

Questions, uncertainties and hard work

The discharge of raw sewage into the sea can pose a health hazard, adding to oxygen depletion and obvious visual pollution in coastal areas, additionally creating a major problem for countries with a developed tourist industry. The professional background information on technology and specific facilities regarding the sewage utilization in the BSR ports are at the moment highly coveted by port specialists.

In order to fulfil the current and forthcoming obligations, port authorities plan investments in new required facilities. However, the new regulations concerning port reception facilities (PRFs) raise many questions and uncertainties among the authorities of the Baltic ports.

Baltic ports' voice

The topic of sewage reception from passenger ships and waste from scrubbers was tackled during the BPO Environmental Seminar, which accompanied this year's Transport Week conference in Gdańsk, Poland. The seminar served as a platform of know-how exchange among ports, which already possess the reception facilities for sewage and wastewater from passenger ships and those only just planning this investment and further development.

The representatives of the ports of Copenhagen Malmö, Gdynia, Tallinn and Turku shared their expertise as well as crucial data regarding waste handling and management, fees and waste recycling.

Gert Nørgaard, Manager Strategy and Planning of CMP, presented a case study on Copenhagen's new investment regarding waste management. The port, as the busiest cruise destination in the Baltic Sea with approx. 350 cruise ship visits and 700,000 passengers per year, will have a new passenger quay for turnarounds of these vessels. The 1,100 m long, 70 m wide, three-berth quay will be situated right on the Øresund coast line. As a part of the investment process, wastewater pipes are to be implemented in the quay receiving wastewater from three passenger ships simultaneously. The capacity of the installation is designed for up to 300 cbm/h for one ship.

The Port of Gdynia, with 733 ferry and cruise ship calls and 550,000 passengers in 2013, was represented by Environmental Protection Specialist Daria Mróz. Currently, new sewage PRFs are under construction in three port quays and an amelioration of a fourth is planned in order to adapt the sewage system for merchant ships to the new regulations. In the i.a. Bułgarskie and Szwedzkie Quays an inlet for sewage discharged from ships will be installed, with a sewage quality measurement device and

Tab. 1. Legal background - main regulations

Year	Regulation
2000	The EU Directive on port reception facilities (2000/59/EC) for ship-generated waste and cargo residues came into force. The document addressed in detail the legal, financial and practical responsibilities of the different operators involved in delivering ship-generated waste and cargo residues. Ports were obliged to establish cost recovery systems to encourage the delivery of waste on land and discourage dumping at sea.
2007	The BSR states decided to adopt HELCOM's Baltic Sea Action Plan, which defined actions necessary to protect the natural environment of the sea on the basis of the Helsinki Commission's Convention on the Protection of Marine Environment of the Baltic Sea Area. One of the issues targeted was minimizing the scale of pollution from ships' sewage.
2010	The HELCOM ministerial meeting set up a Baltic Sea Cooperation platform on sewage PRFs. The latter during 2010-2013 involved the shipping industry, technology providers, ports and national authorities for discussions on outstanding issues around the improvement of sewage PRFs in the region.
2011	The International Maritime Organization (IMO) on the basis of the International Convention for the Prevention of Pollution from Ships (MARPOL Annex IV) declared the Baltic Sea a special area for environmental reasons deciding which classes of sewage can be discharged into the sea and created requirements for states to implement adequate sewage PRFs. IMO also stated that from 2016 all newly-built passenger ships are not allowed to release their sewage directly into the sea. From 2018, the same prohibition will be applied to the existing passenger vessels travelling on the Baltic Sea.

connection to a municipal biological treatment plant pumping station. Readjusting investments in Helskie II, Polskie and Francuskie Quays, which are used for cruise liners and ferries, are also planned. The aim is to gradually upgrade the standards of PRFs and achieve their adequacy by January 1, 2016, at least on the main berths serving cruise traffic.

The Port of Tallinn, with 9.2 mln passengers and 344 cruise ship calls in 2013, was represented by Ellen Kaasik, Head of the Quality and Environmental Management Department. She raised the issue of 'no-special-fee' system with the dual purpose of encouraging ships to deliver waste ashore and to avoid undesirable

waste streams between ports. Ships calling at Tallinn's harbours are obliged to pay a waste fee that doesn't directly depend upon the quantity of the delivered ship-generated waste. The levy of waste fee is based on a vessel's gross tonnage.

Markku Alahäme, Quality Manager at the Port of Turku, which last year was visited by 2,178 cruise passengers, presented the port's waste management and wastewater reception facilities. He focused on the already existing PRFs, such as fixed wastewater reception points for passenger traffic with a capacity of 200-250 m³/h, emphasizing that due to the new upcoming legal regulations, the port authorities plan to retrofit the ship water treatment system.

