

IMO's Fuel Oil Consumption Database

Marine Environment Division | International Maritime Organization (IMO)

MEPC 71 | IMO HQ, London, UK | 4 July 2017

Energy efficiency of ships – Further measures

Data collection system for fuel oil consumption adopted at MEPC 70

3-step approach agreed at MEPC 68

Step 1
Data collection



Step 2
Data analysis



Step 3
Decision-making on what further
measures, if any, are required

Step 1: data collection will provide the basis for an objective, transparent and inclusive policy debate in the MEPC

Other outcomes of MEPC 70

- Resolution MEPC.282(70): 2016 *Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP)*
- *Guidelines for Administration data verification procedures and Guidelines for the development and management of the IMO Ship Fuel Consumption Database to be adopted* (correspondence group report submitted to MEPC 71)

Development of the IMO Ship Fuel Oil Consumption Database

Overview of database development

- Consultation between the Marine Environment Division (MED) and the Information and Communication Technology Services (ICTS)
- Review of the technical and security issues identified with regard to the establishment of the database
- Module within the Global Integrated Shipping Information System (GISIS) platform
- Integrated IMO Web Accounts framework utilized to manage secure access to the module
- Prototype version of this module ready for consideration by MEPC 71

The screenshot displays the 'Secretariat Area' of the IMO's Global Integrated Shipping Information System (GISIS). The page features a blue header with the IMO logo and the text 'Global Integrated Shipping Information System'. Below the header, a search bar is labeled 'Find module by keyword' with a 'Search' button. The main content area is titled 'Welcome to the Secretariat Area' and contains a grid of 14 modules, each with an icon and a brief description:

- Reporting Requirements Dashboard**: Status and completeness of information in GISIS received from IMO members.
- Marine Casualties and Incidents**: Data on marine casualties and incidents, as defined by circulars MSC-MEPC.3/Circ.3.
- Port State Control**: Information communicated under the provisions of SOLAS regulation I/19, article 11 of MARPOL, article 21 of Load Lines, article X(3) of STCW and the Procedures for port State control.
- Organizational Planning**: Information on the status of planned and new outputs related to the High-level Action Plan.
- Country Maritime Profile**: Information from Member States to enable targeted technical co-operation and resources.
- Development of Amendments**: Development of amendments to the 1974 SOLAS Convention and related mandatory instruments.
- Ballast Water Chemicals**: GESAMP-BWING database of chemicals most commonly associated with treated ballast water.
- Maritime Security** (Public Area)
- Ship and Company Particulars**: Search the world fleet of ships by IMO particulars by IMO Company Number.
- Status of Treaties**: Status of ratification of IMO convention.
- Simulators**: Information on simulators available for...
- Risk Management**: Information on the status of risk event plan.
- Survey and Certification**: Exemptions and equivalents, and spec...
- Member State Audits**: Information on audits under the IMO P...
- Greenhouse Gas Emissions**: Reference should be made to MEPC.1/Ship Energy Efficiency Operational Ind...
- Recognized Organizations** (Public Area)

Development of the IMO Ship Fuel Oil Consumption Database

Data reporting format and submission

- Extensible Markup Language (XML) format
 - Preferred means for bulk submission of data from Member States
 - In line with other GISIS modules
 - Complexity of implementation and ongoing support more manageable
 - Secretariat will develop an XML format for use by all Member States wishing to develop facilities for automated data submission to GISIS
- Additional user interface will be developed
 - Option for Member States wishing to manually input their annual data
- IMO Web Accounts system of permissioning
 - Secure access by specific designated users for the purposes of data upload
 - Separate read-only access to the data
 - Flexibly designed to any desired configuration
 - Applies both to system-to-system data transfer mechanisms and to direct interfaces

Development of the IMO Ship Fuel Oil Consumption Database

Data for non-Party ships

- Segregation of data for non-Party ships can be achieved within the GISIS framework
- Non-Party data submitters can be easily accommodated, via both the user interface and the automated exchange mechanism

