

Emission Abatement Methods

Training on Enforcement Provisions of the Sulphur Directive

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Marine Environment & PSC
Environment and Capacity Building

Lisbon 31 May 2016



Agenda

- *Emission Abatement Methods in the Sulphur Directive*

How EAM work?

- *Trials for EAM*

What are Trials for EAMs?

- *Enforcement Aspects with EAM*

How are the provisions of the Sulphur Directive enforced for ships with EAM?

As per article 4c of the Sulphur Directive:

Member States shall allow the use of emission abatement methods by ships of all flags in their ports, territorial seas, exclusive economic zones and pollution control zones, as an alternative to using marine fuels that meet the requirements of Articles 4a and 4b...

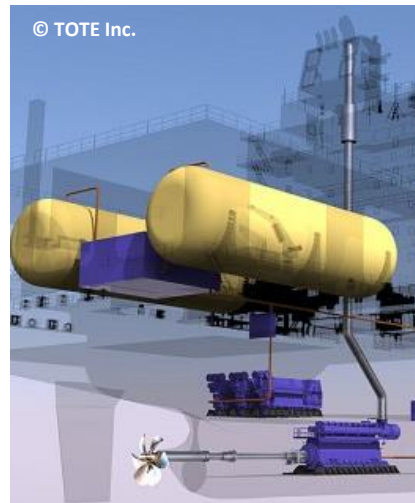
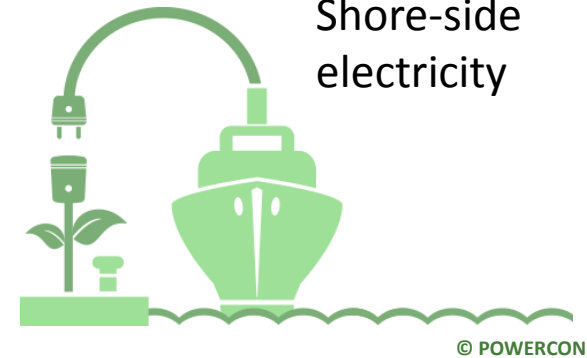


Emission Abatement Methods (EAM)

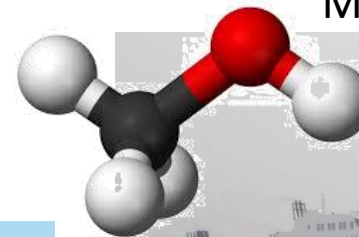
EGCS/Scrubbers



Biofuels



LNG



Methyl/Ethyl alcohols



MARPOL Annex VI vs Sulphur Directive

MARPOL Annex VI

Regulation 4 - Equivalents

- The Administration may allow **any fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance method used as an alternative** if (...) they are **at least as effective** in terms of emissions reductions as required by this Annex.

Directive 2012/33/EU

Article 2 – definitions

- *Emission abatement method means **any fitting, material, appliance or apparatus to be fitted in a ship or other procedure, alternative fuel, or compliance method, used as an alternative to low sulphur marine fuel (...), that is verifiable, quantifiable and enforceable.***

Article 4c – Emission abatement methods

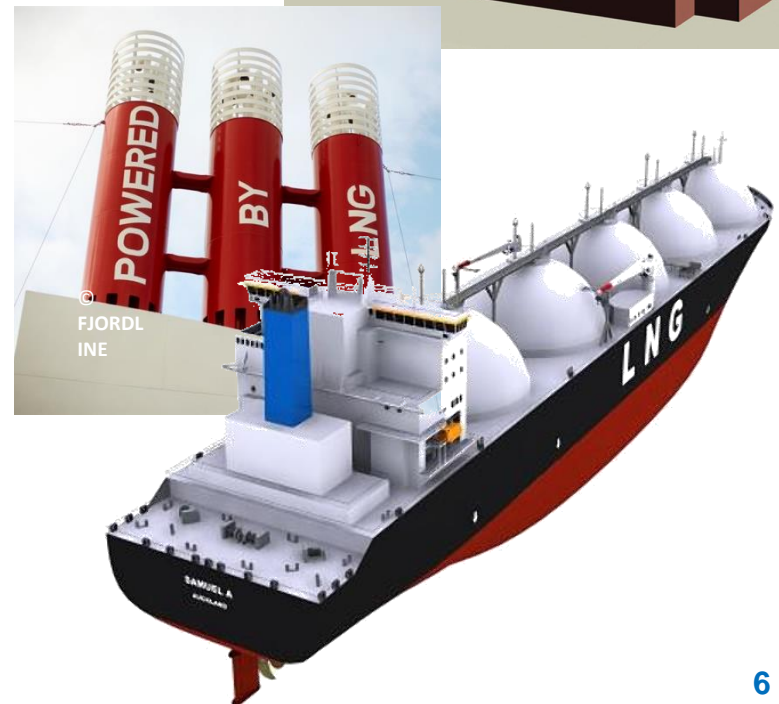
- Ships using the emission abatement methods (...) shall **continuously achieve reduction** of sulphur dioxide emissions that are **at least equivalent** to the reductions that would be achieved by using marine fuels

As per article 4c of the Sulphur Directive, the following EAM are to be considered:

- Exhaust Gas Cleaning Systems (EGCS), commonly known as 'scrubbers'
- Mixture of marine fuel and boil-off gas (BOG) for LNG carriers

and, where applicable...

- **Biofuels** (and mixtures of biofuels and marine fuels)
- **On-shore power supply**
- **Alternative Fuels e.g. LNG, Methanol**



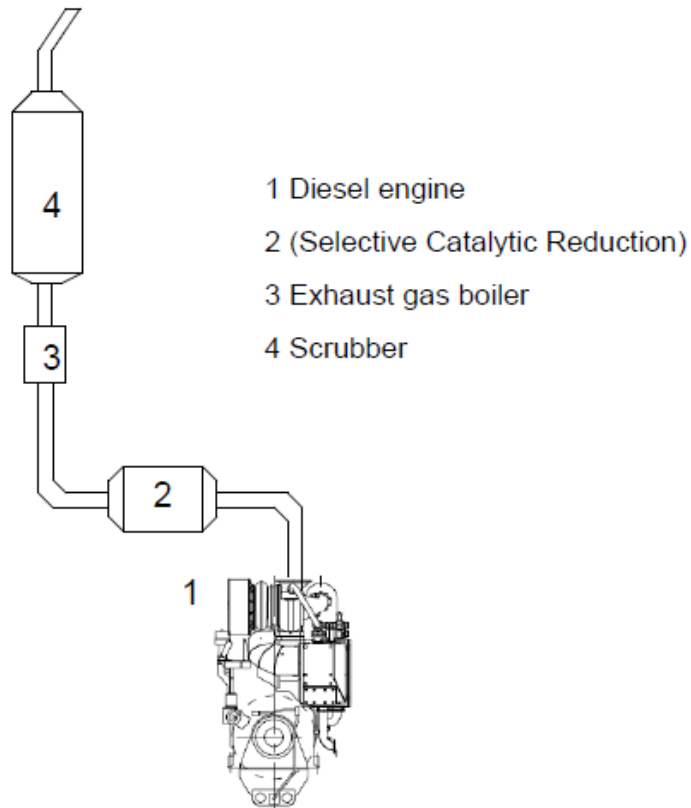
Exhaust Gas Cleaning Systems

- Good option for applications in existing ships
- Structural-Stability impact
- Considerable experience
- Cross Industry

