

**Translation from Finnish
Legally binding only in Finnish and Swedish
Ministry of the Environment, Finland**

**Government Decree on the environmental protection requirements of energy production units
with a rated thermal input below 50 megawatts
(750/2013)**

Section 1

Scope of application

(1) This Decree applies to energy production units that use solid, liquid or gaseous fuels with a rated thermal input of:

- 1) at least 5 megawatts, but below 50 megawatts; and
- 2) at least 1 megawatt, but below 5 megawatts, if the energy production unit is located within the same installation with other energy production units and their combined rated thermal input exceeds 5 megawatts or if the energy production unit is otherwise part of activities subject to an environmental permit.

(2) This Decree applies as a minimum environmental protection requirement to activities subject to a permit in accordance with section 28 of the Environmental Protection Act (86/2000). This Decree also applies to activities registered in accordance with section 65 of the Environmental Protection Act.

(3) This Decree does not apply to:

- 1) units covered by the Government Decree on Waste Incineration (151/2013);
- 2) units covered by the Government Decree on Limiting the Emissions of Combustion Plants with a Rated Thermal Input of At Least 50 Megawatts (96/2013);
- 3) units that use combustion products for the direct heating, drying or other treatment of objects or materials, such as reheating furnaces and furnaces for heat treatment;
- 4) post-combustion units designed to purify waste gases by combustion and which are not operated as independent combustion units;
- 5) the incineration of whole animal carcasses;
- 6) units used to study, develop or test diesel, gas or multi-fuel engines;
- 7) short-term activities undertaken on an experimental basis as defined in section 30 of the Environmental Protection Act.

Section 2

Definitions

For the purpose of this Decree:

- 1) *energy production unit* means an electricity or heat-producing boiler, gas turbine or combustion engine individually or together with a heat recovery boiler;
- 2) *energy production plant* means one or more energy production units located within the same installation as well as other activities technically or operationally connected to it;

3) *boiler* means a pressurised container in which heat produced through the oxidation of fuels, hot gas or a chemical reaction is used for heating or vaporising liquids;

4) *gas turbine* means any rotating machine converting thermal energy into mechanical work that has a compressor, a burning chamber in which the fuel is oxidised, and a turbine as its main parts;

5) *combustion engine* means a device that converts the chemical energy stored in fuel into mechanical energy when the pressure produced from the combustion of fuel is converted into mechanical energy with the help of pistons that move inside cylinders;

6) *heat recovery boiler* means a device in which the heat recovered from the waste gases produced in a gas turbine or combustion engine are used to heat or vaporise liquids and which can be equipped with an auxiliary burner;

7) *multi-fuel unit* means an energy production unit that can be used to burn two or more different fuels either simultaneously or in turn, and excluding the start-up periods;

8) *back-up and peak load unit* means an energy production unit with a maximum operating time of 1,500 hours per year as a five-year rolling average;

9) *existing energy production unit or plant* means an energy production unit or plant that was in operation on 1 June 2010 or an energy production unit or plant for which the application for an environmental permit has been publicly announced before the aforementioned date;

10) *new energy production unit or plant* means an energy production unit or plant not covered in paragraph 9;

11) *emergency operating unit* means a back-up power unit with a maximum operating time of 500 hours per year as a five-year rolling average.

Section 3

Contents of the registration notification:

The notification referred to in section 65 of the Environmental Protection Act must include:

- 1) the name and contact information of the operator;
- 2) the contact information of the plant, its location and information about its surroundings;
- 3) information about the town planning of the area;
- 4) information about the environmental permit of the plants as well as any other valid permits, agreements, decisions and notifications;
- 5) information about the operation of the plant, and the fuels used and emission reduction methods of each unit;
- 6) information about emissions into the air;
- 7) information about the height of the stack and the grounds for its sizing;
- 8) information about the treatment of wastewater and rain and melt water (*drainage water*) as well as emissions into water or the sewer system;
- 9) information about the storage of fuels;
- 10) information about the waste produced and waste management;
- 11) information about the chemicals used;
- 12) information about the noise pollution caused by the operation, its impact and noise abatement measures;
- 13) a monitoring plan;
- 14) a plan for preparation for disturbances and exceptional situations.

Section 4 *Location of operations*

The location of an energy production unit must be chosen in accordance with the provisions laid down in sections 6 and 30 of the Environmental Protection Act.

Section 5 *Emission limit values for emissions into the air*

- (1) The emissions of sulphur dioxide, nitrogen oxides and dust from new energy production units into the air must not exceed the emission limit values presented in Annex 1, tables 1, 3 and 5.
- (2) The emissions of sulphur dioxide, nitrogen oxides and dust from existing energy production units into the air must not exceed the emission limit values presented in Annex 1, tables 2 and 4.
- (3) The emissions of sulphur dioxide, nitrogen oxides and dust from multi-fuel units into the air must not exceed the emission limit values determined in accordance with Annex 1, section 2.
- (4) If the waste gases of two or more energy production units are discharged through a common flue gas channel, the emission limit values of the units are defined based on the combined thermal input of the units.
- (5) If no primary fuel is available and a unit switches to using back-up fuel exclusively, the emission limit values for the back-up fuel are applied to the emissions from the unit.

