Ministry of Defence

Defence Infrastructure Organisation

Technical Standard for the Implementation of the Medium Combustion Plant Directive and Specified Generator legislation

Technical Standard – MCPD - 01

ESTATE MANAGEMENT

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Equality and Diversity Impact Assessment

This policy has been Equality and Diversity Impact Assessed in accordance with the Department's Equality and Diversity Impact Assessment Tool against:

Part 1 Assessment Only (no diversity impact found)

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Foreword

This Technical Standard here after known as 'the Standard' is published by Defence Infrastructure Organisation (DIO) for application across all areas of the MoD. This standard is mandated for all contracts including USVF, overseas and PFI arrangements.

Document Synopsis

The aim of this Technical Standard is to provide guidance and direction on how to achieve compliance with the Medium Combustion Plant Directive (Directive (EU) 2015/2193) and domestic Specified Generator Regulations (England, Wales and N.I only), which apply to relevant combustion and electrical generation plant found on MoD establishments.

Medium combustion plant and specified generator controls exist to reduce air pollution and lessen the risks to human health and the environment through the regulation of SO_2, NO_x and particulate matter (fine dust) to atmosphere.

In order to comply with the regulations the Ministry of Defence are required to obtain environmental permits for all medium sized combustion plant and specified generators by the relevant dates as per this Technical Standard.

Information presented within this Technical Standard should enable persons to:-

- Identify medium combustion plant (MCP) and specified generators (SG) that are in scope of the new regulations.
- Understand and apply relevant emission limit values (ELV) to plant dependant upon thermal input, fuel type and age.
- Understand the timeline of implementation associated with the MCP Directive.
- Understand the environmental permit application process and the role of the regulator.
- Understand operator requirements for the purposes of environmental permitting and maintaining legal compliance– emissions testing, record keeping, management systems etc.
- Identify options to achieve compliance.

Contents

Glossary

Abatement	General term used to describe methods of direct pollution control such as the use of filters or chemical reagents or processes for the purpose of minimising or eliminating a substance from entering the environment.
Aggregator	Organisation generating electricity sold to the National Grid under any capacity contract
Air Quality Modelling	Computer predicted dispersion of pollution emissions in the atmosphere
AMPS	The Association of Manufacturers and Suppliers of Power Generating Systems
AQMA	Air Quality Management Area. Locations in the UK designated by local authorities as having air pollution problems that exceed the government objectives on clean air and require improvement.
BAT	Best Available Technique - Technical term applied in permitting legislation intended to describe the requirements for the best available methods to be applied in the implementation of pollution abatement
Capacity Contract	A contract with the National Grid to supply electricity. These have various names depending on how they are set up such as Triad, FIT etc.
CEM's	Continuous Emissions Monitoring
CHP	Combined Heat and Power generation
CO_2	Carbon Dioxide
Common Windshield	Where several chimney/exhaust stacks are grouped together for the same purpose of venting combustion gases to the atmosphere.
CV	Calorific Value
DPF	Diesel Particulate Filter
Dual Fuel	Equipment that is capable of operating on liquid or gaseous fuels
EGR	Exhaust Gas Recirculation
ELV	Emission Limit Value
EMS	Environmental Management System
Environmental Permits	Licences issued by the Environment Agency, Natural Resources Wales, Northern Ireland Environment Agency, Scottish Environmental Protection Agency and Local Authorities in British territories intended to control excessive pollution to the environment.
Generator	Any device designed to generate electricity
GT	Gas Turbine
GTL	Gas to Liquid synthetic fuels
H_2O	Water
HFO	Heavy Fuel Oil (Sometimes know as bunker fuel or residual fuel oil)

IED	Industrial Emissions Directive
IMO	International Maritime Organisation Standards for Marine engines
ISO	International Standards Organisation
K	temperature measured in Kelvin
LAPPC	Local Authority Pollution Permitting Control
LPA	Local Planning Authority (Borough, District or County Council)
MCERTS	Environment Agency's Monitoring Certification Scheme for measuring instrumentation accuracy and reliability
MCP	Medium Combustion Plant
MCPD	Medium Combustion Plant Directive
$mgNm^3$	Standardised method of measuring pollutant concentrations in a defined volume of air. Milligrams in one Newton Meter volume of air/gas.
MWth	Mega Watt Thermal
MWth input	Total amount of energy inputted into a system
MWth output	Total amount of energy output from a system
N_2	Nitrogen
NACE	Nomenclature of Economic Activities (Nomenclature statistique des Activités économiques dans la Communauté Européenne)
NG	National Grid
NO_2	Nitrogen Dioxide
NO_X	Oxides of Nitrogen
NPPF	UK National Planning Policy Framework
NRMM	Non Road Mobile Machinery Regulations
O_2	Oxygen
Pa	Pressure measured in Pascal
Part B Permit	Permits regulated by Local authorities (County, District and Borough Councils)
Particulate matter	Fine dust considered to be smoke in the context of liquid and gas fuel combustion.
PFI	Private Finance Initiative eg. Sites operated and maintained by 3rd party investment
PPA	Power Purchase Agreements. Heat, Gas and Electrical Generation systems owned and operated by 3rd party supplier.
PPP	Public-Private Partnership, an arrangement whereby a public project or service is partially financed or run by a private company

RAMSAR	The preservation and conservation convention on wetlands of international importance (named after the Iranian city of Ramsar where the convention was signed in 1971) e.g. Arun valley, The New Forest
SAC	Special Areas of Conservation e.g. Dungeness
SCR	Selective Catalytic Reduction
SD	Shut Down
Secondary abatement	Can by catalytic converters or particulate filters
SG	Specified Generator
SO_2	Sulphur Dioxide
SoS	Secretary of State
SPA	Special Protection Areas e.g. Dorset Heathlands
SRP	Standard Rules Permits
SSSI	Site of Special Scientific Interest
Statutory Nuisance	Nuisance caused by noise, dust, smell or effluvia that would be considered to be an unreasonable interference with the use and enjoyment of a persons private property.
STP	Standard Temperature and Pressure
STOR	Short Term Operating Reserve.
SU	Start Up
TGN	Technical Guidance Note
Transitional arrangements	The phasing in of equipment over time into environmental compliance depending on classification
UKAS	United Kingdom Accreditation Service
WHRB	Waste Heat Recovery Boiler

1. MCPD Regulatory Framework

1.1 Introduction

1.1.1 Medium combustion plant (MCP) and specified generator (SG) permits protect the environment and limit pollutant emissions to air only.

1.1.2 The permits are standalone unless the MCP or SG is part of :

- An Industrial Emissions Directive (IED) installation permit.
- A part B environmental permit.

Where an environmental permit is already in place, you may need to contact the regulator and vary your permit to include MCP or SG requirements.[1]

The regulations set the emission limit values your MCP or SG must meet. The emission limits are conditions of the permit.

1.2 Medium Combustion Plant (MCP)

1.2.1 MCP regulations apply to MCP burning any fuel with a capacity of more than or equal to 1 megawatt thermal input (MWth) and less than 50MWth input.

1.2.2 MCPs are classed as 'new' or 'existing'.

1.2.3 MCP regulations can apply to static or mobile plant.[2]

1.2.4 If your MCP does not generate electricity, then only the MCP regulations apply.

1.2.5 If your MCP generates electricity, then both the MCP and specified generator regulations may apply.

1.3 Generators

1.3.1 A generator is a combustion plant that generates electricity.

1.3.2 The specified generator regulations apply to generators with a capacity up to 50MWth input burning any fuel.

1.3.3 Generators are classed as 'Tranche A' or 'Tranche B'.

1.3.4 Some generators are excluded from the regulations and may not require an environmental permit. Tranche A generators benefit from extended transitional arrangements. Tranche B generators require a permit immediately.

[1] *See section 10 for further details on how to vary an environmental permit.*
[2] *See section 2 for further guidance as to whether your plant is in scope.*

1.4 MCP and SG

1.4.1 The MCP and SG regulations have different sets of criteria to assess against. If the MCP generates electricity both sets of controls may apply.

1.4.2 If both MCP and SG regulations apply the stricter of the two regulations will apply. You must obtain your environmental permit by the earliest deadline set in the regulations.

1.5 Legal Operator

1.5.1 For the purposes of any Environmental Permit application the 'legal operator' shall be the Head of Establishment or Commanding Officer for each respective site.

1.5.2 The HoE/CO shall ensure that relevant staff and contractors comply with this Technical Standard and any subsequent environmental permit conditions.

1.5.3 The HoE/CO shall ensure that a suitable Environment Management System is in place to ensure that conditions of any Environmental Permit are complied with.[3]

1.6 Application of this Standard Elsewhere

1.6.1 The Ministry of Defence's position on environmental compliance is set out within the Secretary of State's Policy Statement (2018)

"Within the United Kingdom the MoD complies with all applicable Health Safety and Environmental Protection legislation."

"Overseas, we will comply with the laws of Host States, where they apply to us, and in circumstances where such requirements fall short of UK requirements, we will apply UK standards so far as it is reasonably practicable to do so."

1.6.2 The Medium Combustion Plant Directive applies to all member states of the European Union. Within the European Union the MoD would be expected to follow regional guidance from the Regulator and comply with Medium Combustion Plant Directive emission limit values, implementing local requirements as specified by the Regulator.

1.6.3 Outside of the European Union the SoS's policy applies MCPD emission limit values and compliance deadlines to the MOD's overseas estate, so far as it is reasonably practicable to do so.

1.6.4 Within the original EU Directive medium combustion plants located in remote locations are exempt from emission limit values because of the technical and logistical issues associated with such plants' isolated location. Instead members are advised to set emission limit values for such plants to reduce their emissions to air and the potential risks to human health and the environment.

1.6.5 Where medium combustion plant is situated outside of the EU in a 'remote' location, or there are significant logistical and technical issues which prevent compliance with the MCPD, the Head of Establishment

[3] *JSP 418 'Management of Environmental Protection in Defence' (Dec 2014) and JSP 418 'Leaflet 2 Pollution Prevention' (2010) provide additional internal guidance on how the MoD comply with environmental legislation.*

shall produce policy to ensure Host States requirements are met and the risk to human health and the environment is as low as is reasonably practicable.

1.6.6 The contents of this Technical Standard is applicable to all in scope Medium Combustion Plant and Specified Generator equipment found on MoD Establishments occupied by the United States Visiting Forces (USVF)

1.6.7 The contents of this Technical Standard is applicable to all in scope Medium Combustion Plant and Specified Generator equipment found on MoD Establishments managed under PFI, PPP or PPA arrangements.

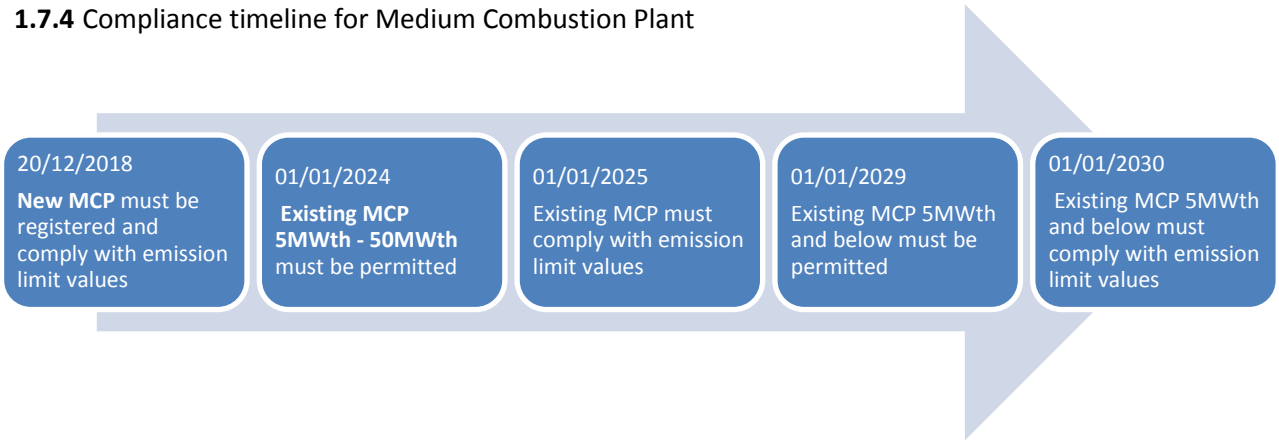
1.7 Legislation

1.7.1 The MCPD (Directive 2015/2193/EU) forms part of the European Union's Clean Air Policy Package (2013) and aims to fill the gap in regulation between Large Combustion Plants (>50MWth), covered under the Industrial Emissions Directive, and smaller appliances (heater and boilers<1MWth) covered by the Ecodesign Directive.

