

GOING BEYOND THE RECLAMATION OF FLUORINATED GREENHOUSE GASES WILL ACCELERATE THE TRANSITION TO A CIRCULAR ECONOMY

03/07/2023 – Laurent GUEGAN / Morgan BOVE

The logo for Climalife, featuring the word "climalife" in a bold, lowercase, sans-serif font. A registered trademark symbol (®) is positioned at the top right of the letter "e". The logo is centered on a blue background that features a large, faint, light-blue circular graphic element behind it.

climalife®

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SUMMARY

- Climalife, the pioneer in responsible refrigeration
- The concept of recovery
- A comprehensive approach to the service
- Refrigerant services
- SF₆ and extinguishing agents services
- Transfert and inerting of packaging
- Comprehensive support
- The concept of a circular economy, the very essence of our brand
- Why is it necessary now to increase collection and update reclamation processes?
- An excellence hub in circular economy
- Climalife, key player in waste management
- Sustainability

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*Family business
company founded
in 1874*

A large, light teal graphic of a stylized 'C' or 'G' shape, composed of a thick curved line and a grid of squares to its right, serving as a background for the Climalife logo.

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A strong brand of the Dehon group

PIONEER IN RESPONSIBLE REFRIGERATION

Since 1989, a refrigerant recovery and waste treatment system was set up

- Awareness of the impact of fluorinated greenhouse gas emissions
- Introduction of the first recovery cylinders on the French market
- Initiative leading to the signing of a voluntary commitment with the French government
- Information and education for professionals in the HVACR sector



PIONEER IN RESPONSIBLE REFRIGERATION

Development of services to support professionals in the management of F-gases, halons and other molecules

- Gas analysis
- Recycling (purification of used fluids)
- Treatment of non-condensables
- Technical assistance for product selection



