

European Legal Framework on Fluorinated Greenhouse Gases

Leak control,
Training and Certification

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Legal Framework on F-Gases

Objective

Protection of the Environment by the reduction of F-Gas emissions in the EU by two-thirds of today's levels by 2030

Lines of Action

- ❖ Rules on containment, use, recovery and destruction of F-Gases
- ❖ Conditions on the placing on the market of products and equipment containing or relying upon F-gases
- ❖ Quantitative limits for the placing on the market of hydrofluorocarbons (HFCs)



Legal Framework on F-Gases

Regulation
842/2006



New F-Gas
Regulation
517/2014

Reg. 1493/2007 : Reporting format for Producers, importers, exporters
Reg. 1494/2007 : Labelling requirements
Reg. 1497/2007 : Leakage checking for Stationary Fire protection systems
Reg. 1516/2007 : Leakage checking for Stationary Refrigeration, AC, Heat Pumps
Reg. 303/2008 : Certification / Stationary Refrigeration, AC, Heat Pumps
Reg. 304/2008 : Certification / Fire protection systems
Reg. 305/2008 : Certification / High-voltage switchgear (recovery)
Reg. 306/2008 : Certification / Solvents (recovery)
Reg. 307/2008 : Training attestation / AC in certain motor vehicles
Reg. 308/2008 : Notification format for MS Certification systems

Directive **2006/40/EC** : Emissions from AC systems in motor vehicles



Containment : Prevention of emissions

- Intentional release of F-gases into the atmosphere is prohibited
- Unintentional release of F-Gases ("Leakages") is to be prevented by all available technical means and repaired without delay when it occurs.

All the works on equipment containing or relying upon F-gases (installation, servicing, maintenance, repair or decommissioning of the equipment) should only be carried out by **Certified technical personnel**



Containment : Leak Checks

Equipment that contains fluorinated greenhouse gases in quantities of the equivalent of 5 tonnes of CO₂ or more must be regularly checked for leaks.

- (a) stationary refrigeration equipment
- (b) stationary air-conditioning equipment
- (c) stationary heat pumps
- (d) stationary fire protection equipment
- (e) refrigeration units of refrigerated trucks and trailers
- (f) electrical switchgear
- (g) organic Rankine cycles.



Containment : Leak Checks

Frequency of Leak Checks

CO ₂ eq in tonnes	Frequency of checks (max number of months between checks)	
	No LDS	LDS installed
5-50	12	24
51-500	6	12
500+	3	6

* LDS : Leakage Detection System / checked every 12 months



Record Keeping

Operators of equipment which is required to be checked for leaks, shall establish and maintain records for each piece of such equipment specifying the following information:

- Quantity and type of fluorinated greenhouse gases installed
- Quantities of f-gases added during installation maintenance or servicing or due to leakage
- Quantities of installed f-gases which have been recycled or reclaimed (including name, address and certificate number of the recycling or reclamation facility)
- Quantity of fluorinated greenhouse gases recovered
- Identity of the undertaking which installed, serviced, maintained and where applicable repaired or decommissioned the equipment, including, where applicable, the number of its certificate
- Dates and results of the checks carried out
- If the equipment was decommissioned, the measures taken to recover and dispose of the fluorinated greenhouse gases.



Certification

In conclusion :

Installation, Service, Maintenance, Repair, Decommissioning and Recovery on equipment that contain f-gases or whose functioning relies upon f-gases, **MUST BE CARRIED-OUT BY CERTIFIED TECHNICIANS ONLY !**

Additionally :

- For the purposes of installation, servicing, maintenance or repair of such equipment, f-gases shall only be sold to and purchased by technicians that hold the relevant certificates or attestations or companies that employ technicians holding a certificate or a training attestation.
- Non-hermetically sealed equipment charged with f-gases shall only be sold to the end user where evidence is provided that the installation is to be carried out by certified technicians



Certification : Member States obligations

Key obligations for MS :

- Certification is mandatory
- MS will establish their own certification, attestation and training systems, which will incorporate the minimum requirements laid down in EU F-gas legislation.
- MS have to set-up their certification, attestation and training systems within a specific timeframe and formally notify the Commission.
- Certificates and training attestations issued in the context of this legislation are mutually recognized among all EU Member States



Certification : Requirements for Member States

MS will issue certificates and attestations covering the minimum requirements laid down in Regulations 303-307/2008 as regards to :

- ⇒ **Types of equipment**
- ⇒ **Technical tasks**

Two types of Certificates are provided for in Regulations 303-307/2008 :

- ⇒ **Certificates or Attestations for natural persons (technicians)**
- ⇒ **Certificates for companies**



Certification : Requirements for Member States

MS should establish **Certification** and **Evaluation bodies** (if they don't already exist) and make sure that these bodies are **independent** and **impartial** in carrying out their activities.

Certification bodies will issue Certificates to personnel who have passed **theoretical** and **practical examinations** organized by Evaluation Bodies.