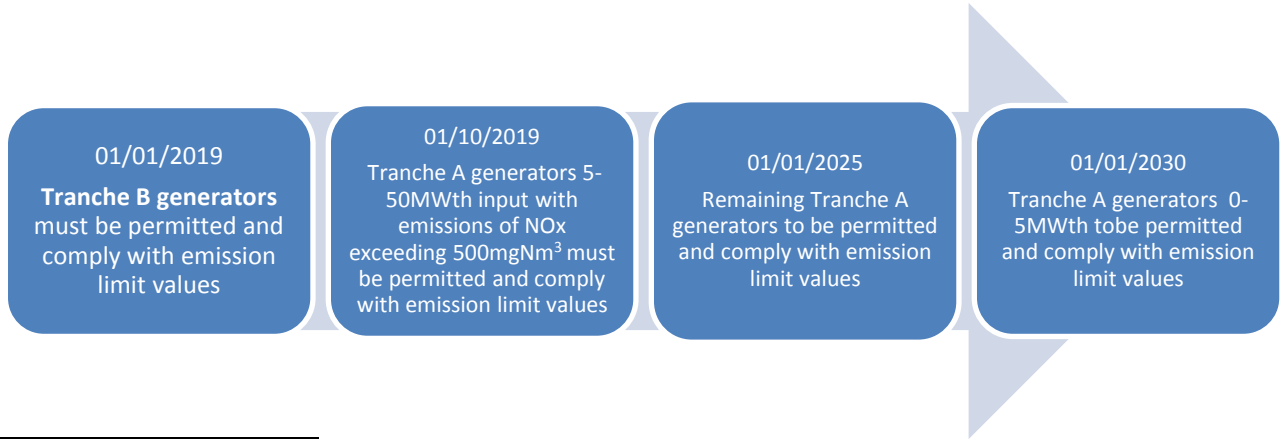
1.7.2 Medium Combustion Plants must comply with Emission Limit Values (ELV) specified within Annex II of the Directive by the relevant date.[4]

1.7.3 Most Specified Generators will need to comply with the Emission Limit Value of 190mg/Nm^3 NO_x[5]

1.7.4 Compliance timeline for Medium Combustion Plant



1.7.5 Compliance timeline for Specified Generators



[4] *See 13.1 Appendix 1 for ELVs*

[5] *at standard temperature and pressure (273.15K and 101.3kPa) with a correction for the water vapour content of the waste gases to dry gas, standardised to O2 concentration of 15%.*

1.7.6 In England and Wales the EU Directive has been implemented via the Environmental Permitting Regulations (2018). Schedules 25A and Schedule 25B relate to the MCPD and domestic Specified Generator Controls.

1.7.7 In Scotland the Pollution Prevention and Control (Scotland) Regulations 2012 were amended in December 2017 to include the requirements of the EU directive. Emissions controls on generators are still being considered.

1.7.8 In Northern Ireland the Pollution Prevention and control (Industrial Emissions) Regulations (Northern Ireland) 2013 were amended in February 2018 to transpose the requirements of the Medium Combustion Plant Directive. The amended regulations include reference to Specified Generators within Schedule 9B.

1.7.9 Responsibility for regulating the MCPD and SG regulations has been devolved to the following bodies within the United Kingdom:

England - Environment Agency (EA)
Scotland - Scottish Environmental Protection Agency (SEPA)
Wales - Natural Resources Wales (NRW)
Northern Ireland - Northern Ireland Environment Agency (NIEA)

1.7.10 A tiered approach has been taken towards the process of permitting Medium Combustion Plants and Specified Generators which takes into account the level of risk posed to ecological and human health receptors.

- Standard Rules Permit
- Simple Bespoke – low Risk
- Complex Bespoke – high Risk

The complexity of Permit Applications increases depending upon the sensitivity of receptors and the potential impacts of emissions. Where sites are located close to human health receptors or sensitive ecological sites (SSSI's, SPAs, SACs, RAMSAR) it is advised that Environmental Consultants are engaged to ensure emissions and their impacts are adequately addressed.[6]

[6] *See Section 5 further for further details re: the Permit Application Process.*

1.8 Planning requirements

1.8.1 The 'Planning and Compulsory Purchase Act 2004' Part 7 and The Planning Reform (Northern Ireland) Order 2006 applies 'the planning Acts' to the Crown, as such new MCP installations will require planning consent from the relevant body. The National Planning Policy Framework (NPPF) gives further guidance on how to proceed should there be concerns regarding national security.

1.8.2 New developments which include standby plant/back up power generation will require planning consent. NPPF guidance regarding the Crown Estate should be consulted prior to submitting any application.

1.8.3 Existing MCP may require planning consent, if not already granted.

1.8.4 Where new installations are proposed, the impacts upon air quality should be considered as part of the initial scoping process. Air quality assessments may be required by the Local Planning Authority (LPA) to determine the potential impacts upon nearby sensitive receptors (human health/ecological). These should be prepared by a suitably qualified environmental consultant. Air quality assessments should be submitted to the relevant LPA for review as part of the planning process.

1.8.5 Where planning consent for existing/new MCP is sought the MoD will need to consider the likelihood of causing a statutory nuisance, particularly where plant is located in close proximity to residential receptors. [7] The LPA will seek to ensure that no statutory nuisance is caused by any retrospective or new MCP/SG application. MCP/SG operations must not cause a 'statutory nuisance' as defined by the Environmental Protection Act (1990) e.g. dark Smoke, noise or odour. [8]

1.8.6 Where MCPs are located within Air Quality Management Areas (AQMA) stricter control over emissions and restricted operating hours may apply. This will also be the case where assets are located in close proximity to ecological receptors with European designations such as Special Areas of Conservation (SAC), RAMSAR sites or SSSI's.[9]

[7] Further guidance can be found in 'Leaflet 4 Statutory Nuisance JSP 418' MOD (2010).

[8] Further guidance on abatement to eliminate the potential for any 'statutory nuisance' can be found in section 12.

[9] For further information as to how AQMAs and designated conservation sites can be identified see sections 6.1.4 and 6.2.5.

2. Medium Combustion Plant (MCP)

2.1 MCP definition

2.1.1 A Medium Combustion Plant includes all the following:

- a combustion unit, such as an engine, boiler or turbine
- any abatement
- the attached stack or flue
- air cooling where it's part of the combustion unit

2.1.2 A MCP does not include:

- fuel handling or storage
- waste handling equipment
- external water or air cooling

2.2 Excluded Plant - MCPD controls do not apply to the following

(a) combustion plants covered by Chapter III or Chapter IV of the Industrial Emissions Directive (IED)

(b) combustion plants covered by the 'Non Road Mobile Machinery Regulations'

(c) combustion plants in which the gaseous products of combustion are used for the direct heating, drying or any other treatment of objects or materials;

(d) combustion plants in which the gaseous products of combustion are used for direct gas-fired heating used to heat indoor spaces for the purpose of improving workplace conditions. This is where the flame itself provides the heat, rather than where the flame heats a fluid that is then used to transfer heat to the surrounding work space;

(e) post-combustion plants designed to purify the waste gases from industrial processes by combustion, and which are not operated as independent combustion plants;

(f) any technical apparatus used in the propulsion of a vehicle, ship or aircraft;

(g) gas turbines and gas and diesel engines, when used on offshore platforms;

(h) test beds for engines and turbines;

(i) commissioning trials for a new combustion plant;

(j) firefighting training facilities - MCPD controls do not apply because the training facility uses the smoke not the heat generated.

2.3 Mobile MCPs and mobile boilers

2.3.1 MCPD controls apply to mobile MCP placed on the market (for distribution or use) before 1 January 2017 and with an engine above 560 kilowatt (kW) drive output.

2.3.2 MCP placed on the market before 1 January 2017 but not operated for the first time until after 20 December 2018, is classed as a new MCP rather than an existing MCP.

2.3.3 MCPD controls do not apply to mobile MCP placed on the market after 1 January 2017. They're covered by the revised Non Road Mobile Machinery Regulations (NRMM). [10]

2.3.4 MCPD controls do apply to a mobile boiler on a trailer for transporting it from site to site.

2.4 Calculating and establishing MCP Capacity

2.4.1 MCPD controls apply to all in scope MCPs with a rated thermal input of each unit between 1MWth and 50MWth regardless of the type of fuel used.

2.4.2 Rated thermal input is the capacity of the MCP. It's calculated using the net calorific value (CV) not the gross CV.

You can:

- ask the manufacturer for this value[11]
- calculate it using Association of Manufacturers of Power generating Systems (AMPS) method[12]

2.4.3 You must aggregate 2 or more separate MCP on the same site when the MCPs are new.

2.5 New or Existing MCP

2.5.1 If a plant has been 'put into operation' before 20 December 2018 it is deemed to be an existing MCP. If the MCP has been fired to its full load with the fuel it's designed to use then it has been 'put into operation'.

2.5.2 A MCP is new if it was 'put into operation' on or after the 20 December 2018.

2.5.3 Where an existing MCP undergoes significant refurbishment and refurbishment costs are in excess of 50% of the cost of a new comparable MCP then it will be classed as a new MCP.

2.5.4 Where any alterations or repair works result in increased emissions, the plant will be classified as new.

2.5.5 Emission limit values are dependent on whether the MCP is 'new' or 'existing'. New MCPs will have stricter emission limit values. [13]

[10] These regulations extended the scope of the previous NRMM Directive (engines up to 560kW drive) to include engines with no upper size threshold.

[11] Some burners/equipment will have a variable operating range. When this is the case it is recommended MCP capacity should be calculated using the methods recommended by AMPS based on fuel consumption.

[12] See Appendix 2 (13.2)

[13] See Appendix 1 (13.1)

2.6 Aggregating MCP

2.6.1 Only new MCP on the same site should be aggregated - treated as one discharge.

2.6.2 Where MCPs share a 'common windshield', a shared structure or stack which may contain several flues the net rated thermal input for each plant can be added together to create one MCP as long as the capacity discharging does not exceed 50MWth.[14]

2.6.3 Aggregating discharge points can improve dispersion. Operators must not avoid aggregation by separating discharge points in order to minimise cost.

2.6.4 Existing MCP should be treated separately and permitted individually.

2.7 Emission Limit Values[15]

2.7.1 A new MCP must meet ELVs from 20 December 2018 or before you commission your new MCP.

2.7.2 A new MCP that is not an engine or gas turbine the ELVs are listed in part 2, table 1

2.7.3 A new MCP that is an engine or GT the ELVs are listed in part 2, table 2

2.7.4 An existing MCP that is not an engine or GT between more than 5 and less than 50MWth the ELVs are listed in part 1, table 2 – it must meet these by 1 January 2025

2.7.5 An existing MCP that is not an engine or GT between greater than or equal to 1 and less than 5MWth the ELVs are listed in part 1, table 1 – it must meet these by 1 January 2030

2.7.6 An existing MCP between 1 and 50MWth which is an engine or GT the ELVS are listed in part 1, table 3 – it will depend on its capacity as to what deadline applies.

2.7.7 You must refer to the notes with the tables.

2.8 Co-fired and multi fuelled MCPs (2 fuels used simultaneously)

2.8.1 Calculate the MCPs total rated input (net calorific value) and fuel consumption for the monitoring period.

2.8.2 Dual fuel MCP's – Different ELVs apply where different fuels are fired on the same MCP separately. For example, liquid fuel is used as a backup fuel if the natural gas supply is interrupted. Where dual fuels are used you normally need to apply for a bespoke MCPD permit.[16]

2.8.3 Gas Turbine with supplementary firing – two different ELVs apply where a gas turbine has a supplementary fired waste heat recovery boiler (WHRB) – one for the gas turbine and one for the boiler. Where both the Gas Turbine and boiler are being fired, or the gas turbine alone, the Gas Turbine ELV applies at 15% O2. Where the WHRB is being fired alone (auxiliary mode), the boiler ELV applies at 3% O2.

[14] *Above 50MWth the Industrial Emissions Directive applies.*
[15] *Full tables available in Appendix 1 (13.1)*
[16] *Exemptions may apply in this situation see 2.9.3.*

2.9 Emission Limit Values – Exemptions

2.9.1 Existing MCPs operating less than 500 hours per year as a 5 year rolling average are exempt from meeting MCPD ELVs.

2.9.2 New MCPs operating less than 500 hours per year as a 3 year rolling average are exempt from meeting MCPD ELVs.

2.9.3 If a dual fuel MCP uses its backup fuel for less than 500 hours per year (over the rolling average) the MCP is exempt from meeting the ELVs that apply to the backup fuel.

2.9.4 An MCP that is also a Part B activity (LAPPC) must comply with MCPD ELVs even if the MCP operates for less than 500 hours per year on a:

- 5 year rolling average – existing.
- 3 year rolling average – new.

However, you do not need to monitor every year. Instead you must monitor every 500 operating hours or every 5 years, whichever comes first.

2.10 ELV Exemptions extension to 1,000 hours

2.10.1 ELV - You can extend the 500 operating hours per year to 1,000 operating hours per year when you use an emergency or standby MCP:

- for backup power generation in islands when the power supply is interrupted.
- to supply heat in exceptionally cold weather – **this will be determined by the regulatory body**.

2.11 How to calculate operating hours

2.11.1 Operating hours start from when the MCP is operating and discharging emissions to air. The clock starts ticking at the end of start up (SU) and stops at the beginning of shut down (SD).

2.11.2 The regulators have adopted the IED rule on SU and SD. This defines a minimum start up load and a minimum shut down load for stable generation. Below this the combustion unit cannot deliver:

- its output to the national grid (NG) safely and reliably.
- useful heat or electricity to an industrial or commercial site.[17]

2.11.3 For each MCP you must record its SU and SD value. This means one of the following:

- the SU and SD thresholds as a fixed percentage of rated output.[18]
- Or the physical state of the MCP such as a valve opening which indicates stable operation.

