

ANALYSIS OF CHARGES FOR THE UNLOADING OF OIL RESIDUES FROM SEA-GOING SHIPS TO PORT RECEPTION EQUIPMENT ON SELECTED EXAMPLES

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Abstract: The main goal was to analyse the system of calculating fees in Port of Gdańsk and port of Klaipeda for collecting oil waste to port reception facilities and to check if shipowners are subject to restrictions related to this.

This article analyses two sea ports, i.e. the ports of Gdańsk and Klaipeda. Waste management plan for the ports of Gdansk and Klaipeda was used for this analysis. Waste types that could be delivered to port reception facilities were analyzed along with the permissible amount of waste delivered in port as part of the tonnage fee.

After analysing the available data, it has been concluded that both seaports allow for the discharge of oil waste and oil residues to port reception facilities. Each port has its own separate waste management plan, which sets out the procedure for notifying the port of waste going to the port from vessel.

However, each port has its own separate method of calculating fees for waste delivered at the port. The port of Gdansk applies a fixed tonnage fee for a certain amount of waste. If it is exceeded, additional fees are charged. The Klaipeda port, on the other hand, charges a fixed tonnage fee, allowing any amount of waste from a seagoing ship to be delivered.

The article compares the ports of the Baltic Sea in terms of fees and the possibility of receiving waste from seagoing vessels. This will allow further analysis of the adaptation of seaports to applicable environmental requirements.

Keywords: oil residues, port reception facilities, seaport.

1. Introduction

Oil waste is one of six groups of waste classified in the International Convention for the Prevention of Marine Pollution by Ships Marpol 73/78. These include, among others:

- Category I – Oil waste.
- Category II – Harmful liquids in bulk.
- Category III – Harmful substances transported in packaging.

- Category IV – Sewage.
- Category V – Waste from ships.
- Category VI – Air pollution (International Convention..., 2015).

They mainly include: crude oil, sludge, oily bilge water, oil fuel, oil waste, etc.

Due to the danger they carry and the effects of oil waste getting into the sea waters, national and international organisations undertake all activities to protect the marine environment against such events (International Convention..., 2015).

As a result of these actions, legal regulations are introduced and tightened, which concern how to manage oil waste on ships so that they do not pose a direct threat to both human life and health, as well as to marine fauna and flora of the surrounding waters (International Convention..., 2015).

The International Maritime Organization (IMO), which deals with the prevention of sea waters and oceans against degradation based on hydrotechnical conditions and the state of the marine environment of individual water bodies, has divided the waters into sensitive and other areas. The areas classified as sensitive include the Baltic Sea, the North Sea and the English Channel (International Convention..., 2015).

Therefore, all maritime vessels operating in these waters are obliged to comply with strict regulations regarding the standards and technical condition of vessels. Purified water currently discharged directly into the sea from ships at the outlet of the filtration system should not exceed the permissible norm of 15 ppm content of oil particles (undiluted liquid). This is to reduce the amount of pollutants entering the sea, and thus to improve the condition of heavily polluted waters, e.g. the Baltic Sea (International Convention..., 2015).

According to the latest ordinances, conventional seagoing vessels must meet the construction requirements and be equipped with a specialised system for cleaning oily waters from seagoing vessels, in accordance with the requirements of the Marpol Convention, or oil residue tanks and profitable tanks that will allow safe storage and transport of waste oil directly to port reception facilities (International Convention..., 2015).

2. Analysis of port fees for collection of oily waste from seagoing vessels

For the purposes of this article, two seaports and their system for collecting oil waste from seagoing vessels was analysed. These include the ports of Gdańsk and Klaipeda.

2.1. Port of Gdańsk

The seaport of Gdańsk is one of the fastest growing ports on the Baltic Sea. It is located in its southern part. It plays a significant role in the transport corridor connecting the Scandinavian

countries with South-eastern Europe. In 2018, there were 49 032 234 tonnes of transhipments ([www.portgdansk.pl/...](http://www.portgdansk.pl/)).

The Gdańsk port is fully adapted to receive precipitation from seagoing vessels in accordance with the Act of 12 September 2002 on port reception facilities for waste and cargo residues from ships (Journal of Laws, 2002) and the principles set out in "Port management plan for waste and cargo residues from ships" (Act of September..., 2002).

Thanks to the available port infrastructure, it is possible to report oil waste, solid waste, as well as sewage and flue gas cleaning residues.