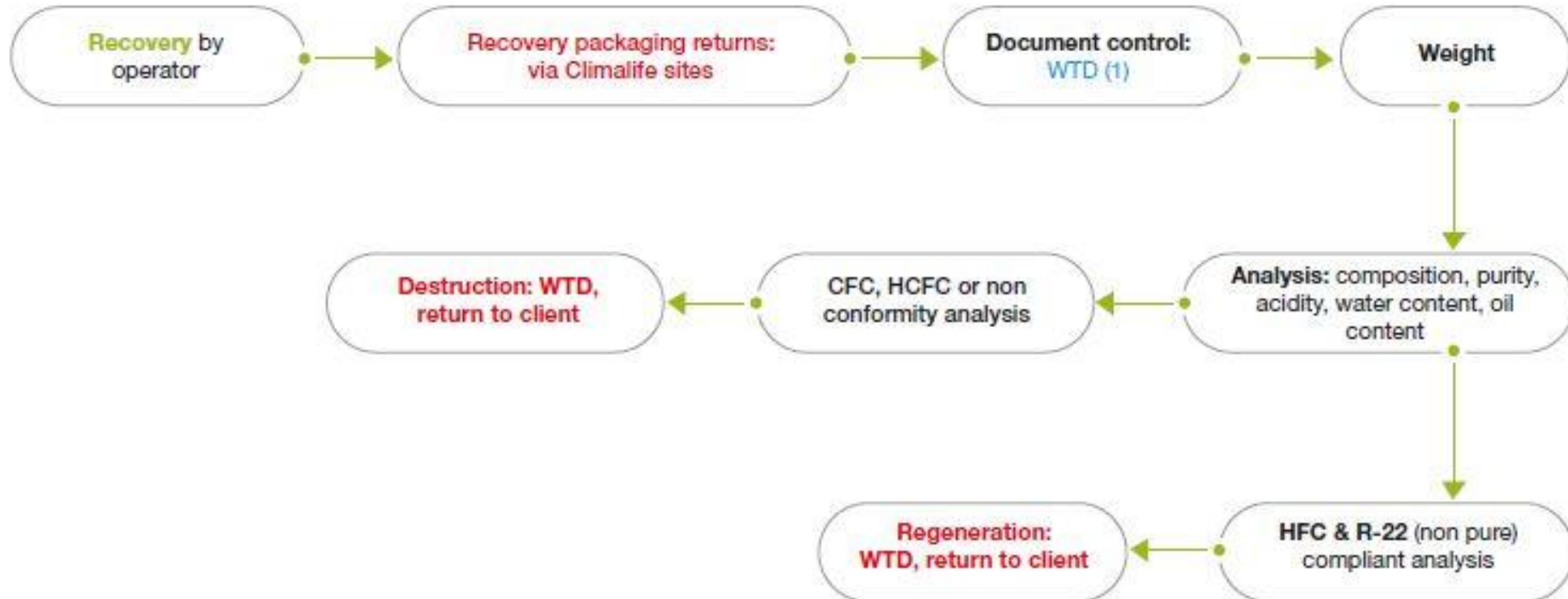
PIONEER IN RESPONSIBLE REFRIGERATION

Since 2008, valorisation of refrigerants and SF₆

- Anticipating regulations on fluorinated greenhouse gases
- Certified reclamation of gases
- Reuse of reclaimed gases to maintain installations/equipment until end of life