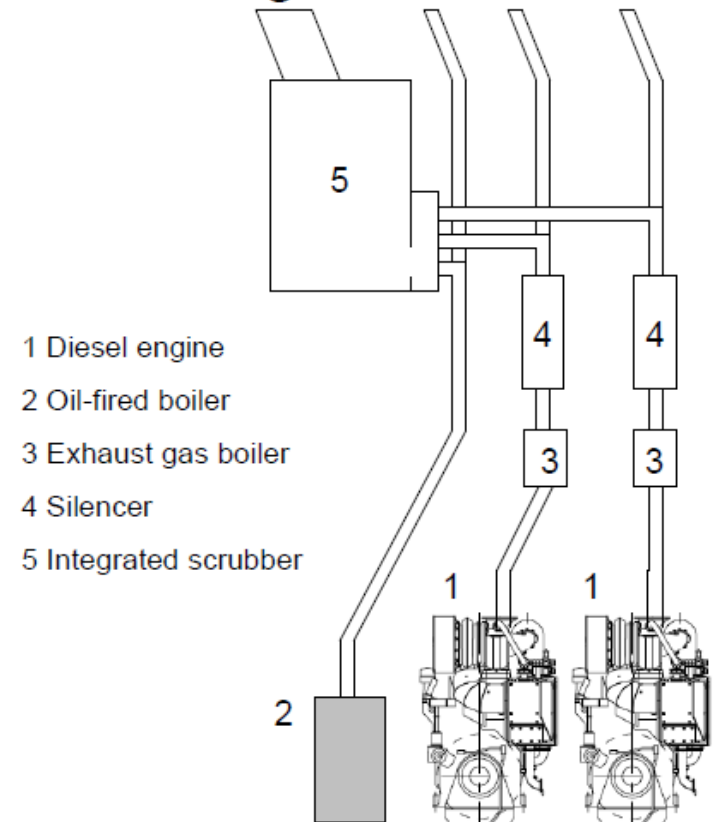
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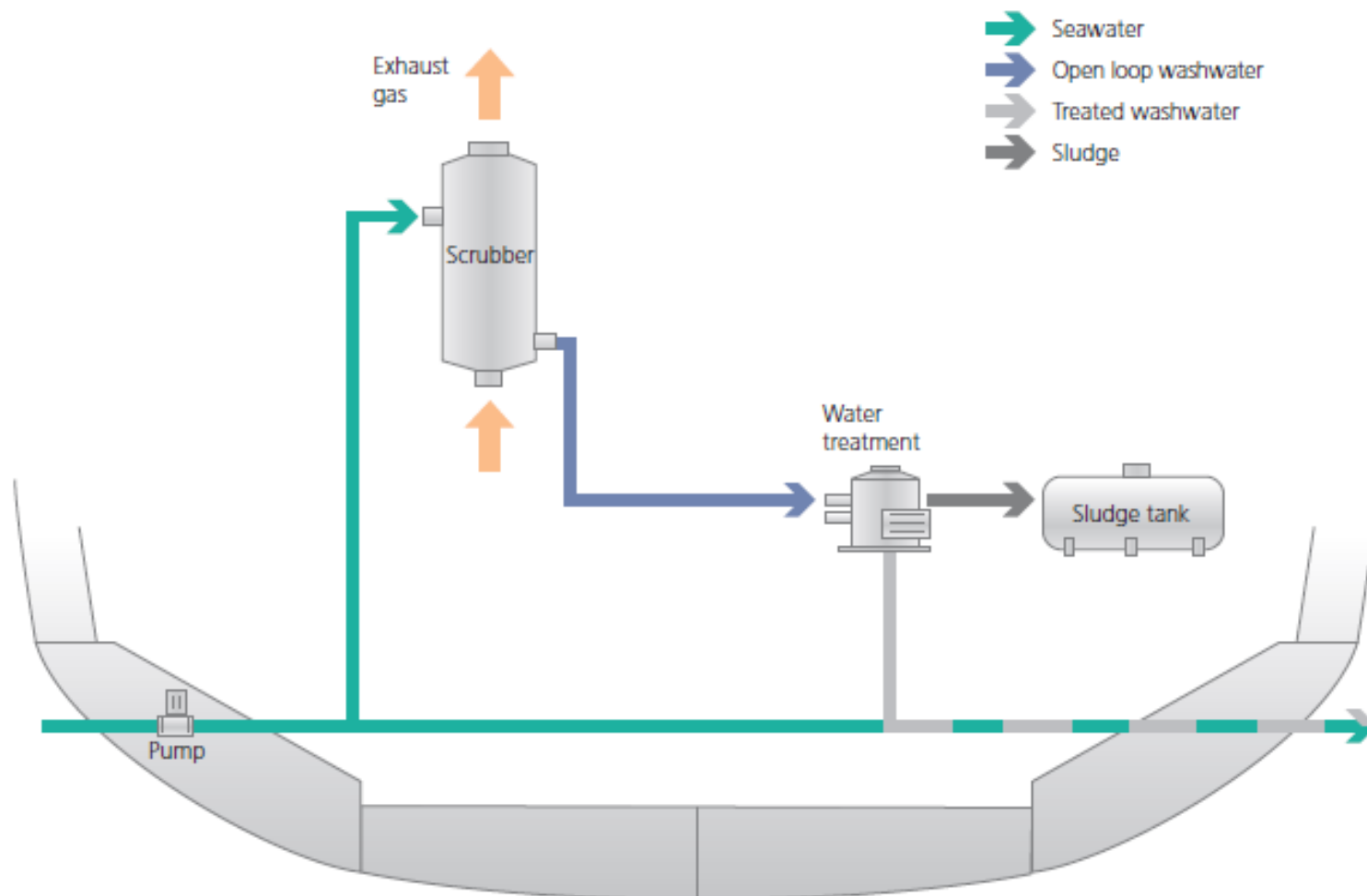
Main stream scrubber



