

Life cycle of refrigerants – theory and reality

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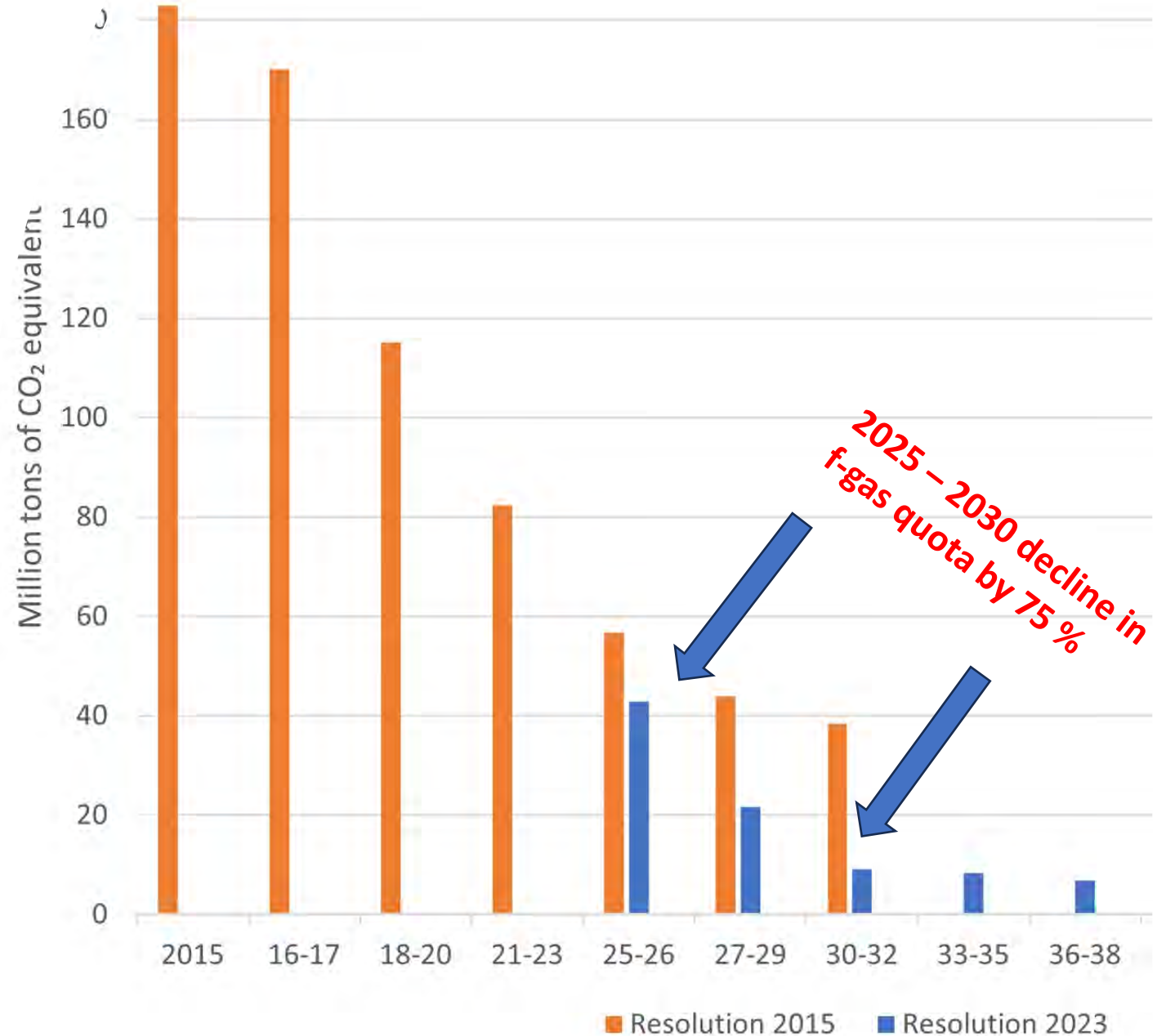
Czech Association for Cooling
and Air Conditioning

Technology



Life cycle of refrigerants – legislative framework

- Phase-down scheme and service bans under reg. 2024/573 drastically limit the amount of f-gases on the EU market
- Used HFC's have become valuable asset – will the companies take the chance?