Fig. 1. Waste fee – comparison of the rates

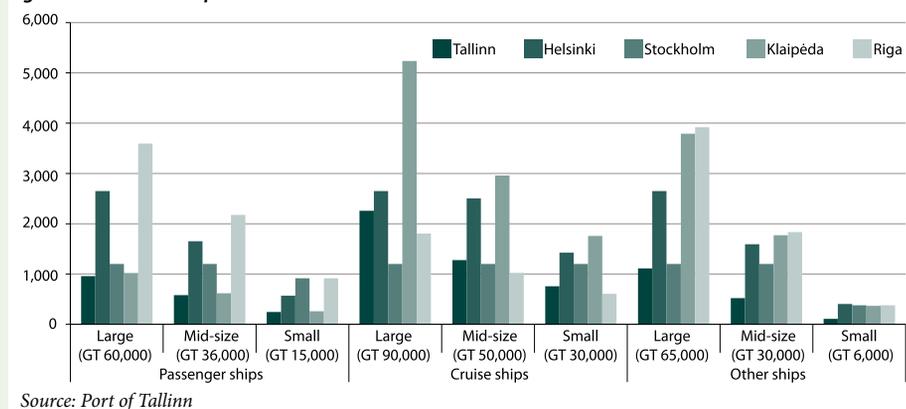
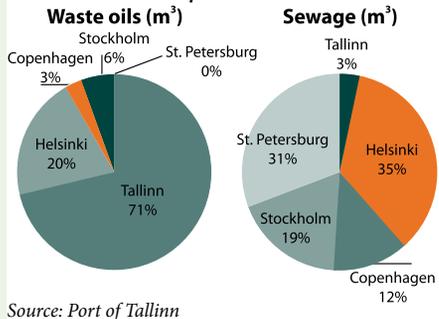


Fig. 2. Amount of ship-generated waste delivered to some Baltic cruise ports



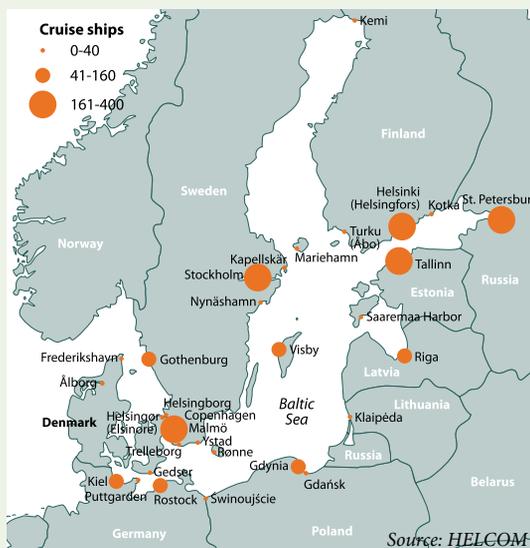
Source: Port of Tallinn

Technology and R&D

BPO invited experts and maritime suppliers from Wärtsilä Moss to present the ship scrubber technology and the sort of wastes produced by the scrubbers. Wärtsilä's hybrid

scrubber system has the flexibility to operate in both an open and closed loop using seawater to remove SOx from the exhaust. When operating in an open loop, exhaust gases enter the system and are sprayed with seawater in three different stages. The sulphur oxide in the exhaust reacts with the water and forms sulphuric acid. Chemicals are not required since the natural alkalinity of the seawater neutralizes the acid. Wash water from the scrubber is treated and monitored at the inlet and outlet to ensure that it conforms to the MEPC 184(59) discharge criteria. It can then be discharged into the sea with no risk of harming the environment. The system also operates in a closed loop where the wash water is circulated within the scrubber. Exhaust gas enters the scrubber and is sprayed with fresh water that has been mixed with caustic soda (NaOH). The sulphur oxides in the exhaust react with this mixture and are thereby neutralized. The hybrid approach enables operation in a closed loop mode when required, for instance whilst in the port and during manoeuvring using NaOH as a buffer. When at sea, the switch can be made to open loop using only seawater.

Fig. 3. Baltic cruise traffic 2011



Moreover, the event involved a training session dedicated to the Self Diagnosis Method (SDM), a new methodology designed to assess environmental management in seaports. SDM, developed by two research teams and about sixty seaports, allows for the comparison of the current environmental situation with that corresponding to previous years and an assessment of the opportunities for improvement. Established by

EcoPorts, SDM along with the Port Environmental Review System (PERS) have their origins within the ESPO R&D projects that have been the subject of continuous development during the last 15 years, serving as a helpful instrument for ports in implementing the new environmental regulations.

Substantial attention was devoted to EcoPorts itself; various R&D initiatives of this platform are focused on applying research outcomes to practical solutions, in order to assist port environmental managers in their daily work.

Light at the end of the tunnel

The issues raised evoked a lot of doubts and questions, especially concerning the legal field. There is still a multitude of queries regarding interpretation of the EU Directive on port reception facilities, especially on specifying the 'adequate reception facilities in ports' and no definite fees for ship-generated wastes. The complexity of the problem is even magnified by parallel obligations for ports' legal systems such as national, the EU's and IMO's regulations.

As the status of port reception facilities' development is highly diversified throughout the Baltic ports, the seminar enabled participants to present solutions implemented in their ports and discuss to what extent the chosen ways are useful and effective. Since the costs of new sewage PRFs are potentially high, it is vital to acknowledge the legal requirements and technical parameters of the devices. On the other hand, such investments have a positive long-term impact on the Baltic Sea's environment and may help develop an environmentally-friendly marine industry and intensify the passenger traffic. ■

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