

# **Installation of Explosion Relief Systems for Gas-fuelled Engines**

## **Amended Rules**

Rules for the Survey and Construction of Steel Ships Part GF

## **Reason for Amendment**

Requirement 10.3 of the International Code of Safety for Ships Using Gases or Other Low-flashpoint Fuels (IGF Code) specifies that explosion relief systems are to be fitted to the exhaust systems of gas-fuelled engines installed on ships using gaseous fuels in order to protect against explosion due to stagnating unburned gas resulting from flame failures, methane slips, etc.

Since engines equipped with systems for injecting gaseous fuels into cylinders after confirming the ignition of pilot fuel can reduce the risk of explosion in exhaust systems due to unburned gas. The IMO decided to review its requirements for explosion relief systems in exhaust systems to determine whether they should be defined in accordance with the safety concepts of engines and should consider the generation of unburned gas and the possibility of an explosion in the exhaust system.

As a result of its review, the IMO adopted amendments to the IGF Code as resolution MSC.458(101) at the 101<sup>st</sup> Session of the IMO Maritime Safety Committee (MSC101) held in June 2019.

Accordingly, relevant requirements are amended based on resolution MSC.458(101).

## **Outline of Amendment**

For explosion relief systems to be fitted to exhaust systems, stipulates an alternative treatment to the one specified in 10.3, Part GF of the Rules for the Survey and Construction of Steel Ships may be adopted.

“Rules for the survey and construction of steel ships” has been partly amended as follows:

## **Part GF      SHIPS USING LOW-FLASHPOINT FUELS**

### **Chapter 2    DEFINITIONS**

#### **2.2      Definitions (*IGF Code 2.2*)**

##### **2.2.1      Terms\***

Sub-paragraph -44 has been added as follows.

44 “Ship constructed on or after 1 January 2024” means ships that fall under any of the following.

- (1) for which the building contract is placed on or after 1 January 2024;
- (2) in the absence of a building contract, the keels of which are laid or which are at a similar stage of construction on or after 1 July 2024; or
- (3) the delivery of which is on or after 1 January 2028.

## Chapter 10 POWER GENERATION INCLUDING PROPULSION AND OTHER GAS CONSUMERS

### 10.3 Internal Combustion Engines of Piston Type (*IGF Code 10.3*)

#### 10.3.1 General\*

Sub-paragraph -1 has been amended as follows.

1 The exhaust system is to be equipped with explosion relief ventilation sufficiently dimensioned to prevent excessive explosion pressures in the event of ignition failure of one cylinder followed by ignition of the unburned gas in the system. Ships constructed on or after 1 January 2024 are to comply with the following requirements.

- (1) The exhaust system is to be equipped with explosion relief systems unless designed to accommodate worst case overpressure due to ignited gas leaks or justified by the safety concept of the engine.
- (2) Detailed evaluations of the potential for unburnt gas in exhaust systems are to be undertaken covering the complete system from the cylinders up to the open end.
- (3) The evaluations specified in (2) are to be reflected in the safety concept of the engine.