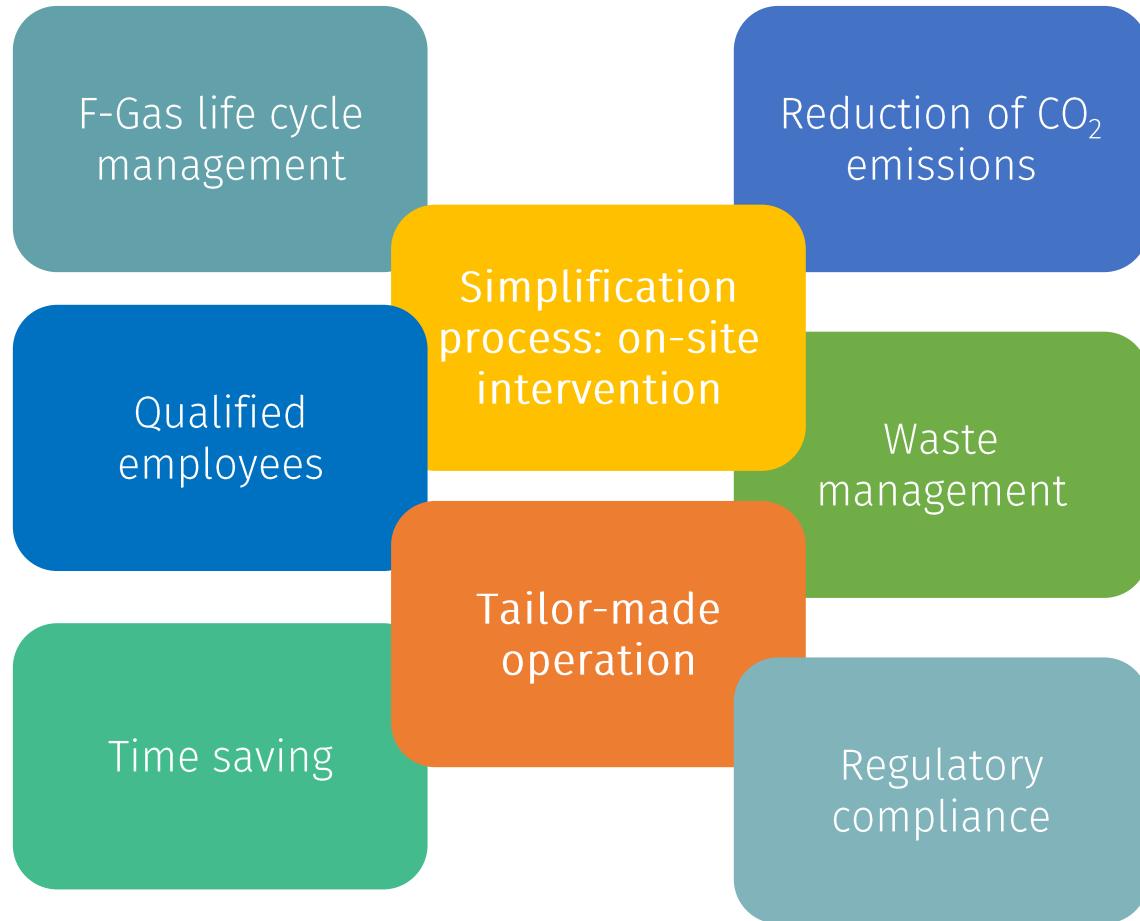


Procedure for gas recovered for regeneration / destruction



(1) WTD: Waste Transfer Document

THE CONCEPT OF RECOVERY



Recovery and treatment (reclamation or destruction) of refrigerant and SF₆



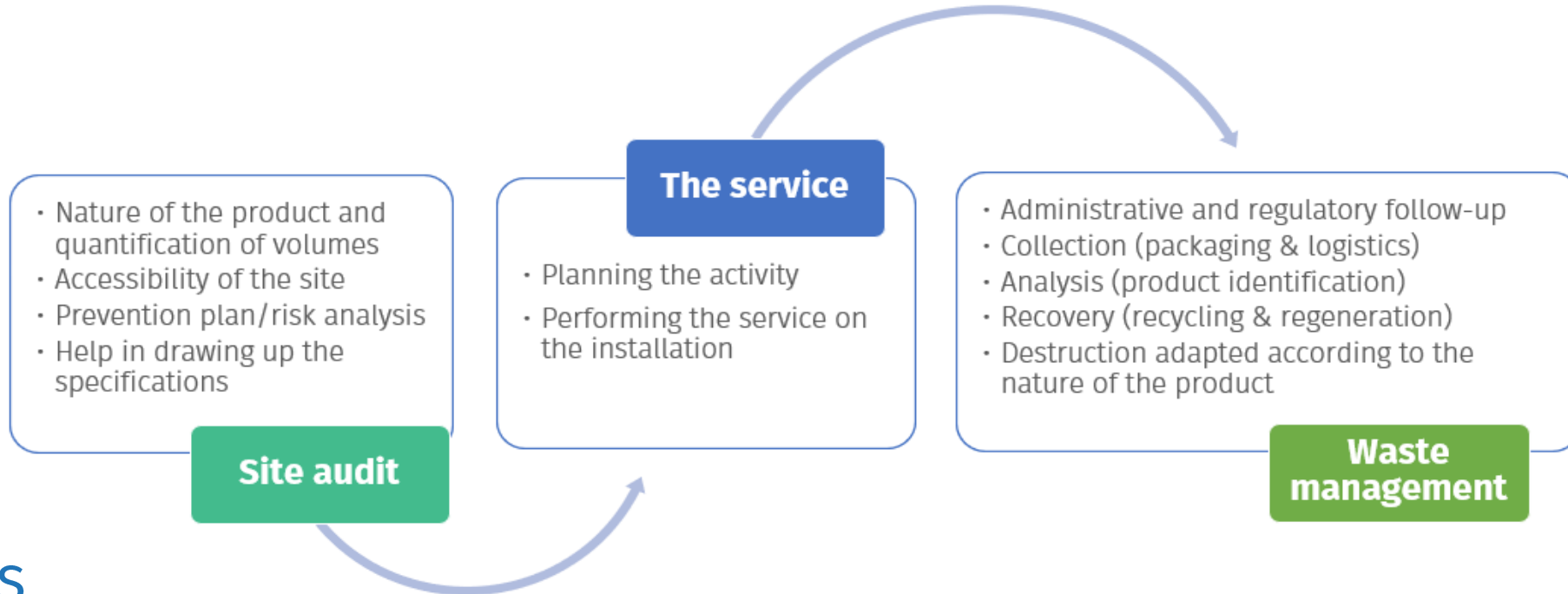
Filling and removal of heat transfer fluids



Cleaning of thermal installations



A COMPREHENSIVE APPROACH TO THE SERVICE



Benefits

- Energy performance
- Regulatory and environmental compliance
- Reduction of waste and CO₂ emissions
- Qualified and certified staff (F-Gas qualification, forklift trucks, working at height, chemical risks II, SCBA, NH₃/chlorine, etc)
- Tailor-made solutions
- A single supplier (One stop shop)

Challenges

- Complex configuration of installations (volume, special fluids, etc.)
- Need for specific equipment and occasional lack of resources
- Difficult logistics and access
- Management of recovered fluids and traceability
- Waste reduction