According to the tariff applicable at the port of Gdańsk, the lowest fee is PLN 42.55. As part of servicing the vessel in the port, a tonnage fee must be paid, which applies for the ship's entry and exit, transit through the port area and for ensuring the reception of waste from the ship (Tariff of port fees..., 2019).

These fees are calculated according to specific rates by type and size of the ship converted in PLN/1 GT (Gross tonnage) (Tariff of port fees..., 2019).

Table 1 presents the list of tonnage charges applied in the Gdańsk seaport for selected sea units (Tariff of port fees..., 2019).

Table 1.

Tonnage charges at the port of Gdańsk (Tariff of port fees..., 2019)

No.	Ship type and size	Amount of fee (PLN / 1 GT)
1	Car carriers	0.60
2	General cargo	1.91
3	Reefers	2.21
4	Containership	1.02
5	Bulk carriers up to 38,000 GT	2.17
6	Ferries	0.38
7	Tankers up to 38,000 GT	2.51
8	Push sets and towing assemblies	2.04

The tonnage fees presented in Table 1 refer to specialist units and are expressed in PLN/1 GT. The lowest fees apply to ferry vessels – PLN 0.38 for 1 GT. However, the most expensive fees are charged for tankers, bulk carriers, etc. Their amount exceeds PLN 2 for 1 GT.

According to the tariff, shipowners of ferry vessels and other liner shipping vessels can count on a discount depending on the number and frequency of vessels arriving at the seaport in Gdańsk (Tariff of port fees..., 2019).

The tonnage rates listed in Table 1 also include the collection of waste from ships. The permissible quantities that can be passed at the port as part of the tonnage fee depend on the type of waste, as well as the location of the last port of call. Table 2 presents the permissible quantities of waste that may be handed over to the port of Gdańsk as part of the tonnage payment.

Table 2.

Acceptable limits for the delivery of waste as part of the tonnage fee paid (Tariff of port fees..., 2019).

Waste Type	Unit	Location of last port of call		
		Baltic Sea	North Sea	Other waters
Oil waste and mixtures thereof	[m ³]	3.0	7.0	12.0
Solid waste	[m ³]	0.5	0.6	0.7
Sanitary sewage	[m ³]	3.0	6.0	7.0

The amounts presented in Table 2 refer to oil waste, solid waste and sewage, which can be handed over to the port of Gdańsk as part of the tonnage fee without the need to pay additional fees.

In the tariff, the port of Gdańsk, in order to define oil waste and mixtures thereof, refers to waste listed in Annex I of Marpol 73/78.

According to the data presented in the port tariff, units traveling to the Gdańsk port from another port located in the Baltic Sea may hand over 3 m³ of oil waste as part of the tonnage fee, 7 m³ if their journey is from the North Sea port and 12 m³ when the craft is sailing from other areas. Any additional amounts of waste will be collected from ships for an additional fee.

To compare, all types of waste received as part of the tonnage fee at the port of Gdańsk – oil waste and mixtures thereof – can be taken in the largest quantities. For example, solid waste on a ship departing from the Baltic Sea region may be discharged in an amount of 0.5 m³, which is 500% less than for oil waste and sanitary sewage.

Ships entering the port of Gdańsk from the North Sea region may, as part of the port fee, hand over hand over to receiving devices – sanitary waste at the level of 6 m³. This means that they can pass them 14.28% less than oil waste, which was set at level 7 m³.

Solid waste without additional charges, the port of Gdańsk can accept at level 0.6 m³ from vessels coming from the North Sea region, i.e. 90% less than solid waste and 91.43% less than oil waste.

Ships coming to the port of Gdańsk from other regions may hand in up to 12 m³ of oil waste as part of the tonnage fee. Solid waste was set at 0.7 m³, i.e. 94.17% less than oil waste. Sanitary waste, on the other hand, can be pass on the level of 7m³, i.e. 41.66% less than oil waste and 90% more than in the case of solid waste.

Additional amounts of oil waste may be taken to the port of Gdańsk for an additional fee, as shown in Table 3 below.

Table 3.

Additional fees for the transfer of oil waste at the port of Gdańsk (Tariff of port fees..., 2019).

No.	Type of operation	Price in PLN
1	Reception of oversize quantities – liquid form	89.36/m ³
2	Reception of oversize quantities – solid form	255.32/m ³
3	Collection from ships not complying with the acceptance conditions – liquid form	127.66/m ³
4	Collection from ships not complying with the reception conditions – solid form	297.88/m ³

The fees presented in Table 3 relate to the collection of additional quantities of oil waste from seagoing vessels or fees for the collection of such waste from vessels that do not meet port requirements.