Section 6 *Compliance with emission limit values*

- (1) The normal operation of an energy production unit must comply with the emission limit values presented in Annex 1. The start-up and shut-down periods of an energy production unit are not part of its normal operation.
- (2) The emission limit values shall be regarded as having been complied with if:
 - 1) the energy production unit is operated in accordance with a monitoring plan as referred to in section 16;
 - 2) the regularity of burning at the energy production unit is monitored using continuously operating oxygen, temperature and carbon monoxide measuring equipment in accordance with Annex 3; and
 - 3) the results of the periodic measurements carried out in accordance with Annex 3 stay below the emission limit values specified in Annex 1.

Section 7 *Height of the stack*

- (1) The height of the stack of an energy production unit must be sized in accordance with Annex 2, table 1, a dispersion model or a method for determining the fuel-specific height of the stack of a small combustion plant (*stack nomogram*).

(2) If the height of the stack of an energy production unit is sized based on a dispersion model or a stack nomogram, the stack must be sized in such a way that the energy production unit does not cause more than 20% of the daily air quality guiding value specified in the Government Decree on Air Quality Guide Values and the Target Values of Sulphur Fallout (480/1996). In addition to this, the height of the stack and the flow speed of the flue gas in the flue or flues must be designed in such a way that no downwash is formed under normal operating conditions.

(3) The height of the stack of a new energy production plant must always be at least 2.5 times the height of the production building.

(4) The height of the stack of a new energy production unit must always be sized using a dispersion model if within a range of 500 metres from the energy production unit the height of a building, terrain barrier or ground level rises to over 30 metres as measured from the ground level next to the production building.

(5) The stack of an existing energy production unit is high enough if its height is at least 75% of the requirements of Annex 2, table 1.

Section 8

Noise abatement

(1) The operation of an energy production plant and related traffic, unloading and loading activities as well as fuel handling must be designed and placed in such a way that the noise nuisances caused by them can be prevented. The noise pollution resulting from operation must be reduced based on the principle of best available technique by choosing machinery and equipment that cause the lowest possible noise levels and by muffling sources of noise. The spread of the noise caused by operation must be prevented with construction engineering and by directing and placing sources of noise in a way that prevents the spread of noise as effectively as possible.

(2) The operation of an energy production plant must be organised in such a way that the noise generated by operation and related traffic during normal operation does not exceed LAeq 55 dB at sites exposed to noise during the day (7 am to 10 pm) and LAeq 50 dB at night (10 pm to 7 am). In areas used for holiday residences, nature reserves, camping areas and recreational areas located outside population centres, the noise caused by operations must not exceed LAeq 45 dB during the day (7 am to 10 pm) and LAeq 40 dB at night (10 pm to 7 am). If the noise is impact-like or narrow-band in nature, 5 dB must be added to the measurement or calculation result before comparison with the limit value. The evaluation of the noise situation must also take into account the noise level caused by other sources in the area.

Section 9

Treatment and conduction of wastewater from purification equipment

(1) The operator must determine the quantity and quality of wastewater produced by the energy production plant. If operations result in or make use of substances that contain substances specified in Annex 1 of the Government Decree on Substances Dangerous and Harmful to the Aquatic Environment (1022/2006), precautions must be taken so that they are not conducted into ground waters, water environments or a sewer.

(2) Wastewater formed in a waste gas scrubber and as a result of waste gas condensation (*condensation water*) that is conducted into a sewer must be neutralised, clarified and filtered before conduction. Condensation water conducted into a water system must be neutralised, clarified and filtered before conduction. Condensation water conducted into a ditch must be chemically precipitated, clarified and filtered before conduction. When applying this Decree to activities subject to a permit in accordance with section 28 of the Environmental Protection Act, condensation water may also be treated with other methods if the operator can show in the permit application that this will achieve similar or better results than with the methods specified in this subsection.

(3) After full desalination, regeneration waters must be neutralised.

(4) Dust removal water formed on a one-off basis must be pre-treated through neutralisation and clarification before conduction into a sewer, or it must be recovered and delivered for treatment to a facility with an appropriate processing permit.

(5) Pickling water must be treated through neutralisation before conduction into a sewer, or it must be recovered and delivered for treatment to a facility with an appropriate processing permit. Rinsing water from pickling can be conducted directly into the terrain.

Section 10

Treatment and conduction of oily wastewater

(1) Waters from oil product handling areas and oil container catch basins and other waters that may contain oil must be conducted into an oil separator. Oil separators must be equipped with alarm systems that indicate the remaining capacity of the oil space, the functionality of which must be tested at least once a year.

(2) If the waters from the oil separators are conducted into a wastewater sewer maintained by a water supply plant, they must be treated in a class II oil separator that complies with standard SFS-EN-858-1 and has an output water hydrocarbon content of under 100 mg/l.

(3) If the waters from the oil separator are not conducted into a wastewater sewer, they must be treated in a class I oil separator that complies with standard SFS-EN-858-1 and has an output water hydrocarbon content of under 5 mg/l. After this the waters can be conducted into a rainwater sewer or water system.

(4) The sewer must include a sampling and shut-off valve drain immediately following the oil separator, which can be used to close the access of wastewater from the energy production plant to the water supply plant sewer or other discharge location used by the energy production plant. The sampling and shut-off valve drain must be placed, marked and protected in such a way that makes the drain accessible. The shut-off valve must be operable without delay in all conditions.