2.11.4 You must keep SU and SD periods as short as possible.

2.11.5 For Gas Turbines, ELVs apply above 70% full load, so the SU and SD value is 70% full load.

[17] *See the detail in the Joint Environmental Programme (JEP) guide: IED compliance protocol for utility boilers and GTs.*
[18] *Manufacturers usually recommend a minimum percent load for their engines depending on the fuel. For example, typically 30% for diesel engines. The regulators will accept this where the value is not determined.*

2.11.6 The first 12 month period starts on the day the permit is issued. You need to add up the operating hours of the first 5 or 3 year period and take the average. Thereafter the following 12 month period is added and the first 12 month period dropped off and you calculate a new average.

2.11.7 If your MCP qualifies for a 500 hour exemption it can run for more than 500 hours per 12 month period but it must not exceed:

- 2,500 hours over 5 years.
- 1,500 hours over 3 years.

2.11.8 The maximum number of operational hours allowed in a single 12 month period is 750:

- before the MCP's 5 or 3 year rolling operational period starts.
- if the MCP closes before the 5 or 3 year operational period ends.

2.11.9 You must keep records of each 12 month period of operational hours for each MCP for 6 years.

2.11.10 You must tell the regulator if any MCP exceeds the 500 hour annual operational limit in one 12 month period.

2.11.11 You must prove that you have not exceeded the 500 hours rolling average over 5 or 3 years.

2.12 Fuel supply interruption

2.12.1 When there's a shortage of fuel supply or it's stopped or interrupted, the regulator can suspend you from ELV compliance. If you normally operate your MCP with:

- low sulphur fuel and cannot because of an interruption to fuel supply – you can get a suspension for up to 6 months.
- natural gas and you need to fire on standby liquid fuels (which would need secondary abatement to meet MCPD ELVs) – you can get a suspension for up to 10 days or longer.

You must write to the regulator to:

- tell them why you need a suspension and the likely length required.
- provide evidence of fuel interruption and why you must maintain energy supplies.

2.13 MCP Monitoring requirements (Frequency)

2.13.1 For a new MCP you must commence monitoring emissions within 4 months of the permit being issued or at the start of operation, whichever is the latest.

2.13.2 For an existing MCP you must start monitoring within 4 months of permit issue.

2.13.3 You are required to do periodic monitoring at least every:

- 3 years for a MCP less than or equal to 20MWth.
- year for a MCP greater than 20MWth.

2.14 MCP Monitoring requirements. (Method)

2.14.1 Technical Guidance Note M5[19] details the techniques and procedures to be followed when sampling to demonstrate compliance.

2.14.2 MCERTS accredited analysis is not required for all MCP/SG applications. Where non- MCERTS accredited service engineers are used to demonstrate compliance, the following must be implemented as a minimum standard:

- Portable measuring systems must be selected that have met the requirements of MCERTS certification for emission monitoring systems. Measurement systems that meet the requirements of EN-50379-2 may be used until 1st January 2025.
- Instrumentation used will need to be calibrated annually as per TGN M5, evidence of this shall be provided by the test house/service organisation.
- Service engineer organisations shall have monitoring procedures that meet the requirements of TGN M5 and these procedures shall be documented in a management system such as ISO 9001 which has been certified by a third party that has been accredited by UKAS.
- If particulate matter testing is required, this must be carried out by an organisation with MCERTS accreditation for EN-13284-1.

[19] *See ref no. 8*

3. Specified Generators (SG)

3.1 Specified Generator definition

3.1.1 A generator is a combustion plant that generates electricity, including:

- engines.
- gas turbines.
- boilers – that operate as a combined heat and power combustion plant.

A direct drive and heat only combustion plant is not classed as a generator. But it's still a medium combustion plant (MCP).

3.1.2 The term **'specified generator'** covers an individual generator or a number of generators if they're:

- on the same site.
- operated by the same operator.[20]
- for the same purpose. (generating electricity)

3.1.3 Generators are still classed as operating for the same purpose if they're:

- using different fuels or technologies.
- under contract for a capacity marketing agreement or to provide a balancing service.

3.1.4 If you have more than one generator on your site you'll need to aggregate your generators into a specified generator. You'll need one 'specified generator' permit for the site.

3.1.5 Specified Generators can have a thermal input of less than 1MWth and may not operate continuously.

3.1.6 Compliance dates for Specified Generators are dependant upon the age, size, emissions, operating hours and participation in National Grid contracts. *(This may include Demand Side Response, Firm Frequency Response, Feed in Tariffs and Capacity Market Agreements)*

3.1.7 Specified Generators can be both Specified Generators and Medium Combustion Plants. Where this is the case, the earlier permitting and more stringent emission limit values apply.

3.2 Excluded generators

3.2.1 These generators are excluded from specified generator controls (*for a MCP that generates electricity you must also check if the MCP is excluded from the MCPD controls)* :

- Chapter 2 or 3 Industrial Emissions Directive (IED) installations.
- Generators that are part of an IED installation under chapter 2 or 3 are excluded.[21]

[20] Operator is defined as per EA definition see ref no.13

[21] However, the regulators will use the MCPD and specified generator requirements to inform the site-specific best available techniques. These are the minimum standards they will apply. See section 10 for further info.

3.2.2 Nuclear safety role - Generators that have a defined nuclear safety role under a nuclear site licence issued by the Office for Nuclear Regulation are excluded.

3.2.3 Emergency backup generators - From 1 January 2019, a backup generator only used to provide power at a site during an emergency is excluded. *However, it is a MCP and requires a permit by the appropriate deadline.*

Using a backup generator for the following is not classed as emergency use:

- providing a balancing service. (whether procured or not)
- demand side response operations such firm frequency response.

For an on-site emergency, there's no restriction on the total number of hours:

- a backup generator can operate for – operators must try to reduce the period and frequency of emergency use.
- 'black start' backup generators can operate for.

3.2.4 Number of hours you can test backup generators

You must not carry out more than 50 hours testing a year for each backup generator. You must get agreement in writing from your regulator if you want to increase this limit. The regulator can exclude commissioning time within the written agreement.

For each backup generator, you must record the number of hours you test during the year. This is to demonstrate that you meet the exclusion criteria.

If you exceed the limit of 50 hours testing a year without written agreement the regulator will take appropriate enforcement action.

3.2.5 Data centres - Data centres that use an on-site emergency backup generator when the transmission frequency is unstable are excluded. This is provided the generator is not part of a formal agreement or contract.

3.2.6 How to test backup engines[22]

When you test backup engines you should aim to:

- stagger the tests if you have multiple backup engines.
- keep testing times and frequency to the minimum, just enough to demonstrate reliability at the appropriate load.
- only test when you expect low ambient nitrogen oxides (NOx) background, such as not during peak traffic periods.
- use the electricity generated from the test on your site.
- install backup generators away from sensitive receptors (not below windows or venting onto car parks) and terminate the exhaust flues vertically, making sure there are no obstructions.

[22] R*egulator guidance only – not mandatory*

3.2.7 Offshore generators - Generators operated offshore are excluded.

3.2.8 Gas storage and unloading platforms - Generators installed on a gas storage or unloading platform are excluded.

3.2.9 Mobile generators

The owner of the mobile generator is responsible for its compliance with specified generator controls.

Specified generator controls do not apply to a mobile generator that is designed to move or be moved (on roads or land). However, the controls do apply if it:

- generates electricity for the national transmission or distribution system to cover a specified generator that's out of operation.
- performs a function that a static generator could do.

3.2.10 Mobile generators on construction sites - Specified generator controls do not apply to a mobile generator used on a construction site.

3.3 Capacity

3.3.1 Specified generator controls, unless excluded, apply to generators with a rated thermal input between 1MWth and 50MWth.

3.3.2 They also apply to generators less than 1MWth, if they:

- have a capacity agreement or an agreement to provide a balancing service.
- are part of a specified generator group which in total has a rated thermal input[23] of between 1MWth and less than 50MWth.

3.4 More time to comply – who qualifies?

3.4.1 Some operators have more time to get their permit in place and comply with permit conditions (this is called a transitional arrangement).

3.4.2 You can use the transitional arrangement if one of the following applies:

- your generator was already operating before 1 December 2016
- you already had a contract to provide services to the national grid (capacity agreement, balancing service contract or feed-in tariff (FIT) accredited application) before 31 October 2017

3.4.3 The regulators consider that a capacity contract is the same as a capacity agreement.

3.4.4 These are called 'Tranche A' generators.

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[23] Rated thermal input is the capacity of the specified generator. It's calculated using the net calorific value (CV) not the gross CV. You can ask the manufacturer for this value or you can calculate it using Association of Manufacturers of Power generating Systems (AMPS) method. See Appendix 2 (13.2)

3.4.5 Contracts made after 31 October 2017 can only get Tranche A status if the generator stopped generating for the contract and it ended before 31 December 2018.

3.4.6 Those that do not qualify are called 'Tranche B' generators. They must be permitted immediately as the compliance deadline of 1 January 2019 has passed.

3.5 Qualifying for Tranche A – less than 1MWth

3.5.1 A generator with a rated thermal input of less than 1MWth is classed as Tranche A if it meets any of these conditions:

- it's under a capacity agreement from the 2014, 2015 or 2016 capacity auctions. (regardless of when the generator came into operation)
- it's under an agreement to provide a balancing service entered into before 31 October 2017.
- an application for a FIT preliminary accreditation was received by the Gas and Electricity Markets Authority before 1 December 2017.
- Where an aggregator is involved, the date of the capacity agreement is the date of the contract between the aggregator and the National Transmission System Operator.

3.6 Qualifying for Tranche A – between 1MWth and under 50MWth.

3.6.1 A generator with a rated thermal input of between 1MWth and under 50MWth is classed as Tranche A if it meets any of these conditions:

- it came into operation before 1 December 2016 or it's under a capacity market agreement or a balancing service contract from the 2014, 2015 or 2016 capacity auctions. (regardless of when the generator came into operation)
- an application for a FIT preliminary accreditation was received by the Gas and Electricity Markets Authority before 1 December 2016.

Where an aggregator is involved, the date of the capacity agreement is the date of the contract between the aggregator and the National Transmission System Operator.

3.6.2 A contract is the binding agreement between the National Transmission System Operator and the supplier – this is a legal contract. For a balancing service, a Short Term Operating Reserve (STOR) contract is made when National Grid issue a STOR Tender Acceptance. That creates the STOR contract for the provision of the service.

3.7 Deadlines you must meet

3.7.1 The permitting date is the date by which you must have a permit in place.

3.7.2 If you have aggregated your generators into a specified generator, the term 'relevant date' is also used. This is the earliest date by which you must have your permit in place. You work out your relevant date by taking all generators on your site and assessing which has the earliest permitting date.

3.8 Deadlines for individual specified generators

3.8.1 To work out your permitting date and compliance date for an individual specified generator, you must work out the following:

- whether your generator is Tranche A or Tranche B.
- its rated thermal input.
- its emissions.
- the number of hours it operates for each year.[24]

3.9 Deadlines for Tranche B specified generators

3.9.1 All Tranche B generators must meet these deadlines. The:

- permitting date (or relevant date) is 1 January 2019 or the date the new generator was commissioned.
- compliance date is 1 January 2019.
- If operations started after 1 January 2019, your permitting date and compliance date are the same – the date you commissioned the specified generator.

3.9.2 These dates also apply to Tranche A operators who become Tranche B operators because they signed up to a new capacity market, balancing service or FIT contract after 31 October 2017 and it remained in place after 31 December 2018.

3.9.3 If the new contract date is after 1 January 2019, your permitting date and compliance date are the same as the new contract date.

3.10 Deadlines for Tranche A specified generators 5MWth to 50MWth

3.10.1 For Tranche A generators between more than 5MWth and less than 50MWth, the deadline depends on the level of emissions and operating hours.

3.10.2 For generators with emissions above 500mg/Nm^3 (STP, 15% O2) and more than 50 operating hours a year (aggregated hours) the:

- permitting date (or relevant date) is 1 October 2019.
- compliance date is 1 January 2025.

3.10.3 For generators with emissions below 500mg/Nm3 (STP, 15% O2) or 50 operating hours or less a year (aggregate hours) the:

- permitting date (or relevant date) is 1 January 2025.
- compliance date is 1 January 2025.

If a Tranche A generator more than 5MWth to 50MWth, entered into a capacity market, balancing service or FIT contract before 1 December 2016 and it ends after 1 January 2025, this end date becomes the compliance date. It must not participate in any other contracts for this to apply.

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[24] 'Operating hours' is the number of hours the combustion plant is operating and discharging emissions to air. Do not include start up (SU) and shut down (SD) periods. You must minimise SU and SD times.

3.11 Deadlines for Tranche A specified generators 1MWth to 5MWth

3.11.1 For Tranche A generators 1MWth to more than or equal to 5MWth the:

- permitting date (or relevant date) is 1 January 2030
- compliance date is 1 January 2030

3.11.2 If a Tranche A generator 1MWth to 5MWth entered into a capacity market, balancing service or FIT contract before 1 December 2016 and it ends after 1 January 2030, this end date becomes the compliance date. It must not participate in any other contracts for this to apply.

