The Voice of European Air-Conditioning, Refrigeration and Heat Pumps Contractors

Implementing Act on training and certification, Article 10 F-gas Regulation 2024/573

AREA position

10 June 2024

AREA, the European association of refrigeration, air conditioning and heat pump (RACHP) contractors, fully supports an ambitious transition to alternatives to f-gases. However, AREA members have been voicing concerns regarding the very low level of training on alternative refrigerants among F-gas trained personnel and on the risk of a shortage of contractors trained in the use of low GWP refrigerants for years. Training and certification are required to avoid accidents, injuries and fatalities involving systems with alternative refrigerants which all present safety issues, and many of which are flammable.

Therefore, AREA welcomes the extension of the F-gas certification scheme to alternative refrigerants in the new F-gas Regulation as a necessary complementary addition to the existing F-gas provisions in order to ensure safe, efficient and reliable handling of these refrigerants. This is an important step forward in increasing safety in the RACHP sector, both for the end users and the technicians at work.

The sufficient competence of the technician is an indispensable risk-mitigating factor, and therefore a precondition for a successful transition from F-gases to alternative low GWP refrigerants. The definitions and categories of certification which will be defined in the implementing act, provide the clarity needed in order for the Regulation to translate into practices and behavior in line with the European climate ambitions and the energy transition.

AREA members welcome the new certification structure including five categories as listed in article 3 of the draft Implementing Act.

The vast majority of residential heat pumps sold in the short to medium term will contain either F-gases or hydrocarbons, and heat pumps containing these two types of refrigerants have enough technical similarities in order for them to be placed in the same category (A). People should be able to be qualified for F-gases and flammables only, now and in the future. Otherwise, instead of increasing the number of skilled technicians, the Regulation might have the opposite effect and lead to an even more important lack of workforce in the sector.

Whereas we support the explicit mention of Hydrocarbons in the Implementing Act, this is not the case in the Regulation which refers to flammable in general (high pressure and toxic). The terms “flammable” and “hydrocarbons” are both used, and although their respective meanings overlap, they are not the same. This should be clarified to ensure a correct implementation of the Regulation. Thus, we would suggest mentioning in the implementing act “*Hydrocarbons and other flammables*”.

In addition, we would like to reiterate the practicality of a smaller category A specifically for the residential heat pump and air conditioning market. AREA suggests a demarcation as follows:

- A1 for all f-gas or hydrocarbons systems, without charge limitation
- A2 for smaller heat pumps and air conditioning systems: ≤1kg hydrocarbons and ≤ 3 kg F-gas or ≤12 kW rated capacity. The distinction can be made by either refrigerant charge or by rated capacity.

Refrigeration equipment and heat pumps containing CO2 and ammonia differ too widely from those containing F-gases or hydrocarbons – mainly regarding materials used and operating pressures – and merit their own respective categories. Moreover, the use of ammonia as a refrigerant is a distinctly separate market from the residential heat pump market. The companies, and their technicians, active in the market of ammonia refrigeration, are not the same companies as those working on heat pumps for indoor comfort purposes. Thus, we fully support the creation of two new certificates, B and C, respectively for CO2 and ammonia.

In addition, the possibility of combining any of the certificate types ensures the appropriate flexibility, depending on the required skills needed for the technician activities.

As regards the validity of the certificates, we would suggest mentioning the deadline in article 10 (a) for a matter of clarity:
"(a) Holders of Categories I and II certificates under Article 3(2) of Commission Implementing Regulation (EU) 2015/2067 are only allowed to continue using those certificates ***after 12 March 2029*** *if they update their knowledge and skills…"*

As a final point, our comments on Annex 1 "Minimum requirements as to the skills and knowledge to be covered by the evaluation bodies" are available below.

AREA members are confident that this new certification structure will guarantee the adequate level of skills to ensure a safe transition towards alternative refrigerants.