(5) The separators used for water treatment must be kept operational and they must be emptied at least once a year.

Section 11

Treatment and conduction of other wastewater

- (1) The domestic wastewater from the property must be conducted into a wastewater sewer maintained by a water supply plant. Provisions for the treatment of domestic wastewater outside sewer networks are laid down in the Government Decree on Treating Domestic Wastewater in Areas Outside Sewer Networks (209/2011).
- (2) The drainage water from the energy production plant area must be prevented from accessing the sewers from which water is conducted into the oil separators.
- (3) Outdoor fuel storage fields must have impermeable foundations and their drainage water system must be equipped with solid matter separation.

Section 12

Handling and storage of solid fuels

- (1) The storage, handling and transportation of solid fuels must be organised in such a way that operations do not cause dust, odour or littering nuisances or risk of fire.
- (2) The reception stations for milled peat and other similar fine-grained fuels must be located in a closed hall or other similar space to prevent dust and other environmental impacts.

Section 13

Handling and storage of liquid fuels

- (1) The following requirements must be observed in the handling and storage of liquid fuels:
 - 1) liquid fuels must be stored in appropriate double-shell containers approved for the storage of the fuel in question or in containers placed in an impermeable catch basin;
 - 2) the volume of the catch basin must be sized in such a way that in a spillage situation it can accommodate at least 1.1 times the liquid volume of the largest container placed in it;
 - 3) the condition of the containers must be checked regularly, at least every ten years;
 - 4) the containers must be equipped with overfill prevention systems and double-shell containers must additionally be equipped with leak detectors;
 - 5) in order to prevent the spreading of leaks, absorbents and prevention equipment must be reserved for fuel collection purposes;
 - 6) handling and storage areas must be impermeable to liquids and have elevated boundaries.
- (2) Provisions for the storage and handling of liquid fuels are also laid down in the Act on the Safe Handling and Storage of Dangerous Chemicals and Explosives (390/2005) and pursuant to it.

Section 14

Waste management

- (1) The waste management of an energy production plant must be organised in accordance with the Waste Act (646/2011) and the provisions issued under it so that operation does not cause environmental littering, contamination of soil or other danger or harm to people's health or the environment. Special care must be observed so that:
 - 1) hazardous waste and recoverable waste are collected and kept separate from other waste;

- 2) hazardous wastes are grouped, packed and marked according to their properties and stored in a roofed or otherwise watertight space with a solid base;
- 3) the suitability of airborne and bottom ash for landfill utilisation and recovery is monitored and ash is stored separately in silos or other similar closed spaces;
- 4) the transportation of ash is organised in such a way that no dust nuisances are caused in the vicinity of the plant;
- 5) ash for use as fertiliser product is stored and transported in accordance with the Fertiliser Product Act (539/2006);
- 6) a shipping document is prepared for the shipping of waste as laid down in the Government Decree on Waste (179/2012);
- 7) oil and other hazardous wastes are delivered for appropriate disposal or utilisation at least once a year;
- 8) waste is delivered for utilisation or disposal to a plant that has been granted an appropriate environmental permit for the reception of this kind of waste.

(2) When applying this Decree to activities subject to a permit in accordance with section 28 of the Environmental Protection Act, the ash referred to in subsection 1, paragraph 3 may also be stored in other appropriate ways approved by environmental permit authorities.

Section 15 *Exceptional situations*

- (1) The operator must prepare in advance for exceptional situations, for which there must be an action plan. Instructions must be drawn up for activities that pose a risk of environmental pollution.
- (2) The notification obligation regarding exceptional situations is laid down in section 62 of the Environmental Protection Act and the orders to be given as a result of notifications are laid down in section 64 of the aforementioned Act.
- (3) The operator must initiate the repair and prevention measures that the exceptional situation calls for without delay in order to prevent environmental pollution and harmful impact on the environment. An investigation into the impact of the exceptional situation must be initiated as necessary in a scale appropriate to the nature of the situation in a way agreed upon with the municipal environmental protection authority or, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency, with the Centre for Economic Development, Transport and the Environment.
- (4) The operator must notify the municipal environmental protection authority or, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency, the Centre for Economic Development, Transport and the Environment of any disturbances and breakdowns concerning waste gas purification equipment without delay or no later than 48 hours after they arise.
- (5) Following disturbances and exceptional situations, the operator must take appropriate action to prevent similar incidents from happening again.

Section 16

Monitoring of the operation and its emissions and impact

- (1) The operator must have a monitoring plan that presents the operative monitoring of the energy production plant and the monitoring of emissions and environmental impact. In addition to this, the monitoring plan must present how the monitoring data is provided to the municipal environmental protection authority and also to the Centre for Economic Development, Transport and the Environment, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency. The operation of the plant as well as its emissions and impact on the environment must be monitored in accordance with Annex 3 of this Decree.
- (2) The flue gas emissions of an energy production unit must be measured within 12 months following the commencement of operation or a significant change in operation. After this, measurements must be carried out periodically in accordance with Annex 3.
- (3) The noise levels resulting from the operation of the energy production plant and the traffic related to its operation must be measured once within 12 months following the start of operation. The measurements must be carried out in the normal operating conditions of the energy production plant in accordance with Annex 3.
- (4) The monitoring and supervision of the waste management of the energy production plant must be organised in accordance with section 120 of the Waste Act and section 25 of the Government Decree on Waste.
- (5) The operator must submit the monitoring plan of the plant to the competent authority in connection to applying for an environmental permit or to a municipal environmental protection authority in connection to submitting a registration notification. The monitoring plan may be amended at a later date and it must be kept up to date.