Data validation and cross-referencing by the database

- Incoming data will be checked by the system to ensure expected format
- Data from the Ship Particulars module of GISIS (copy of the IHS World Fleet database) could be utilized to cross-reference data inputted into the database

! Possible discrepancies as ship characteristics within the Ship Particulars module are up-to-date whereas fuel oil consumption data may be up to 18 months old when submitted

IMO INTERNATIONAL MARITIME ORGANIZATION GISIS: Ship and Company Particulars

Secretariat Area > Ship and Company Particulars

Ships

Ship IMO Number: IMO

Ship name: Search former name Exact name

Flag Administration:

Call sign:

MMSI:

Status of ship: In service only Any (broken up, total loss, etc)

[Advanced search >](#)

Development of the IMO Ship Fuel Oil Consumption Database

Granularity of submitted data

- Data of a numerical nature (ship particulars and fuel oil consumption figures) submitted to the nearest integer value in the units specified in the guidelines
 - Examples: "fuel oil consumption" rounded up/down to the nearest metric tonne; "distance travelled" rounded up/down to the nearest nautical mile; "hours underway" rounded up/down to the nearest hour

Database access

- IMO Web Accounts system: managing permissions and limiting access to the database as per specified requirements
- Management of individual accounts for access to anonymized data delegated to Member States
- Each user can be identified as:
 - data manager (able to input and edit data for their country); or
 - viewer (read-only access); or
 - any other level of access that might be identified

Development of the IMO Ship Fuel Oil Consumption Database

Anonymity of data made available to users

- Actual values submitted by the Member States will be held in the database and used for analysis and reporting by the Secretariat to the MEPC
- Datasets accessible to all Member States and other users:
 - Rounded to two significant digits

Examples:

167,430 GT	shown as	170,000 GT
32,710 GT	shown as	33,000 GT
6,940 GT	shown as	6,900 GT

- IMO number and ship flag not shown
- Fuel oil consumption data provided in full without modification, to allow analysis
- With aforementioned anonymization data will not be attributable to specific ships

Development of the IMO Ship Fuel Oil Consumption Database

Data analysis and export

- GISIS module could provide basic statistical results based on pre-defined reporting requirements and according to criteria to be defined within the guidelines
- Could also be integrated with the GISIS Reporting Dashboard module for a general overview on the status of information submitted
- Bulk data could be exported for analysis using external tools (anonymized!)

Alerts and Administration contact person

- Automatic notifications and reminders can be incorporated as features in the module
- Contact person designated in each Administration for the database

Ice class

- Different categorizations used within IMO instruments including the Polar Code
- Notation from Polar Ship Certificate could be used in the database
 - ! Variety of notations making analysis of the data more complex

Demonstration of the Database (working prototype)

Welcome to the Members Area

Logged in as a data manager of a Party Administration



Ship Fuel Oil Consumption

Mandatory reporting of fuel oil consumption by ships.



Contact Points

Electronic database for Contact Points.



Marine Casualties and Incidents

Data on marine casualties and incidents as defined by circulars MSC-MEPC.3/Circ.1.



Pollution Prevention Equipment

Equipment required by MARPOL 73/78 and anti-fouling systems compliant with the AFS Convention.



Facilitation of International Maritime Traffic

Reports on stowaway incidents (FAL.2/Circ.50/Rev.2); Reports on unsafe practice associated with the trafficking or transport of migrants by sea (MSC/Circ.896/Rev.1).



Simulators

Information on simulators available for use in maritime training.



Maritime Security

Information communicated under (SOLAS chapter X1-2 and the I



Recognized Organizations

Information submitted by Mem MEPC/Circ.382.



Port Reception Facilities

Data on the available port reception generated waste.