Integrated scrubber

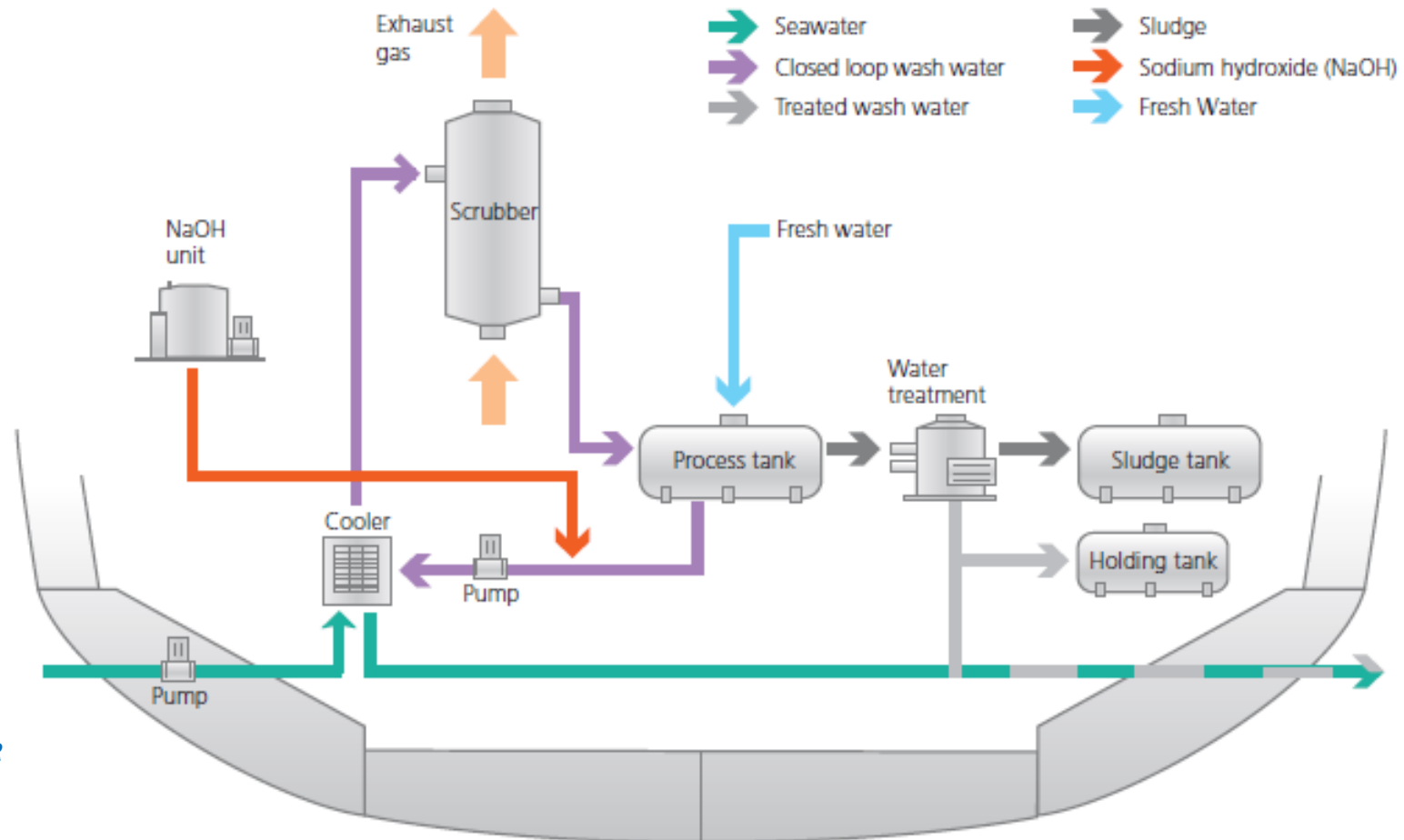


An open loop wet SO_x scrubbing system



Source LR

A closed loop wet SOX scrubbing system



Source LR

EGCS 'scrubbers' - An Overview

The Challenge - Meeting the requirements as follows:

- Fulfilment of the **SO₂/CO₂** emission ratio (flue-gas)
 - Lower natural alkalinity characteristics of water lead to lower scrubbing efficiency i.e. lower SO_x neutralisation
- Fulfilment of the **washwater** discharge criteria
 - Higher SO_x neutralisation lead to Higher acidic effluents



Criteria for the Approval & Trials of EAM (MARPOL Annex VI vs Sulphur Directive)

2015 EGCS Guidelines

Scheme A: EGC system approval, survey and certification using parameter and emission checks

Options under Scheme A provide for:

- a) Unit approval
- b) Serially manufactured units
- c) Production range approval

Scheme B: EGC system approval, survey and certification using continious monitoring of SOx emissions

Under Scheme B the monitoring system should be approved by the Administration.

Directive 2012/33/EU

Article 4d – Approval of emission abatement methods for use on board ships flying the flag of a Member State

1. Emission abatement methods falling within the scope of the Council Directive 96/98/EC (Marine Equipment Directive) shall be approved in accordance
2. Emission abatement methods NOT covered by paragraph 1 shall be approved in accordance with the procedure referred to in Regulation 2099/2002 (**COSS committee**), taking into account:
 - (a) Guidelines developed by the IMO
 - (b) The results of any trials
 - (c) Effects on the environment, including achievable emission reductions, and impacts on ecosystems in enclosed ports, harbours and estuaries; and
 - (d) The feasibility of monitoring and verification

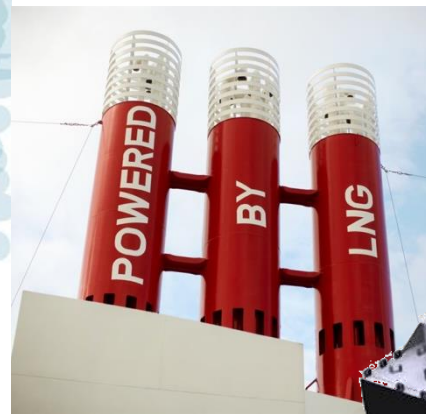
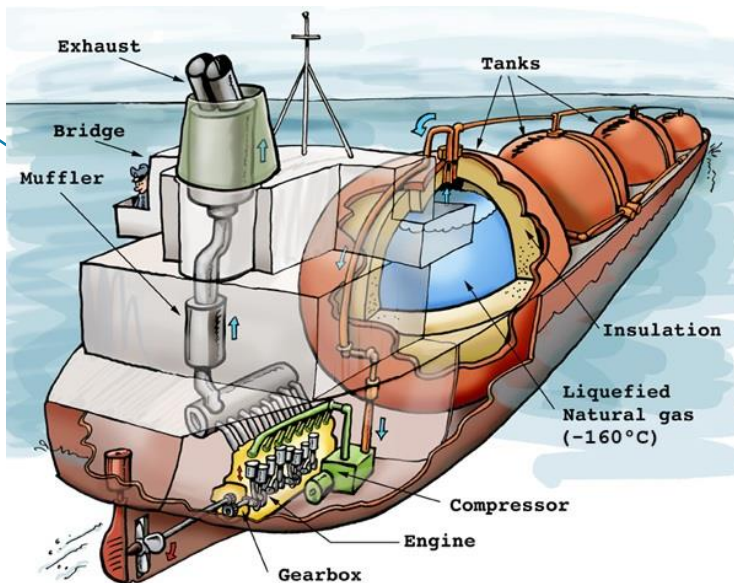
EGCS 'scrubbers' Approval - Scheme A vs Scheme B

Scheme A	Scheme B
Onboard Monitoring Manual (OMM)* EGC Record Book SOx Emissions Compliance Plan (SECP)* EGC System Technical Manual (ETM-A)* SOx Emission Compliance Certificate (SECC)	Onboard Monitoring Manual (OMM)* EGC Record Book SOx Emissions Compliance Plan (SECP)* EGC System Technical Manual (ETM-B)*
Shop test	No shop test
Continuous recording of performance parameters	Daily spot checks of performance parameters
Daily spot checks of exhaust gas quality	Continuous onboard monitoring of exhaust gas quality
Continuous monitoring of wash water	Continuous monitoring of wash water