Depending on the liquid or solid form of waste sent to port reception facilities, prices vary. In the case of a unit meeting all the requirements specified by the port, the price is 89.36 PLN/m³ of material handed over, where the fee for passing additional solid oil waste is 255.32 PLN/m³, which is 185.72% more than for waste liquid.

In addition, there are other additional special fees, i.e. the fee for collecting waste on Sundays and holidays – 34.04 PLN/m³, the addition for Sundays and holidays in the event of receiving oversized quantities or from units not meeting the relevant requirements – 51.06 PLN/m³, supplements for a ship's lack of readiness to hand over waste – charged for each hour of waiting for the ship's readiness – 340.43 PLN/h.

2.2. Port of Klaipeda

The port of Klaipeda is one of the northernmost ice-free port on the east coast of the Baltic Sea. It is the most important Lithuanian port as a transport hub connecting sea, land and rail routes from east to west [Port of Klaipeda, 2019].

The annual transshipment capacity of the Klaipeda port is 65 million tonnes. One of the shortest distances between ports provides the opportunity to connect the port of Klaipeda with the most important industrial eastern regions, such as Russia, Belarus and Ukraine. It should be emphasised that the main shipping lines to the ports of Western Europe, Southeast Asia and the continent of America pass through the port of Klaipeda (Waste management plan..., 2018).

As in the case of the port of Gdańsk, the port of Klaipeda applies port fees for a seagoing ship calling to the port.

Prices depend on the type, size, specifics of the ship and the frequency of arriving at the port. Table 4 shows the port charges used for selected maritime units.

Table 4.

Port fees for selected vessels calling at the Klaipeda port (The regulations..., 2008).

No.	Ship type and size	Amount of fee (EUR / 1 GT)
1	Cruise ship	0.12
2	Liner	0.58
3	Ro-Pax liner	0.07
4	Container Liner	0.28
5	Nonlinear cargo / passenger ship	0.58
6	Fishing vessel GT <1000	0.12
7	Push sets and towing assemblies	0.87

The charges in Table 4 relate to the different types of maritime units calling at the port of Klaipeda. The fees depend on both the size and type of the unit, as well as the frequency of entering the port.

The lowest fees apply to vessels appearing in the Klaipeda port regularly. These include, among others: cruise ships and any other liner shipping. For these units, prices range from 0.07 EUR/GT to 0.58 EUR/GT. Tramp shipping vessels pay a fee of 0.58 EUR/GT (cargo/passenger ship), where the ro-pax unit making regular voyages is charged at 0.07 EUR/GT, i.e. 728.57% less than in the case of vessels occasionally entering the port.

The fee discussed above does not include waste limits from the entity entering the port that may be transferred to port reception facilities. This problem has been resolved in a different way.

The ship entering the port bears the tonnage fee and the sanitary fee under which the port receives from the unit waste specified in the Marpol Convention. Every ship in the port of Klaipeda is subject to a fee. This is usually calculated based on the number of days it spends at the port:

- up to and including 10 days, the fee is 0.07 EUR/GT,
- from the 11th day for each subsequent day, 0.007 EUR/GT.

In addition, ships that are equipped with a waste treatment system recognised by international certificates, e.g. Green Award, which use modern waste management systems thereby reducing the amount of waste generated, recycling it and sorting it, receive a 20% discount on sanitation fees (The regulations..., 2008).

Conclusions

The ports of Gdańsk and Klaipeda discussed in this article are two of the many ports located within the Baltic Sea region. Due to the fact that the Baltic Sea is a sea with special conditions, i.e. very low salinity, limited possibilities of water exchange with the nearby North Sea and a high degree of pollution occurring in it - is referred to as the sensitive area. This is primarily associated with stricter regulations regarding the possibility of using marine waters, including imposing greater requirements on shipowners of vessels operating in the Baltic Sea regarding sulphur emissions, the use of marine fuels or the use of appropriate technical solutions enabling more accurate purification of waters taken offboard. The same is true for seaports concentrated within the Baltic Sea – ports must be adapted to receive pollution produced on seagoing ships directly to port reception facilities in order to manage them safely and meet all standards.

