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FACTORIES ACT CAP. F1. LAWS OF THE FEDERATION OF NIGERIA, 2004

BOILER AND PRESSURE VESSEL REGULATIONS, 2018

ARRANGEMENT OF REGULATIONS

Regulation :

S. I. No. 35 of 2018

FACTORIES ACT CAP. F1. LAWS OF THE FEDERATION OF NIGERIA, 2004

BOILER AND PRESSURE VESSEL REGULATIONS, 2018

[18*th Day of December*, 2018] Commencement.

b In exercise of the powers conferred on me by Section 49 of the Factories Act, CAP. F1, Laws of the Federation of Nigeria, 2004, and all other powers enabling me in that behalf, I, Senator Dr. Chris Nwabueze Ngige, the Honourable Minister of Labour and Employment, make the following regulations—

PART I—PRELIMINARIES

1. These Regulations make provisions for the safety of persons coming in contact with or involved in the manufacture, fabrication, installation, inspection, use, or maintenance of steam boilers, steam receiver, other pressure vessels, refrigeration plants, or piping in a workplace in Nigeria. Objectives.

2. In these Regulations, unless the context otherwise requires— Interpretation.

"*adopted codes and standards*" means the "Boilers and Pressure Vessels Code and Standards adopted by the Director of Factories for the purpose of these Regulations ;

"*alteration*" means a change in the item described on the original manufacturer's data report that requires a change of design calculations, or otherwise affects the pressure-containing capability of a boiler or pressure vessel ;

"*boiler*" means a closed vessel in which gas or vapour may be generated, or gas, vapour, or liquid may be put under pressure by heating ;

"*certificate of inspection*" means a certificate issued pursuant to these Regulations, in respect of an inspection of a boiler or pressure vessel ;

"*design*", in reference to a boiler, pressure vessel, or piping, means its plan or pattern and includes, drawings, specifications, calculations and test data, or a model ;

"*director*" means the Director of Factories under the Act ;

"*engineer*" means a person, who is registered as an engineer by the Council for Registered Engineering in Nigeria ;

"*fired vessel*" means a vessel that is directly heated by—

(*a*) a flame or the hot gases of combustion,

(*b*) electricity, or

(*c*) any means other than a thermal liquid ;

"*fitting*" means an appurtenance that is attached to or used in connection with a boiler, a pressure vessel, or piping, and includes valves, gauges. controlling devices, and other pressure-retaining components ;

"low pressure boiler" means, a boiler that—

(*a*) generates steam or other vapour at a pressure of 15 psi (103 kPa) or less, or

(*b*) operates at a pressure of 160 psi (1,100 kPa) or less, where the water temperature at the boiler outlet is 121ºC or less ;

"*maximum allowable working pressure*" means the maximum pressure at which a boiler, pressure vessel, fitting, or piping is permitted to be operated under these Regulations ;

"*owner*" includes, a person, who for the time being is in possession or control of a boiler, pressure vessel, fitting, or piping ;

"*piping*" means a pressure piping being part of a system of pipes that is used to contain gas, vapour, or liquid under pressure, and includes, a boiler, pressure vessel, or fitting connected to such system ;

"*pressure*" means force above prevailing atmospheric pressure ;

"*pressure vessel*" means an enclosed unfired vessel that contains gas, vapour, or liquid under pressure ;

"*repair*" means work necessary to restore a boiler or pressure vessel to a safe and satisfactory operating condition, which does not result in a deviation from the original design ;

"*steam receiver*" means a vessel other than a boiler, containing steam under pressure, greater than atmospheric pressure ;

"*unfired pressure vessel*" includes any type of pressure vessel that is not fired or exposed to combustion or burner fire" ;

"*used boiler, pressure vessel, fitting, or piping*" means a boiler, pressure vessel, fitting, or piping that has been in service and that has been moved from its previous site for use elsewhere ; and

"*workplace*" means a factory, oil field installations or other premises as stipulated in Section 56 of the Factories Act.

Application.

3.—(1) These Regulations apply to the design, manufacture, installation, maintenance, use, operation, inspection, repair, alteration, and service of boilers, pressure vessels, and piping.

(2) These Regulations do not apply to—

(*a*) a low-pressure boiler that has either a wetted heating surface of 2.79 square metres or less, or a power rating of 30 kW or less ;

(*b*) a boiler having a heating surface of 0.93 square metres or less ;

(*c*) a pressure vessel, fitting, or piping that contains gas, vapour, or liquid at a maximum allowable working pressure of 15 psi (103 kPa) or less ;

(*d*) a pressure vessel, fitting, or piping containing liquids not more hazardous than water and that operates at a temperature of 65ºC or less, and at a maximum allowable working pressure of 250 psi (1,717 kPa) or less ;

(*e*) a pressure vessel for domestic use that has an internal diameter of 610 mm or less for the storage of hot water, where the temperature does not exceed 100ºC and the heat input is 120 kW or less ;

(*f*) a pressure vessel that is used exclusively for hydraulic purposes at a temperature no greater than 65ºC ;

(*g*) a pressure vessel that has an internal diameter of 610 mm or less, which is connected to a liquid pumping system at a temperature not exceeding 65ºC, and contains air or an inert gas compressed to serve as a cushion ;

(*h*) a refrigeration piping that has a capacity of 11 kW or less of refrigeration ;

(*i*) compressed air piping, having a nominal pipe size of 19mm or less ;

(*j*) hot oil piping, where the pressure is not greater than 100 psi (687 kPa) and the operating temperature is not less than 10ºC, lower than the flash point of the oil ;

(*k*) pressure containers that form an integral part of, or are a component of rotating or reciprocating mechanical devices, including pumps, compressors, turbines, generators, engines and hydraulic or pneumatic cylinders, where the primary design considerations or stresses, or both, are derived from the functional requirements of the device ;

(*l*) automatic fire protection systems that are designed and installed in accordance with the Nigerian Building Code ;

(*m*) buried water piping operating at a temperature of 65ºC or less, and at a maximum allowable working pressure of 600 psi (4,120 kpa) ;

(*n*) a pressure vessel having a capacity of 42.5L or less, and which is not a fitting ; and

(*o*) a pressure vessel having an internal diameter of 152mm or less.