Section 17

Record keeping and providing information

- (1) The operator must keep records of the operation of the energy production unit in accordance with the monitoring plan and Annex 3 and of waste management in accordance with sections 118 and 119 of the Waste Act and sections 20—23 of the Government Decree on Waste. A summary of the records must be kept for a period of five years and presented upon request to the municipal environmental protection authority or, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency, to the Centre for Economic Development, Transport and the Environment.
- (2) The operator must submit the following information annually by the end of February to the municipal environmental protection authority or, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency, to the Centre for Economic Development, Transport and the Environment:
 - 1) the quantities and quality of fuels and chemicals used by each energy production unit;
 - 2) energy production;
 - 3) the operating hours of each energy production unit;

- 4) total emissions of sulphur dioxide (SO₂), nitrogen oxides (NO₂) and dust and carbon dioxide (CO_{2foss} and CO_{2bio}), which are based on measurements or calculations based on fuel data;
- 5) the amount and quality of ash and other waste produced as a result of operation and their delivery locations;
- 6) the amount and quality of wastewater produced as a result of operation;
- 7) noise measurements;
- 8) exceptional situations and resulting measures;
- 9) participation in joint monitoring of air quality and noise;
- 10) the results of other emission and other monitoring measurements, unless they are separately submitted to the supervisory authority.

Section 18

Notification on the termination of operation

- (1) The operator must notify the municipal environmental protection authority or, if the activity is subject to a permit and the competent authority is a Regional State Administrative Agency, the Centre for Economic Development, Transport and the Environment of the termination of operation and present a plan for the removal of the energy production unit and structures and for determining the possible pollution of groundwater.
- (2) Following the termination of operation, the operating area must be left in a state that does not cause a health hazard or other pollution of the environment or risk of it. The operating area must be cleaned and the waste and hazardous waste stored in the area must be delivered for utilisation or processing as laid down in the Waste Act. The obligations after the termination of operations are laid down in a more detailed manner in the Environmental Protection Act.

Section 19

Notification of changes in operation

An operator must notify without delay the municipal environmental protection authority or, if the activity is subject to a permit and the competent authority is a Regional State Administrative Agency, the Centre for Economic Development, Transport and the Environment of any changes in operation that are significant in terms of environmental protection supervision.

Section 20

Transitional provisions and entry into force

- (1) This Decree enters into force on 1 November 2013.
- (2) This Decree repeals the Government Decree on the Environmental Protection Requirements of Energy Production Units with a Rated Thermal Input of Under 50 Megawatts (445/2010).
- (3) This Decree shall apply to an energy production unit that was granted an environmental permit or that was registered before this Decree entered into force as of 1 January 2018 at the latest. Until then the Government Decree repealed by this Decree shall apply.
- (4) Notwithstanding the provisions laid down in subsection 3, this Decree shall apply to the operation an energy production unit subject to an environmental permit meant in the aforementioned subsection as of such time as:

- 1) an environmental permit must be applied for a significant change in operation of an energy production unit pursuant to section 28, subsection 3 of the Environmental Protection Act;
- 2) an application for the review of permit conditions must be made in accordance with section 55, subsection 2 of the Environmental Protection Act; or
- 3) there is a need to amend the environmental permit in accordance with section 58, subsection 1 of the Environmental Protection Act.

(5) A publicly announced environmental permit application or registration notification concerning an energy production unit that is pending at the time this Decree enters into force shall be processed in accordance with the provisions valid at the time this Decree enters into force and subsections 3 and 4 shall apply to the activities of the energy production unit.

(6) Notwithstanding the provisions laid down in subsection 4, the requirement concerning the size of the catch basins of liquid fuel containers laid down in section 13, subsection 1, paragraph 2 shall apply to the operation of an energy production unit that was registered or that was granted an environmental permit before this Decree enters into force as of 1 January 2018.

FUEL-SPECIFIC EMISSION LIMIT VALUES

1. The emission limit values of new and existing energy production units

Table 1. The emission limit values of new energy production units (boilers) with a rated thermal input of at least one but below 50 megawatts

Rated thermal input of the boiler (P)	Dust mg/m ³ n	NO _x (as NO ₂) mg/m ³ n	SO ₂ mg/m ³ n
Liquid fuels ¹	O ₂ = 3%	O ₂ = 3%	O ₂ = 3%
1≤P≤15 MW	50 ²	800	350 ⁴
15<P<50 MW	50 ³	500	350 ⁴
Gaseous fuels		O ₂ = 3%	
1≤P≤15 MW		340	
15<P<50 MW		200	
Wood and other solid biofuels ⁵	O ₂ = 6%	O ₂ = 6%	
1≤P≤5 MW	200	375	200
5<P≤10 MW	50	375	200
10<P<50 MW	40	375	200
Peat	O ₂ = 6%	O ₂ = 6%	O ₂ = 6%
1≤P≤5 MW	200	500	500
5<P≤10 MW	50	500	500
10<P<50 MW	40	500	500
Coal	O ₂ = 6%	O ₂ = 6%	O ₂ = 6%
1≤P≤10 MW	50	270	850
10<P<50 MW	40	270	850

¹ These emission limit values shall be applied to liquid fuels other than those meant in section 2, sub-section 1, paragraphs 1 and 2 of the Government Decree on the Sulphur Content of Heavy Fuel Oil, Light Fuel Oil and Marine Gas Oil (689/2006) as of 1 January 2020.