AREA comments on ANNEX I

Minimum requirements as to the skills and knowledge to be covered by the evaluation bodies

		A	B	C	D	E	Comments
4.0	**Checks for leakage**						
4.03	Carrying out a visual and manual inspection of the whole system in accordance with Commission Regulation (EC) No 1516/2007 1	P	P	P		P	1516/2007 is only for HFCs. We are fine if this also applies to CO2 and Ammonia, but this could be confusing.
4.04	Carrying out a check for leakage of the system using an indirect method in accordance with Regulation (EC) No 1516/2007 and the instruction manual of the system	P	P	P		P	Please see above
4.07	Carrying out a check for leakage of the system using one of the direct methods which does not entail breaking into the refrigeration circuit, referred to in Regulation (EC) No 1516/2007		P	P		P	Please see above
5.0	**Environment-friendly handling of the system and refrigerant during installation, maintenance, servicing or recovery**						
5.03	Use of a recovery set to recover refrigerant and connect and disconnect recovery set with minimal emissions	P	P	P	P		There are no recovery sets for CO2. This should be deleted for category B.
5.04	Drainage of F-gas contaminated oil out of a system	P	P	P	P		Presumably this should say "refrigerant contaminated oil". If not, this should be deleted for categories B and C
5.05	Identification of refrigerant state (liquid, vapour) and condition (subcooled, saturated or superheated) prior to charging, to ensure correct method and volume of charge. Filling the system with	P					This also applies to categories B,C and D, so this should be added.

	refrigerant (both in the liquid and vapour phase) without loss of refrigerant						
5.08	Knowledge of requirements and procedures for handling, reusing, reclaiming, storage and transportation of fluorinated refrigerant and oils, including when contaminated	T	T	T	T		Why are categories B and C also included? It mentions "fluorinated".
5.09	Knowledge of requirements and procedures for handling, filling, recovering, reclaiming, storage and transportation of hydrocarbons and installation of equipment and systems relying on hydrocarbons	T	T	T	T		Add "and oils, including when contaminated". This only applies to category A, other categories should be deleted.
5.10	Knowledge of requirements and procedures for handling, filling, recovering, reclaiming, storage and transportation of R744 (CO2) and installation of equipment and systems relying on R744		T				Add "and oils, including when contaminated". “Recovery” should be deleted, and “venting” added.
5.11	Knowledge of requirements and procedures for handling, filling, recovering, reclaiming, storage and transportation of R717 (NH3) and installation of equipment and systems relying on R717. Knowledge of the effects of the release of R717 during installation or maintenance work, through leaks or accidents and of how to reduce these effects (for example using scrubbers) with proper planning)			T			Add "and oils, including when contaminated".
6.0	**Component: installation, putting into operation and maintenance of reciprocating, screw and scroll compressors, single and two-stage**						
6.04	Adjustment of the suction and discharge valves		P	P			This only applies to larger industrial compressors. Not executable on exam installations. Not relevant for CO2 trans critical. This should be deleted.
6.05	Check of the oil return system						It applies to categories A, B and C
6.08	Knowledge of measures improving or maintaining the energy efficiency of equipment during installation or maintenance of compressors	T			T		It also applies to categories B and C but not to category D.

7.0	**Component: installation, putting into operation and maintenance of air cooled and water-cooled condensers**						
7.03	Proper installation of a condenser/outdoor unit, including control and safety equipment, so that no leak or major release occurs when the system has been put into operation	P					Also applicable to categories B and C.
7.04	Adjusting the safety and control switches	P					Also applicable to categories B and C.
7.05	Checking the discharge and liquid lines	P					Also applicable to categories B and C.
7.06	Purging non-condensable gases out of the condenser using a refrigeration purging device	P					Also applicable to categories B and C.
7.07	Starting up and shutting down a condenser and check of the good working condition of the condenser, including by making measurements during operation	P					Also applicable to categories B and C.
7.08	Checking the surface of the condenser	P					Also applicable to categories B and C.
7.09	Writing of a report about the condition of the condenser, which identifies any problems in the functioning that could damage the system and eventually lead to refrigerant leakage or release should no action be taken	T					Also applicable to categories B and C.
7.10	Knowledge of measures of improving or maintaining the energy efficiency of equipment during installation or maintenance of condensers	T					Also applicable to categories B and C.
8.0	**Component: installation, putting into operation and maintenance of air cooled and water-cooled evaporators**						
8.01	Explanation of the basic functioning of an evaporator (including defrosting system) and risks of leakage associated to it	T					Also applicable to categories B and C.
8.02	Adjustment of an evaporating pressure control of the evaporator	P					Also applicable to categories B and C.
8.03	Installation of an evaporator including control and safety equipment, so that no leak or major release occurs when the system has been put into operation	P					Also applicable to categories B and C.
8.04	Adjustment of the safety and control switches	P					Also applicable to categories B and C.