Life cycle of refrigerants – legislative framework

- Regulation EU 2024/573 sets the legislative framework for reclamation of FGG
 - Recovery of FGG is mandatory and can be done only by certified persons
 - Recovered FGG can/should be used again and reg. 573 gives us rules how to do it
 - National/state legislations on waste management and transport must be considered

Life cycle of refrigerants – bans of use of new refrigerants

- Regulation EU 2024/573 bans on use of new HFC's **in stationary refrigeration systems**:
- 2020 and 2025: ban on HFC's with GWP 2500 or higher (R23, R404A, R507)
 - **Reclaimed HFC's can be used till the end of 2029**
 - Exemption for weapon systems and systems going under -50 °C
- 2032: ban on HFC's with GWP 750 or higher (R407, R448, R449 ...)
 - Reclaimed HFC's can be used without time limit
 - Exemption for weapon systems, systems going under -50 °C and systems for cooling nuclear power plants
 - **Chillers not affected!**

Life cycle of refrigerants – regeneration points

- Refrigerants, whether new, reclaimed, or repackaged, are considered acceptable for use in refrigeration and air-conditioning products if they meet the purity levels defined in AHRI Standard 700.
- In 2025 there are three companies in the EU, which can do reclamation of refrigerant blends like R404A, R407, R410A, GER, NL and POL
- Their capacity has been increased and so far, there have been no reports of lack of reclaimed f-gases
- They are able to reclaim ... tons of HFC's per year

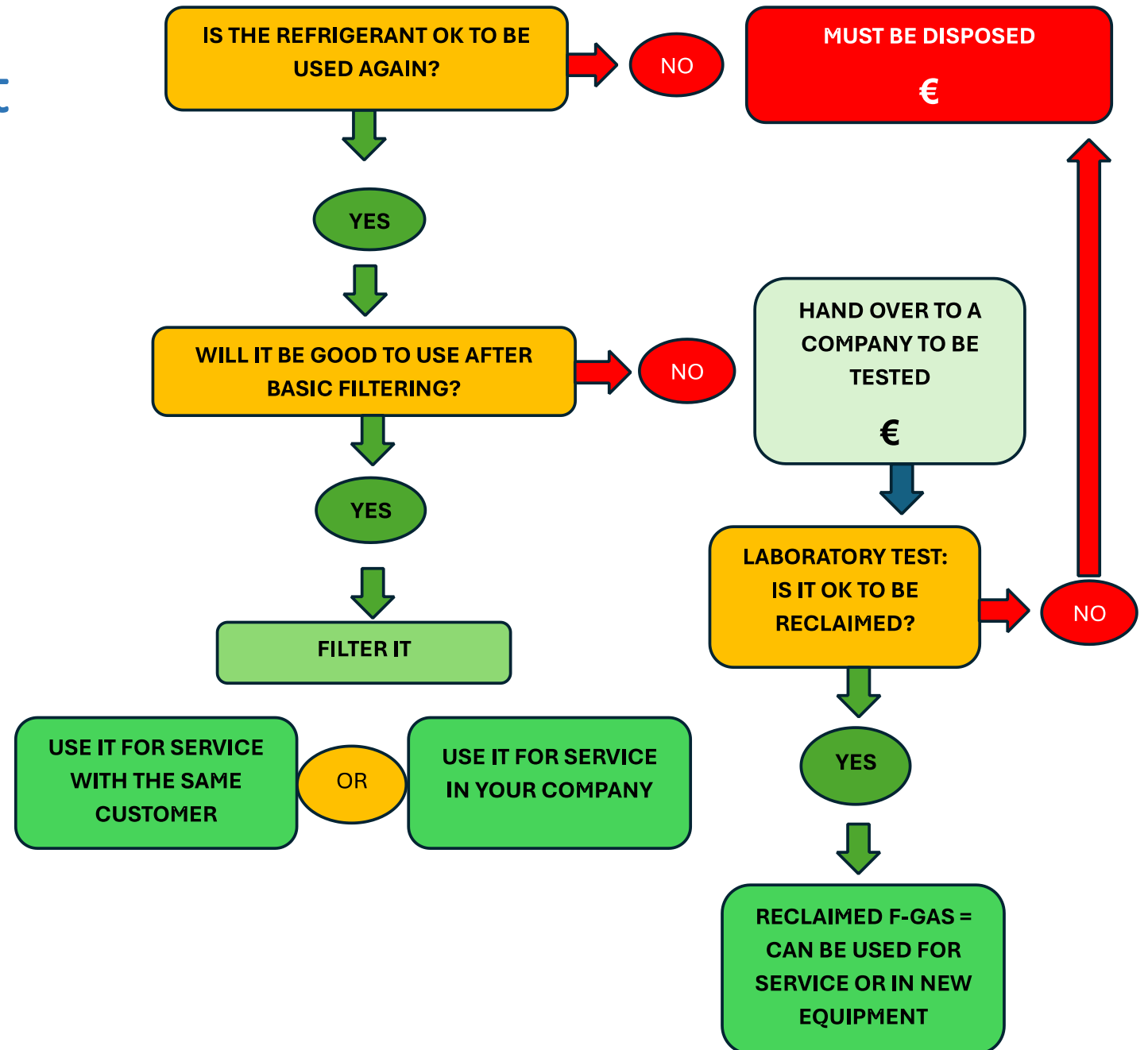
Life cycle of refrigerants – collective systems