Source LR

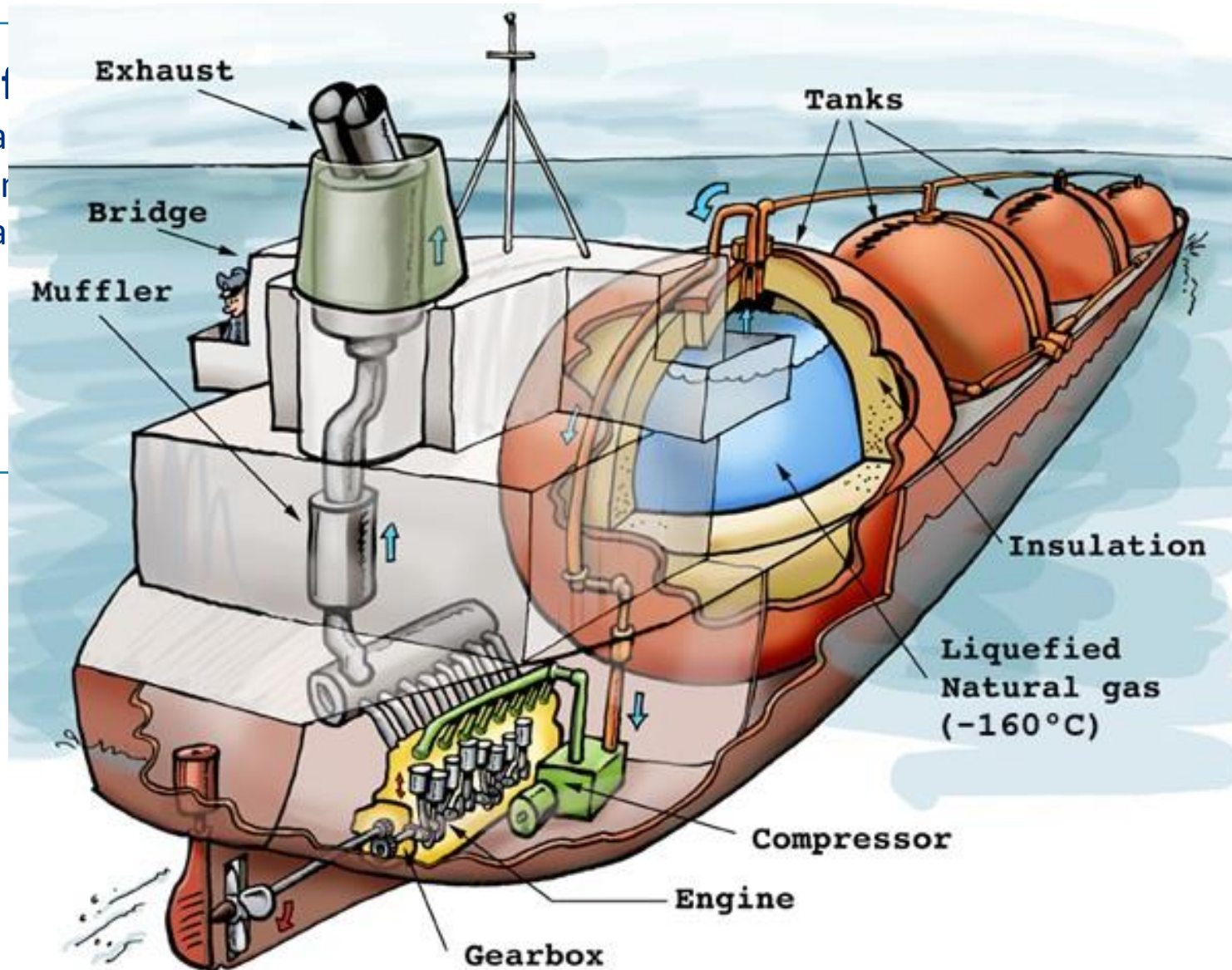
Boil-Off Gas (BOG)

- Initially in LNG Carriers – opportunistic advantage
- Commission Decision 2010/769/EC
- Initially for ships at berth – Extended for SECA

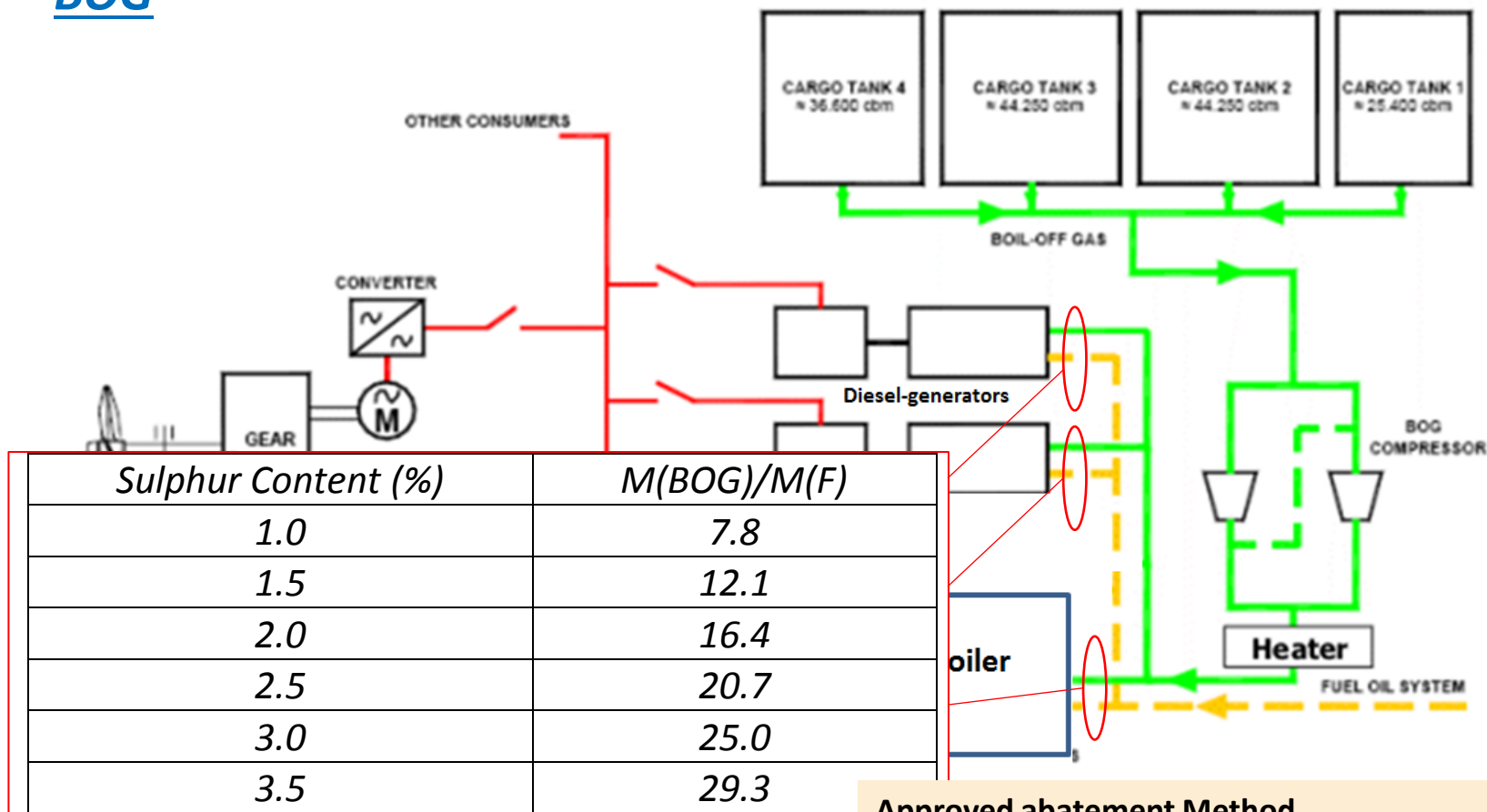


Boil-Off

- Initial
- Compressor
- Initial



BOG



Approved abatement Method

Commission Decision 2010/769/EC

For ships at berth, can be extended for ECA upon request and COSS deliberation

BOG

In case of ships using BOG when transiting SECA, it should also be possible to demonstrate that the LNG/HFO consumption rates and ratios of the ship specific installations and operational profile would ensure that the ship continuously achieves, throughout the entire journey, sulphur reductions at least equivalent to those which would be achieved by using compliant fuel.