This article deals with oil residues from seagoing vessels. After analysing the available data, it has been concluded that both seaports allow for the discharge of oil waste and oil residues to port reception facilities. Each port has its own separate waste management plan, which sets out the procedure for notifying the port of waste going to the port from vessel.

However, each port has its own separate method of calculating fees for waste delivered at the port.

Table 5 presents a comparison of the charges used at the ports of Gdańsk and Klaipeda.

Table 5.

The kind of Fees for waste occurring in the ports of Gdańsk and Klaipeda (symbol “•” means presence of a charge at the port, “-” means – no charge)

	Port of Gdańsk	Port of Klaipeda
Tonnage fee	•	•
Additional fee for waste	•	–
Sanitary fee	–	•

The charges in Table 5 show which charges are common to ports and what additions are applied depending on the port to which the unit will arrive.

The port of Gdańsk applies a fixed tonnage fee and an additional fee for the extra amount of waste sent to port reception facilities. This means that if the entity entering the port meets the quantities specified in the port waste management plan, it will not incur additional fees for passing the waste. However, if these quantities are exceeded, an additional fee will be charged in accordance with the tariff.

The Klaipeda port uses a different approach to waste. The shipowner incurs a fixed tonnage fee for entering the port and a sanitary fee for passing waste to port reception facilities. This solution provides the possibility of passing any amount of waste without any restrictions.

Table 6 presents a comparison of rates for waste delivery to port reception facilities at the ports of Gdańsk and Klaipeda.

Table 6.

Rates for the transfer of oil waste at the ports of Gdańsk and Klaipeda

	Port of Gdańsk		Port of Klaipeda
Collection of oil waste liquid form	- For ships coming from the Baltic Sea > 3 m ³ - For ships coming from the North Sea > 7 m ³ - For ships from other areas > 12 m ³	89.36 PLN / m ³	- up to and including 10 days: 0.07 EUR/GT - from the 11th day for each subsequent day: 0.0007 EUR/GT
Collection of oil waste solid form	- For ships coming from the Baltic Sea > 3 m ³ - For ships coming from the North Sea > 7 m ³ - For ships from other areas > 12 m ³	255.32 /m ³	

The fees presented in Table 6 relate to waste taken over at the ports of Gdańsk and Klaipeda. For example, if a ship whose last port was the port of Rotterdam (belonging to the North Sea) with a size of 23 933 GT and receives 20 m³ of liquid oil waste at the port for 3 days, then:

- in the port of Gdańsk, in addition to the fixed tonnage fee charged for the entry of the unit into the port, the shipowner will also pay an additional fee in the amount of:

$$\begin{aligned}
 & [20 \text{ m}^3 - 7 \text{ m}^3 \text{ (limit under the tonnage fee)}] \times 89.36 \text{ PLN/m}^3 = \\
 & = 13 \text{ m}^3 \times 89.36 \text{ PLN/m}^3 = \underline{\underline{1\ 161.68 \text{ PLN}}}
 \end{aligned}$$

- In the port of Klaipeda, in addition to the fixed tonnage fee, a sanitary fee will be charged in the amount of:

$$23\,933\text{ GT} \times 0.07\text{ EUR/GT} = \underline{\underline{1\,675.31\text{ EUR}}}$$

In this case, the fees in the port of Klaipeda are definitely higher; however, this is a one-time fee regardless of the amount and type of waste that will be transferred to the port reception facilities. On the other hand, in the case of the port of Gdańsk, the increase in the amount of oil waste will increase the fee for collecting this waste by port reception facilities. It should be borne in mind that, in addition to the above-mentioned fee, shipowners must also take into account additional fees when transferring other waste, e.g. sewage, etc.

In addition, the Klaipeda port uses concessions for ships that are equipped with a waste treatment system recognised by international certificates, e.g. Green Award, which use modern waste management systems, thereby reducing the amount of waste generated, recycling and sorting it, and they receive a discount of 20% for sanitary fees. Therefore, if the analysed unit meets the relevant requirements, the fee will be:

$$23\,933\text{ GT} \times 0.07\text{ EUR/GT} = 1\,675.31\text{ EUR} - 20\% \text{ (discount)} = \underline{\underline{1\,340.24\text{ EUR}}}$$

The use of such solutions may encourage shipowners to legally hand over waste in seaports and to modernise their vessels and enrich them with advanced systems favouring the protection of the marine environment.

Additional ports should be analysed to check the functioning of the waste management system in seaports and to analyse solutions in the area of a fee system for handling waste in seaports.

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