Performance Standard for Scrubber

SD 3 – Respond to climate change

Seung Joo Lee
Tae Eul Park
Wan Kyu Cho

CONTENTS

1 IMO Regulation 2020

1. Background
2. 4 ways to meet 2020 Sulphur cap requirements

1. IMO REGULATION 2020

When did IMO adopt regulations to control air pollution from ships?

1960s	Reduce harmful impacts of shipping on environment
1997	Annex VI to the MARPOL adopted
19 May 2005	Annex VI entered into force
2020	Using 0.5% instead of 3.50%

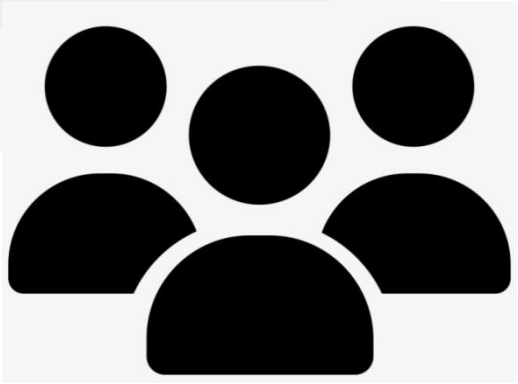
Requirements for control of emissions from ships :

- Ozone Depleting Substance(ODS)
- Nitrogen Oxides(Nox)
- Sulphur Oxides(Sox), Particulate Matter(PM)
- Volatile Organic Compounds(VOC)
- Shipboard incineration
- Carbon Dioxide(CO2)

1. IMO REGULATION 2020

Area		Sox limit on fuel oil		
Global		**before 2012.1.1**	**after 2012.1.1**	**after 2020.1.1**
		4.5% m/m ↓	3.5% m/m ↓	0.5% m/m ↓
SECA	Baltic and North Sea	**before 2010.7.1**	**after 2010.7.1**	**after 2015.1.1**
		1.5% m/m ↓	1.0% m/m ↓	0.1% m/m ↓
	North American ECA	**before 2012.8.1**	**after 2012.8.1**	**after 2015.1.1**
		4.5 m/m ↓	1.0% m/m ↓	0.1% m/m ↓

1. IMO REGULATION 2020



- ✓ Premature deaths avoided

Reductions in:

- ✓ Stroke
- ✓ Asthma
- ✓ Cardiovascular Disease
- ✓ Lung Cancer

- ✓ Less harm to crops, forests, aquatic species and acidification of the oceans

1. IMO REGULATION 2020

4 WAYS TO MEET 2020 SULPHUR CAP REQUIREMENTS

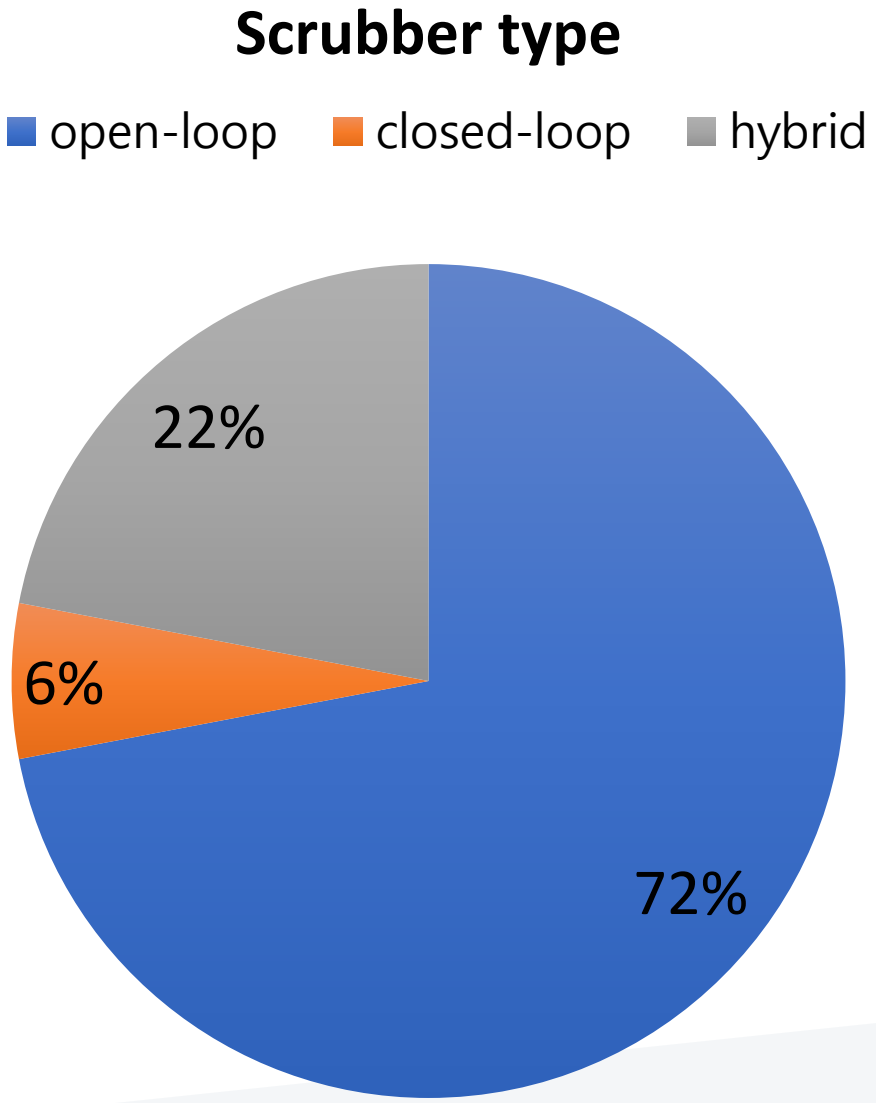
1) Use a compliant fuel
2) Use an alternative fuel e.g. LNG, Methanol
3) Use onshore power supply when at berth
4) Use a scrubber