LNG Fuelled ships

Extending BOG understanding to LNG fuelled vessel

LNG BOG used by LNG carriers, for convenience, for more than 40 years – Boil-off Gas (currently accepted as alternative EAM)

LNG as Fuel current uptake with around **60 vessels operating** and **60 more on order/under construction**

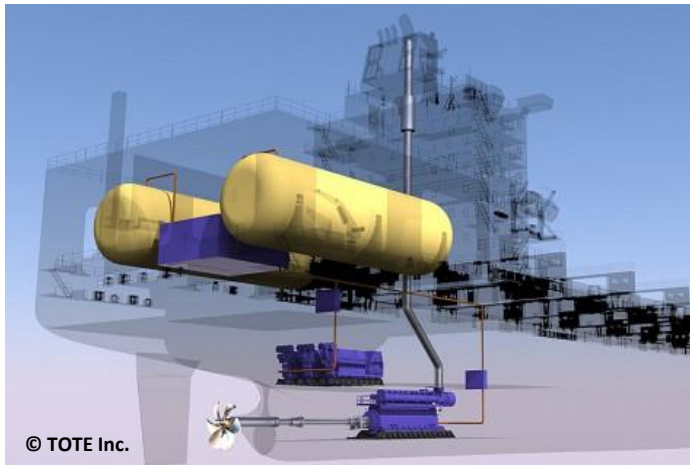
IGF Code adopted in June 2015. Entry in Force in **January 2017** defining requirements for construction of LNG fuelled vessels



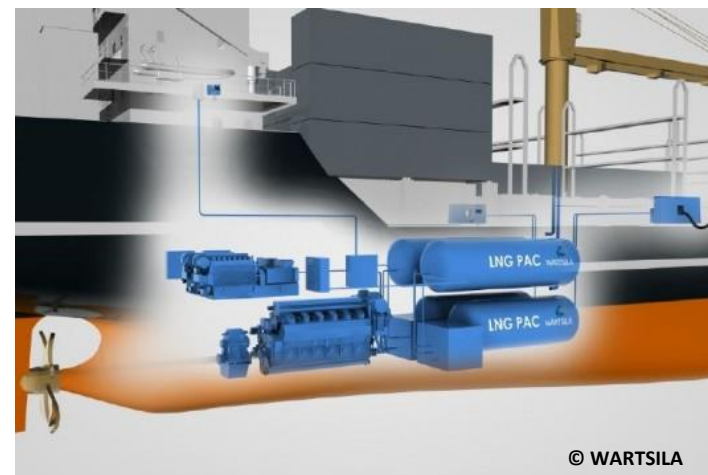
LNG Fuelled ships

Extending BOG understanding to LNG fuelled vessel

- Around 60 LNG vessels operating
- All pre-IGF vessels – *first movers*
- Approval by Alternative Design



© UECC, NYK, Wallenius Lines





TRIALS

- EAMs are complex customized systems (particularly EGCS systems)
- No such thing as “one system fits all”
- Need for “first run” adjustments, checks, surveys and other procedures related to the setup of the EAM system.
- Need identified for Initial Exemption regarding provisions in both MARPOL and Sulphur Directive.
- Exemption shall be well documented.

Marpol Annex VI

• Regulation 3 – Trials for Ship Emission Reduction and Control Technology Research

The Administration may, in cooperation with other Administrations as appropriate, issue an exemption from specific provisions of this Annex for a trial of a new or improved technology of emission control.

MARPOL TRIALS

- Depend on Engine stroke displacement
 - Can go up to 5 years
1. For marine diesel engines with a per cylinder displacement at or above 30 litres, the duration of the ship trial shall **not exceed 5 years** and shall require a progress review by the Administration at each intermediate survey. A permit may be withdrawn based on this review (...). If (...) additional time is required (...) a permit may be renewed for an additional time period not exceeding 5 years.

Directive 2012/33/EU

• Article 4e – Trials of new emission abatement methods

Member States may, **in cooperation with other MS**, as appropriate approve trials of ship emission abatement methods on vessels flying their flag, or in sea areas within their jurisdiction. During those trials, the use of the method shall not be mandatory, provided that the conditions are fulfilled.

Sulphur Directive TRIALS

- Maximum of 18 months
 - Defined a list of measures that need to be in place for the Trials to be both granted and maintained.
- (a) The Commission shall write down the list of measures that need to be in place for the Trials to be both granted and maintained.
- (b) Permit the use of the method on vessels flying their flag, or in sea areas within their jurisdiction.
- (c) All ships shall have the method in place for the duration of the trial.
- (d) **All ships shall have the method in place for the duration of the trial.**
- (e) There shall be proper waste management systems in place for any waste generated (...) throughout the trial.
- (f) There is an assessment of impacts on the marine environment, particularly ecosystems in enclosed ports, harbours and estuaries through the trial period; and
- (g) **Full results are provided to the Commission, and made publicly available, within 6 months of the end of the trials.**



ENFORCEMENT

- **MARPOL - Port State Control on Operational Requirements – Reg.10.**
- **Guidelines for PSC under MARPOL Annex VI**
- **Provisions of the Sulphur Directive**
- **What to verify for different cases?**

Enforcement (MARPOL Annex VI vs Sulphur Directive)

Marpol Annex VI

- **Regulation 10 - Port State Control on operational requirements**

1. A ship, when in a port or an offshore terminal under the jurisdiction of a Party, is subject to inspection by officers duly authorized by such Party concerning **operational requirements under this Annex**, where there are clear grounds for believing that the **master or crew are not familiar with essential shipboard procedures relating to the prevention of air pollution from ships**.
2. In the circumstances given in paragraph 1, the Party shall take such steps as to ensure that the ship shall **not sail** until the situation has been brought to order in accordance with the requirements of this Annex.

2015 Guidelines for EGCS:

4.2.3.2. in accordance with Marpol Annex VI regulation 10, **EGC units may also be subject to inspection by PSC**

2009 Guidelines for PSC under Marpol Annex VI

Initial PSC inspections cover: **approved documentation relating to any installed EGCS**, or equivalent means to reduce SOx emissions;

Directive 2012/33/EU

- **Art. 4a - Maximum sulphur content of marine fuels**

Member States shall take **all necessary means to ensure** that marine fuels are not used (...) if the sulphur content of those fuels by mass exceeds (...)

Member States shall be **responsible for the enforcement** of paragraph 1 at least in respect of:

- Vessels flying their flag, and
- In the case of MS bordering SECAs, vessels of all flags while in their ports

Member States may also take additional enforcement action in respect of other vessels in accordance with international maritime law.