3.12 Deadlines for Tranche A specified generators less than 1MWth

3.12.1 For Tranche A generators less than 1MWth the:

- relevant date is 1 January 2030.
- compliance date is 1 January 2030.

3.12.2 If a Tranche A generator less than 1MWth entered into a capacity market, balancing service or Feed In Tariff contract before 31 October 2017, and it ends after 1 January 2030, this date will become their compliance date. It must not participate in any other contracts for this to apply.

3.13 Aggregating generators for a specified generator site

3.13.1 Follow these steps to work out the relevant date (earliest permitting date) and compliance date for aggregated generators that are a specified generator site.

1. Identify Tranche A and Tranche B status for each generator on the site.

2. Calculate the total rated thermal input of the specified generators on the site. Add together the rated thermal input of all the generators (both Tranche A and B but not any excluded generators).

Different deadlines apply if the total rated capacity is between 1MWth and 5MWth or more than 5MWth. If it exceeds 50MWth you'll need an IED installations permit.

3. Calculate the total number of operating hours a year of your specified generator site. Include Tranche A's and B's, but not excluded generators. Identify if the aggregated hours are less than or more than 50 hours per year.

Do not add the operating hours of each generator together. Each site hour can include one or more generators. For example, you have 3 generators running for exactly the same 400 hour time period – the total operating hours is 400 hours. Or you operate half of your generators for 12 hours and half for 24 hours – the total is 24 hours because the generators are running for different time periods.

4. Assess if any Tranche A generator's NOx emissions will be less than or more than 500 mg/Nm3 (STP, 15% O2).

3.14 Permitting deadlines for 'Specified Generator' site

3.14.1 If you have any Tranche B generators on your specified generator site, your relevant date (earliest permitting date) and compliance date is 1 January 2019 or the date it's commissioned.

3.15 Deadlines if you only have Tranche A generators on your site

3.15.1 If you only have Tranche A generators on your specified generator site, work out your relevant date (earliest permitting date) and compliance date as follows.

3.16 The total capacity of all the Tranche A generators is more than 5MWth

3.16.1 If at least one of your Tranche A generators is emitting more than 500mg/Nm3 (STP, 15% O2) and operating for more than 50 hours a year, your:

- permitting date (relevant date) is 1 October 2019.
- compliance date is 1 January 2025.

3.16.2 Your permitting date (relevant date) and compliance date is 1 January 2025 if all of your Tranche A generators meet one of these conditions:

- emitting less than 500mg/Nm^3.(STP, 15% O_2)
- operating for less than 50 hours a year.

3.16.3 If a Tranche A generator more than 5MWth and up to 50MWth entered into a capacity market, balancing service or FIT contract before 1 December 2016 and it ends after 1 January 2025, this end date becomes the compliance date. It must not participate in any other contracts for this to apply.

3.17 Total capacity of all the Tranche A generators is less than 5MWth

3.17.1 Your permitting date (relevant date) and compliance date is 1 January 2030.

3.18 Standard ELV the specified generator must meet the following

3.18.1 You must meet this ELV by the required date.

For engines and turbines the standard ELV for nitrogen oxides is 190mg/Nm^3 at a temperature and pressure of 273.15K and 101.3kPa. With a correction for the water vapour content of the waste gases to dry gas, standardised to O_2 concentration of 15%.[25]

3.18.2 If you operate a generator with a diesel engine, you will need to fit secondary abatement to achieve this ELV.

[25] This is equivalent to 500mg/Nm3 at 5% O2. This ELV is achievable by most gas fired generators. For solid fuels it's 475mg/Nm3 at 6% O2, for gas and liquid non-gas turbine or engine it's 570mg/Nm3 at 3% O2.

3.18.3 Where the generator needs secondary abatement, for example selective catalytic reduction, the ELV must be met within:

- 20 minutes of starting operation if its a Tranche A
- 20 minutes of starting operation if its a Tranche B that was previously a Tranche A
- 10 minutes of starting operation if its a Tranche B

3.18.4 You must monitor emissions at least every 3 years where secondary abatement is fitted.

3.18.5 You must monitor your emissions every 1,500 hours if you are operating under the 500 hour per annum exemption.

3.19 Air quality standards

3.19.1 Your specified generator must not cause a breach of an air quality standard. You must ensure it protects:

- human health – known as sensitive receptors
- conservation sites – known as habitats

3.19.2 You must make sure your generator can comply with the rules in a standard rules permit on sensitive receptors and habitats.

If it cannot, you must quantify the impact on sensitive receptors and habitats, for example by air dispersion modelling. Where detailed air quality modelling is carried out you must follow guidance issued by the regulator.[26]

3.19.3 As a result of your assessment the regulator may set the following stricter permit conditions. These could require you to:

- meet a lower ELV
- better disperse emissions
- reduce hours of operation

[26] *For further information see 6.1.3 and 6.2.1*

4. Applying for an Environmental Permit (England)

4.1 Apply for a permit

4.1.1 Medium Combustion Plant Directive (MCPD) and Specified Generator (SG) permits are standalone permits. They only cover emissions of SO2, NOx and dust to air.[27]

4.1.2 There are 3 types of permit:

- standard rules permit (SRP) – low risk
- simple bespoke – low risk
- complex bespoke permit – high risk

4.1.3 For a site with multiple specified generators, only one site wide 'Specified Generator' permit will be required.

4.1.4 Unless specified otherwise, details of environmental permit applications are placed upon a public register. This has implications for National Security; details of how to exclude information from the public register are included in Appendix 4.

[27] *There are no permit conditions for water, land, energy efficiency, odour or noise.*

5. Standard Rules Permit (SRP)

5.1 SRP General Principles

5.1.1 To apply for an SRP you must be able to meet the rules set out in the permit. If you cannot, you must apply for a bespoke permit.

5.1.2 In order to assess if the Standard Rules Permit is suitable for your specific application you will have to review the specific conditions within each rule set in detail.

5.1.3 The Regulator will not advise which rule set is appropriate. If the wrong Standard Rules permit is applied for significant costs will be incurred to reapply for the correct permit.[28]

5.1.4 SRP are available for low risk stationary MCPs and low risk Tranche B specified generators.

5.2 Apply for a Standard Rules Permit

5.2.1 You must provide the following information when you submit your application, the:

- operator's name and the address of the registered office
- MCP/SGs location, address, postcode and the national grid reference or latitude and longitude
- net rated thermal input (MWth)
- type of combustion plant – such as diesel engine, gas turbine, dual fuel engine, other engine or boiler (Ideally make, model and serial number)
- stack height
- expected annual operating hours and the approximate average load in use
- *For SGs only* Status – Tranche A or B
- type and portion of fuels used as set out in the fuel categories in Annex II of the MCPD
- operation start date
- distance from places where people live and or work
- distance from ecological receptors (SSSI, SAC, SPA, RAMSAR sites)
- whether the MCP/SG is located in an AQMA (Air Quality Management Area)
- Background NO_x concentrations (μgm^{-3}) https://uk-air.defra.gov.uk/data/gis-mapping/
- Nomenclature of Economic Activities (NACE) code for the activity

5.3 ELV exemption declaration (MCP only)

5.3.1 If the 500 operating hours per year exemption applies to your MCP, you must provide a signed declaration that the MCP will not operate more than the allowed hours.

[28] You should seek 'pre-app' support from the Regulator where available and engage a suitably qualified environmental consultant to assist if there is any uncertainty.

5.4 Charges for SRPs

Fees and charges for Standard Rules Permits can be found in the Environment Agency Charging Scheme[29]

5.5 Help and advice

You can ask for pre-application advice from the regulator.

In England email: mcpdhelp@environment-agency.gov.uk

In England you apply for a Standard Rules Permit using an eform available https://www.gov.uk/government/publications/application-for-an-environmental-permit-low-risk-medium-combustion-plant-and-specified-generator

Once complete submit to: mcpd-application@environment-agency.gov.uk.

[29] *See ref no.12*

6. Bespoke permits (MCP and SG)

6.1 Bespoke permit general principles

6.1.1 If you cannot meet the conditions in a SRP you must apply for a bespoke permit.

6.1.2 There are 2 types:

- simple bespoke (low risk) – does not require air dispersion modelling
- complex bespoke (high risk) – does require air dispersion modelling

6.1.3 Use the specified generator screening tool to determine if a low or high risk application is required.[30]

If the emissions screen out as 'low risk' you can apply for a simple bespoke permit. You'll need to provide a completed copy of the screening tool with your application to demonstrate you've applied for the correct permit.

If the emissions do not screen out as 'low risk' you'll need to apply for a complex bespoke permit. Complex bespoke permits require a site specific air quality modelling assessment. [31]

6.1.4 You must provide all the information required for a SRP application and you must also provide the following:

Air emissions risk assessment - If there are habitats site within the screening distance of your MCP/SG you must submit your air emissions risk assessment report with your application. This is to demonstrate the MCP's effect on the site.

A pre-application service is available to identify relevant habitat sites within screening distance of your installation.[32]

Alternatively you can use Natural England's 'Magic Map' to identify relevant receptors, using the 'designations' tab of the interactive GIS.[33]

Use the **H1 risk assessment tool[34]** if you're operating within:

- 2km of a designated site of special scientific interest (SSSI) for any fuel
- 5km of a designated special protection area (SPA), special area of conservation (SAC) or Ramsar site if the fuel is natural gas or low sulphur diesel
- 10km of a designated SPA, SAC or Ramsar site if using any other fuel.

It may be prudent to contact a suitably qualified and experienced environmental consultant where Air Emissions Risk Assessments are required to ensure screening is carried out accurately. Should any values exceed screening levels then Detailed Air Quality Modelling will be required. Engaging a consultant early on in the process is likely to avoid delays and be more efficient, as screening, impact assessment and recommendations on compliance can be carried out sequentially.

[30] *See ref no. 16*
[31] *See ref no. 4 and no. 17*
[32] *See ref no. 7*
[33] *See ref no. 26*
[34] *See ref no. 4*

6.1.5 If the MCP (which may also be a specified generator) has a total thermal rated input of 20MWth or more, you must meet Schedule 24 of the Environmental Permitting Regulations. This implements the requirements of the Energy Efficiency Directive. You must prepare and submit a report with your application on how your generator meets the requirements.

You must prepare and submit a report if your plant is:

- new or substantially refurbished
- operates more than 1,500 hours per year
- is over 20MWth (total aggregated net thermal input)
- a boiler, furnace, gas turbine or compression ignition engine

This requirement does not apply to:

- spark ignition engines
- existing Tranche A and Tranche B generators

6.2 MCP or SGs located in a Local Authority AQMA

6.2.1 You must find out if your MCP or SG is located within a local authority AQMA.

6.2.2 In your application you must provide:

- details of the AQMA
- actual emissions from the MCP/SG

6.2.3 The regulator will consult the local authority to check if your MCP/SG is identified in the associated air quality management plan.

6.2.4 If it is, your MCP/SG emissions may be identified as adversely affecting air quality in the area. The Local Authority, in their plan, will identify how much stricter the ELV needs to be to make a noticeable improvement to air quality. The regulator will include the agreed stricter ELV in your permit conditions.

6.2.5 DEFRA have provided an online tool to identify Air Quality Management Areas and background air quality data.[35]

6.2.6 Where plant is located within an AQMA detailed assessment of the impacts from your process will likely be required. As such it is advise that a suitably qualified and experienced environmental consultant be contacted to carry out detailed assessment/modelling of emissions.

[35] *See ref no. 2*

6.3 Setting monitoring requirements

You must provide detailed information on:

- secondary abatement – the pollutant, abatement technology and how it's maintained and monitored to provide continuous and effective abatement.
- continuous emissions monitors (CEMs) where proposed – the pollutant and the monitoring standards the CEMs meet.
- the stack and flue configuration and sample points of aggregated stacks for new or existing MCP.

The regulator will set the monitoring requirements based on:

- Annex 3 of the MCPD.
- the information you submit with your application.

6.4 Charges for bespoke permits

6.4.1 Fees and charges for simple and complex bespoke MCP/SG permits can be found within the Environment Agency's Charging Scheme.[36]

6.4.2 If the Environment Agency needs to do extra or unusual regulatory work they will charge you a supplementary charge. For example, if they need to assess the effect of emissions to air on a habitats site.

6.5 Apply for a bespoke permit

6.5.1 You must provide all the information required for a SRP application and you must also provide the following.

- **ELV compliance verification**

You can demonstrate you're meeting ELVs by using:

- M5 Monitoring of stack gas emissions from medium combustion plants and specified generators for simple bespoke permits.[37]
- Environment Agency's Monitoring Certification Scheme – MCERTS for complex bespoke permits

6.5.2 In England you can apply online. https://apply-for-environmental-permit.service.gov.uk/start/start-or-open-saved

6.5.3 Get help with your bespoke application by contacting. mcpdhelp@environment-agency.gov.uk

[36] *See ref no. 12*
[37] *See ref no.9*

6.6 All Permits - After you apply

6.6.1 The regulator may reject your application if, for example you have:

- not used the right forms.
- forgotten to include the fee or sent the wrong fee.
- not provided important information.

