European Maritime Safety Agency

Developments in the use of scrubbers

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Use of scrubbers: Regulatory Incentives

Sulphur Directive (2012/33/EU): emission abatement methods

- **Art. 4(c)** – Members States shall allow:
  - the use of **emission abatement methods** by ships of ALL FLAGS in their ports, territorial seas, EEZs and pollution control zones
  - as an **alternative to using compliant marine fuels**

- **Art. 3(A)** – Member States shall ensure that:
  - marine fuels are **NOT** used within their territory if their sulphur content exceeds 3,50% by mass
  - **EXCEPT for fuels** supplied to ships using **emission abatement methods** subject to Art. 4c **operating in closed mode**.

Use of scrubbers: Regulatory Incentives

Sulphur Directive (2012/33/EU): emission abatement methods

- **Art. 2 (3)M** – **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 alternative to low sulphur marine fuel

- That meet the requirements set out in this Directive, that is:
  - ❑ **Verifiable**
  - ❑ **Quantifiable, and**
  - ❑ **Enforceable**

- **Art. 4c(2)** - Ships using emission abatement methods shall **continuously achieve reductions** of sulphur dioxide emissions that are **at least equivalent**.

Use of scrubbers: Financial Incentives

Bunker fuel prices

Prices | ICE LIVE

Port	IFO 380	IFO 180	MDO	MGO	Date
Singapore	609.00 ↑+4.50	620.00 ↑+4.50	---	928.00 ▶0.00	2013-11-22
Rotterdam	582.00 ↑+6.00	610.00 ↑+5.00	---	919.50 ↑+18.50	2013-11-22
Fujairah	619.50 ↑+1.00	650.00 ▶0.00	---	990.00 ▶0.00	2013-11-22
Busan	660.00 ↑+5.00	680.00 ↑+5.00	958.50 ↑+18.50	968.50 ↑+18.50	2013-11-22

Regional Bunker Prices: Africa | Asia | L. America | M. East | N. America | N. Europe | S. Europe |

Source: Bunkerindex.com

≥ 300 $ premium for MGO

Scrubber price & pay-back time

- **Assumed price for one scrubber: $ 2,5 M**
- **Payback time depends on time spent in SECA's + LSF consumption**

Use of scrubbers: moving away from early-adapters phase

Order book predictions

- Exhaust Gas Cleaning Systems Association (**EGCSA**) reported in September 2013 that **62 systems** had been installed and are on order

- **DNV** ('Shipping 2020') foresees in the most likely scenario:
  - Limited uptake until 2020 when global sulphur limit of 0,5% is enforced: Around **200 hundred installations per year**
  - After 2020, scrubbers may potentially be fitted on **several thousands ships**.

- Recent statement from both cruise & ferry companies show **confidence** in scrubbers as alternative method of compliance:
  - Carnival – scrubbers systems on-board 32 ships
  - DFDS – 8 more ships to be fitted with scrubbers, to 12 in total
  - …

- Order book shows that orders & installations are increasingly covering **wide range of vessels** (cruise, container, ferry/roro, tanker, bulker)

Use of scrubbers: remaining barriers

Despite increasing take-up, number of issues need to be addressed:

- **Price:**
  - Initial investment (CAPEX) remains high especially for smaller companies
  - Uncertainty about future price of low-sulphur fuel and LNG
- **Regulatory and legal certainty:**
  - Transposition and application of Sulphur Directive in EU MS
  - Local differences/requirements for the use of scrubbers
  - Global 0,5% sulphur content cap in 2020(?)
- **Technical, installation and operational**
  - Not all existing ships suitable for installation of scrubbers
  - Ordering time & docks-availability
  - Which system for which ship (open or closed loop, hybrid, dry)
  - Some operational issues (efficiency, reliability)