Adopted Codes and Standards.

4.—(1) Subject to the provisions of the Act and these Regulations, the Director of Factories may approve, in writing, and circulate specific codes and standards to govern the design, manufacture, inspection, installation, repair or alteration of boilers, pressure vessels, or piping systems.

(2) In the event of a conflict between these Regulations and adopted codes and standards, these Regulations shall prevail.

Requirements for Compliance.

5.—(1) An employer, manufacturer, or owner of a boiler, pressure vessel, or piping shall—

(*a*) comply with the adopted codes and standards approved by the Director of Factories,

(*b*) ensure that the boiler, pressure vessel, piping or refrigeration plant is maintained in a safe working condition and operated safely ; and

(*c*) ensure that a person engaged in an activity involving the design, manufacture, installation, inspection, repair, alteration, maintenance, service, use, or disposal of boiler, pressure vessel, or piping carries out such activity in compliance with adopted codes and standards approved by the Director of Factories, and these Regulations.

(2) Subject to regulation 4 of these Regulations, an employer, occupier, manufacturer, or owner, who intends to design, manufacture, install, alter, maintain, or repair a boiler, pressure vessel, fitting, or piping system shall—

(*a*) develop and implement a written quality control program manual suitable for the scope of the work to be carried out, which meets the requirements of relevant adopted codes or standards ;

(*b*) commence the design, manufacture, installation, alteration, maintain, or repair, provided the quality control program manual is reviewed and approved by an Authorized Inspector pursuant to regulation 11 of these Regulations ; and

(*c*) carry out the manufacture, installation, alteration, or repair in accordance with the registered quality control program manual.

(3) An employer, occupier, manufacturer or owner, who intends to manufacture, install, alter, maintain, or repair a boiler, pressure vessel, fitting, or piping system using welding procedures shall—

(*a*) subject to regulation 4 of these Regulations, develop and qualify, by testing, welding procedures in accordance with the adopted codes and standards ;

(*b*) not commence the process, unless the welding procedures have been reviewed and approved by an Authorized Inspector ; and

(*c*) carry out such process in accordance with the registered welding procedures.

(4) In pursuance of these Regulations, non-destructive testing shall be carried out by certified persons registered with the Institute of Non-Destructive Testing, Nigeria.

(5) Persons or organization carrying out non-destructive testing and training shall fulfill the guidelines and requirements stipulated by the Institute of Non-Destructive Testing, Nigeria, for the education, training, certification, experience and practice of Non-Destructive Testing in, Nigeria".

Requirements for Compliance for Boilers.

6.—(1) A boiler shall be equipped with—

(*a*) an alarm system which, in the event any irregularity occurs while the boiler is in operation—

(*i*) will audibly and visually caution the operator in charge or any other person in the vicinity of the boiler,

(*ii*) will initiate an alarm signal to a monitoring system that is continuously attended to or electronically monitored, and

(*iii*) cannot be shut off until the irregularity is rectified or the boiler is shut down ;

(*b*) an automatic control system, which will safely operate the boiler when the operator in charge leaves the controls ; and

(*c*) such other devices, as the Director of Factories may specify from time to time.

(2) A steam boiler shall be equipped with—

(*a*) a high-pressure tripping device, which automatically stops and prevents the supply of fuel to the boiler, in the event of the boiler pressure reaching the maximum allowable working pressure or exceeding an established high-pressure limit specified by the manufacturer, whichever is the lower pressure ;

(*b*) a low water level tripping device, separate from any other device, which automatically controls the water level in the boiler during normal operation by—

(*i*) automatically stopping and preventing the supply of fuel to the boiler, in the event of the boiler water falling below the safe operating level specified by the manufacturer, and

(*ii*) preventing the boiler from automatically restarting ;

(*c*) a high-water level tripping device, separate from any other device, which automatically controls the water level of the boiler during normal operation by automatically stopping and preventing the supply of water to the boiler, in the event of the water in the boiler exceeding the operating level specified by the manufacturer ;

(*d*) a device, which purges the furnace chamber of combustible materials anytime the boiler is put in use, so as to ensure safe ignition ; and

(*e*) a flame failure tripping device, which—

(*i*) detects a flame failure,

(*ii*) automatically stops and prevents the supply of fuel to the boiler, in the event a flame failure occurs, and

(*iii*) prevents the boiler from automatically restarting.

(3) A steam boiler shall have attached to it—

(*a*) safety valve, separate from and incapable of being isolated by any stop-valve, to prevent the boiler being worked at a pressure greater than the maximum permissible working pressure ;

(*b*) a stop-valve, connecting the boiler to the steam pipe, which shall be lagged at all times ;

(*c*) a correct steam pressure gauge, connected to the steam space and visible to the operator, which—

(*i*) indicates the pressure in the boiler in kilograms per square centimetre, and

(*ii*) has the maximum permissible working pressure visibly marked on it and in a distinctive colour ;

(*d*) at least, one water gauge of transparent material or other type approved by the Director of Factories, to show the water level in the boiler, provided that where the gauge is a glass tubular type and the working pressure in the boiler exceeds three kilograms per square centimetre, the gauge shall be provided with an efficient guard but not so as to obstruct the reading of the gauge ; and

(*e*) a plate visibly bearing its distinctive number.

(4) A steam boiler shall be provided with means for attaching a test pressure gauge.

(5) For the purpose of sub-regulation (3)(*a*) of this regulation, a lever-valve shall not be deemed a suitable safety valve, unless the weight is secured on the lever in the correct position.

(6) Sub-regulation (3)(*b*) of this regulation shall not apply to economisers, while sub-regulations (3)(*c*)-(*e*) and (4) shall not apply to either economisers or super heaters.

(7) A hot water boiler shall be equipped with—

(*a*) a high-water temperature tripping device, which—

(*i*) automatically stops and prevents the supply of fuel to the boiler, in the event of the water in the boiler exceeding the safe operating temperature specified by the manufacturer, and

(*ii*) prevents the boiler from automatically restarting ; and

(*b*) such other devices as are described in regulation 6 of these Regulations, excluding sub-regulation(3)(*d*) of this regulation.