6.6.2 Once the regulator has the information they need to start assessing your application, they will contact you and tell you that your application is 'duly made'. You will be notified if your application is duly made within:

- One month in England.
- 21 working days in Wales.
- 15 working days within Northern Ireland and Scotland

6.6.3 The regulators may request more information if they need it to complete their assessment.

6.6.4 Once a permit has been 'duly made' the regulator will proceed to determine the permit and undertake any consultation as required. This process usually takes a maximum of 4 months except in Northern Ireland where the regulator may take up to 6 months to determine a permit.

6.7 How to comply with your Permit

6.7.1 Environmental Management system (EMS)

You must be in possession of a suitable environmental management system that ''identifies and minimises risks of pollution, so far as is reasonably practicable, including those risks arising from operations, maintenance, accidents, incidents, non-conformances and those drawn to the attention of the operator as a result of complaints'.

Any management system related to MCP or SG should only be concerned with how emissions to air will be managed and minimised where possible[38]. *(Fuel storage for example is beyond the scope of the Permit and is subject to other regulation - Oil Storage Regulations)*

A management system as a minimum should outline:

- Procedures to ensure effective operation of plant and any associated abatement.
- The parameters for normal operation and how abnormal operations will be identified and acted upon.
- Inspection and maintenance procedures. Including extent and frequency of checks/inspections and the subsequent recording of such works.
- Emergency procedures, should a fault develop, complaint be received or emission limits be exceeded.
- How Start up/Shut down procedures will be minimised.
- How operational hours will be monitored and recorded.

[38] *See ref no.5*

- Monitoring practices and procedures, including sampling port locations and details of sampling procedures. Details of any Continuous Monitoring systems and their calibration should be discussed if installed.
- Technical Competence of those responsible for the Plant. The minimum qualifications of those responsible for operating and maintaining the Plant should be included.

6.8 Monitoring requirements

6.8.1 Operators must test emissions from each unit (unless the permit has a different condition) to demonstrate compliance with emission limits.

6.8.2 The permit will specify the monitoring method you must use. Usually:

- low risk standard rules permits and simple bespoke permits require you to use the monitoring method set out in. Technical Guidance Note M5[39]

The following must be implemented and recorded if Non-MCERTS accredited emissions testing companies are engaged to carry out periodic emissions testing for Standard Rules or Low Risk Bespoke Permits.

- *Portable measuring systems must be selected that have met the requirements of MCERTS certification for emission monitoring systems. Measurement systems that meet the requirements of EN-50379-2 may be used until 1st January 2025.*
- *Instrumentation used will need to be calibrated annually as per TGN M5, evidence of this shall be provided by the test house/service organisation.*
- *Service engineer organisations shall have monitoring procedures that meet the requirements of TGN M5 and these procedures shall be documented in a management system such as ISO 9001 which has been certified by a third party that has been accredited by UKAS.*
- *If particulate matter testing is required this must be carried out by an organisation with MCERTS accreditation for EN-13284-1.*

6.8.3 Complex bespoke permits require you to verify emissions using Environment Agency's Monitoring Certification Scheme – MCERTS. Where the MoD are in possession of a complex bespoke permit the HoE shall engage an MCERTS accredited emissions testing company to carry out periodic emissions testing.

[39] *See ref no. 9*

6.9 Records and reporting

6.9.1 You must keep records and report to the regulators as set out in the permit.

6.9.2 You'll normally be required to send monitoring returns within 4 months of the date of permit issue or the date of the start of operation, whichever is later. The frequency after this will be specified in the permit conditions.

6.9.3 You must keep records of the plant operation for at least 6 years.

6.10 Changes to operations

6.10.1 You must notify the regulator immediately of:

- any non-compliance event and ensure compliance is restored within the shortest possible time.
- changes to the combustion plant which could affect the applicable ELVs.

6.11 How you'll be regulated

6.11.1 The regulators will assess compliance by doing:

- desk based inspections.
- site inspections.

6.11.2 The regulators will use the monitoring returns you submit to assess compliance.

6.11.3 If you do not comply :

- The regulators can require you to suspend plant operation if your MCP or specified generator fails to comply with ELVs and causes significant damage to air quality.
- If non-compliance continues the regulators may take enforcement action against you.

7. Applying for an Environmental Permit (Wales)

7.1 Regulator

Natural Resources Wales – Guidance Page and Permit Application Forms are available here **https://naturalresources.wales/permits-and-permissions/medium-combustion-plant-and-specified-generator-activities/?lang=en**

7.2 Applications

You can send your application by email or in the post. Send your completed application form and all supporting documents to:

Email: permitreceiptcentre@naturalresourceswales.gov.uk
By post: Permit Receipt Centre, Natural Resources Wales, Cambria House, 29 Newport Road, Cardiff, CF24 0TP

7.3 Fees and charges

For Wales can be found:
https://naturalresources.wales/about-us/what-we-do/how-we-regulate-you/our-charges/?lang=en

7.4 Enquiries

Regarding Medium Combustion Plant or Specified Generator applications contact:
mcpd.queries@naturalresourceswales.gov.uk or call Customer Care Centre on 03000 065 3000.

8. Applying for an Environmental Permit (Scotland)

8.1 Specified Generators compliance

In Scotland Specified Generator Regulations are yet to be adopted, as such only Medium Combustion Plants require a permit.

8.2 Advice

As the Permit will be related to National Security you must contact SEPA directly prior to applying **ppc@sepa.org.uk**

8.3 Permit types

SEPA do not make a distinction between Standard Rules Permits and Bespoke Applications simply fill out the application form with the required information and pay the appropriate application fee**.**
https://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/#PPC

8.4 Applications

You can send your application by email or in the post. Send your completed application form and all supporting documents to:

SEPA Angus Smith Building
6 Parklands Avenue
Eurocentral
Holytown
North Lanarkshire
ML1 4WQ

8.5 Fees and charges

For Environmental Permits can be found: **https://www.sepa.org.uk/regulations/authorisations-and-permits/charging-schemes/charging-schemes-and-summary-charging-booklets/**

9. Applying for an Environmental Permit (Northern Ireland)

9.1 Regulation

The emission limit values and principles of regulation as per England apply to Northern Ireland; however the process of permitting and inspecting MCPD/SG sites has been split between the Northern Ireland Environment Agency (NIEA) and District Councils.

Plant located on Part A and Part B sites regulated under the 2013 Regulations will be dealt with by the NIEA. While plant not on already regulated sites will be dealt with by the District Council of the area in which the plant is located.

9.2 Guidance

Guidance Page for MCPD within Northern Ireland https://www.daera-ni.gov.uk/articles/medium-combustion-plant-directive-and-specified-generators

9.3 Contact

If you have any specific queries in relation to MCPD policy please contact: the Air and Environmental Quality Unit.

Department of Agriculture, Environment and Rural Affairs
Klondyke Building
1 Cromac Avenue
Gasworks Business Park
Belfast BT7 2JA.

E-mail: aeqteam@daera-ni.gov.uk
Phone: 028 90 569 541

9.4 Applications

No application stationary has been provided by the NIEA. To make a permit application in Northern Ireland you must contact the relevant District Council or the IPRI ipri@daera-ni.gov.uk

10. What to do if your MCP/SG is part of an already permitted site/varying an existing Environmental Permit (England and Wales)

10.1 Chapter II Industrial Emissions Directive (IED) sites

10.1.1 Specified Generator regulations do not apply on a chapter 2 or chapter 3 IED installation sites. However, these regulations will inform site specific 'Best available techniques' BAT. Consequently it is likely that Selective Catalytic Reduction will need to be installed to meet ELV if generators are used for anything other than 'emergency backup' functions.

10.1.2 MCP regulations do apply to a MCP on a chapter 2 IED installation. You must meet MCP requirements where it's a:

- primary activity – where the total rated thermal input is more than 50MWth on an installation, for example gas engines generating electricity.
- directly associated activity – combustion to another chapter 2 activity, for example combustion on a chemical manufacturing site.

10.1.3 As a minimum, the MCP must meet the appropriate Medium Combustion Plant Directive (MCPD) emission limit value (ELV) by the required date. If the existing ELVs (required by BAT) are stricter than required by MCPD, BAT continue to apply.

10.1.4 You will need to vary your permit if your chapter 2 IED installation:

- includes an existing MCP – you will not have to do this until 2024 at the earliest.
- adds a new MCP – you will need to do this now.

10.1.5 Complete form C2.5[40]:

- to add a new MCP or specified generator to your existing IED installation.
- for a new activity or substantially refurbished activity for MCPs with a total aggregated thermal input of 20MWth or more.

10.1.6 The regulator will include MCPD requirements in your permit, such as ELVs and monitoring.

10.2 Varying an existing Environmental Permit (Scotland)

In the first instance contact SEPA for guidance who will advise what information is required and direct you to the appropriate forms to complete.

Contact: 03000 99 66 99
Or via the contact SEPA via email option available https://www.sepa.org.uk/contact/

10.3 Varying an existing Environmental Permit (Northern Ireland)

If your combustion plant is already part of a regulated facility (either Part A or Part B under 'The Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013) you should contact ipri@daera-ni.gov.uk to discuss the process of varying your existing Environmental Permit.

[40] *See ref no. 11*

11. Achieving compliance – Introduction to secondary abatement

11.1 Calculating Emission Rates

11.1.1 In the first instance contact the manufacturer or supplier of MCP/SG plant to obtain the emission rate of NOx at standard reference conditions.[41]

11.1.2 Where manufacturer information cannot be obtained for MCP/ SG plant emissions testing should be carried out. Emissions testing should be carried out such that it can be used to demonstrate compliance later on in the process.[42]

11.1.3 A suitable contractor should be employed to determine the emission rate of relevant pollutants at standard reference conditions[43]:

- Diesel engines - NO_x and particulate matter.
- Gas engines, boilers and turbines - NO_x only.
- Plant running on heavy fuel oil/solid fuel - NO_x particulate matter and sulphur

11.1.4 Where plant cannot achieve the required emission limit value, action will have to be taken. This may be in the form of:

- Retrofitting abatement technology.
- Recommissioning of the plant to alter emissions profile.
- Replacing components within the system to reduce NO_x emissions.
- Changing fuel type
- Replacing plant with modern low emission alternative.

11.1.5 The following sections provide a broad overview as to the potential options available to reduce emissions of relevant pollutants. Plant specific investigation will be required to determine the suitability and total cost of the following options.

[41] dry gas, 273.15K, 101.3kPa, O_2 of 3% MCP other than engines or gas turbines, using liquid and gaseous fuels, 6% MCP using solid fuels or 15% engines and gas turbines

[42] See sections 2.13.4, 7.5.1, 7.8.2, 7.8.3

[43] See section 6.8 for further details

11.2 Diesel engines: achieving compliance – What are your options?

11.2.1 Selective Catalytic Reduction (SCR) uses Urea (NH_3) as a reagent in the presence of a catalyst to convert NOx into N_2, CO_2 and H_20. Sensors identify the temperature of the gas and NOx concentration to determine appropriate dosing. The technology is similar to that used in modern diesel vehicles to reduce NOx emissions using ad blue (urea).

11.2.2 SCR can be retrofitted to existing generators and provides a proven, robust means of reducing NOx emissions beneath the required ELV.

11.2.3 SCR can be applied to a range of exhaust temperatures, however where exhaust temperatures are very low or high the costs and practicalities become a significant obstacle. As such the load profile of a generator needs to be considered before specifying abatement.

11.2.4 Capital costs of installing SCR units can be high and there are ongoing operational costs associated with purchasing Urea and servicing the dosing and monitoring systems. The price of the units are dependant upon the size/output of the generator unit, a larger generator will require a larger catalyst and therefore incur a greater cost due to the quantity of precious metal within the catalyst.

11.2.5 Where diesel generators are located within buildings or inaccessible locations the costs of installation will increase due to additional civil engineering works to accommodate the unit.

11.2.6 Data logging equipment can be built into the system which not only monitors emissions but records the data for the purpose of demonstrating compliance to the regulator.

11.2.7 Exhaust Gas Recirculation (EGR) is used to reduce the levels of NOx emitted from the engine by recirculating exhaust gases in to the engine's cylinder; this reduces the amount of oxygen in the cylinder which lowers combustion temperatures and the formation of NOx.

11.2.8 Not all diesel engines will be able to be retrofitted with EGR. More modern engines may already have EGR in place and still exceed to ELV. EGR alone is unlikely to achieve the required reduction in NOx emissions.

11.2.9 Diesel Particulate Filters (DPF) remove particulate matter from exhaust gases. They are often used in conjunction with SCR. DPF's require servicing to ensure continued operation – this is will be specified by the installer based on estimated run hours/load profile etc.

11.2.10 'Gas to Liquid' are synthetic fuels produced from natural gas that perform in the same manner as traditional diesel but offer reduced emissions of particulates and NO_x.

11.2.11 GTL fuels can reduce NOx emissions by 25% and particulate matter by up to 38%, depending upon engine type.

11.2.12 The cost of GTL is more expensive per litre if ordering and using in small volumes, however if purchasing in large volumes the cost is broadly equivalent to traditional diesel.

11.2.13 GTL can be deployed directly in existing engines and stored and handled in the same manner as traditional diesel. No additional infrastructure is required.

11.2.14 GTL has additional benefits in that it is resistant to microbial contamination 'diesel bug' and can therefore be stored for longer periods with less risk of degradation.

