative, the technical attributes of the product are just as important as the quality of the service offered by the supplier. He cited the willingness of BNAC's staff to come



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## ENVIRONMENT

alongside his team when they were applying the green product for the first time as an example of a good business practice.

Operating in the Salish Sea's aquaculture heartland, BC Ferries' newest ship, the 150-passenger, 50-vehicle Baynes Sound Connector, has been built by Seaspan Shipyard in North Vancouver to be the 'greenest' vessel in their fleet. Everything relating to the environment was taken into consideration with the new vessel according to BC Ferries.

The use of non-toxic fluid is a vital step in contributing to sustainable shipping should a leak occur. Mark Wilson, BC Ferries' Vice president of engineering, stated, "The Baynes Sound Connector Cable Ferry has had a good all-round performance with the use of the Panolin Line. The oil is much more environmentally friendly and has resulted in very normal operational parameters around system pressure and temperature."

When asked what were the most valuable management insights learned from implementation green products in the marine sector, Chris Richardson, President of BNAC replied that "going green saves money." From a financial perspective, customers such as GCT and BC Ferries are benefiting from the use of the green product because they can extend hydraulic oil changes and thereby lower their labour, disposal and product shipping costs. Since Panolin is a zero-waste product, there is no need to dump and flush the oils every six months to a year of service. In contrast, products made from vegetable oil will need to be replaced after 1,500 to 2,000 hours. An inherent part of sustainable shipping is the need for a quality management process because, if kept properly filtered, Panolin will last 10 to 20 times longer than conventional bio and mineral oils.

### Conclusion

The theme that emerges from this article is that the successful introduction of a new green product or technology rides on leadership, collaboration and trust. Perhaps this is why company initiatives are in fact driving sustainability improvements that extend beyond mere regulatory compliance. In a sector where commercial supply chain and logistics collaboration is often discussed but lacks a level of trust and integration, it is often difficult to achieve measurable improvements.

As the standard of corporate conduct for the maritime sector continues to evolve rapidly, all companies will need to adopt continuous learning and innovation programs. Our ability to engage in international trade as a nation will increasingly depend on the effective use of environmental technologies in the maritime transport and logistics sector. Failure to do so will make it much harder to attract the next generation of employees but will also undermine the public confidence necessary to support increased investments in transportation infrastructure.

In an era of intense price competition, tight operating margins and emphasis on improved productivity, it is important to acknowledge and learn from pacesetters who are at the forefront of making a difference.

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