1. IMO REGULATION 2020

Use A Scrubber

- By the end of 2019, according to the statistics, 2,950 vessels are expected to have installed scrubbers
- By 2023, the number is expected to have risen to 3500
- Many companies have opted for scrubbers
- The number one spot is secured by the open loop scrubber system, as the most practical and economic solution

➢ However, the future of open loop systems is uncertain, as certain port authorities and coastal states have imposed restrictions on wash water discharge from open loop scrubber



*Source: Hellenic Shipping News Worldwide

2 Implications

1. Weighing the pros and cons of open/closed loop types
2. The ban on open loop type scrubbers in several countries

2. Implications

Open Loop Type Scrubbers

- Generally use seawater as the scrubbing liquid
- Once the scrubbing process has been completed, the wash water is filtered and separated accordingly and discharged overboard.

Closed Loop Type Scrubbers

- Generally use chemically controlled sea or fresh water as the scrubbing liquid
- Re-circulate the scrubbing liquid, with only a small bleed off discharged overboard
- Once passed through the exhaust gas, the wash water is typically held in a process tank, treated, and then re-circulated

Open Loop Type Scrubbers

Pros:

- Simplicity
- Lack of reliability on additional chemicals

Cons:

- Potentially hazardous to marine life since the sulfur is dissolved in the wash water and discharged into the sea
- System wear and fouling
- Acceptability of open loop scrubbers in port

Closed Loop Type Scrubbers

Pros:

- Less contained sulfur in the wash water
- The alkalinity of the scrubbing water can be controlled
- Immune to fouling caused by intake of sand or sedimentation

Cons:

- More complex with more required storage tanks
- Chemical handling & storage
- Fresh water consumption

2. Implications

Some countries do not allow discharge of wash water from open loops

As some vessels are banned from entering certain ports, a portion of the shipping industry is in disarray

This is resulting from the IMO not setting the performance standards of the scrubber system

If IMO provides a common performance standard that all scrubbers must meet, internationally harmonized implementation can be achieved that IMO always stands for

3 Performance Standard for Scrubber

1 What to regulate?

3. PERFORMANCE STANDARD OF SCRUBBER

What to regulate?

1. The Sulphur contents in the discharged wash water regardless of whether the scrubber adopts an open or a closed loop system.

2. Limiting the followings in the discharge wash water;
   a. Sox
   b. PM
   c. Sand
   d. Sediments

4

Action Requested of the Assembly

4. Action Requested of the Assembly

The Assembly is invited to:

1. take note of the need for internationally harmonized performance standards of the scrubber;

2. consider and adopt a draft Assembly resolutions as set out in the annex.

4. Action Requested of the Assembly

ANNEX
DRAFT ASSEMBLY RESOLUTIONS
Performance Standard for Scrubber

THE ASSEMBLY,
Technical Specification,

1. The scrubber shall be designed so as not to endanger the health and safety of the crew, interact negatively with the ship's systems and cargo or produce any adverse environmental effects.

2. The scrubber should be provided with simple and effective means for its operation and control. It should be provided with a control system that should be such that the services needed for the proper operation of the scrubber are ensured through the necessary arrangements.

4. Action Requested of the Assembly

3. The scrubber shall incorporate control equipment that automatically monitors and detect the impurities of discharged wash water of the scrubbers.

4. The discharge of wash water from the SOx scrubber must meet the limitations of the following:

.1 Sulfur content of less than 0.5%;

.2 Particulate Matter (PM) emission levels less than 1.5 µg/m^3 per day.

4. Action Requested of the Assembly

5. The scrubber shall be equipped with an appropriate filter so as the sand and sediments drawn from the wash water does not affect the operation of the scrubber, as set by the manufacturer.

6. Facilities should be provided for checking, at the renewal surveys and according to the manufacturer's instructions, the performance of the scrubber components that take measurements.

7. A calibration certificate certifying the date of the last calibration check, should be retained on board for inspection purposes.

8. Only the manufacturer or persons authorized by the manufacturer should perform the accuracy checks.

REFERENCE

MEPC74-5-3
News Final of MEPC 72
News Final of MEPC 73
News Flash of PPR 5 (Sub-Committee on Pollution Prevention and Response)
News Flash of PPR 6 (Sub-Committee on Pollution Prevention and Response)

IMO Regulations for Marine Scrubber and Performance Considerations(Korea Marine Equipment Research Institute)
Summary of Emission Regulation and Trend Introduction - Convention & Legislation Service Team Korean Register of Shipping

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THANK YOU !