² The limit value for dust emissions shall be applied to energy production units that were granted an environmental permit or that were registered on or after 1 June 2010, but before this Decree entered into force, as of 1 January 2018, until which time the limit value is 100 mg/m³n. However, for light fuel oil the limit value for dust emissions is always 50 mg/m³n.

³ For back-up and peak load boilers that were granted an environmental permit or that were registered on or after 1 June 2010, but before this Decree entered into force, the limit value for dust emissions is 70 mg/m³ until 1 January 2018.

⁴ The limit value for sulphur dioxide emissions shall be applied to energy production units that were granted an environmental permit or that were registered on or after 1 June 2010, but before this Decree entered into force, as of 1 January 2018, until which time the emission limit value is 850 mg/m³n.

⁵ Reed canary grass, straw, pellets, etc.

Table 2. The emission limit values of existing energy production units (boilers) with a rated thermal input of at least one but below 50 megawatts (emission limit values of back-up and peak load boilers are presented in parentheses)

Thermal input of the boiler (P)	Dust mg/m³n	NO_x (as NO₂) mg/m³n	SO₂ mg/m³n
Liquid fuels¹	O ₂ = 3%	O ₂ = 3%	O ₂ = 3%
1≤P≤15 MW	140 (200) ²	900	350 (850) ³
15<P<50 MW	50 (140) ²	600	350 (850) ³
Gaseous fuels		O ₂ = 3%	
1≤P≤15 MW		400	
15<P<50 MW		300	
Wood and other solid biofuels⁴	O ₂ = 6%	O ₂ = 6%	O ₂ = 6%
1≤P≤5 MW	300 (375)	450 (500)	200
5<P≤10 MW	150 (250)	450 (500)	200
10<P<50 MW	50 (125)	450 (500)	200
Peat	O ₂ = 6%	O ₂ = 6%	O ₂ = 6%
1≤P≤ 5 MW	300 (375)	600 (625)	500
5<P≤10 MW	150 (250)	600 (625)	500
10<P<50 MW	50 (125)	600 (625)	500
Coal	O ₂ = 6%	O ₂ = 6%	O ₂ = 6%
1≤P<50 MW	50 (140)	420 (550)	1100

¹ The emission limit values presented in Annex 1, table 2 shall be applied to liquid fuels other than those meant in section 2, subsection 1, paragraphs 1 and 2 of the Government Decree on the Sulphur Content of Heavy Fuel Oil, Light Fuel Oil and Marine Gas Oil (689/2006) as of 1 January 2020.

² The limit value for dust emissions from light fuel oil is 50 mg/m³n, regardless of the size and operating time of the plant.

³ The limit value for sulphur dioxide emissions shall be applied as of 1 January 2018, until which the emission limit value is 1700 mg/m³(n).

⁴ Reed canary grass, straw, pellets, etc.

Table 3. The emission limit values of new energy production units (diesel and gas engines and gas turbines) with a rated thermal input of at least one but below 50 megawatts (emission limit values of back-up and peak load units are presented in parentheses)

	NO_x (as NO₂)	NO_x (as NO₂)	SO₂	Dust
	≤ 20 MW	> 20 MW		
	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%
Oil diesel engine (GI)	1600	750 (1600)	120 (300) ¹	30(50) ²
Gas diesel engine (GD), gas	1600	750 (1600)		
Spark-ignited engine (SG)	190	95 (190)		
Dual-fuel engine (DF), gas	380	190 (380)		
Dual-fuel engine (DF) oil ³	2000	750 (2000)	300	20
Gas turbine	115	50		

¹ The limit value for sulphur dioxide emissions shall be applied to energy production units that were granted an environmental permit or that were registered on or after 1 June 2010, but before this Decree entered into force, as of 1 January 2018, until which time the emission limit value is 600 mg/m³(n).

² The limit value for dust emissions shall be applied to energy production units that were granted an environmental permit or that were registered on or after 1 June 2010, but before this Decree entered into force, as of 1 January 2018, until which time the emission limit value is 60 mg/m³(n).

³ The emission limit values for dual-fuel combustion engines (DF, oil) that were granted an environmental permit or that were registered on or after 1 June 2010, but before this Decree entered into force, are the same as the emission limit values for existing diesel and gas engines and gas turbines presented in Annex 1, table 4.

Table 4. The emission limit values of existing energy production units (diesel and gas engines and gas turbines) with a rated thermal input of at least one but below 50 megawatts (emission limit values of back-up and peak load units are presented in parentheses)

	NO_x (as NO₂)	SO₂	Dust
	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%
Oil diesel engine (GI)	1850	120 (300) ¹	30(50) ²
Gas diesel engine (GD), gas	1850		
Spark-ignited engine (SG)	190 (250)		
Dual-fuel engine (DF), gas	380		
Dual-fuel engine ³ (DF), oil	2300	300	70
Gas turbine	150 (250)		

¹ The limit value for sulphur dioxide emissions shall be applied as of 1 January 2018, until which time the emission limit value is 600 mg/m³(n).