11.2.15 GTL has reduced water content and does not retain dissolved or emulsified water, helping to protect the spread of rust in tanks and pipework.

11.2.16 Additional water separation and fuel polishing systems may be advised to futureproof your engine when converting to GTL.

11.2.17 GTL is less environmentally damaging than traditional diesel in the event of spillage (Shell 2006)

11.2.18 Switching to GTL in isolation is unlikely to achieve compliance with ELVs. Additional measures are likely to be required. However, if considering 'fuel storage and management' costs alongside generator renovation it may be considered as a means to reduce overall costs.

11.3 Gas Engines

11.3.1 Gas engines will only require NO_x emissions to be addressed as sulphur and other impurities are at very low levels within natural gas. [44]

11.3.2 'Lean burn' gas engines should be able to comply with ELVs. By altering the parameters of the engine – effectively 'tuning' the engine, most lean burn engines should be able to comply with the NO_x emission limit value. The manufacturer of the engine or a suitably qualified service engineer should be able to advise further.

11.3.3 Where a lean burn engine cannot be 'tuned' to achieve ELVs Selective Catalytic Reduction may be appropriate.[45]

11.3.4 Lean NOx Catalysts are an alternative to SCR and work by injecting a small amount of diesel fuel or other hydrocarbon reductant into the exhaust upstream of a catalyst. The hydrocarbon acts to convert NO_x to N_2 and O_2. The mechanisms are analogous to SCR but use a different reductant and catalyst composition. Depending on exhaust temperatures 50% -60% NO_x reductions can be achieved.

11.3.5 Rich burn gas engines may need a three way catalyst or a non selective catalytic reduction (NSCR) unit retrofitted to achieve ELVs for NO_x. NSCR works by passing exhaust gases from the engine through a metallic or ceramic honeycomb covered with a platinum group catalyst. The catalyst promotes the low temperature reduction of NO_x to N_2 and O_2.

11.3.6 The efficiency of the catalyst is directly related to the air/fuel mixture and temperature of the exhaust. As such additional engine controls and oxygen sensors may need to be added in order to obtain the correct O_2 concentrations, and therefore NO_x reductions within exhaust gases.

11.3.7 Typically NO_x conversion efficiencies for NSCR systems range from 90-99%

[44] *Note: 'Biogas' has a different composition and may require additional consideration due to additional sulphur.*
[45] *see section 9.2.2.*

11.4 Replacing Gas/Diesel Engines

11.4.1 It is highly likely that all new diesel engines will require Selective Catalytic Reduction to comply with emission limit values.

11.4.2 Diesel and gas engines are the 'power unit' within most backup power generators. The following information may well be encountered when considering 'emissions compliance' of new generator sets. Compliance with the following standards may well be misleading when considering compliance with MCPD/SG regulations as the standards do not directly relate or translate.

11.4.3 A brief summary of some of the compliance standards that may be encountered are described below.

IMO Compliant – 'IMO Marine Engine regulations' set out emission limits for marine engines, with Tier III being the most stringent. The limits are presented as NO_x g/kWh based upon the maximum operating speed of the engine (rpm). Achieving 'IMO' compliance does not directly translate to MCPD compliance.

Euro Stages I -V relate to emissions standards for new engines/and or vehicles subject to EU emissions standards. There are different categories for different vehicle/engine types ranging from cars and light trucks to, non road mobile machinery and heavy duty truck/bus engines. The standards are incrementally more stringent. Achieving 'Euro V' compliance does not directly translate to MCPD compliance.

EPA Tier 1-4: These standards relate to emissions from new vehicles/engines within the USA. The standards have become incrementally more stringent over time and aim to regulate emissions to air. Achieving 'Tier 4' compliance does not directly translate to MCPD compliance.

When replacing generator sets please note there is a significant demand for used diesel generators internationally and a buoyant export market. This may facilitate cost reductions when purchasing new plant.

11.5 Boilers

11.5.1 In the event that existing boilers are unable to comply with MCP ELVs for NO_x the following options should be considered as potential compliance solutions, they are listed in order of practicality and cost:

- **Recommissioning** - Contact the manufacturer or a suitably qualified service engineer to ensure that the boiler has been commissioned with NOx emissions in mind. 'Tuning' the burner's air: fuel ratio may allow the ELV to be met.
- **Replacement of burners**- Burners may be replaced with more efficient designs that reduce NOx emissions. Alternatives may include 'modulated' types that better control the air: fuel ratio. Multi - nozzle heads, premix heads or water injection may all be suitable.
- **Exhaust Gas Recirculation (EGR) – *also known as flue gas recirculation*** EGR/FGR. Exhaust gas is recirculated into the combustion chamber to reduce combustion temperatures and therefore NO_x conversion. The technology is able to be retrofitted and is a proven and effective means of achieving reduced NOx emissions (30 -50% reductions in NO_x typical)

11.5.2 SO_2 emissions are entirely related to the amount of sulphur present in the fuel to begin with. As such methods to control SO_2 emissions are limited:

- Specify a 'low sulphur' version of your existing fuel (if available)
- Switch to a different grade of fuel (Heavy Fuel Oil to LPG or LNG)
- Apply abatement techniques to exhaust gases

There may be significant capital costs associated with converting to a different grade of fuel. Alterations may range from a simple recommissioning of existing plant, through to entirely new infrastructure. Contact your fuel/energy supplier to discuss options.

11.5.3 Flue gas desulphurisation or 'scrubbers' remove SO_2 from exhaust gases using various reagents. SO_2 is neutralised by the addition of lime within the flue. Installing scrubbers will require a significant capital outlay and ongoing operational costs associated with the purchase of reagent and disposal of spent reagent.

11.5.4 It is unlikely that boilers making use of HFO will be able to comply with relevant SO_2 and particulate matter ELVs without abatement.

11.5.5 Particulates from incombustibles within fuel (ash) and products of incomplete combustion will need to be removed from exhaust gases to comply with ELVs. This is particularly the case for solid fuels and heavy fuel oil.

- Bag or reverse jet filtration units can be used where exhaust temperatures are low enough and space permits. Bag house units tend to be large and require frequent inspection servicing.
- Ceramic filters can be used in high temperature applications and can achieve MCP emission limit values.
- Composite Candle filters – Suitable for high temperature applications and can achieve MCP emission limit values
- Electrostatic precipitators - Capable of achieving MCP emission limit values but likely to incur significant costs.

11.5.6 A site specific, cost benefit analysis will need to be undertaken to determine the most suitable abatement options.

11.5.7 Useful information to gather in order to assist in the specification of EGR systems or replacement burners:

- Appropriate ELV (see 14.1 Appendix 1 "Annex II – ELV tables")
- Boiler Type (hot, overheated water, steam, diathermic oil etc.)
- Thermal output
- Fuel Type
- P_{max}/P_{min} modulation range
- Flue diameter
- $\%O_2$ in exhaust
- System layout/diagram

11.6 Gas Turbines

11.6.1 Gas turbines may be in use to provide energy generation at larger or isolated sites. NOx emissions from gas turbines can be controlled via 'front'' or 'back' end abatement options. Front end options relate to the operation of the combustion unit and back end solutions are effectively retrofitted solutions that treat exhaust gases.

11.6.2 Replace the existing turbine combustor with a low NOx combustor. Typically, Dry Low NOx (DLN)/Dry Low Emissions (DLE) combustors will be readily available and can be substituted for non compliant combustors. Where such a replacement occurs, it is likely for the purposes of the MCPD regulations that the MCP will then be classified as a 'new' MCP and the 'new' ELV will apply.

11.6.3 Selective Catalytic Reduction can be applied to Combined Cycle Gas Turbines to reduce the formation of NOx. Where SCR is implemented overall efficiency of the unit is likely to reduce as the SCR unit will reduce exhaust pressure, meaning more fuel is burned to convert NOx to N2 and O2.

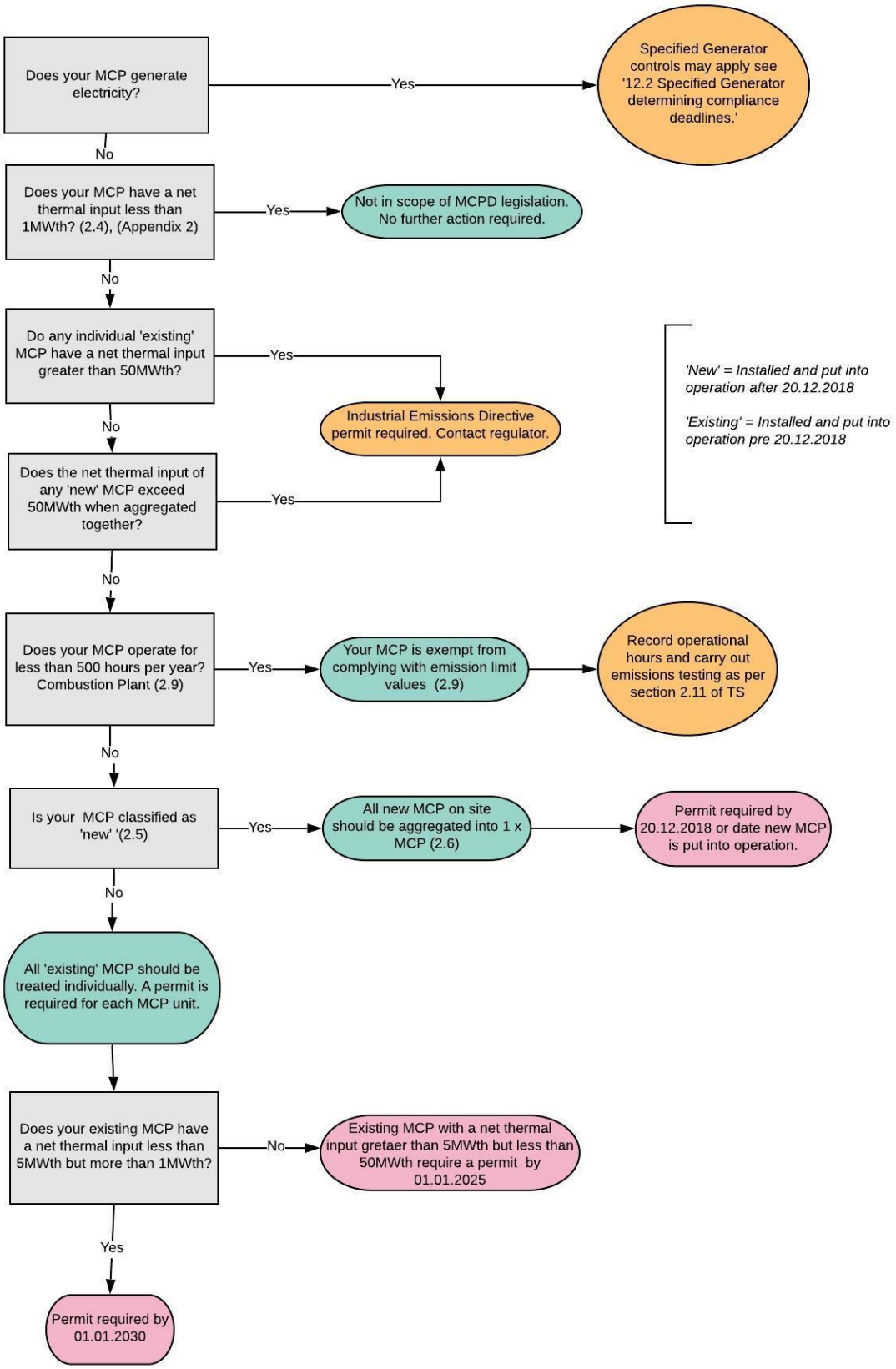
11.6.4 SCR cannot be readily applied in 'simple cycle configurations' as the exhaust temperatures are prohibitively high. High temperature SCR options are available but cost significantly more than SCR options operating at optimum temperatures (around 275oC).

11.6.5 Other catalyst based technology exists to reduce NOx emissions – typically called 'SCONOX'. SCONOX has not been considered within this Technical Standard as the costs associated with installation and operation are up to three times the cost of SCR and are therefore deemed redundant due to excessive cost.