Registration of Boilers and Pressure Vessels.

7.—(1) A boiler or pressure vessel manufactured in Nigeria shall be designed by an engineer, who has experience in designing boilers, pressure vessels, piping, or fittings.

(2) The design for a boiler or pressure vessel shall bear the signature and seal of the design engineer.

(3) Subject to regulation 8 of these Regulations, no manufacturer shall commence the manufacture of a boiler, pressure vessel, piping or fitting, unless the design is—

(*a*) reviewed by an Authorized Inspector ; and

(*b*) approved for manufacture and registered by the Director of Factories.

(4) Where the designer, manufacturer, installer, or owner of a boiler, pressure vessel, fitting, or piping proposes a change to a registered design, such change shall be re-submitted to the Authorized Inspector for review and subsequent approval by the Director of Factories before implementation.

(5) Where an Authorized Inspector discovers, after manufacture or installation, that a boiler, pressure vessel, piping, or fitting for which approval for manufacture was granted is defective, he shall report such defect to the Director of Factories who may—

(*a*) permit the boiler, pressure vessel, or fitting to be operated within such limits of safety, as the Authorized Inspector considers adequate in the circumstances ; and

(*b*) require the manufacturer or installer to correct the defects within such period, as the Authorized Inspector may allow.

(6) Where the defect referred to in sub-regulation (5) of this regulation is as a result of the design and specifications of the boiler, pressure vessel, fitting, or piping, and thus cannot be remedied, the Director of Factories shall cancel the registration of the design, and no other boiler, pressure vessel, fitting, or piping shall be manufactured or installed based on that design.

(7) Where a boiler, pressure vessel, fitting, or piping was not manufactured or installed in conformity with its approved design, but may be used safely at a pressure lower than its design pressure, the Authorized Inspector shall, subject to the payment of the prescribed fees and penalty specified in regulation 11 (4) (*b*) of these Regulations, and after thorough examination and tests, fix its maximum allowable working pressure having regard to—

(*a*) its design, condition, and installation ; and

(*b*) the purpose for which it is to be operated.

(8) Used boilers, pressure vessels, fittings, or piping shall be registered with the Director of Factories, inspected and certified by an Authorized Inspector, before being put to subsequent use in Nigeria.

(9) Boilers, pressure vessels, fittings, or piping already in use before the coming into force of these Regulations, shall be inspected in accordance with the provisions of these Regulations for registration and certification, and any defect found during such inspection shall be subject to the provisions of sub-regulation (5) and (6) of this regulation.

Requirements for Registration of Boilers and Pressure Vessels.

8.—(1) The Director of Factories shall register a boiler or pressure vessel manufactured, installed, operated, or used in Nigeria and assign a registration number to it accordingly ; provided the Authorised Inspector is satisfied that the review of the design, quality control program, and manufacturing process is in compliance with the requirements of these Regulations.

(2) An application for the registration of a boiler or pressure vessel shall be submitted to the Director of Factories in the prescribed form, together with the prescribed fees, either after its manufacture or before installation.

(3) Drawings, calculations, specifications, and other information required for the purposes of an application for registration must be submitted in duplicate.

(4) With respect to an application for the registration of a boiler or pressure vessel, or its alteration or repair, other information referred to in sub-regulation (3) of this regulation includes—

(*a*) the design pressure and temperature ;

(*b*) details of the arrangement and dimensions of all component parts ;

(*c*) the material details and specifications as required by the adopted code or standard ;

(*d*) details of the proposed manufacture, welded joint configuration, and quality control plan ;

(*e*) the section and paragraph number of the adopted code and standards under which it is being constructed ;

(*f*) a report of physical tests conducted for the purpose of establishing the maximum allowable working pressure ; and

(*g*) any other information that the Director of Factories may require.

(5) For the purposes of this regulation, the owner of any of the following classes of pressure vessels does not require registration to operate the pressure vessel—

(*a*) an air receiver with capacity of 60 litres or less ;

(*b*) a propane vessel used in a vehicle as a fuel tank ;

(*c*) a propane storage vessel with a capacity of 30,000 litres or less, that forms part of a distribution facility, which is used to dispense propane to the public ;

(*d*) a propane storage vessel with a capacity of 7,500 litres or less, that is used for heating purposes in a building, manufacture site, or oil field ; and

(*e*) a propane storage vessel with a capacity of 30,000 litres or less, that is used for heating purposes on a farm.

Registration of Organisations.

9.—(1) A person or organisation involved in the business of manufacturing, installing, altering, or repairing boilers, pressure vessels, fittings, or piping systems shall be registered as an Approved Contractor, by the Director of Factories.

(2) An organisation involved in the business of inspection and certification of boilers, pressure vessels, fittings, or piping systems shall be registered as an Approved Inspection Agency, by the Director of Factories.

(3) A person or organisation, involved in the training of engineers, Authorized Inspectors, boiler operators, and technicians shall be registered as a Training Contractor, by the Director of Factories.

(4) A person or organisation so registered according to sub-regulation (1)-(3) of this regulation shall be referred to as a Registered Contractor.

(5) A person or organisation seeking registration, as set out in sub-regulations (1)-(3) of this regulation, shall submit an application in the prescribed form and prescribed fees to the Director of Factories.

(6) The Director of Factories shall, upon the receipt of the application form and prescribed fees, as stipulated in sub-regulation (5) of this regulation, register a person or organisation, as a Registered Contractor; provided that the application form is successfully evaluated.

(7) An application as a Registered Contractor shall set out the scope of the work that the applicant intends to engage in.

(8) The registration of a Registered Contractor is valid for a period of three years, unless it is suspended or cancelled before its expiry date.

(9) The Director of Factories may renew the registration of a Registered Contractor, where, prior to the expiry date, the Registered Contractor—

(*a*) submits to the Director of Factories, a renewal application in the prescribed form ;

(*b*) pays the prescribed renewal fees ; and

(*c*) is successful at the renewal audit preceding the renewal.