- Collective systems work on the scheme ...



Recovery of used refrigerant

- Ways of recovered f-gas refrigerant can be used



Collective schemes in Czechia in 2025

- SERVICE COMPANY LEVEL:

- Service companies work with their refrigerant suppliers to buy new and reclaimed refrigerants AND TO COLLECT RECOVERED refrigerants (there are 7 in CZ)
- After recovery service company transports ref. in bottles to their supplier,
- ref. is not considered as waste yet (new CZ legislation will not consider recovered f-gases as dangerous waste!)
- Recovered ref. is then collected as waste and sent to lab tests
- After tests service company is informed about the amount which can be reclaimed, takes from 2 – 4 weeks
- Sometimes you wait until larger amount of recovered f-gases is collected

Collective schemes in Czechia in 2025

- SERVICE COMPANY LEVEL:
 - Only R404A, R134a, R407 and R410A are accepted for reclamation
 - In 2024 two largest companies in CZ collected about 5 tons of HFC's for reclamation and sold about 6 tons of reclaimed refrigerants
 - Recovered and later reclaimed refrigerant is 3 times cheaper than reclaimed refrigerant bought from a dealer
 - Service companies buy almost only reclaimed R404A, there is a demand for reclaimed R410A, but it is not available on the market

Collective schemes in Czechia in 2025

- RACHP SYSTEM OPERATOR LEVEL:
 - One system aimed at operators:
 - Only for selected key customers
 - HFC's are recovered from old units on the cost of the operators
 - The company doesn't pay for the waste and gets credits for future new installations
 - Recovered refrigerant is taken to reclamation plant, purified and mixed with virgin refrigerant if needed
 - Reclaimed refrigerant is then filled into new units in production plant
 - works for R410A, R407 and R134a, R32 is in plan
 - 100s of kgs were collected in CZ in 2024, in Austria tons

??? to future

- Will the system collect enough recovered gases?
- Will reclaimed refrigerants be competitive on the market?
- Will producers want to use reclaimed refrigerants?
- Will member states be able to protect the market against illegal HFC's?



Any questions?

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