- **Art. 11 - Penalties**

1. Member States shall determine the **penalties** applicable to breaches of the national provisions adopted pursuant to this Directive.
2. The penalties determined must be **effective, proportionate and dissuasive** and may include fines calculated in such a way as to ensure that the fines at least **deprive those responsible of the economic benefits** derived from their infringement and that those fines **gradually increase for repeated infringements**.

Criteria for EAM (approved, under trial or being commissioned):

The EAM referred to in Article 4c shall comply at least with the criteria specified in the following instruments, as applicable:

EAM	Applicable Instruments	Notes
BOG	Commission Decision <u>2010/769/EU of 13 December 2010 (for ships at berth)</u>	For ships at berth – applicable within SECA for the 0,10% req.
EGCS	<u>IMO EGCS Guidelines</u> - Resolution MEPC.259(68) of 15 May 2015	EGCS Guidelines are currently under revision
Biofuels	<u>Directive 2009/28/EC of 23 April 2009</u> and <u>Sulphur Directive</u> requirements for mixtures	
On-shore power supply	under a voluntary scheme	Challenging solution for at berth condition
Alternative Fuels	Statutory/Class certification (<u>IGF Code</u> - <u>low-flash point fuels Code</u>)	IGF Code enters in force on 1 st January 2017

General criteria for EAM (approved, under trial or being commissioned):

On a ship that uses an EAM to meet the requirements, the **sulphur inspection** should be limited to determining whether the ship:

1. has received an appropriate approval (Flag State and/or Coastal State(s)) for using an EAM (approved, under trial or being commissioned), and
2. if all fuel combustion machinery on board connected to EAM have been running in compliance.

EGCS - Scrubbers

Verify supporting documentation/records such as, but not limited to:

- Flag State trial approval or system approval (MED certification or MARPOL Annex VI performance - as per IMO 2015 EGCS Guidelines MEPC.259(68) Scheme A or B, as applicable),
- the type of fuel and sulphur content allowed,
- ship log books and bunker delivery notes (BDN).

In addition, a visual inspection of the system should be conducted in order to verify that is properly functioning, there are tamper-proof continuous-monitoring systems (for Scheme B) and that all the applicable combustion machinery have been running in compliance.



EGCS 'scrubbers' Approval - Scheme A vs Scheme B



Scheme A	Scheme B
Onboard Monitoring Manual (OMM)* EGC Record Book SOx Emissions Compliance Plan (SECP)* EGC System Technical Manual (ETM-A)* SOx Emission Compliance Certificate (SECC)	Onboard Monitoring Manual (OMM)* EGC Record Book SOx Emissions Compliance Plan (SECP)* EGC System Technical Manual (ETM-B)*
Shop test	No shop test
Continuous recording of performance parameters	Daily spot checks of performance parameters
Daily spot checks of exhaust gas quality	Continuous onboard monitoring of exhaust gas quality
Continuous monitoring of wash water	Continuous monitoring of wash water

Source LR

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Source LR

EGCS 'scrubbers' Statutory Approval (Administration or RO)



- Statutory MARPOL performance (IMO Guidelines)
- Flag-specific requirements (washwater discharge criteria?)

Notes:

- Full type-approval would encompass design/fabrication/construction assessment validation or type testing and manufacturer assessments.
- Full verification is vessel-specific and unit-specific requiring in-situ (on-board) testing after installation.
- **Scheme A** is an approval of the EGCS and requires emission testing conformity of production arrangements, parameter checks and controls.
- **Scheme B** is an approval of monitoring arrangements, compliance is demonstrated by continuous monitoring of emissions.
- Scheme A is not type-approval! Almost all EGCS approved with Scheme B

Emission Abatement Methods (EAM)



EGCS 'scrubbers' Approval



DET NORSKE VERITAS SECA COMPLIANCE CERTIFICATE Certificate of Unit Approval for Exhaust Gas-SOx Cleaning Systems

DNV Id No:
23714
Date of issue:
2009-08-10

Issued under the provisions of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 related thereto

under the authority of the Government of

FINLAND

by Det Norske Veritas AS

Particulars of Ship

Name of Ship: "SUULA"
Distinctive Number or Letters: OJKZ
Port of Registry: PORVOO
IMO Number: 9257560

THIS IS TO CERTIFY:
that the Exhaust Gas-SOx Cleaning System (EGCS-SOx) unit listed below has been surveyed in accordance with the requirements of the specifications contained under Scheme A in the Guidelines for on-board exhaust gas-SOx cleaning systems - adopted by resolution MEPC.170(57) in line with regulation 14(4)(e) of MARPOL Annex VI.

This Certificate is valid only for the EGCS-SOx unit referred to below:

Unit manufacturer	Model/Type	Serial No.	EGC-SOx Unit and Technical Manual approval number
Wärtsilä Finland Oy	WM 1.25	0001	G-10117

A copy of this Certificate, together with the EGCS-SOx Technical Manual, shall be carried onboard the ship fitted with this EGCS-SOx unit at all times.

This Certificate is valid for the life of the EGCS-SOx unit subject to surveys in accordance with section 2 of the Guidelines and regulation 5 of MARPOL Annex VI, installed in ships under the authority of this Government.

Issued at **Høvik (Norway)** on 2009-08-10

for Det Norske Veritas AS

Skeivig Alf Roger
Head Of Marpol Section
MNBNA643

Source IMO GISIS - DG-ENV - Wärtsilä - DNV&GL&LR

DET NORSKE VERITAS
CERTIFICATE OF CONFORMITY - EC

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2012/20/EU, issued as "Forskrift om Skipstøutryk" by the Norwegian Maritime Directorate. This Certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

CERTIFICATE NO. MED-G-1856

This is to certify that the
On board exhaust gas cleaning systems
with type designation and itembatch number
141591 SC200 S.3L131375-32 and 141483 SC400 S.3L131375-33 installed on MS Clipper Poah (IMO 9656747)

Issued to
Wärtsilä Moss AS
Moss, Norway

Is, by design assessment and product verification, in accordance with Module G in the Directive and found to comply with Annex A.1, Item No. A.12.10 and Annex B, Module G of the Directive, Marpol 73/78 as amended, Annex VI Regulation 4 and IMO Res. MEPC.184(59)

Further details of the equipment and conditions for certification are given overleaf.

Høvik, 2010-01-24
for Det Norske Veritas AS

Notified Body No.: 0075
DNV local office:
Machinery

Det Norske Veritas AS, Veritasveien 1, NO-1320 Høvik, Norway, Tel.: +47 67 57 80 00, Org.No. NO 945 749 201 MVA.
Form No.: MED-Ga Issue: 2013-11

Notice of Compliance

MARPOL 73/78, Annex VI & MEPC.170(57)
Exhaust Gas Scrubber
Wärtsilä WM 1.25

This is to State

This is to certify that the Exhaust Gas-SOx Cleaning System (EGCS-SOx) unit listed below has been surveyed in accordance with the requirements of the specifications contained under Scheme A and Scheme B in the Guidelines for exhaust gas-SOx cleaning systems adopted by resolution MEPC.170(57) in line with regulation 14(4)(e) of MARPOL Annex VI.

This is to Note

- This Certificate is valid only for the EGCS-SOx unit referred to below.
- This Notice of Compliance does not replace the SECA Compliance Certificate.