² The limit value for sulphur dioxide emissions shall be applied as of 1 January 2018, until which time the emission limit value is 70 mg/m³n.

³ The limit values for nitrogen oxides, sulphur dioxide and dust shall be applied as of 1 January 2018.

Table 5. The emission limit values of new emergency operating units with a rated thermal input of at least one but below 50 megawatts

	NO_x (as NO₂)	SO₂	Dust
	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%	mg/m ³ n O ₂ = 15%
Oil diesel engine (GI)	2000	300	70
Gas diesel engine (GD), gas	1900		
Spark-ignited engine (SG)	200		
Dual-fuel engine (DF), gas	400		
Dual-fuel engine (DF), oil	2300	300	70
Gas turbine	150		

2. Determining the emission limit value for multi-fuel units

The emission limit value of a multi-fuel unit which is used to burn two or more fuels simultaneously is calculated based on average fuel consumption over the course of a calendar year. For new energy production units, the emission limit value is calculated based on planned operating times and the actual operating times for existing energy production units.

The emission limit value of a multi-fuel unit is calculated using the following formula:

$$\text{Limit value} = \frac{\text{limit value}_{\text{fuelA}} \times A + \text{limit value}_{\text{fuelB}} \times B + \text{limit value}_{\text{fuelC}} \times C}{A + B + C}$$

A = calorific value of fuel A (MJ/kg) x quantity of fuel A (kg/h or t/a)

B = calorific value of fuel B (MJ/kg) x quantity of fuel B (kg/h or t/a)

C = calorific value of fuel C (MJ/kg) x quantity of fuel C (kg/h or t/a)

Table 1. Stack height

Fuel	Rated thermal input of the energy production unit (P), MW	Height of the stack from ground level, metres
Gaseous fuels, motor fuel oil and light fuel oil as well as wood pellets	$1 \leq P \leq 5$	10
	$5 < P \leq 20$	20
	$20 < P < 50$	30
Heavy fuel oil, maximum sulphur content 0.50%	$1 \leq P \leq 5$	20
	$5 < P \leq 20$	30
	$20 < P < 50$	40
Heavy fuel oil, maximum sulphur content 1.00%	$1 \leq P \leq 5$	30
	$5 < P \leq 20$	50
	$20 < P < 50$	60
Solid fuels	$1 \leq P \leq 5$	20
	$5 < P \leq 20$	30
	$20 < P < 50$	40

MONITORING OF THE OPERATION OF AN ENERGY PRODUCTION UNIT AND PLANT AS WELL AS ITS EMISSIONS AND IMPACT

Monitoring of the operation of emergency operating units and plants and their emissions and impact

Emergency operating units and plants must monitor their operation at least comprehensively enough to be able to provide the information listed in section 17 of the Decree to the municipal environmental protection authority or, if the activity is subject to a permit and the competent authority is a Regional State Administrative Agency, to the Centre for Economic Development, Transport and the Environment.

Operative monitoring and emissions monitoring of energy production units with a rated thermal input of at least one megawatt but below five megawatts

The compliance with emission limit values of a unit with a rated thermal input of at least one megawatt but below five megawatts must be ensured by building the unit in accordance with the principle of best available technique and by operating the unit in such a way that combustion control can be used to make sure that emissions remain as low as possible. The emission measurements must be carried out once upon the commencement of operations or in connection with a significant change in operation.

In regard to the other requirements of the Decree, the impact of units with a thermal input below 5 megawatts must be handled as part of the requirements of the whole installation.

Monitoring of an energy production plant with a rated thermal input of at least five megawatts

The monitoring plan must include the goals of the monitoring and the main methods of the monitoring in regards to environmental impact. The monitoring must include the monitoring of operations and waste, as well as the monitoring of environmental impact. The monitoring of operations is a key part of the monitoring of small energy production plants since such plants are not required to carry out continuous emission measurements. For these plants, the management of environmental hazards is based on the appropriate use and maintenance of equipment as well as the staff's expertise in preventing potential hazards and exceptional situations. The quality or environment system of the plant supports the management of operation and in its part ensures that the plant continues to operate in such a way that environmental hazards remain as small as possible.

1. Operative monitoring

Operative monitoring consists of the monitoring of fuel quality, combustion conditions, waste gas emissions and record keeping practices. The variables that are operatively significant to the operation of an energy production plant must be monitored separately for each energy production unit (table 1). Records must be kept of the monitoring. In order to maintain compliance with the emission limits of the Decree, it is recommended that the plant be audited regularly in order to make sure that the operation of the plant remains at a good level.

Monitoring of fuel quality

The operator must have adequate reports on the quality of fuel in regard to the functioning of the combustion process, emission management and emission calculations. The quality of fuel can be monitored based on information received from the fuel supplier or based on monitoring carried out at the plant.