(10) The Director of Factories shall suspend or cancel the registration of a Registered Contractor, where he is satisfied that the Registered Contractor or an employee of the Registered Contractor—

(*a*) has violated or failed to comply with these Regulations ;

(*b*) has caused or permitted a boiler or pressure vessel under their control to be used in an unsafe condition or while overloaded ;

(*c*) has performed work on a boiler or pressure vessel in a manner that has impaired the safe operation of the equipment ; or

(*d*) has knowingly permitted a subcontractor or employee of a subcontractor to perform work under the subcontract in a manner likely to impair the safety of persons within the vicinity of the boiler or pressure vessel.

Operation of Boiler and Pressure Vessel.

10.—(1) An employer, occupier, or owner of a boiler, pressure vessel, fitting, or piping shall—

(*a*) ensure that it is maintained in a safe working condition and operated safely ; and

(*b*) have adequate pressure relief devices set to relieve at or below its maximum allowable working pressure in accordance with the adopted code and standards.

(2) No employer, occupier, or owner shall—

(*a*) operate or permit a boiler, pressure vessel, fitting, or piping to be operated, unless a valid certificate of inspection has been issued in respect of the boiler, pressure vessel, fitting, or piping ;

(*b*) operate or permit a boiler, pressure vessel, fitting, or piping to be operated at a pressure higher than its maximum allowable working pressure, as shown on the licence ;

(*c*) operate or permit a boiler, pressure vessel, or fitting to be operated, unless it is operated, maintained and supervised by a licenced person or Registered Contractor ;

(*d*) alter, interfere with, or render inoperative any fitting that is attached to a boiler, pressure vessel, fitting, or piping for safety purposes, while it is in operation and without the approval of an Authorized Inspector ;

(*e*) operate or permit a boiler, pressure vessel, fitting, or piping to be operated, where it has been sealed off by an Authorized Inspector ; or

(*f*) move a boiler, pressure vessel, fitting, or piping that has been sealed off to another location for operation, without the approval of the Director of Factories.

(3) Where there is a possibility of gas, vapour, or liquid causing injury to a person inspecting, repairing, or maintaining a boiler, pressure vessel, fitting, or piping, the owner, operations or safety personnel, or other person responsible for it shall ensure that—

(*a*) a competent person is stationed to prevent gas, vapour, or liquid from entering the boiler, pressure vessel, fitting, piping or any part of it ; and

(*b*) such other measures are taken to the satisfaction of the person inspecting, repairing, or maintaining the boiler, pressure vessel, fitting or piping to ensure his safety.

(4) No refrigeration plant with a capacity—

(*a*) greater than 45 tonnes but not greater than 100 tonnes shall be operated; unless under the general supervision of a licenced refrigeration plant operator, refrigeration engineer, or engineer of the appropriate class ; or

(*b*) greater than 100 tonnes shall be operated; unless under general supervision of a licenced refrigeration engineer or engineer of the appropriate class.

(5) The owner of a boiler or refrigeration plant requiring supervision shall—

(*a*) provide a log book in which the appropriate person records relevant information relating to the operation of the boiler or refrigeration plant ;

(*b*) ensure that the log book is kept at the site of the boiler or refrigeration plant ; and

(*c*) ensure that the log book and information kept is available for inspection, in written or printed form, for at least five years from the date of the last entry.

(6) Without limiting the generality of sub-regulation (5) of this regulation, log book entries include—

(*a*) with respect to shifts—

(*i*) the time, date, number, or designation of the shift,

(*ii*) the name and signature of the person supervising the boiler or refrigeration plant, and

(*iii*) the boiler conditions observed during the shift ;

(*b*) a description of any irregularities observed in the boiler or refrigeration plant and the corrective action required or taken ;

(*c*) implemented and maintained continuous boiler water treatment program for the purpose of controlling and limiting corrosion and deposits ;

(*d*) an order given that is contrary to or in addition to the normal operating procedures, the name of the person giving the order, the time at which the order was given, and the reason for the order ;

(*e*) a description of preventive maintenance procedures carried out on the boiler or refrigeration plant, including the testing and recording of all operation, logging, control, alarm and safety systems, and the time at which the procedures were carried out ; and

(*f*) a description of repairs carried out on any part of the boiler or refrigeration plant, and the name of the person who carried out the repairs.

Inspections.

11.—(1) A registered contractor shall ensure that at any stage of the manufacturing, installation, repair, or alteration of a boiler, pressure vessel, fitting, or piping, an Authorised Inspector carries out inspection, in accordance with relevant adopted codes and standards, adopted by the Director of Factories and set out in these Regulations.

(2) An Authorized Inspector shall inspect an imported boiler, pressure vessel, fitting, or piping before it is put into first use in Nigeria, and the cost of inspection shall be borne by the owner.

(3) In respect of inspection carried out under sub-regulation (1) and (2) of this regulation, an Authorised Inspector shall—

(*a*) endorse the manufacturer's data report ;

(*b*) issue a certificate of inspection, in accordance with the adopted code and standards, within 28days of the inspection; provided he is satisfied that the boiler, pressure vessel, fitting, or piping may be operated safely ; and

(*c*) file the certificate of inspection with the Director of Factories.

(4) Where a required inspection is not carried out on a boiler, pressure vessel, fitting, or piping at the time of its manufacture or installation, the Director of Factories shall—

(*a*) direct an Authorised Inspector of his choice to conduct a thorough examination on the already manufactured or installed boiler, pressure vessel, fitting, or piping ; and

(*b*) where the Authorised Inspector is satisfied and endorses that the boiler, pressure vessel, fitting, or piping may be operated safely, issue a certificate of inspection, upon the payment of prescribed fees and a fine of not less than 5 per cent of the value of the boiler, pressure vessel, fitting, or piping.