Specification Exhaust Gas Cleaning System

Manufacturer	Wärtsilä Finland / Mæker Power
Model/Type	WM 1.25
Serial number	0001
OL approval no.	81118-50144
Date of primary issue	2009-07-20
Maximum exhaust gas mass flow	1.25 kg/s
Maximum fuel oil sulphur content in emission test	3.3 % w/w
Maximum allowable fuel oil sulphur content as demonstrated in EGC-SOx Technical Manual and additional documentation	4.5 % w/w

Specification of the Engine fitted to the Exhaust Gas Cleaning System

Engine type	Wärtsilä 4L20
Engine no.	21617
Power and Speed at maximum EGC-SOx capacity	621 kW at 900 rpm

This is to Confirm

- That the above-mentioned EGCS-SOx unit as specified in the documents "EGCS Technical Manual" and "Onboard Monitoring Manual" has been approved in accordance with all requirements as applicable.

DET NORSKE VERITAS

Certificate No.: MED-G-1856
Item No.: A.10
Job No.: 344.1-004280-1

Product description

The Wärtsilä Moss AS Exhaust Gas Cleaning systems SC200 & SC400 are open loop wet scrubber systems that pass the exhaust gases through seawater (as the wash water). The wash water absorbs the oxides of sulphur (mainly SO2) and particulates from the exhaust gas resulting from the combustion processes. The absorption of these gases is known as the scrubbing process. The particulates are removed in a cyclonic water treatment process assisted by de-aeration, and the resulting sludge collected in a separate tank. The treated wash water can be discharged to sea as long as discharge criteria are fulfilled.

Application/Limitation

Exhaust Gas Cleaning Systems are intended for reducing the SOx emissions in a level below the current and upcoming requirements in world wide and ECA areas. In scheme D, compliance with emission requirements demonstrated by continuous exhaust gas monitoring. Monitoring system should be approved by the Administration.

The monitoring equipment to have yearly surveys according to MEPC.184(59)

Type Examination documentation

131375.201-SC200 Rev AA:	EGC System - ETM-B - Technical Manual for Scheme B - SC 200 1415M1
131375.201-SC400 Rev AA:	EGC System - ETM-B - Technical Manual for Scheme B - SC 400 1418M3
131375.202-SC200 Rev AA:	EGC System - OMM - On Board Monitoring Manual - SC 200 1415M1
131375.202-SC400 Rev AA:	EGC System - OMM - On Board Monitoring Manual - SC 400 1418M3
131375.203-SC200 Rev AA:	EGC Record Book - SC 200 1415M1
131375.203-SC400 Rev AA:	EGC Record Book - SC 400 1418M3
131375.204 Rev AA:	SECP - SOx Emissions COMPLIANCE PLAN

Tests carried out

EGCS Statutory Verification Survey Report, DNV Id.: 32596, Doc No.: 16090333DNV Job Id: ULN112517-1 dated 2013-12-06

Marking of product

For traceability to this Certificate of Conformity, each unit to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Serial no.

END OF CERTIFICATE

Det Norske Veritas AS, Veritasveien 1, NO-1320 Høvik, Norway, Tel.: +47 67 57 80 00, Org.No. NO 945 749 201 MVA.
Form No.: MED-Ga Issue: 2013-11

IMO Number: 9302556

APPROVED

For and on behalf of the Government of the vessel's Registration, as shown in the attached Approval History, as complying with the Regulations stated below

EXHAUST GAS CLEANING (EGC) SYSTEM

The information contained in the SOx Emission Compliance Plan (SECP), Onboard Monitoring Manual (OMM) and EGC System Technical Manual "Scheme B" (ETM-B) have been examined for the compliance with Resolution MEPC.184 (59), Scheme "B" (Continuous Monitoring with Parameter Checks), in accordance with Regulation 4.1 of the revised Marpol Annex VI, which allows the use of alternative compliance methods.

No alteration or revision shall be made to any part of this plan without the prior approval of the Lloyd's Register Group.

The Owner remains responsible for the accuracy of the information and details given in OMM, ETM-B and SECP.

Signed: [Signature] Date: 21 January 2014
Surveyor to Lloyd's Register Group
A Member of The Lloyd's Register Group

Approval for compliance with Marpol Annex VI Regulation 4.1 and Resolution MEPC.184 (59), Scheme "B" is subject to satisfactory onboard survey, which includes functional test and calibration of exhaust gas and wash water monitoring systems.

Signed: [Signature] Date: 27 January 2014
Surveyor to Lloyd's Register Group
A Member of The Lloyd's Register Group

Approval is subject to verification that the arrangements onboard are identical to those described in SECP, OMM and ETM-B.

Signed: [Signature] Date: 27 January 2014
Surveyor to Lloyd's Register Group
A Member of The Lloyd's Register Group

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EGCS 'scrubbers' Equivalency/Trial



E

4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

MEPC.1/Circ.836
10 June 2014

APPLICATION OF REGULATION 4 OF MARPOL ANNEX VI

Communication received from the Government of the United Kingdom

- 1 A communication has been received from the Government of the United Kingdom concerning the application of relevant provisions under regulation 4 of MARPOL Annex VI.
- 2 In accordance with the provisions of regulations 4.1 and 4.2 of MARPOL Annex VI, the details are annexed hereto and circulated to Parties to the Convention and Member States of the Organization for their information and appropriate action, if any.

MEPC.1/Circ.836
Annex, page 1

MEPC.1/Circ.831
Annex, page 1

ANNEX



Secretary-General
International Maritime Organization
4 Albert Embankment
London
SE1 7SR

Permanent Representative
of the UK to the IMO
Spring Place
195 Commercial Road
Southampton
SO15 1EG

Tel: +44 (0)23 8032 9116
Fax: +44 (0)23 8032 9191
E-mail: kaly.ward@rpa.gov.uk

Our ref: MS 947/022/0144

4 June 2014

Dear Secretary General

Equivalent arrangements accepted under the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the 1978 and 1997 Protocols

MARPOL Annex VI Regulation 4

Vessel: Queen Victoria
IMO: 9320556

I have the honour to inform you that the Government of the United Kingdom has agreed, in accordance with the provisions of Annex VI, Regulation 4 of the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the 1978 and 1997 Protocols (MARPOL), that the Government of Bermuda may proceed with equivalent arrangements as per the provision of Regulation 4.1.

The Department of Maritime Administration, Bermuda has accepted the Exhaust Gas Cleaning System (EGCS), manufactured by EcoSpray Technologies S.r.l., Atzano Scivola (AL) Italy. Unit model: MK1A-ECO-Oxi-ox 459-475, Serial Number: 901 - 010, as fitted to Diesel Generator No. 2, Engine: Wärtsilä NSD-12V ZM405, Serial Number: 12425, on board the vessel: Queen Victoria IMO No.9320556.

This Exhaust Gas Cleaning System (EGCS) has been tested in compliance with IMO standards as specified in Resolution MEPC.184 (59), under 'Scheme-B', an equivalent method to demonstrate compliance with the requirements of Regulation 14, MARPOL Annex VI.

The equipment has been surveyed, tested and approved by Lloyds Register of Shipping who is the recognized Organization for the said ship. The Bermuda Maritime Administration has verified the results of the tests and is content that the system meets the standards and the requirements as set out in IMO Resolution MEPC.184 (59).