- ⇒ MS shall ensure that **training** is available for natural persons seeking certification
- ⇒ MS shall also ensure that natural persons already holding certificates will have access to information on **new technological developments** with regards to replacing f-gases or reducing the use of f-gases.



Certification : Requirements for Member States

Certificates and Training attestations for natural persons (personnel)

REG/ DIR	Type of equipment	Technical tasks			
		Leak Checking	Recovery	Installation	Maintenance Servicing
303	Stat. Refrigeration	Certificate	Certificate	Certificate	Certificate
	Stat. A/C	Certificate	Certificate	Certificate	Certificate
	Stat. Heat Pumps	Certificate	Certificate	Certificate	Certificate
304	Stat. Fire protection	Certificate	Certificate	Certificate	Certificate
305	Elec. Switchgear		Certificate		
306	Solvents		Certificate		
307 DIR40	MAC		Training Attestation		



Certification : Requirements for Member States

Certificates for companies

REG/ DIR	Type of equipment	Technical tasks			
		Leak Checking	Recovery	Installation	Maintenance Servicing
303	Stat. Refrigeration			Certificate	Certificate
	Stat. A/C			Certificate	Certificate
	Stat. Heat Pumps			Certificate	Certificate
304	Stat. Fire protection			Certificate	Certificate
305	Elec. Switchgear				
306	Solvents				
307 DIR40	MAC				



Example of minimum requirements as to the skills and knowledge to be covered by evaluation bodies

REG 303

SKILLS AND KNOWLEDGE		CATEGORIES			
		I	II	III	IV
1	Basic thermodynamics				
1.01	Know the basic ISO standard units as for temperature, pressure, mass, density, energy	T	T	—	T
1.02	Understand basic theory of refrigeration systems: basic thermodynamics (key terms, parameters and processes such as Superheat, High Side, Heat of Compression, Enthalpy, Refrigeration Effect, Low Side, Sub-cooling), properties and thermodynamic transformations of refrigerants including identification of zeotropic blends and fluid states.	T	T	—	—
1.03	Use relevant tables and diagrams and interpret them in the context of indirect leakage checking (including checking of the good operation of the system): log p/h diagram, saturation tables of a refrigerant, diagram of a single compression refrigeration cycle.	T	T	—	—
1.04	Describe the function of the main components in the system (compressor, evaporator, condenser, thermostatic expansion valves) and the thermodynamic transformations of the refrigerant.	T	T	—	—
1.05	Know the basic operation of the following components used in a refrigeration system and their role and importance for refrigerant leakage prevention and identification: (a) valves (ball valves, diaphragms, globe valves, relief valves), (b) temperature and pressure controls, (c) sight glasses and moisture indicators, (d) defrost controls, (e) system protectors, (f) measuring devices as manifold thermometer, (g) oil control systems, (h) receivers, (i) liquid and oil separators		—	—	—



Example of minimum requirements as to the skills and knowledge to be covered by evaluation bodies REG 303

SKILLS AND KNOWLEDGE		CATEGORIES			
		I	II	III	IV
3	Checks before putting in operation, after a long period of non-use, after maintenance or repair intervention, or during operation				
3.01	Carry out a pressure test to check the strength of the system	P	P	—	—
3.02	Carry out a pressure test to check the tightness of the system				
3.03	Use a vacuum pump				
3.04	Evacuate the system to remove air and moisture according to standard practice				
3.05	Fill in the data in the equipment records and fill in a report about one or more tests and checks carried out during the examination.	T	T	—	—
4	Checks for leakage				
4.01	Know potential leakage points of refrigeration, air-conditioning and heat pump equipment	T	T	—	T
4.02	Check equipment records prior to a check for leakage and identify the relevant information on any repeating issues or problem areas to pay special attention to	T	T	—	T
4.03	Make a visual and manual inspection of the whole system in accordance with the Commission Regulation (EC) No 1516/2007 of 19 December 2007 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, standard leakage checking requirements for stationary refrigeration, air conditioning and heat pump equipment containing certain fluorinated greenhouse gases (*)	P	P	—	P



Certification : Requirements for training

Member States **shall ensure** that **Training is available** for natural persons (personnel) carrying out the following tasks :

Type of equipment	Technical tasks					
	INSTALL	SERV/MAIN	REPAIR	DECOM	LEAK	RECOV
Stationary refrigeration equipment						
Stationary air-conditioning equipment						
Stationary heat pumps						
Stationary fire protection equipment						
Refrigerated trucks and trailers						
Electrical switchgear						
MAC						
Solvents in stationary equipment						



Certification : Requirements for training

MS will ensure that natural persons holding certificates have access to information on:

- Relevant technologies to replace or reduce the use of f-gases and their safe handling
- Existing regulatory requirements for working with equipment containing alternative refrigerants to f-gases.