(5) An Authorized Inspector may require the owner or other person responsible for a boiler, pressure vessel, refrigeration plant, piping, or fitting to do all things necessary for a proper inspection, including—

(*a*) preparing it for inspection or testing, in such manner as the Authorized Inspector requires, to supply water for testing, and to assist in conducting the testing ;

(*b*) carrying out destructive and non-destructive test or using any other method to enable the Authorised Inspector determine its condition and the thickness of the material used ;

(*c*) putting it under pressure or into operation, so that the inspector may test the safety valves or any part of the installation under operating conditions ;

(*d*) stopping the application of heat to a boiler or reducing the pressure upon a boiler, pressure vessel, piping, or fitting to a designated pressure, where the Authorized Inspector has reason to believe that it is in an unsafe condition ; and

(*e*) doing any other thing the Authorized Inspector considers necessary to ensure a proper inspection.

Periodic Inspections.

12.—(1) An owner shall ensure that an Authorised Inspector inspects—

(*a*) a boiler or refrigeration plant, at least once in every 12 months ; or

(*b*) a pressure vessel, including steam receiver, steam container, separators, air receiver, and other pressure vessels, at least once in every 26 months.

(2) With regard to the service conditions and risk factors associated with the pressure vessel, the Authorized Inspector may extend the inspection interval of an unfired pressure vessel for a period not exceeding five years.

(3) Fees or fines relating to an inspection conducted under these Regulations shall be borne by the employer, occupier, or owner of the equipment being inspected.

(4) Where manufacture and service conditions permit, a periodic inspection of a boiler, pressure vessel, refrigeration plant, or compressed gas plant shall include an internal inspection.

(5) Following an inspection, the Authorized Inspector, shall—

(*a*) immediately notify the owner of any defect found in the boiler or pressure vessel ;

(*b*) issue a report on the inspection to the Director of Factories ; and

(*c*) if satisfied that the boiler or pressure vessel can be operated safely, issue a certificate of inspection.

(6) Where the owner receives a notice under sub-regulation (5) (*a*) of this regulation that the boiler or pressure vessel cannot be operated safely, he shall seal it off and suspend its operation, until the defect is rectified and the Authorised Inspector certifies the boiler or pressure vessel fit for purpose.

(7) The owner of a certified boiler or pressure vessel shall keep the certificate of inspection in good condition and post it in a conspicuous place near the boiler or pressure vessel, or where it is impracticable to do so, at such place as a Factory Inspector may direct.

(8) The owner or other person responsible for a boiler, pressure vessel, or piping shall notify an Authorised Inspector of any defect he has knowledge of or believes to exist either at the time of its inspection or any other time, when he learns of the defect.

Report on Inspection.

13.—(1) An Authorized Inspector carrying out inspection in accordance with regulation 12 of these Regulations shall—

(*a*) immediately notify the employer, occupier, or owner of any defect in the boiler or pressure vessel, which in his opinion could compromise the boiler or pressure vessel ;

(*b*) where in his opinion, there exists a defect in the boiler or pressure vessel capable of causing serious personal injury—

(*i*) immediately notify the employer, occupier, or owner of the defect, and

(*ii*) place a prohibition sticker or sign, or seal off such equipment ;

(*c*) issue a certificate of test and examination specifying the maximum safe working pressure, signed by him ; and

(*d*) within 28 days of the inspection, file the result of such examination in the prescribed form and containing the prescribed particulars signed by him, with the Director of Factories.

(2) An employer, occupier, or owner, who has been notified under sub-regulation (1)(*a*) and (*b*) of this regulation, shall ensure that the boiler or pressure vessel is not used until the defect is rectified.

(3) An employer, occupier, or owner shall ensure that certificates and reports required to be made under these Regulations are—

(*a*) available for inspection by a factory Inspector ; and

(*b*) kept for a period of at least three years from the date of the report or certificate.

Alterations.

14.—(1) No person shall alter, a boiler, pressure vessel, piping, or fitting unless the alteration is registered with the Director of Factories and inspected by an Authorized Inspector.

(2) No person shall repair, operate, or permit the operation of a repaired boiler, pressure vessel, fitting, or piping, without the prior inspection by an Authorized Inspector.

(3) Installation, alteration, or repair not reported in accordance with regulation 15(2) of these Regulations shall be liable to a fine of not less than ₦1,000,000.

Obligation to Report.

15.—(1) An employer, occupier, or owner of a boiler, pressure vessel, fitting, or piping shall, having permanently removed it from operation, notify the Director of Factories of such removal in the prescribed form.

(2) An employer, occupier, or owner of a boiler, pressure vessel, fitting, or piping shall report any installation, alteration, or repair to a boiler, pressure vessel, or refrigeration plant to the Director of Factories in the prescribed form.

(3) Where there is an explosion or rupture to a boiler, pressure vessel, fitting, or piping, or where an accident occurring from its operation results in injury, death, or property damage, the owner shall—

(*a*) immediately notify the Director of Factories, in person, by telephone, or other means, of the occurrence and provide full details ; and

(*b*) within 48 hours of the explosion or rupture, send the Director of Factories a written report of the circumstances of the occurrence.

(4) The Director of Factories or a Factory Inspector acting under the instruction of the Director of Factories may investigate the matter reported under sub-regulation (3) of this regulation, or of which he is aware, to determine its cause.

(5) Where an explosion or rupture occurs to a boiler, pressure vessel, fitting, or piping, no person shall, interfere with, disturb, destroy, carry away, or alter any wreckage, article, or thing at the scene, or connected with the occurrence, except—

(*a*) for the purpose of saving a life or relieving human suffering ; and

(*b*) with the written permission of a Factory Inspector.

(6) A person, who contravenes the provisions of sub-regulation (5) of this regulation, is liable, on conviction to—

(*a*) imprisonment for a term not exceeding two years ;

(*b*) a fine not exceeding N1,000,000 ; or

(*c*) both fine and imprisonment.

PART II—CERTIFICATION OF REGISTERED CONTRACTORS

Training and Certification of Personnel.

16.—(1) An employer, Registered Contractor, or owner shall ensure that a person involved in the design, manufacture, installation, repair, alteration, maintenance, service, operation, or disposal of boiler, pressure vessel, fitting or piping is—

(*a*) adequately trained for the level of skill and involvement required for the safe operation of a boiler, pressure vessel, or piping, as indicated in these Regulations ; and

(*b*) a competent person, duly certified by the Director of Factories.

