

BAHRIA CLASSIFICATION SOCIETY



BCS-R F

Requirements Concerning Fire Protection July 2022

These requirements are prepared by embedding related IACS Unified Requirements. In order to have consistency, the numbering of the requirements are kept as the same with related IACS Unified Requirements.

Unless otherwise specified, these Rules apply according to the implementation dates as defined in each requirement. See Rule Change Summary on BCS website for revision details.

This latest edition incorporates all rule changes.

"General Terms and Conditions" of the respective latest edition will be applicable (see Rules for Classification and Surveys).

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BCS- R F20 Inert Gas Systems

F20.1 General Requirements

F20.1.1 All types of inert gas systems are to comply with the following:

- .1 Plans in diagrammatic form are to be submitted for appraisal and should include the following:
 - details and arrangement of the inert gas generating plant including all control and monitoring devices;
 - arrangement of the piping system for distribution of the inert gas.
- .2 An automatic control capable of producing suitable inert gas under all service conditions is to be fitted.
- .3 Subsequent surveys are to be carried out at the intervals required by BCS

F20.2 Requirements for All Systems on Tankers, including Chemical Tankers, to which SOLAS regulation II-2/4.5.5.1 applies

F20.2.1 An inert gas system complying with the applicable requirements of Ch. 15 of the FSS Code, as amended by MSC.367 (93), is to be fitted on tankers to which SOLAS regulation II-2 /4.5.5.1 applies. In applying the applicable requirements of Ch. 15 of the FSS Code, any use of the word "Administration" therein is to be considered as meaning BCS. The inert gas system is to be operated in accordance with SOLAS regulation II-2/16.3.3, as amended by MSC.365(93). In applying SOLAS regulation II-2/16.3.3.2, paragraph 2.2.1.2.4 of Ch. 15 of the FSS Code is to be complied with.

NOTES:

1. This requirement is applied on ships contracted for construction on or after 1 January 2016.
2. The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to BCS- PR 29.

F20.3 Additional Requirements for Nitrogen Generator Systems on Tankers, including Chemical Tankers, to which SOLAS regulation II-2/4.5.5.1 applies

F20.3.1 The following requirements apply where a nitrogen generator system is fitted on board as required by SOLAS regulation II-2/4.5.5.1. For the purpose, the inert gas is to be produced by separating air into its component gases by passing compressed air through a bundle of hollow fibres, semi-permeable membranes or adsorber materials.

F20.3.2 In addition to the applicable requirements of Ch. 15 of the FSS Code, as amended by MSC.367(93), the nitrogen generator system is to comply with SOLAS regulations II-2/4.5.3.4.2, 4.5.6.3 and 11.6.3.4.

F20.3.3 A nitrogen generator is to consist of a feed air treatment system and any number of membrane or adsorber modules in parallel necessary to meet paragraph 2.2.1.2.4 of Ch.15 of the FSS Code, as amended by MSC.367(93).

F20.3.4 The nitrogen generator is to be capable of delivering high purity nitrogen in accordance with paragraph 2.2.1.2.5 of Ch.15 of the FSS Code, as amended by MSC.367(93). In addition to paragraph 2.2.2.4 of Ch.15 of the FSS Code, as amended by MSC.367(93), the system is to be fitted with automatic means to discharge "off-spec" gas to the atmosphere during start-up and abnormal operation.

F20.3.5 The system is to be provided with one or more compressors to generate enough positive pressure to be capable of delivering the total volume of gas required by 2.2.1.2 of the FSS Code, as amended by MSC.367(93). Where two compressors are provided, the total required capacity of the system is preferably to be divided equally between the two compressors, and in no case is one compressor to have a capacity less than 1/3 of the total capacity required.

F20.3.6 The feed air treatment system fitted to remove free water, particles and traces of oil from the compressed air as required by 2.4.1.2 of Ch.15 of the FSS Code, as amended by MSC.367(93), is also to preserve the specification temperature.

F20.3.7 The oxygen-enriched air from the nitrogen generator and the nitrogen-product enriched gas from the protective devices of the nitrogen receiver are to be discharged to a safe location* on the open deck.

F20.3.8 In order to permit maintenance, means of isolation are to be fitted between the generator and the receiver.

*) "safe location" needs to address the two types of discharges separately:

1. oxygen-enriched air from the nitrogen generator - safe locations on the open deck are:
 - outside of hazardous area;
 - not within 3m of areas traversed by personnel; and
 - not within 6m of air intakes for machinery (engines and boilers) and all ventilation inlets.
2. nitrogen-product enriched gas from the protective devices of the nitrogen receiver - safe locations on the open deck are:
 - not within 3m of areas traversed by personnel; and
 - not within 6m of air intakes for machinery (engines and boilers) and all ventilation inlets/outlets.

F20.4 Nitrogen /Inert Gas Systems Fitted for Purposes other than Inerting Required by SOLAS Reg. II-2/4.5.5.1 and 4.5.5.2

F20.4.1 This section applies to systems fitted on oil tankers, gas tankers or chemical tankers to which SOLAS regulations II-2/4.5.5.1 and 4.5.5.2 do not apply.