8.05	Checking the liquid and suction pipelines in the correct position	P					Also applicable to categories B and C.
8.06	Checking the hot gas defrost pipeline	P					Also applicable to categories B and C.
8.07	Adjustment of evaporation pressure regulation valve	P					Also applicable to categories B and C.
8.08	Starting up and shutting down an evaporator and check of the good working condition of the evaporator, including by making measurement during operation	P					Also applicable to categories B and C.
8.09	Checking the surface of the evaporator	P					Also applicable to categories B and C.
8.10	Writing of a report about the condition of the evaporator, which identifies any problems in the functioning that could damage the system and eventually lead to refrigerant leakage or release should no action be taken	T					Also applicable to categories B and C.
8.11	Knowledge of measures of improving or maintaining the energy efficiency of equipment during installation or maintenance of evaporators	T					Also applicable to categories B and C.
9.0	**Component: installation, putting into operation and servicing of Thermostatic Expansion Valves (TEV) and other components**						
9.01	Explanation of the basic functioning of different kinds of expansion regulators (thermostatic expansion valves, capillary tubes) and risks of leakage associated to it	T					Also applicable to category C.
9.02	Installation of valves in the correct position	P					Also applicable to categories B and C.
9.03	Adjustment of a mechanical/electronic TEV	P					Also applicable to categories B and C.
9.04	Adjustment of mechanical and electronic thermostats	P					Also applicable to categories B and C.
9.05	Adjustment of a pressure-regulated valve	P					Also applicable to categories B and C.
9.06	Adjustment of mechanical and electronic pressure limiters	P					Also applicable to categories B and C.
9.07	Checking the functioning of an oil separator	P					Also applicable to categories B and C.
9.08	Checking the condition of a filter dryer	P					Also applicable to category B.

9.09	Writing of a report about the condition of these components, which identifies any problems in the functioning that could damage the system and eventually lead to refrigerant leakage or release should no action be taken	T					Also applicable to categories B and C.
9.10	Knowledge of measures of improving or maintaining the energy efficiency of equipment during installation or maintenance of TEV and other components	T					Also applicable to categories B and C.
10.0	**Piping: building a leak-tight piping system in a refrigeration installation**						
10.01	Welding, brazing and/or soldering of leak-free joints on metallic tubes, pipes and components that can be used in refrigeration, air conditioning or heat pump systems	P	P	P			Up to and including cat I PED (above that means a separate certification, either for brazing or welding) Ammonia should be excluded.
11.0	**Information on relevant technologies to replace or to reduce the use of fluorinated greenhouse gases and their safe handling**						
11.05	Knowledge of differences in components and system design for equipment and systems relying on hydrocarbons	T	T	T	T	T	Only applicable for category A.
12.0	**Installation and good practice of servicing for equipment and systems relying on hydrocarbons**						
12.01	Knowledge of the labelling requirements and special requirements for flammable refrigerants in equipment, systems and refrigerant cylinders and special requirements on bottle connections	T	T	T	T		This section is only for hydrocarbons. Why are categories B, C & D concerned by this requirement?
12.02	Knowledge of the safety requirements for service tools and equipment such as gas detection, leak detection, ventilation, personal protective equipment, vacuum pumps, recovery units; requirements for disposal of recovered gases.	T	T	T	T		This section is only for hydrocarbons. Why are categories B, C & D concerned by this requirement?
13.0	**Installation and good practice of servicing for equipment and systems relying on R744 (CO2)**						
13.03	Knowledge of the special requirements for refrigerant cylinders and ~~**double valves**~~ for ~~**liquid and**~~ gas extraction		T				Knowledge of the special requirements for refrigerant cylinders for gas extraction (technicians do not handle liquid CO2)
13.08	Performance of a pressure test to check the pressure resistance and tightness of the system		P				The skill on performing the vacuum as 12.09 and 14.12 is missing.

13.10	Charge of the system with the appropriate volume of R744 (CO_2) in gaseous ~~**and liquid phase**~~		P				Delete liquid phase, technicians do not handle CO_2 liquid, only gas.
13.16	Knowledge of measures of improving or maintaining the energy efficiency of equipment during installation or maintenance with toxic refrigerants		T				"toxic refrigerants" to be replaced with "high pressure refrigerants"
14.0	**Installation and good practice of servicing for equipment and systems relying on R717 (NH_3)**						
14.10	Opening of the system by welding (or other appropriate procedure), removal and exchange of a component and closing of the system by welding (or other appropriate procedure).			P			This can be deleted, since a welder would perform this, not the refrigeration technician.
14.15	Safe recovery of toxic refrigerant from the system and filling the system with nitrogen			P	P		Category D certificate only covers recovery of F-gases.