Solutions

- Recovery
- Reclamation
- Inerting of containers
- Waste treatment
- All types of refrigerants, eg HFO, NH₃, HFC, CFC, HCFC
- All types of installation, from a few kilos to several tonnes



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TRANSFERT AND INERTING OF PACKAGING

Challenges

- Need for specific equipment
- Administrative complexity
- Difficult logistics and access
- Management of recovered fluids and traceability
- Waste management

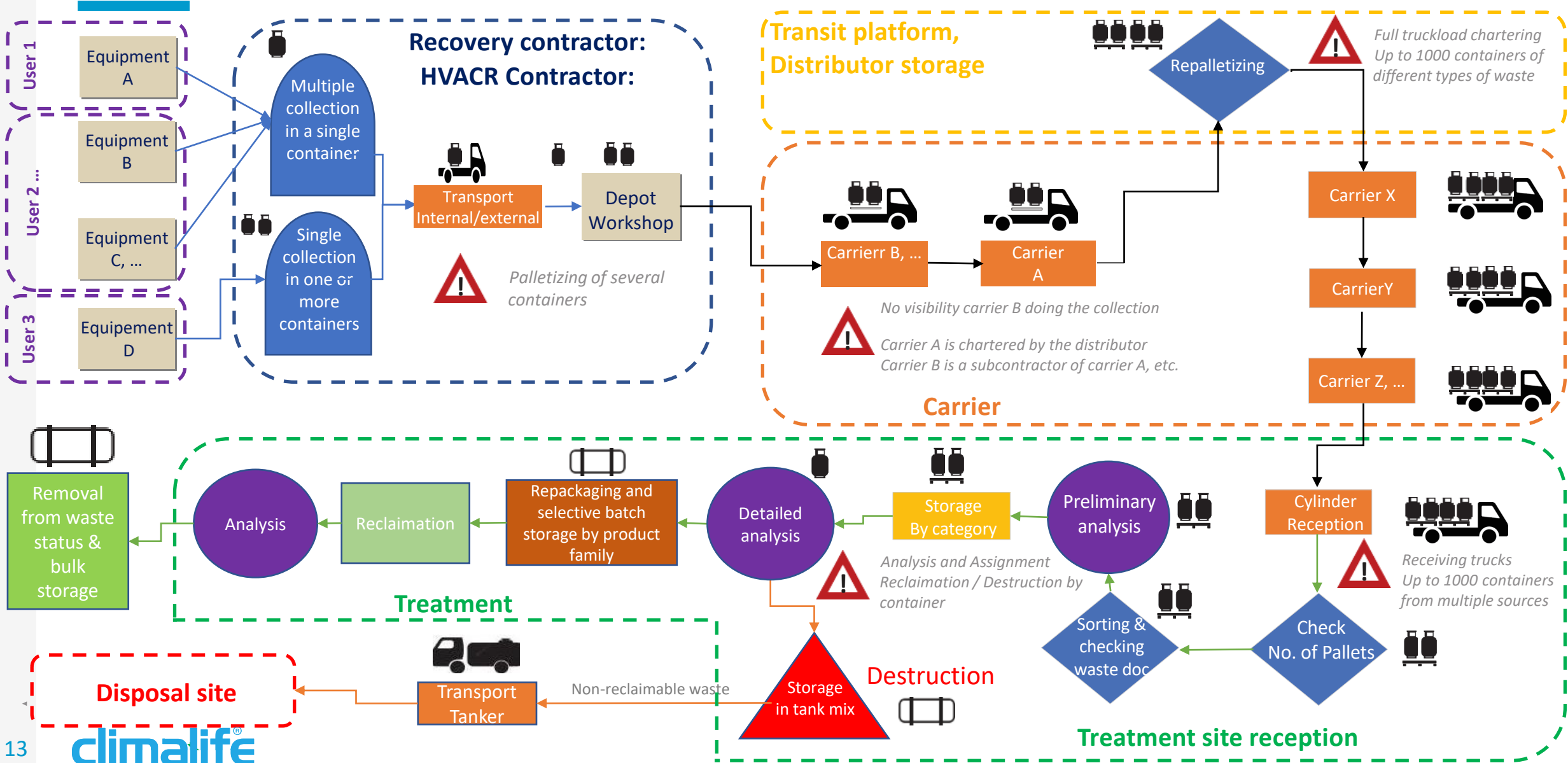
Solutions

- Qualified employees
- Local and dedicated contact
- Appropriate and dedicated packaging
- Specific equipment
- Administrative management
- Logistics management
- Reclamation or destruction