(2) An employer, Registered Contractor, or owner shall ensure that a person, who operates a boiler and pressure vessel, is equipped with adequate health and safety information, and written instructions on the safe operation of the equipment.

(3) An employer, occupier, or owner shall ensure that a person engaged for the purpose of conducting a thorough examination or inspection of a boiler, pressure vessel, or piping, as set out in regulation 17 of these Regulations, is competent and duly certified by the Director of Factories.

Certificate of Competency.

17.—(1) Certificates of competency, which may be issued by the Director of Factories under these Regulations include—

(*a*) Authorized Inspector ;

(*b*) Certified Power Engineer ;
(*c*) Certified Refrigeration Engineer ;
(*d*) Certified Power Technician ; and
(*e*) Certified Refrigeration Plant Technician ;

(2) The Director of Factories may issue a certificate of competency, where the applicant—

(*a*) passes the prescribed competency certification examination ;

(*b*) submits an application in the prescribed form and endorsed by the applicant's employer ;

(*c*) fulfils the provisions of regulations 18, 19 and 20 of these Regulations ; and

(*d*) pays the prescribed fees.

(3) A certificate of competency is valid for a period of five years, or such number of years as expressly specified on a certificate; unless the certificate is suspended or cancelled before its expiry date.

(4) The Director of Factories may renew a certificate of competency, provided the applicant—

(*a*) submits an application for renewal in the prescribed form and endorsed by the applicant's employer ;

(*b*) pays the prescribed renewal fees ;

(*c*) submits such other requirements stipulated by these Regulations and the Director of Factories ; and

(*d*) in the case of an expired certificate, submits the requirements contained in paragraphs (*a*)-(*c*) of this regulation within 12 months of the its expiration.

(5) Where a holder of an expired certificate of competency fails to renew as prescribed under sub-regulation (4) (*d*) of this regulation, any subsequent application shall comply with sub-regulation (2) of this regulation.

(6) The Director of Factories may suspend, cancel, or refuse to renew a certificate of competency, where the applicant—

(*a*) is incompetent or lacks reasonable skills ;
(*b*) has failed to comply with these Regulations ; or
(*c*) has falsified report on activities bordering on his professional competence.

(7) Where a certificate of competency is lost or so damaged that it is unusable, a replacement may be supplied upon payment of the prescribed fees.

18.—(1) A person, who conducts an inspection under these Regulations, shall hold a valid certificate of competency as an Authorized Inspector.

Authorized Inspector Certification.

(2) The classes of Authorized Inspector licences are—

(*a*) Authorized Inspector Class 1 Licence ;

(*b*) Authorized Inspector Class 2 Licence ; and

(*c*) Authorized Inspector Class 3 Licence.

(3) An Authorized Inspector Class 1 Licence—

(*a*) qualifies the holder to inspect a boiler, pressure vessel, or refrigeration plant during its manufacture and installation ; and

(*b*) in the case of an "N" endorsement, qualifies the holder to inspect boilers and pressure vessels in nuclear plants during new manufacture.

(4) An Authorized Inspector Class 2 Licence—

(*a*) qualifies the holder to carry out in-service inspection of a boiler, pressure vessel or refrigeration plant ; and

(*b*) in the case of an "N" endorsement, qualifies the holder to carry out in-service inspection of nuclear plants.

(5) An Authorized Inspector Class 3 Licence qualifies the holder to carry out in-service inspection of unfired pressure vessels only.

(6) An "R" endorsement on a class of Authorized Inspector Licence, qualifies the holder to inspect a boiler and pressure vessel undergoing repair or alteration.

(7) The Director of Factories may issue an Authorized Inspector Licence in the appropriate class, where the applicant—

(*a*) pays the prescribed fees ;

(*b*) passes the prescribed examination conducted by the Director of Factories ;

(*c*) is in the regular employment of an Inspection Agency, duly registered by the Director of Factories ;

(*d*) holds the minimum educational requirement of an Ordinary National Diploma in Engineering ; and

(*e*) possesses a minimum of five years' experience in boiler manufacturing, repair, or inspection, verifiable by the National Guild of Boiler Inspectors of Nigeria.

(8) An Authorized Inspector Licence issued pursuant to this regulation is valid for five years, from the date of issue, unless—

(*a*) it is suspended or cancelled before its expiry date ; or

(*b*) the holder of the licence ceases to be in employment of the Inspection Agency, contrary to regulation 18 (7)(*c*) of this regulation, whichever occurs first.

(9) Where a person, who ceases to be in employment of an Inspection Agency, is re-employed within two years of the said unemployment, the Director of Factories may renew his licence ; provided it has not expired for more than 12 months.

(10) An authorized Inspector Licence may be renewed, on the condition that the applicant—

(*a*) submits an application for renewal to the Director of Factories, before the expiration of the licence ;

(*b*) continues to show proof of continuous professional development through an attestation from the National Guild of Boiler Inspectors of Nigeria ; and

(*c*) is in regular employment of an Inspection Agency duly registered by the Director of Factories.

(11) A holder of a certificate of competency pursuant to this regulation shall—

(*a*) ensure that—

(*i*) the boiler or pressure vessel is safely operated and maintained in accordance with these Regulations, and

(*ii*) the pressure relief devices are properly set and protected against unauthorized adjustment ; and

(*b*) review the maximum allowable working pressure of the boiler or pressure vessel, and require the owner or operator of the boiler or pressure vessel to make such adjustments as are necessary for its safe operation, having regard to the design, manufacture, age, condition and operation of the boiler or pressure vessel.

(12) Where an Authorized Inspector perceives that a boiler, pressure vessel, fitting, or piping is in an unsafe operating condition or is being operated in a dangerous manner, he shall—

(*a*) immediately notify the Director of Factories of that fact ;

(*b*) take such steps as are necessary to remove the danger, including affixing a caution seal to the equipment, disconnecting the power or other precautionary means ; and

(*c*) recommend to the Director of Factories to cancel the certificate of registration or certificate of inspection, as the case may be.

Operator Certification.