Monitoring of combustion conditions

The operator must monitor combustion conditions in order to ensure good combustion and thus low emissions. The management of combustion conditions is important since the monitoring of emissions is not continuous. Oxygen content and temperature must be monitored using continuously operating monitoring equipment at new and base load units. Carbon monoxide content must be monitored continuously in solid fuel boilers with a rated thermal input of over five megawatts. The quality of the measurements used for monitoring combustion conditions must be ensured and the measuring equipment must be calibrated regularly, at least once a year. The connection between carbon monoxide and oxygen content and emissions can be defined based on information provided by the boiler manufacturer.

Monitoring of equipment functionality and maintenance

The functionality of equipment must be monitored regularly and maintenance procedures must be carried out in a preventive manner and at regular intervals. This will ensure the functionality of equipment and compliance with the emission limits of the Decree. The amount of material separated by waste gas purification equipment must be monitored. In addition to this, the pressure differences and permeability of cyclones and multicyclones, the current and voltage of electrical filters, the pressure differences and opacity of fibre filters and the pressure differences and fluid flow of wet scrubbers must be monitored. These values must stay within the ranges of variation defined by equipment suppliers so that the purification efficiency of the equipment can be ensured. The frequency of monitoring must be presented in the monitoring plan. Maintenance must encompass the maintenance procedures of boilers, burners, waste gas purification equipment and other separators, stacks, fuel containers and measuring equipment, as well as dust removal and cleaning procedures. A plan must be prepared for maintenance, which must detail the different procedures, their schedules and the persons responsible for them.

Record keeping procedures

The operator must keep records of their operative monitoring. The records must include at least the aforementioned matters.

Table 1. Variables to be monitored as part of the operative monitoring of an energy production plant by unit based on fuel used

	Fuel used in the unit				
	gas	liquid fuel	coal	peat	other solid fuel (wood, biofuels, pellets, etc.) ¹
Monitoring of the quality and quantity of fuel					
• origin	x	x	x	x	x
• consumption	x	x	x	x	x
• humidity			x	x	x
• calorific value	x	x	x	x	x
• grain or particle size				x	x
• sulphur content		x	x	x	x
• ash content			x	x	
• viscosity		x			
• heavy metals ²		x ³	x ⁴	x ⁴	x ⁵
Monitoring of combustion conditions					
• oxygen	x	x	x	x	x
• temperature	x	x	x	x	x
• carbon monoxide ⁶ /incombustibles			x	x	x
Monitoring and maintenance of equipment					
• boilers	x	x	x	x	x
• separators (scrubbers, cyclones, electrical filters, oil separators, etc.)	x	x	x	x	x
• burners	x	x	x		
• measuring equipment	x	x	x	x	x

¹ monitoring of origin and consumption is mandatory in units with a thermal input below five megawatts, other parameters as needed

² as necessary

³ if heavy fuel oil Ni, V

⁴ As, Cd, Co, Cr, Ni, Pb, Zn, Hg

⁵ if wood Cr, Pb, Zn, Cd, As

⁶ the amount of excess air (residual oxygen) in the flue gas must be at least 5%

2. Monitoring of flue gas emissions

Flue gas emissions must be monitored with the help of operative monitoring and one-off dust and nitrogen oxide measurements. Sulphur dioxide emissions can usually be calculated based on fuel

data. In addition, the dust emission levels of new boilers that use solid fuels and heavy fuel oil must be measured continuously (opacity measurement).

A plan concerning one-off waste gas emission measurements must be submitted one month prior to the measurements to the municipal environmental protection authority or the Centre for Economic Development, Transport and the Environment, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency. The first emission measurements of the energy production unit must be carried out no later than twelve months after the commencement of operation. The measurements may be carried out in connection with the warranty measurements of the plant. After this, measurements must be carried out regularly in accordance with table 2 and also in connection with any changes that are significant in regard to emissions. A measurement report must be attached to a permit review application or registration notification.

The emissions of the plant must be measured by an authorised measurer in accordance with table 2. The measurer must be accredited to use the measuring methods that he or she uses (CEN/ISO/other similar nationally or otherwise approved method). The competency of the measurer must be demonstrated to the supervising authority in the measurement plan.

The measurements must be carried out on the highest and lowest power level of the energy production unit so that the results represent the normal operation of the energy production unit as accurately as possible. In manual dust measurements (EN 13284-1), three short-term samples of waste gas must be taken during each operating situation. In order to comply with the limit value, the average of the measurement results must be lower than the limit value. Nitrogen oxides are always measured continuously during emission measurements. Sulphur dioxide emissions can usually be calculated based on the sulphur content of the fuel and emission factors. If lime feed, a waste gas scrubber or other similar methods are used, sulphur dioxide must be measured on a one-off basis using the typical range of fuels used in the boiler. The measurement must be repeated if the measurement result is not lower than the limit value.

The annual emission levels of energy production units are defined based on annual fuel quantities used, the quality data of fuel and emission factors. Emission factors are defined based on the most recent reliable emission measurements. If the plant uses continuously operating measurement equipment for monitoring waste gas emissions, the measurement equipment must be serviced and calibrated at least once a year or even more frequently, as and when necessary.

Table 2. The flue gas emission measurements of an energy production unit¹

Emission measured	gas and light oil	heavy oil	solid fuels
dust	light oil once every five years	once every three years	once every three years
nitrogen oxides	once every five years	once every three years	once every three years

¹ in back-up and peak load units, emission measurements must be carried out at most every 7,000 operating hours or at least once every 7 years.