F20.4.2 Paragraphs 2.2.2.2, 2.2.2.4, 2.2.4.2, 2.2.4.3, 2.2.4.5.1.1, 2.2.4.5.1.2, 2.2.4.5.4, 2.4.1.1, 2.4.1.2, 2.4.1.3, 2.4.1.4, 2.4.2.1 and 2.4.2.2 of Ch.15 of the FSS Code, as amended by MSC.367(93), as applicable apply to the systems.

F20.4.3 The requirements of section F20.3 apply except paragraphs F20.3.1, F20.3.2, F20.3.3 and F20.3.5.

F20.4.4 Materials used in inert gas systems are to be suitable for their intended purpose in accordance with the Rules of BCS.

F20.4.5 All the equipment is to be installed on board and tested under working conditions to the satisfaction of the Surveyor.

F20.4.6 The two non-return devices as required by paragraph 2.2.3.1.1 of Ch.15 of the FSS Code, as amended by MSC.367(93) are to be fitted in the inert gas main. The non-return devices are to comply with 2.2.3.1.2 and 2.2.3.1.3 of Ch.15 of the FSS Code, as amended by MSC.367(93); however, where the connections to the cargo tanks, to the hold spaces or to cargo piping are not permanent, the non-return devices required by paragraph 2.2.3.1.1 of Ch. 15 of the FSS Code, as amended by MSC.367(93) may be substituted by two non-return valves.

BCS- R F29 Non-sparking fans

F29.1 Introduction

A fan is considered as non-sparking if in either normal or abnormal conditions it is unlikely to produce sparks.

F29.2 Design criteria

F29.2.1 The air gap between the impeller and the casing shall be not less than 0,1 of the shaft diameter in way of the impeller bearing but not less than 2 mm. It need not be more than 13 mm.

F29.2.2 Protection screens of not more than 13 mm square mesh are to be fitted in the inlet and outlet ventilation openings on the open deck to prevent the entrance of objects into the fan housing.

F29.3 Materials

F29.3.1 The impeller and the housing in way of the impeller are to be made of alloys which are recognised as being spark proof by appropriate test.

F29.3.2 Electrostatic charges both in the rotating body and the casing are to be prevented by the use of antistatic materials. Furthermore, the installation on board of the ventilation units is to be such as to ensure the safe bonding to the hull of the units themselves.

F29.3.3 Tests may not be required for fans having the following combinations:

- (i) impellers and/or housings of nonmetallic material, due regard being paid to the elimination of static electricity,
- (ii) impellers and housings of non-ferrous materials,
- (iii) Impellers of aluminium alloys or magnesium alloys and a ferrous (including austenitic stainless steel) housing on which a ring of suitable thickness on non-ferrous materials is fitted in way of the impeller,
- (iv) any combination of ferrous (including austenitic stainless steel) impellers and housings with not less than 13 mm tip design clearance.

F29.3.4 The following impellers and housings are considered as sparking and are not permitted:

- (i) impellers of an aluminium alloy or magnesium alloy and a ferrous housing, regardless of tip clearance,
- (ii) housing made of an aluminium alloy or a magnesium alloy and a ferrous impeller, regardless of tip clearance,
- (iii) any combination of ferrous impeller and housing with less than 13 mm design tip clearance.

F29.3.5 Type tests on the finished product are to be carried out in accordance with the requirements of BCS or an equivalent national or international standard.



BCS-R F35 Fire Protection of Machinery Spaces

In the implementation of the SOLAS Chapter II-2, the following requirements are to be met:

1. Reg.II-2/4.2.2.4

Air pipes from oil fuel tanks should be led to a safe position on the open deck.

Air pipes from lubricating oil storage tanks may terminate in the machinery space, provided that the open ends are so situated that issuing oil cannot come into contact with electrical equipment or heated surfaces.

Any overflow pipe should have a sectional area of at least 1,25 times that of the filling pipe and should be led to an overflow tank of adequate capacity or to a storage tank having space reserved for overflow purposes.

An alarm device should be provided to give warning when the oil reaches a predetermined level in the tank, or alternatively, a sight glass should be provided in the overflow pipe to indicate when any tank is overflowing. Such sight glasses should be placed on vertical pipes only and in readily visible positions.

2. Reg.II-2/4.2.2.3.5.1

Short sounding pipes may be used for tanks other than double bottom tanks without the additional closed level gauge provided an overflow system is fitted.

3. Reg.II-2/4.2.2.3

Level switches may be used below the tank top provided they are contained in a steel enclosure or other enclosures not capable of being destroyed by fire.

4. Reg.II-2/5.2.2.3

Controls required by this regulation should also be provided from the compartment itself.

5. Reg.II-2/4.2.2.5.1

Hose clamps and similar types of attachments for flexible pipes should not be permitted.

6. Reg.II-2/4.2.2 and 4.2.5.2

Oil fuel in storage tanks should not be heated to temperatures within 10°C below the flash point of the fuel oil, except that where oil fuel in service tanks, settling tanks and any other tanks in supply system is heated the following arrangements should be provided:

- the length of the vent pipes from such tanks and/or a cooling device is sufficient

for cooling the vapours to below 60°C, or the outlet of the vent pipes is located 3m away from a source of ignition;

- the vent pipes are fitted with flame screens;
- there are no openings from the vapour space of the fuel tanks into machinery spaces (bolted manholes are acceptable) ;
- enclosed spaces are not located directly over such fuel tanks, except for vented cofferdams ;
- electrical equipment is not fitted in the vapour space of the tanks, unless it is certified to be intrinsically safe.