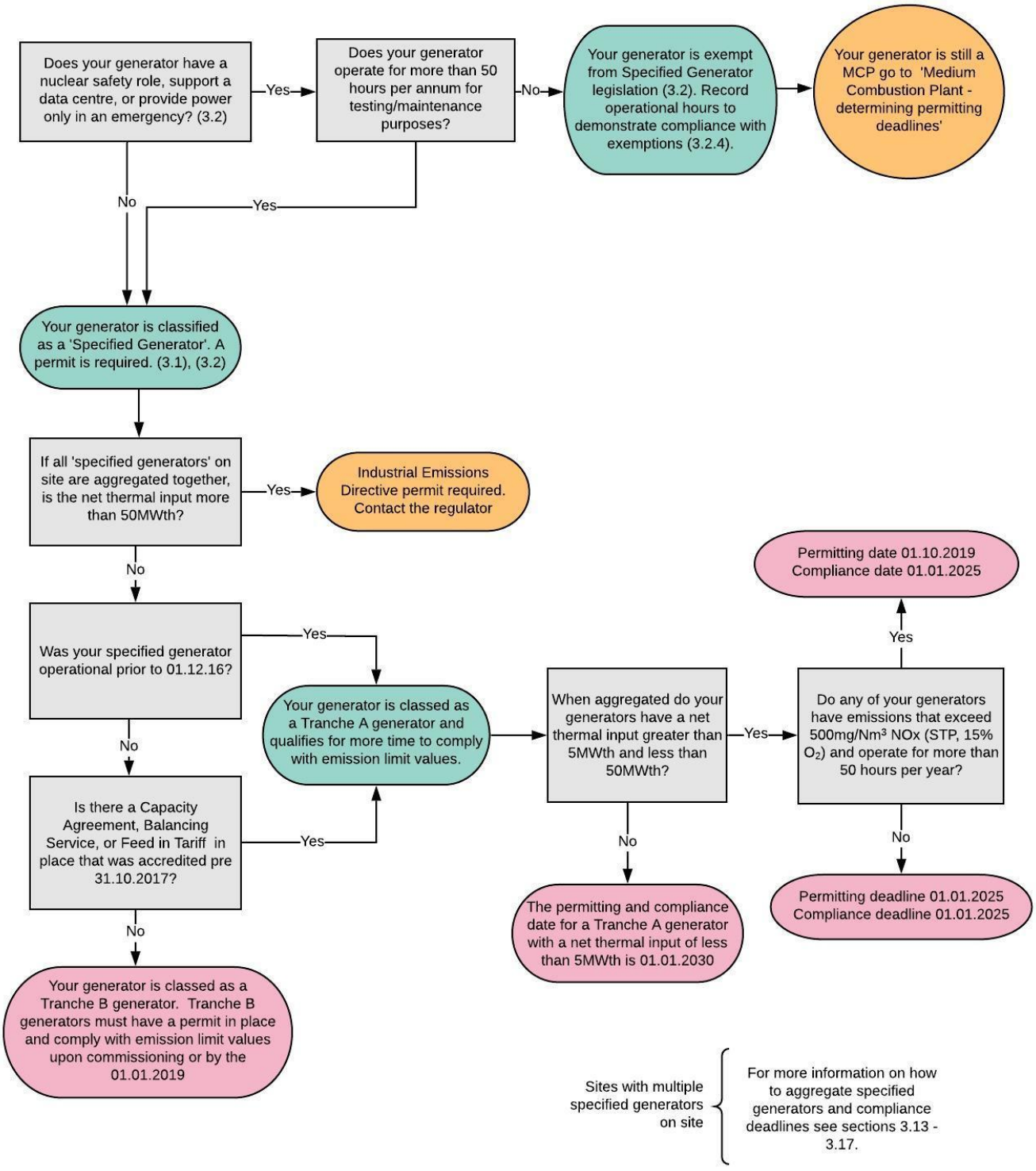
11.6.6 The cost/benefit analysis of replacing the combustor or retrofitting SCR where applicable will have to be carried out by a suitably qualified electrical/mechanical engineer in order to assess the efficiency losses against capital costs and longevity of existing plant.

12. Flow Charts

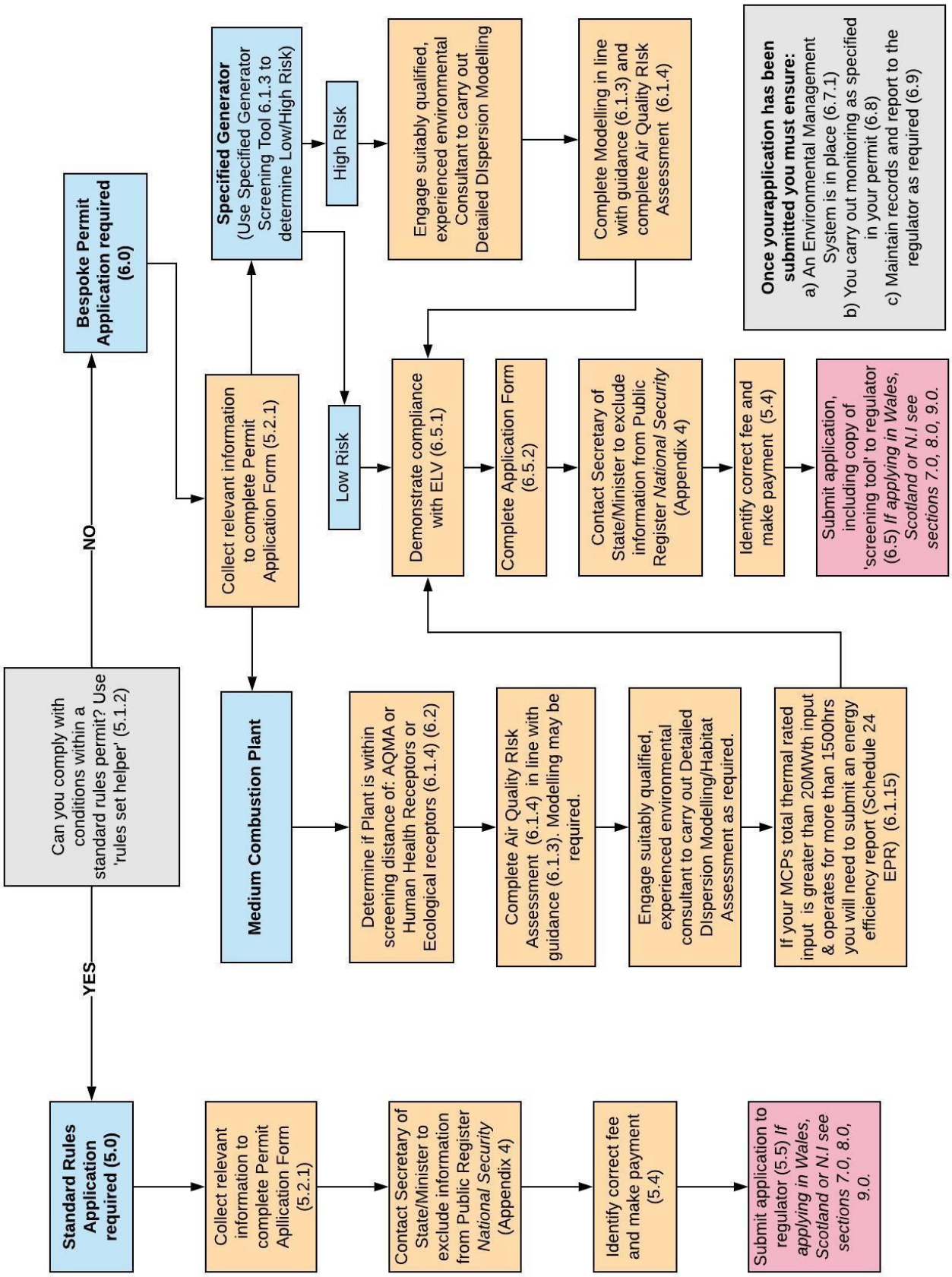
12.1 Medium Combustion Plant – determining compliance deadlines



12.2 Specified Generators – determining compliance deadlines



12.3 Permit Application Process



13. Appendices

13.1 Appendix 1 – MCPD 'Annex II' Emission Limit Value Tables

ANNEX II

EMISSION LIMIT VALUES REFERRED TO IN ARTICLE 6

All emission limit values set out in this Annex are defined at a temperature of 273,15 K, a pressure of 101,3 kPa and after correction for the water vapour content of the waste gases and at a standardised O_2 content of 6 % for medium combustion plants using solid fuels, 3 % for medium combustion plants, other than engines and gas turbines, using liquid and gaseous fuels and 15 % for engines and gas turbines.

PART 1

Emission limit values for existing medium combustion plants

Table 1

Emission limit values (mg/Nm³) for existing medium combustion plants with a rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW, other than engines and gas turbines

Pollutant	Solid biomass	Other solid fuels	Gas oil	Liquid fuels other than gas oil	Natural gas	Gaseous fuels other than natural gas
SO_2	200 (1) (2)	1 100	—	350	—	200 (3)
NO_x	650	650	200	650	250	250
Dust	50	50	—	50	—	—

Table 2

Emission limit values (mg/Nm³) for existing medium combustion plants with a rated thermal input greater than 5 MW, other than engines and gas turbines

Pollutant	Solid biomass	Other solid fuels	Gas oil	Liquid fuels other than gas oil	Natural gas	Gaseous fuels other than natural gas
SO_2	200 (4) (5)	400 (6)	—	350 (7)	—	35 (8) (9)
NO_x	650	650	200	650	200	250
Dust	30 (10)	30 (10)	—	30	—	—

Table 3

Emission limit values (mg/Nm³) for existing engines and gas turbines

Pollutant	Type of medium combustion plant	Gas oil	Liquid fuels other than gas oil	Natural gas	Gaseous fuels other than natural gas
SO_2	Engines and gas turbines	—	120	—	15 (11) (12)
NO_x	Engines	190 (13) (14)	190 (13) (15)	190 (16)	190 (16)
	Gas turbines (17)	200	200	150	200
Dust	Engines and gas turbines	—	10 (18)	—	—

PART 2

Emission limit values for new medium combustion plants

Table 1

Emission limit values (mg/Nm³) for new medium combustion plants other than engines and gas turbines

Pollutant	Solid biomass	Other solid fuels	Gas oil	Liquid fuels other than gas oil	Natural gas	Gaseous fuels other than natural gas
SO_2	200 ([19])	400	—	350 ([20])	—	35 ([21]) ([22])
NO_x	300 ([23])	300 ([23])	200	300 ([24])	100	200
Dust	20 ([25])	20 ([25])	—	20 ([26])	—	—

Table 2

Emission limit values (mg/Nm³) for new engines and gas turbines

Pollutant	Type of medium combustion plant	Gas oil	Liquid fuels other than gas oil	Natural gas	Gaseous fuels other than natural gas
SO_2	Engines and gas turbines	—	120 ([27])	—	15 ([28])
NO_x	Engines ([29]) ([30])	190 ([31])	190 ([31]) ([32])	95 ([33])	190
	Gas turbines ([34])	75	75 ([35])	50	75
Dust	Engines and gas turbines	—	10 ([36]) ([37])	—	—

([1]) The value does not apply in the case of plants firing exclusively woody solid biomass.

([2]) 300 mg/Nm^3 in the case of plants firing straw.

([3]) 400 mg/Nm^3 in the case of low calorific gases from coke ovens in the iron and steel industry.

([4]) The value does not apply in the case of plants firing exclusively woody solid biomass.

([5]) 300 mg/Nm^3 in the case of plants firing straw.

([6]) 1 100 mg/Nm^3 in the case of plants with a rated thermal input greater than 5 MW and less than or equal to 20 MW.

([7]) Until 1 January 2030, 850 mg/Nm^3 in the case of plants with a rated thermal input greater than 5 MW and less than or equal to 20 MW firing heavy fuel oil.

([8]) 400 mg/Nm^3 in the case of low calorific gases from coke ovens, and 200 mg/Nm^3 in the case of low calorific gases from blast furnaces, in the iron and steel industry.

([9]) 170 mg/Nm^3 in the case of biogas.

([10]) 50 mg/Nm^3 in the case of plants with a rated thermal input greater than 5 MW and less than or equal to 20 MW.

([11]) 60 mg/Nm^3 in the case of biogas.

([12]) 130 mg/Nm^3 in the case of low calorific gases from coke ovens, and 65 mg/Nm^3 in the case of low calorific gases from blast furnaces, in the iron and steel industry.

([13]) 1 850 mg/Nm^3 in the following cases:

(i) for diesel engines the construction of which commenced before 18 May 2006;

(ii) for dual fuel engines in liquid mode.

([14]) 250 mg/Nm^3 in the case of engines with a rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW.

([15]) 250 mg/Nm^3 in the case of engines with a rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW; 225 mg/Nm^3 in the case of engines with a rated thermal input greater than 5 MW and less than or equal to 20 MW.

([16]) 380 mg/Nm^3 for dual fuel engines in gas mode.

([17]) Emission limit values are only applicable above 70 % load.

([18]) 20 mg/Nm^3 in the case of plants with a rated thermal input equal to or greater than 1 MW and less than or equal to 20 MW.

([19]) The value does not apply in the case of plants firing exclusively woody solid biomass.

([20]) Until 1 January 2025, 1 700 mg/Nm^3 in the case of plants which are part of SIS or MIS.

([21]) 400 mg/Nm^3 in the case of low calorific gases from coke ovens, and 200 mg/Nm^3 in the case of low calorific gases from blast furnaces, in the iron and steel industry.

([22]) 100 mg/Nm^3 in the case of biogas.

([23]) 500 mg/Nm^3 in the case of plants with a total rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW.

([24]) Until 1 January 2025, 450 mg/Nm^3 when firing heavy fuel oil containing between 0,2 % and 0,3 % N and 360 mg/Nm^3 when firing heavy fuel oil containing less than 0,2 % N in the case of plants which are part of SIS or MIS.

([25]) 50 mg/Nm^3 in the case of plants with a total rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW; 30 mg/Nm^3 in the case of plants with a total rated thermal input greater than 5 MW and less than or equal to 20 MW.

([26]) 50 mg/Nm^3 in the case of plants with a total rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW.

([27]) Until 1 January 2025, 590 mg/Nm^3 for diesel engines which are part of SIS or MIS.

([28]) 40 mg/Nm^3 in the case of biogas.