19.—(1) The classes of operator licences are—

(*a*) First Class Power Engineer ;

(*b*) Second Class Power Engineer ;

(*c*) Third Class Power Engineer ;

(*d*) First Class Power Technician ;

(*e*) Second Class Power Technician ;

(*f*) Refrigeration Engineer ; and

(*g*) Refrigeration Plant Technician.

(2) A First-Class Power Engineer Licence qualifies the holder to operate as Chief Engineer or Shift Engineer of—

(*a*) a high-pressure boiler or high-pressure boiler plant, of any capacity ;

(*b*) a low-pressure boiler or low-pressure boiler plant, of any capacity ; and

(*c*) a refrigeration plant of any capacity.

(3) A Second-Class Power Engineer Licence qualifies the holder to operate as Chief Engineer or Shift Engineer of—

(*a*) a high-pressure boiler or high-pressure boiler plant, with a capacity of not more than 10,000 kilowatts ;

(*b*) a low-pressure boiler or low-pressure boiler plant, of any capacity ; and

(*c*) a refrigeration plant of any capacity.

(4) A Third-Class Power Engineer Licence qualifies the holder to operate as Chief Engineer or Shift Engineer of—

(*a*) a high-pressure boiler or high-pressure boiler plant, with a capacity of not more than 2,000 kilowatts ;

(*b*) a low-pressure boiler or low-pressure boiler plant, of any capacity ; and

(*c*) a refrigeration plant with a capacity of not more than 500 tonnes.

(5) A First-Class Power Technician Licence qualifies the holder to operate, without supervision, on—

(*a*) a low-pressure boiler or low-pressure boiler plant, with a capacity of not more than 5,000 kilowatts ; and

(*b*) a high-pressure boiler with a capacity of not more than 500 kilowatts.

(6) A Second-Class Power Technician Licence qualifies the holder to operate, without supervision, on—

(*a*) a low-pressure boiler or low-pressure boiler plant, with a capacity of not more than 2,000 kilowatts ; and

(*b*) a high-pressure boiler with a capacity of not more than 300 kilowatts.

(7) A Refrigeration Engineer Licence qualifies the holder to operate a refrigeration plant of any capacity.

(8) A Refrigeration Plant Technician Licence qualifies the holder to operate a refrigeration plant with a capacity of not more than 100 tonnes.

(9) The Director of Factories may issue an operator licence, with an endorsement of the area of competence, provided the applicant—

(*a*) passes the prescribed licensing examination ; and

(*b*) pays the prescribed fees.

(10) An operator licence issued pursuant to this regulation is valid for a period of five years, from the date of issue, unless it is suspended or cancelled before its expiry date.

Pressure Welder Certification.

20.—(1) No person is permitted to weld on a boiler, pressure vessel, piping, fitting, or refrigeration plant without a valid licence from the Director of Factories.

(2) The classes of pressure welder licences are—

(*a*) Class MW - Manual Welding ; and

(*b*) Class SW - Semi-Automatic or Machine Welding.

(3) A Class MW Pressure Welder Licence qualifies the holder to weld on boilers, pressure vessels, fitting, piping, and refrigeration plants, using a manual welding process specified in the licence, and subject to limitations with respect to welding variables specified in the licence.

(4) A Class SW pressure welder licence qualifies the holder to weld on boilers, pressure vessels, fitting, piping, and refrigeration plants, using a semi-automatic or machine welding process specified in the licence, and subject to any limitations with respect to welding variables specified in the licence.

(5) A Registered Contractor shall ensure to administer to any pressure equipment welder under its employment, a pressure welder qualification test, through a certified welder engineer approved by the Director of Factories.

(6) The Director of Factories may issue an applicant a pressure welder licence of the appropriate class, on the condition that—

(*a*) the applicant passes the prescribed pressure welder qualification test, pursuant to the provisions of this regulation ; and

(*b*) the Registered Contractor referred to in sub-regulation (5) of this regulation, on behalf of the applicant—

(*i*) applies in writing, to the Director of Factories for a licence of the appropriate class,

(*ii*) submits a record of the welder qualification test issued to the applicant, and

(*iii*) pays the prescribed fees.

(7) The licence issued pursuant to sub-regulation (6) of this regulation shall specify the processes the holder is qualified to carry out and any limitations, with respect to welding variables, the Director of Factories considers appropriate.

(8) A pressure welder licence issued pursuant to this regulation is valid for a period of two years, from the date of its issue.

Administration of Certificate of Competency Examination.

21.—(1) Competency certification examinations shall be administered by the Director of Factories, in consultation with an examination board constituted by the Director of Factories.

(2) The examination board shall ratify the requirements, structure, venue, and passing grade of an examination.

(3) Membership of the examination board shall consist of—

(*a*) a representative from the Federal Ministry of Labour and Employment, appointed by the Director of Factories ;

(*b*) a representative appointed by the National Guild of Boiler Inspectors of Nigeria ;

(*c*) two nominees from companies or organisations using the services of licenced persons ;

(*d*) a representative from Department of Petroleum Resources ;

(*e*) a representative from Institute of Non-Destructive Testing, Nigeria ; and

(*f*) a representative from the Standards Organisation of Nigeria.

(4) A member of the examination board shall hold office for a term not exceeding two years, and may be eligible for reappointment for another term, and no more.

(5) The Examination Board shall be deemed competent to conduct a competency examination, where a minimum of five members of the Board endorse the examination requirements, structure, and passing grade.

Application for Competency Examination.

22.—(1) A candidate for the examination shall submit to the Director of Factories—

(*a*) an application in the prescribed form and prescribed fees ; and

(*b*) evidence of operating experience required for the class of examination applied for, which shall be verified by the National Guild of Boiler Inspectors of Nigeria and the employer, in whose service the candidate has acquired the operating experience.

(2) A candidate for examination to obtain Second Class Power Technician and Refrigeration Plant Technician Licences is not required to submit verification of operating experience.

(3) A person may be accepted as a candidate for examination for a First-Class Power Engineer Licence, where the person is the holder of a valid Second-Class Power Engineer Licence, and for a period of at least 36 months since its issue—

(*a*) has operated as shift engineer of a high-pressure boiler or high-pressure boiler plant, with a capacity greater than 10,000 kilowatts ; and

(*b*) has performed in a supervisory capacity, acceptable to the Director of Factories, on the design, manufacture, installation, repair, maintenance or operation of pressure equipment.