ANNEX



Our date
26.05.2014
Your reference

Our reference
2014/1339-7
File no
57102704

Inquiries to
Lars Christian Enger
Direct phone
+47 22 74 51 07

International Maritime Organization
4, Albert Embankment
London SE1 7SR,
United Kingdom

Attention: Mr. Koji Sekimizu
Secretary General

Statement by the Norwegian Administration

Acceptance of Equivalent Compliance Method under Regulation 4.1 of Annex VI of the MARPOL Convention.

This is to certify the Norwegian Administration has accepted the Wärtsilä Mk1A Exhaust Gas Cleaning System SC205 B SC490 as an equivalent compliance method to that specified in Regulation 14 of MARPOL Annex VI, to be utilized onboard MS Clipper Post (IMO 9056747), in accordance with Regulation 4.1 of MARPOL Annex VI.

The system has been certified to comply with MEPC.184(59). The details of the documentation are attached.

The Organization is requested to circulate this information to the Parties of MARPOL Annex VI in accordance with Regulation 4.2.

Yours faithfully,

Rigm Pedersen
Head of Department

Lars Christian Enger
Senior Approval Engineer

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13 May 2014

European Commission
Directorate General for
the Environment
B-1049 Brussels
Belgium

Approval for a trial of a new emission abatement method

Dear Sir / Madam

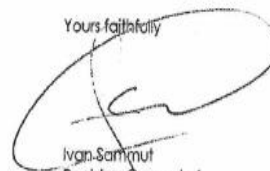
May I refer to Directive 1999/32/EC concerning the reduction in the sulphur content of certain liquid fuels,

The Maltese registered ship MV Mein Schiff III (IMO No.9641730), has been granted a permit to conduct trials on the installed Advanced Exhaust Gas Purification System (AEP). Trials are scheduled to commence on 22 May 2014. The permit has been issued under the provisions of Article 4c(1) of the Directive and MARPOL Annex VI Regulation 3.

During the trial period the AEP System, which incorporates Dual Water Hybrid Scrubbers, will be operated under Scheme B conditions in accordance with Resolution MEPC.184 (59). It is envisaged that the system will prove capable of reducing the SOx emissions to a level equivalent to that established by the EU Directive.

This notification is being submitted in fulfilment of the obligations contained in Article 4c(1), first indent of Directive 1999/32/EC. The Trial Permit is being enclosed together with this notification.

Yours faithfully



Ivan Sammut
Registrar General of
Shipping and Seamen



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An Executive Agency of the Department for Transport, Local Government and the Regions



BOG

Verify supporting documentation/records such as, but not limited to:

1. **Flag State approval** in compliance with relevant decisions from the European Commission and COSS,
2. the **type of fuel and sulphur content allowed**,
3. **ship log books and bunker delivery notes (BDN)**.

In addition, a **visual inspection** of the system should be conducted in order to verify that it is properly functioning, is in operation, there is continuous-monitoring of the quantities of LNG and HFO pilot fuel taking place and applies to all fuel combustion machinery on board.

Biofuels (e.g. biodiesel, bio-ethanol) or other Alternative Fuels (e.g. LNG, Methanol)



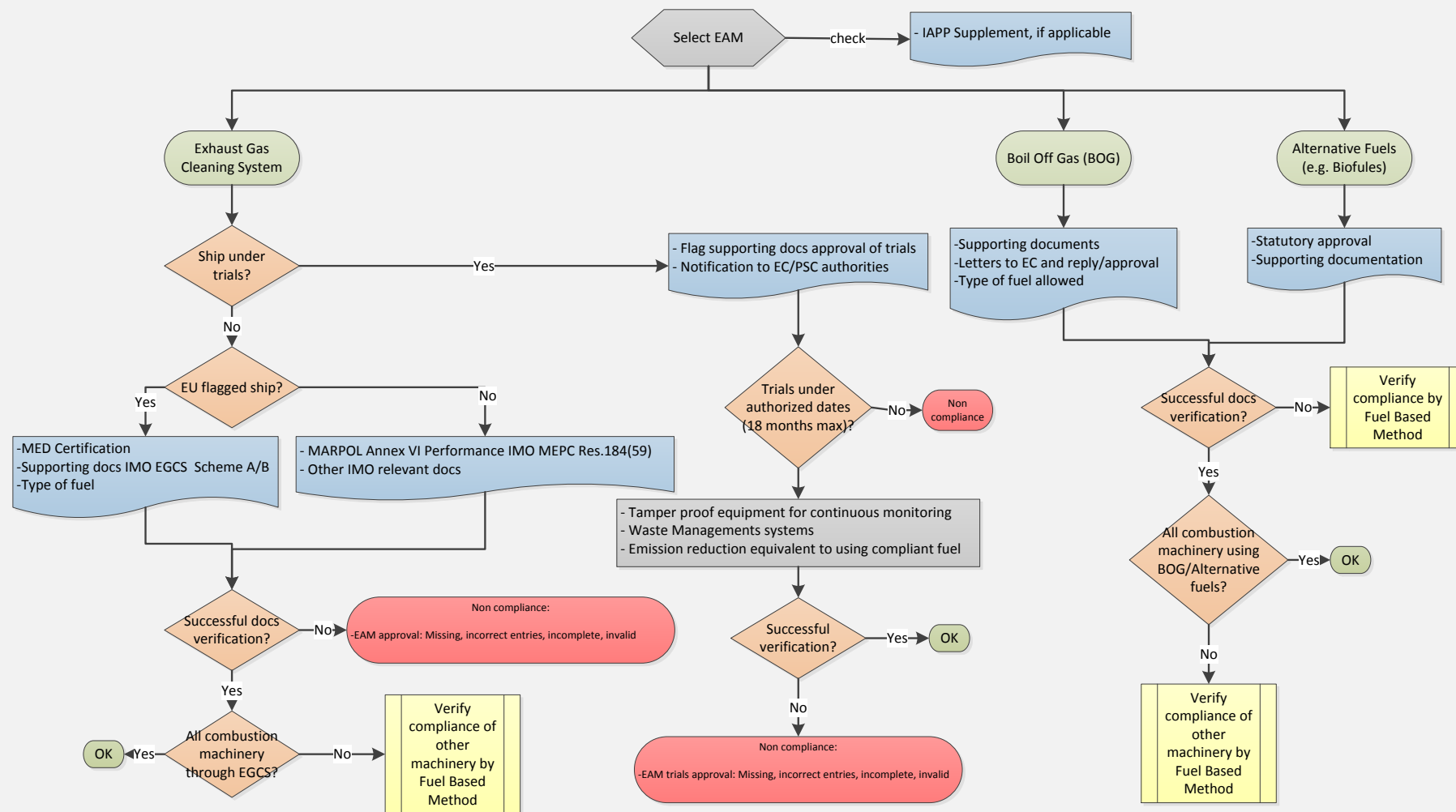
Verify supporting documentation/records such as, but not limited to:

- **Flag State (statutory) or Class certification** for the use of specific fuels,
- **ship log books and, where feasible bunker delivery notes (BDN).**

In addition, a visual inspection of the system should be conducted in order to verify that is properly functioning and that all the applicable combustion machinery have been running in compliance with such fuels.

Emission Abatement Methods (EAM)

Emission Abatement Method (EAM)



Thank you!

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