Piracy and Armed Robberies

Reported incidents of piracy and



Inter-agency platform for smuggling by sea



Global SAR Plan

Information on the availability of

Ship Fuel Oil Consumption

MEPC 70 (October 2016) adopted mandatory MARPOL Annex VI requirements for ships to record and report their fuel oil consumption. Under the amendments, ships of 5,000 GT and above will be required to collect fuel oil consumption data for each type of fuel oil they use, as well as, other specified data, including proxies for transport work.

The aggregated data will be reported to the flag State after the end of each calendar year and the flag State, having determined that the data have been reported in accordance with the requirements, will issue a Statement of Compliance to the ship.

Flag States will be required to subsequently transfer this data to an IMO Ship Fuel Oil Consumption Database.

This module provides the IMO Ship Fuel Oil Consumption Database which allows Member States to transfer ships' fuel oil consumption data and to download anonymised consumption records.

[Add/view/export consumption records](#)

Consumption records

Add new record »

Export data

Reporting year:

2016 ▼

Export

Existing consumption records

Select a reporting year, then click on a record for details.

Reporting year:

2016 ▼

Flag Administration:

Bahamas ▼

Count: 2

IMO Number ↑	Ship type ↓	Distance travelled (NM) ↓	Hours underway (hours) ↓	Fuel oil consumption total (metric tonnes) ↓
IMO 9706504	Gas carrier	80000	7000	5000
IMO 9717632	Containership	10000	800	800

Consumption record

Reporting year:	2016
Start date:	2016-01-01
End date:	2016-12-31

Ship Particulars

Flag Administration:	Bahamas
IMO Number:	IMO <input type="text"/> Populate ship particulars
Party to MARPOL Annex VI:	Yes

i Ship type:	-- Please select --
Gross tonnage:	<input type="text"/>
Net tonnage:	<input type="text"/>
Deadweight tonnage:	<input type="text"/>
Main propulsion power output:	<input type="text"/> kW
Auxiliary engine(s) power output:	<input type="text"/> kW
EEDI:	<input type="text"/>
Ice class:	-- Please select --



i Ship type:

Gross tonnage:

Net tonnage:

Deadweight tonnage:

Main propulsion power output:

Auxiliary engine(s) power output:

EEDI:

Ice class:

-- Please select --

Bulk carrier

Gas carrier

LNG carrier

Tanker

Containership

General cargo ship

Refrigerated cargo carrier

Combination carrier

Passenger ship

Ro-ro cargo ship (vehicle carrier)

Ro-ro cargo ship

Ro-ro passenger ship

Cruise passenger ship

Other

Auxiliary engine(s) power output:

kW

EEDI:

Ice class:

-- Please select --

Not applicable

A

B

C

Consumption Data

Distance travelled: NM

Hours underway: hours

Consumption:

Fuel oil type: 

Quantity: metric tonnes

Data collection method: 

Consumption Data

Distance travelled:

 NM

Hours underway:

 hours

Consumption:

Fuel oil type:

Quantity:

Data collection method:

Add consumption data

-- Please select --
Diesel/Gas Oil (MDO/MGO) - ISO 8217 Grades DMX through DMB (Cf: 3.206)
Light Fuel Oil (LFO) - ISO 8217 Grades RMA through RMD (Cf: 3.151)
Heavy Fuel Oil (HFO) - ISO 8217 Grades RME through RMK (Cf: 3.114)
Liquefied Petroleum Gas (LPG-Propane) (Cf: 3.000)
Liquefied Petroleum Gas (LPG-Butane) (Cf: 3.030)
Liquefied Natural Gas (LNG) (Cf: 2.750)
Methanol (Cf: 1.375)
Ethanol (Cf: 1.913)
Other

Consumption:

Fuel oil type:

- Please select --
- Diesel/Gas Oil (MDO/MGO) - ISO 8217 Grades DMX through DMB (Cf: 3.206)
- Light Fuel Oil (LFO) - ISO 8217 Grades RMA through RMD (Cf: 3.151)
- Heavy Fuel Oil (HFO) - ISO 8217 Grades RME through RMK (Cf: 3.114)
- Liquefied Petroleum Gas (LPG-Propane) (Cf: 3.000)
- Liquefied Petroleum Gas (LPG-Butane) (Cf: 3.030)
- Liquefied Natural Gas (LNG) (Cf: 2.750)
- Methanol (Cf: 1.375)
- Ethanol (Cf: 1.913)
- Other

Quantity:

Data collection method:

Add consumption data

Consumption:

Fuel type	Quantity	Data collection method	
Diesel/Gas Oil (MDO/MGO) - ISO 8217 Grades DMX through DMB (Cf: 3.206)	500	Method using BDNs	Edit Delete

Fuel oil type:

- Please select --
- Diesel/Gas Oil (MDO/MGO) - ISO 8217 Grades DMX through DMB (Cf: 3.206)
- Light Fuel Oil (LFO) - ISO 8217 Grades RMA through RMD (Cf: 3.151)
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- Liquefied Petroleum Gas (LPG-Butane) (Cf: 3.030)
- Liquefied Natural Gas (LNG) (Cf: 2.750)
- Methanol (Cf: 1.375)
- Ethanol (Cf: 1.913)
- Other

Quantity:

Data collection method:

Add consumption data

Cancel

Submit

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Ship no.	Party to M	Ship type	Gross ton	Net tonna	Deadweig	Main prop	Auxiliary e	EEDI	Ice class	Distance t	Hours und	Fuel oil type	Cf value	Quantity	Data collection
2	1	Party	Bulk carrier	9900	10000	14000	3600	0	9.35	Not applic	10000	1000	Heavy Fuel o	3.114	1000	Method using
3													Liquefied N	2.750	500	Method using
4																
5	2	Party	Bulk carrier	22000	20000	34000	6800	2500	12.5	Not applic	100000	5000	Diesel/Gas o	3.206	1450	Method using
6																
7	3	Party	Bulk carrier	23000	20000	38000	50000	0	4.00	Not applic	500000	10000	Heavy Fuel o	3.114	10000	Method using
8													Diesel/Gas o	3.206	5000	Method using
9																
10	4	Party	Bulk carrier	33000	32000	57000	9200	4000	N/A	Not applic	200000	5000	Diesel/Gas o	3.206	1000	Method using
11													Heavy Fuel o	3.114	1000	Method using
12																
13	5	Party	Bulk carrier	40000	40000	77000	90000	5000	12.1	A	51000	3900	Heavy Fuel o	3.114	13561	Method using
14													Diesel/Gas o	3.206	1026	Method using
15																
16	6	Party	Bulk carrier	93000	92000	180000	19000	3000	N/A	Not applic	6000	12000	Diesel/Gas o	3.206	800	Method using
17																
18	7	Party	Bulk carrier	110000	100000	210000	17000	6000	15.2	B	680	790	Heavy Fuel o	3.114	789	Method using
19													Liquefied Pe	3.030	890	Method using
20													Methanol	1.375	6660	Method using
21																
22	8	non-Party	Bulk carrier	22000	30000	35000	5700	0	5.26	Not applic	500	300	Heavy Fuel o	3.114	500	Method using
23													Diesel/Gas o	3.206	200	Method using
24																
25	9	Party	Gas carrier	47000	50000	55000	12000	0	6.20	Not applic	80000	7000	Liquefied Pe	3.000	5000	Method using
26																
27	10	Party	Tanker	11000	16000	17000	4400	0	9.52	A	5700	5000	Heavy Fuel o	3.114	800	Method using
28													Diesel/Gas o	3.206	500	Method using
29																
30	11	Party	Container	80000	80000	60000	50000	3000	22.5	Not applic	10000	800	Other: AAA	4.220	800	Method using
31																

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