(4) A person may be accepted as a candidate for examination for a Second-Class Power Engineer Licence, where the person is the holder of a valid Third-Class Power Engineer Licence and—

(*a*) for a period of at least 18 months, has operated as shift engineer of a high-pressure boiler or high-pressure boiler plant, with a capacity greater than 5,000 kilowatts ; and

(*b*) for a period of at least 24 months, has performed in a supervisory capacity, acceptable to the Director of Factories, on the design, manufacture, installation, repair, maintenance or operation of pressure equipment.

(5) A person may be accepted as a candidate for examination for a Third-Class Power Engineer Licence, where the person—

(*a*) is a graduate engineer ;

(*b*) has successfully completed an approved course in power engineering, leading to a Third-Class Power Engineer Licence being delivered by the National Guild of Boiler Inspectors of Nigeria ; and

(*c*) has for a period of at least 24 months worked as a process operator, in a role acceptable to the Director of Factories.

(6) A person may be accepted as a candidate for examination for a First-Class Power Technician Licence, where the person holds a Second-Class Power Technician Licence and—

(*a*) for a period of at least 24 months, has operated as a Second-Class Boiler Technician of a high-pressure boiler or high-pressure boiler plant, with a capacity greater than 5,000 kilowatts ;

(*b*) has at least 60 months experience in the operation and maintenance of boilers and other related equipment ; and

(*c*) has completed an approved course by the National Guild of Boiler Inspectors of Nigeria, on boilers and other related equipment.

(7) A person may be accepted as a candidate for examination for a Refrigeration Engineer Licence, where the person—

(*a*) is a graduate engineer ;

(*b*) has successfully completed an approved course by the National Guild of Boiler Inspectors of Nigeria, on refrigeration engineering ; and

(*c*) has a period of at least 60 months' experience in the operation and maintenance of refrigeration plant.

(8) The Director of Factories may deny an application for the examination, where a statement made in an application, reference, or evidence of qualification is false or misleading.

(9) Where the Director of Factories discovers the false or misleading statement described in sub-regulation (8) of this regulation after a certificate of qualification has been issued, he may cancel the certificate.

PART III—MISCELLENEOUS

Forgery of Certificates, False Entries and False Declarations.

23.—(1) A person, who—

(*a*) forges or knowingly makes use of a forged a certificate required pursuant to these Regulations ;

(*b*) gives or signs such certificate knowing it to be false ;

(*c*) impersonates any person named in any such certificate ;

(*d*) falsely pretends to be an inspector, an approved person, or a competent person ;

(*e*) wilfully connives in forging, or signing a certificate required pursuant to these Regulations ;

(*f*) wilfully makes a false entry in a register, notice, certificate or documents required pursuant to these Regulations or the Act ;

(*g*) wilfully makes or signs a false declaration required pursuant to these Regulations ; or the Act ; or

(*j*) knowingly makes use of such false entry or declaration as aforesaid, without prejudice to any other penalty prescribed in these Regulations,

commits an offence and is liable on conviction to—

(*i*) a fine not exceeding ₦500,000,

(*ii*) imprisonment for a term not exceeding 12 months, or

(*iii*) both fine and imprisonment.

Accident Investigation.

24.—(1) The Director of Factories may inaugurate an ad hoc Accident Investigation Board to investigate the causes of accidents involving boilers, pressure vessels, and piping.

(2) The membership of the adhoc Accident Board shall consist of—

(*a*) an engineer experienced in the design, manufacture, installation, repair, alteration and other operations of boiler and pressure vessels, and who has so practiced for a period of at least five years ;

(*b*) an Authorized Inspector, who has so practiced for a period of at least five years ; and

(*c*) an Inspector of Factories, experienced in boiler and pressure vessel operations.

(3) A member of the Accident Investigation Board shall not be a person with vested interest, either directly or indirectly, in matter being investigated.

(4) Matters adjudicated by the Accident Investigation Board shall be referred to an Appeal Board, where a party is not satisfied with the outcome of the adjudication.

Powers of Factory Inspectors.

25. —(1) A Factory Inspector shall, for the purposes of executing these Regulations, have power to—

(*a*) call on a factory, including oil field installations, to audit the compliance of the employer, occupier, or owner to the provisions these Regulations and of Section 15 of the Mineral Oils (Safety) Regulations, when he has reasonable cause to believe that—

(*i*) a person is being employed to operate a boiler or pressure vessel ; or

(*ii*) that a boiler or pressure vessel is being manufactured, altered, repaired, maintained, or used therein ;

(*b*) where he reasonably believes a boiler, pressure vessel, or a refrigeration plant is unsafe, order—

(*i*) by written notice, for a test and thorough examination to be carried out by an Authorized Inspector of his choice, at the expense of the employer, occupier, or owner, and

(*ii*) that once the notice referred to in sub-paragraph (*i*) of this regulation is served, the boiler, pressure vessel, or a refrigeration plant shall not be operated, until the Authorised Inspector certifies it safe for operation ; and

(*c*) to exercise such other powers stipulated in Sections 65 and 66 of the Factories Act, necessary to give full effect to the provisions of these Regulations.

Appeals.

26. An appeal arising out of the adjudication referred to in regulation 24 of these Regulations shall lie directly to the Appeal Board, constituted under the Act, and the decision or order of the Appeal Board is final and not open to review, except in the case of an error of law or jurisdiction.

Citation.

27. These Regulations may be cited as the Factories (Boiler and Pressure Vessel) Regulations, 2018.

MADE at Abuja this 18th day of December, 2018.

SENATOR (DR) CHRIS NWABUEZE NGIGE OON, MD, KSJI.
Honourable Minister of Labour
and Employment

EXPLANATORY MEMORANDUM

(*This memorandum does not form part of these Regulations, but is intended to explain its purport*)

These Regulations make provisions for the safety of persons coming in contact with or involved in the manufacture, fabrication, installation, use, or maintenance of boilers, other pressure vessels, refrigeration plants, or piping in a workplace in Nigeria.