Use of scrubbers: overcoming remaining barriers

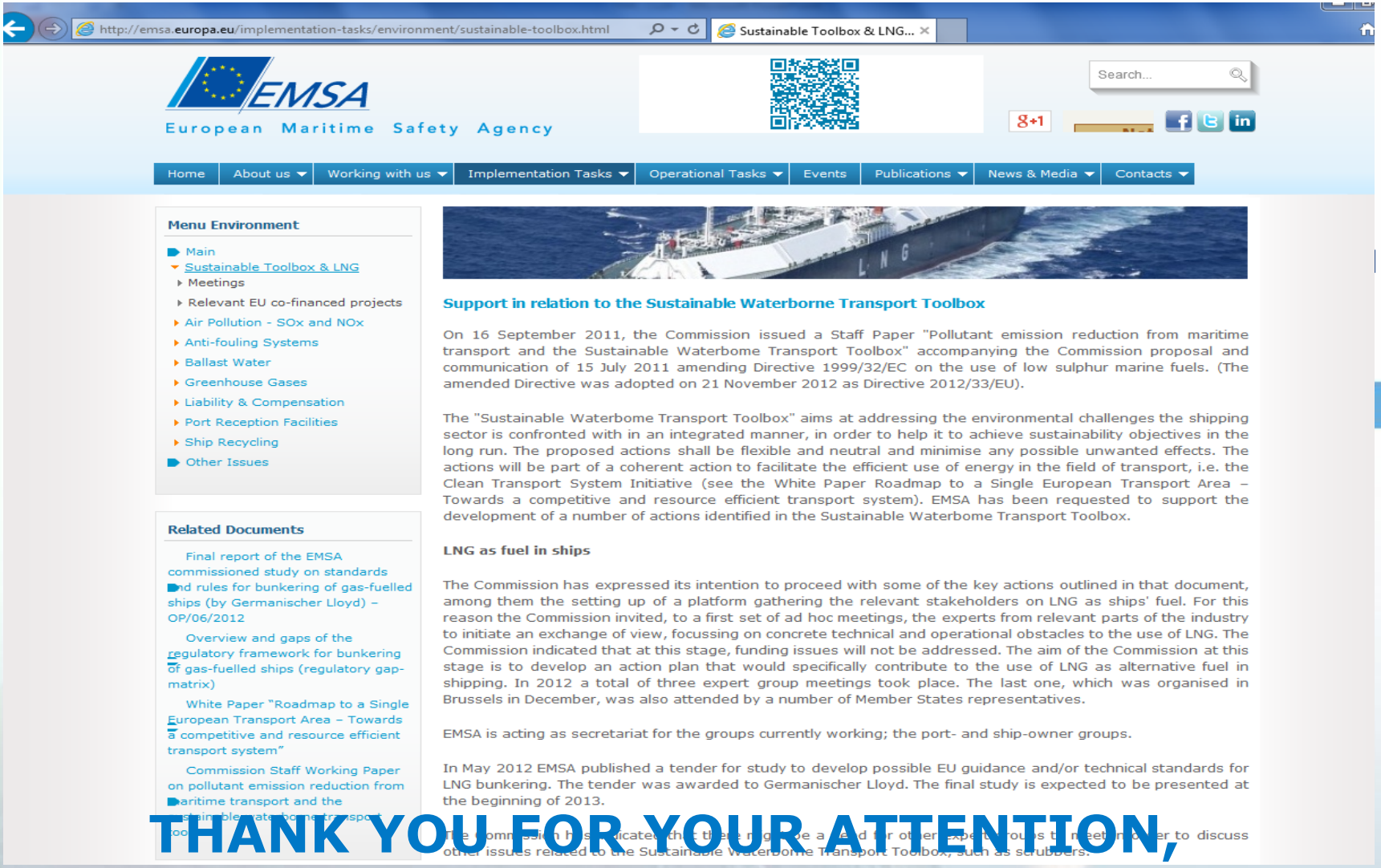
COM/EMSA Ad-hoc Expert Group on Scrubbing Technology

- Organized in June 2013
- Over 80 participants from entire user chain (manufacturers, ship-owners, ports, classification societies, Member States)
- Joint identification of **remaining barriers**, notably:
  - ❑ Wash water discharge limits (applicable pH limits)
  - ❑ Approval by flag State (continuously achieve reductions, impacts on enclosed ports, harbours and estuaries, …) and application of Marine Equipment Directive
  - ❑ Recognition of scrubbers systems approved in non-EU SECAs
  - ❑ Application in combination with other alternative methods
  - ❑ Enforcement
  - ❑ …

TEN-T Funding

- Over 30M € spent on TEN-T projects co-financing the installation of scrubbers on-board ships

Outstanding matters + lessons learned to be further addressed in the ESSF sub-group on scrubbing technology



THANK YOU FOR YOUR ATTENTION,

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