3. Handling and storage of fuels

Monitoring plans must present how the environmental impacts of fuel handling and storage are monitored and prevented.

4. Monitoring of wastewater

Monitoring plans must present the discharge and sampling locations of different types of wastewater, the frequency of sampling and detail sampling methods and the parameters to be analysed.

In accordance with table 3, the wastewater produced as a result of waste gas condensation (condensation water) must be monitored following chemical precipitation, neutralisation, clarification and filtration; regeneration and pickling waters must be monitored following neutralisation; and dust removal waters must be monitored following neutralisation and clarification.

In accordance with table 3, the following parameters must be determined from condensation water conducted into a ditch or water system: flow rate, temperature, pH (continuously) and sulphate, total phosphorous, total nitrogen, solids and heavy metals content as well as biological oxygen consumption. Measurements that must be carried out at least twice a year must be carried out both in the summer (when the amount of condensation water produced during operation is at its highest) and in the winter (when the amount of condensation water produced during operation is at its lowest). Heavy metal content must be analysed from the sample taken in the winter.

During the first year of operation of the plant or in connection with the registration of activities or the review of permit conditions, two samples must be taken of the regeneration water used in process water production that is conducted into a ditch or water system and analysed for temperature, pH, sulphate, total phosphorous, total nitrogen and solids content as well as biological oxygen consumption. Based on the report, the supervising authority decides whether the results from the water samples warrant continued monitoring.

When wastewater is conducted into a public sewer network, the monitoring of wastewater quality and quantity must also take into account the monitoring requirements set in the wastewater agreement of the sewer facility operator.

Table 3. Monitoring of wastewater (condensation water, regeneration water, dust removal water, pickling water) from the purification equipment of energy production plants

Parameter being monitored	Monitoring frequency		
	Condensation water	Recovery water	Dust removal/pickling water
quantity	continuous	In connection with re-generation	in connection with dust removal/pickling
temperature	continuous	In connection with re-generation	in connection with dust removal/pickling
pH	continuous	In connection with re-generation	in connection with dust removal/pickling
sulphate content	twice a year	twice a year in connection with regeneration	in connection with dust removal/pickling
total phosphorous content	twice a year	twice a year in connection with re-generation	in connection with dust removal/pickling
total nitrogen content	twice a year	twice a year in connection with re-generation	in connection with dust removal/pickling
biological oxygen consumption (BHK7)	twice a year	twice a year in connection with regeneration	in connection with dust removal/pickling
solids content	twice a year	twice a year in connection with regeneration	in connection with dust removal/pickling
heavy metals ¹	once a year		in connection with dust removal/pickling

¹ if the plant burns heavy fuel oil, coal, peat (As, Cd, Co, Cr, Ni, Pb, Zn, Hg),
if wood Cr, Pb, Zn, Cd, As

Oil separators must be kept operational through regular maintenance, which must include at least the following measures:

- 1) the hydrocarbon content of the water leaving the oil separators must be determined no later than twelve months after the commencement of operation. After this the monitoring must be continued based on a separate agreement with the supervising authority;
- 2) The functionality of the alarm system that indicates the remaining capacity of the oil space must be tested at least once a year and
- 3) the oil separators must be emptied at least once a year.

5. Monitoring of the utilisation of waste and ash

The quantities and quality of waste produced as a result of the operation must be regularly monitored and records must be kept of them. Records must be kept of the quantities of waste delivered to different utilisation and processing and landfill sites. Waste must be categorised for the purpose of reporting in accordance with the supervising authority's instructions.

The quality of airborne and bottom ash must be monitored in order to promote utilisation. Utilisation must take into consideration: the Government Decree Concerning the Recovery of Certain Wastes in Earth Construction (591/2006), the Fertiliser Product Act and decrees 24/11 and 11/12 issued by the Ministry of Agriculture and Forestry under it; and in final disposal: the Government Decree on landfills (331/2013). The determinations must be redone if changes that may have an effect on the quality of ash occur in the quality or combustion of fuel.

6. Monitoring of noise level

The noise level caused by operations must be measured at sites closest to the plant that are exposed to noise once within twelve months following the commencement of operation of the plant. The measurements must be redone if noise emissions grow significantly or if the noise emission limit values are exceeded. Noise measurements must be carried out in accordance with the instructions issued by the Ministry of the Environment 1/1995 (Environmental noise measurements). Sound power level measurements and calculation models can be used to support or substitute for noise measurements. Noise dispersion calculations can also be used to evaluate the noise levels caused by traffic and background noise.

7. Monitoring of the state of soil

The contamination of soil must be reviewed if necessary in connection with chemical accidents. Contamination must also be reviewed at plants after termination of operation.

8. Risk management and exceptional situations

A plan drawn up for exceptional situations must be presented in connection with the monitoring plan. The plan must include instructions for measures in case of disturbances in burners or separators, as well as in case of oil and chemical accidents.

9. Providing information to the supervising authority

Each year by the end of February, the operator must submit an annual report, which must present the information detailed in section 17 of the Decree, to the municipal environmental protection authority or the Centre for Economic Development, Transport and the Environment, if the plant is subject to a permit and the competent authority is a Regional State Administrative Agency.

10. Monitoring of environmental impact

The plant must participate in the joint supervision of air quality and noise if necessary.