Challenges for candidate countries

Using the EU f-gas legislation as a guiding framework

Enrich / adapt your legislation :

Intentional release of f-gases into the atmosphere should be illegal

- Cover all sectors / types of equipment : refrigeration, air-conditioning, fire-fighting, solvents, foams etc.
- Cover all types of activities : Installation, maintenance, repair and decommissioning of equipment, transport, disposal etc.

Only competent technicians should handle f-gases at all stages of their use :

Installation of equipment, maintenance, repair, recovery, decommission, transfer, recycling, destruction (including purchasing)



Challenges for candidate countries

Users / owners of systems should only employ competent personnel for installation, repair etc. and that records are kept.

Establish **training and certification systems** for technical personnel and companies :

- Certification and Attestation Bodies
- Evaluation bodies and procedures
- Training programs
- Certification rules, procedures and requirements

Of crucial importance : Order and synchronization of legal acts



Challenges for candidate countries Setting-up a certification system

Key steps

- A. UNDERSTANDING THE F-GAS LEGISLATION**
- B. ANALYSIS OF CURRENT SITUATION**
- C. EVALUATION AND KEY DECISIONS**
- D. DESIGN OF THE CERTIFICATION SYSTEM**
- E. LEGAL ACTS**



Challenges for candidate countries Setting-up a certification system

A. UNDERSTANDING THE F-GAS LEGISLATION

Objective

Reducing emissions of f-gases / Reducing negative impact on the environment

Lines of Action

- a) Containment of f-gases at all stages of their use
- b) Restrictions on the placing on the market of the quantities of f-gases as well as of specific products and equipment.

Means for achieving Containment

The certification of technical personnel (and companies) ensures that technicians involved in the handling of F-gases have the necessary qualifications and training to do that properly.



Challenges for candidate countries Setting-up a certification system

B: ANALYSIS OF CURRENT SITUATION

B1. Detailed mapping of **professional sectors** operating in your country, which are involved in f-gas management as defined in REGS 303-307.

- Professional categories, levels of engagement, professional and legal rights.
- Stakeholders and professional bodies
- Make contact and consult on a continuous basis with all bodies involved



Challenges for candidate countries Setting-up a certification system

B2. Detailed mapping of **Education and Training systems** in your country, which are related to the fields and specialties defined in REGS 303-307.

- Degrees awarded by universities and technical schools at all levels. Professional and legal rights.
- Vocational training provided to technicians
- **Make contact and consult with educational and training bodies.**



Challenges for candidate countries Setting-up a certification system

B3. Detailed mapping of existing **certification** and/or **licensing** systems.

- Certification and Attestation bodies (public, semi-public, private)
- Evaluation bodies (public, semi-public, private)
- Certification/attestation rules, procedures and requirements
- **Make contact and consult with educational and training bodies.**

B4. Detailed mapping of **national legislation** relative to B1 – B3



Challenges for candidate countries Setting-up a certification system

C. EVALUATION AND KEY DECISIONS

C1. Evaluation of professional sectors, Education and Training systems, Certification and/or Licensing systems and legal framework in terms of:

- Strengths and weaknesses
- Gaps or Overlaps
- Interrelations



Challenges for candidate countries Setting-up a certification system

C2. Key decisions on:

- The fields of competence and jurisdiction of your professional groups (who does what)
 - The feasibility of upgrades or modifications in your educational system to cover weaknesses (long and mid-term results)
 - The necessity of additional vocational training to cover weaknesses in short time
 - Certification/attestation/evaluation bodies: On the utilization of existing structures (via small or large modifications) and/or the establishment of new ones.
 - The basic rules, procedures and requirements
 - The necessary legal acts to promote all the above
- Consult with all relevant government and professional bodies



Challenges for candidate countries Setting-up a certification system

D. DESIGN OF THE CERTIFICATION SYSTEM

- Certification and Attestation bodies (public, semi-public, private)
- Evaluation bodies (public, semi-public, private)
- Certification/attestation rules, procedures and requirements
- Training bodies and training programs
- Consult with all relevant government and professional bodies

Keep always in mind that Certification, Attestation and Evaluation bodies must be **independent** and **impartial** in carrying out their activities.



Challenges for candidate countries Setting-up a certification system

E. LEGAL ACTS

- Design the necessary legal acts to establish the system, in collaboration with all government bodies involved (i.e ministries of Education, Development, Environment)
- Make sure that all requirements of the f-gas legislation are met
- Adapt/Revise existing legislation or make new one. Make your legislation as simple and straightforward as possible
- Carefully design the order of your legislative acts



Challenges for candidate countries Setting-up a certification system

Two final notes :

It is of paramount importance that the chain of technical actions of **Recovery-collection-transportation-recycling-destruction** must be in place and in workable order (legally and technically) if the final objective of effectively containing the f-gases is to be achieved

Establish a continuous and up-to-date flow of information for both, users and technicians, in order to increase the level of awareness on the risks involved in the use of f-gases in everyday life as well as the available means, practices and technologies to effectively contain them.



Thank You !