([29]) Engines running between 500 and 1 500 hours per year may be exempted from compliance with those emission limit values if they are applying primary measures to limit NO_x emissions and meet the emission limit values set out in footnote (4).

([30]) Until 1 January 2025 in SIS and MIS, 1 850 mg/Nm^3 for dual fuel engines in liquid mode and 380 mg/Nm^3 in gas mode; 1 300 mg/Nm^3 for diesel engines with ≤ 1 200 rpm with a total rated thermal input less than or equal to 20 MW and 1 850 mg/Nm^3 for diesel engines with a total rated thermal input greater than 20 MW; 750 mg/Nm^3 for diesel engines with > 1 200 rpm.

([31]) 225 mg/Nm^3 for dual fuel engines in liquid mode.

([32]) 225 mg/Nm^3 for diesel engines with a total rated thermal input less than or equal to 20 MW with ≤ 1 200 rpm.

([33]) 190 mg/Nm^3 for dual fuel engines in gas mode.

([34]) These emission limit values are only applicable above 70 % load.

([35]) Until 1 January 2025, 550 mg/Nm^3 for plants which are part of SIS or MIS.

([36]) Until 1 January 2025, 75 mg/Nm^3 for diesel engines which are part of SIS or MIS.

([37]) 20 mg/Nm3 in the case of plants with a total rated thermal input equal to or greater than 1 MW and less than or equal to 5 MW.

13.2 Appendix 2 - Calculating Net Thermal Input (AMPS technical guidance)

AMPS Technical Committee

FAQS/TECHNICAL DOWNLOAD

Determination of thermal input power of an engine driven generator

Determination of thermal input power of an engine driven generator

It is not usual to find the thermal input power for an internal combustion engine or engine driven generator on the data-plate or from information supplied by the manufacturer. The following methods may be used to determine this.

Use the method in Annex A where fuel consumption data is available from the engine manufacturer and a fuel of known properties is used. This is the most accurate way of determining the thermal input.

Where fuel consumption data is not available or the fuel is of unknown properties (e.g. biogas) use the method in Annex B. This uses an estimate of engine and generator efficiency. The efficiency estimates given are conservative and should encourage efforts to determine the fuel consumption.

Where the fuel consumption is not known or only known as a brake specific value (BSFC) the rated power must be determined. Engines or generator sets may have more than one rating, e.g. continuous power, prime power, and emergency stand-by power. The highest power rating applied in the application should be used.

The rated power output of an engine in kilowatts (kW) or sometimes horse power (hp) is often provided on the data-plate of the engine or information from the engine manufacturer and this should be first choice for determining rated power. If information on the engine is not available then there should be information on the rating of the generator on the generator data-plate or information from the generator manufacturer that allows it to be determined.

Generator set ratings are often quoted in KVA at a 0.8 power factor. Where this is the case electrical power is determined by:

$$P_{e(r)} = KVA * 0.8 \qquad \text{(Equation 1)}$$

Where
$P_{e(r)}$ = Rated electrical power (KW)
KVA = kiloVoltAmps rating

The electrical power must then be converted to mechanical power to take account of alternator efficiency. There is also some power absorbed by ancillaries such as the cooling system that this is highly variable and therefore ignored for this purpose.

$$P_{m(r)} = P_{e(r)}*100/\eta_A \qquad \text{(Equation 2)}$$

Where
$P_{m(r)}$ = Rated mechanical power (kW)
$P_{e(r)}$ = Rated electrical power (kW)

Any questions should be addressed to: techsec@amps.org.uk

η_A = Alternator efficiency (%)

If the alternator efficiency is not known it may be estimated from the following table:

Power Range	Alternator efficiency (%)
<1MW	93
1-5 MW	94
5-50 MW	95

Any questions should be addressed to: techsec@amps.org.uk

Annex A – Determination of thermal input power from fuel consumption or specific fuel consumption, engine rated power and fuel properties

The fuel consumption of an engine is often published by the engine manufacturer. It may be given as a BSFC, gravimetric fuel rate or volumetric fuel rate. Use the fuel consumption at the power rating applied in the application in combination with the lower or net calorific value of the fuel to determine the thermal input.

Typical units would be:

g/kWh (specific for liquid fuelled engines)
litres/h (volumetric for liquid fuelled engines)
kg/h (gravimetric for liquid fuelled engines)
m^3/h (volumetric for gaseous engines)

This value combined with the calorific value of the fuel can be used to obtain the thermal input power. The calorific values of common fuels can be found in the Digest of UK Energy Statistics (DUKES):

https://www.gov.uk/government/statistics/dukes-calorific-values

These are given in the gravimetric parameter of GJ/tonne (same as MJ/kg) for liquid fuels or the volumetric parameter of MJ/m^3 for gaseous fuels. Net values should be used for this calculation. Common fuels would be Gas/diesel oil (42.6 GJ/tonne in 2016) or natural gas consumed (35.7 MJ/m^3 in 2016).

Liquid fuelled engines

When brake specific fuel consumption and rated power are known

$$P_{th} = b_{e(r)} * P_{m(r)} * H_u / 3.6 \qquad \text{(Equation 3)}$$

Where

P_{th} = thermal input power (kW)
$b_{e(r)}$ = Brake specific fuel consumption at rated power (kg/kWh)
$P_{m(r)}$ = rated mechanical power (kW)
H_u = Lower heating value of fuel

When gravimetric fuel rate is known

$$P_{th} = \dot{m}_K * H_u / 3.6 \qquad \text{(Equation 4)}$$

Any questions should be addressed to: techsec@amps.org.uk

Where
P_{th} = thermal input power (kW)
$\dot{m}_K$ = gravimetric fuel rate (Kg/h)
H_u = Lower heating value of fuel

Where volumetric fuel rate is known

The volumetric fuel rate must be converted to a gravimetric rate that can then be used in equation 4. The density of the test fuel will often be given on the engine data sheet. If not the density of gas/diesel oil, that is usually used for a diesel engine test can be consider to be 0.84 kg/litre

$$\dot{m}_K = \dot{V} * \rho \qquad \text{(Equation 5)}$$

Where

$\dot{m}_K$ = gravimetric fuel rate (Kg/h)
$\dot{V}$ = Volumetric flow rate (litres/h)
ρ = Density of fuel (kg/litre)

Gaseous fuelled engines

Occasionally the energy input to a gas engine is given directly in kW or more often in Btu's (see conversion factors below).
Fuel consumption is usually measured in m^3/h of gas at standard conditions and this can be directly multiplied by the lower calorific value of the gas

$$P_{th} = \dot{V} * H_g / 3.6 \qquad \text{(Equation 6)}$$

Where

P_{th} = thermal input power (kW)
$\dot{V}$ = Fuel flow rate at rated load (m^3/h)
H_g = Lower heating value of gas (MJ/m^3)

Useful Conversion factors
1 m^3 = 35.31 ft^3
1 kW = 1.341 hp
1 MJ = 947.8 Btu

Any questions should be addressed to: techsec@amps.org.uk

Annex B – Determination of thermal input power from engine rated power and estimated engine/generator efficiency

Where there is no fuel consumption data available it will be necessary to determine the thermal input power by using the rated power and estimating the effective efficiency of the engine or generating set.

Taking the effective efficiency from the table below, the thermal input power is calculated from the following equation:

$P_{th} = P_{(r)} * 100 / \eta_e$ (Equation 7)

Where:

P_{th} = thermal input power
$P_{(r)}$ = rated power (mechanical or electrical, with ever is available)
η_e = effective efficiency (relevant for mechanical or electrical power)

Fuel Type	Combustion type	Power range (mechanical or electrical)	Efficiency (η_e) (%)	
			Based on mechanical power	Based on electrical power
Gas oil or other liquid fuel	Compression ignition	<1MW	36	33
		1-5 MW	38	35
		5-20 MW	40	38
		20_50 MW	41	39
Natural gas	Stoichiometric (rich) burn	<1MW	30	28
		1-5 MW	32	30
		5-20 MW	34	32
		20_50 MW	35	34
	Lean Burn	<1MW	35	33
		1-5 MW	36	34
		5-20 MW	38	36
		20_50 MW	40	38
Bio gas	Stoichiometric (rich) burn	<1MW	29	27
		1-5 MW	31	29
		5-20 MW	33	31
		20_50 MW	34	33
	Lean Burn	<1MW	34	32
		1-5 MW	35	33
		5-20 MW	37	35

Any questions should be addressed to: techsec@amps.org.uk

13.3 Appendix 3 – Notice to exclude information from the Public Register

Prior to applying for your permit you must send a Notice to the relevant Secretary of State/ Minister requesting that information be excluded from the public register in the interest of National Security. The letter overleaf provides a Notice template and relevant contact details.

You must also notify the regulator that you have written to the Secretary of State/ Minister to request that details be excluded from the public register. **A further template has been provided for this purpose See page 64 – 67.**

<Address for Secretary of State>

[Your Name]
[Street Address]
[Post code]

Ref: <insert EPR application ref>
Date: xxxxxxxxxx

Dear Sir/Madam,

Notice – Inclusion of information on a public register contrary to the interests of national security. < *Insert legislation from below* >

<**Regulation 47, (4) of the Environmental Permitting (England and Wales) Regulations 2010**.>
Or
<**Regulation 21 (4) of the Environmental Protection Act 1990> (Scotland).**>
Or
<**Regulation 34 (4) Pollution Prevention and control Regulations (Northern Ireland) 2013**.>

It is my opinion that information held within Environmental Permit Application ref: <*insert*> to operate <*Medium Combustion Plant/Specified Generator*> at <*location*> under schedule <*25A/25B*> of the Environmental Permitting Regulations is sensitive and should not be placed upon the Public Register as the application includes details pertaining to an operational military location, which would be contrary to the interests of national security.

I would ask that the Secretary of State make a 'direction' under Regulation 47 of the Environmental Permitting (England and Wales) Regulations 2010, such that the regulator <Environment Agency/Scottish Environment Protection Agency /Natural Resources Wales/Northern Ireland Environment Agency> withhold all details relating to Environmental Permit Application ref <insert> from the public register.

Yours sincerely,

Secretary of State/Ministers Contact details (as of March 2020)

England

George Eustice Secretary of State for Environment, Food and Rural Affairs
House of Commons
London
SW1A 0AA

Or

George Eustice
Secretary of State for Environment, Food and Rural Affairs
Department for Environment Food & Rural Affairs
Seacole Building
2 Marsham Street
London
SW1P 4DF

Wales

Lesley Griffiths as of March 2020
Minister for Environment, Energy and Rural Affairs
Welsh Government
5th Floor
Ty Hywel
Cardiff Bay
CF99 1NA

Scotland

Roseanna Cunningham MSP as of March 2020
Cabinet Secretary for the Environment, Climate Change and Land Reform
The Scottish Government
St. Andrew's House
Regent Road
Edinburgh
EH1 3DG

Northern Ireland

Edwin Poots as of March 2020
Agriculture, Environment and Rural Affairs Minister
Parliament Buildings
Ballymiscaw
Stormont
Belfast
BT4 3XX

<Address of Regulator>

[Your Name]
[Street Address]
[Post code]

Ref: <insert EPR application ref>
Date: xxxxxxxxxxxxxxxx

Dear Sir/Madam,

Notice – **Inclusion of information on a public register contrary to the interests of national security.** < Insert legislation *[1] *[2] *[3]>

*[1] **Regulation 47, (4) of the Environmental Permitting (England and Wales) Regulations 2010**.>
Or
*[2] **Regulation 21 (4) of the Environmental Protection Act 1990> (Scotland)**.>
Or
*[3] **Regulation 34 (4) Pollution Prevention and control Regulations (Northern Ireland) 2013**.>

Please be advised a Notice under the above legislation has been sent to the relevant Secretary of State/Minister to request that information pertaining to Environmental Permit Application ref: XXXXXXXXX, be excluded from the Public Register. The application relates to activities taking place upon an operational military base, publishing details would be contrary to the interests of national security.

An Environmental Permit application has been submitted to operate <Medium Combustion Plant/Specified Generator> at <location> under schedule <insert regulations from below>

<25A/25B of the Environmental Permitting (England and Wales) Regulations>
<9A/B Pollution Prevention and control (Industrial Emissions) Regulations (Northern Ireland)>
<1B Pollution Prevention and Control (Scotland) Regulations>

I would appreciate if all details of the application be withheld from the public register until the Secretary of State/Minister determines otherwise.

Yours sincerely,

Regulator contact details

Environment Agency
Email: mcpd-application@environment-agency.gov.uk.

Natural Resources Wales
Permit Receipt Centre,
Natural Resources Wales,
Cambria House,
29 Newport Road,
Cardiff,
CF24 0TP

Email: permitreceiptcentre@naturalresourceswales.gov.uk

Scottish Environmental Protection Agency
SEPA Angus Smith Building
6 Parklands Avenue
Eurocentral
Holytown
North Lanarkshire
ML1 4WQ

Email: **ppc@sepa.org.uk**

Northern Ireland Environment Agency
Air and Environmental Quality Unit.
Department of Agriculture, Environment and Rural Affairs
Klondyke Building
1 Cromac Avenue
Gasworks Business Park
Belfast BT7 2JA.
Email: ipri@daera-ni.gov.uk

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