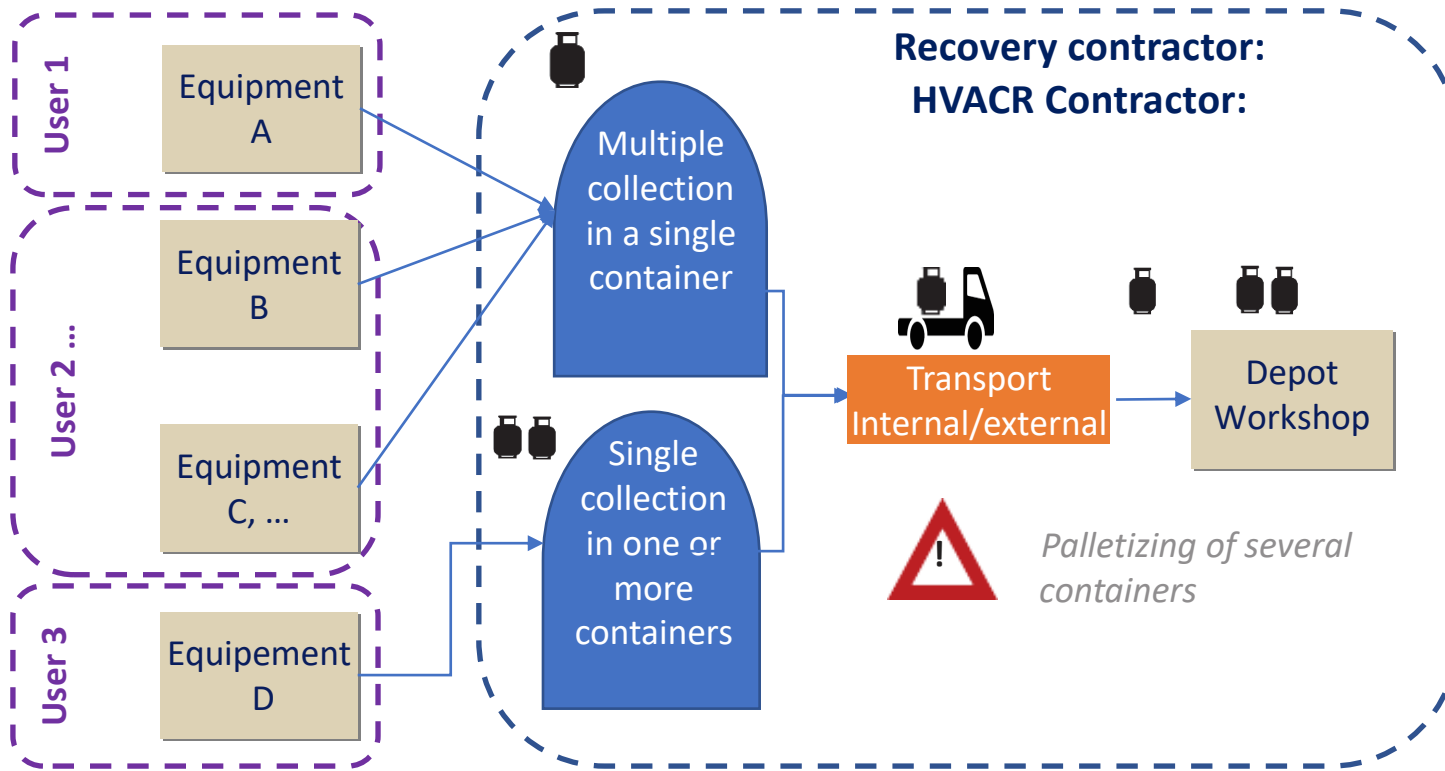




The Path of a Pressurised Gas Waste: SF₆ & Refrigerant CFC, HCFC, HCF, HFO, NH₃, HC



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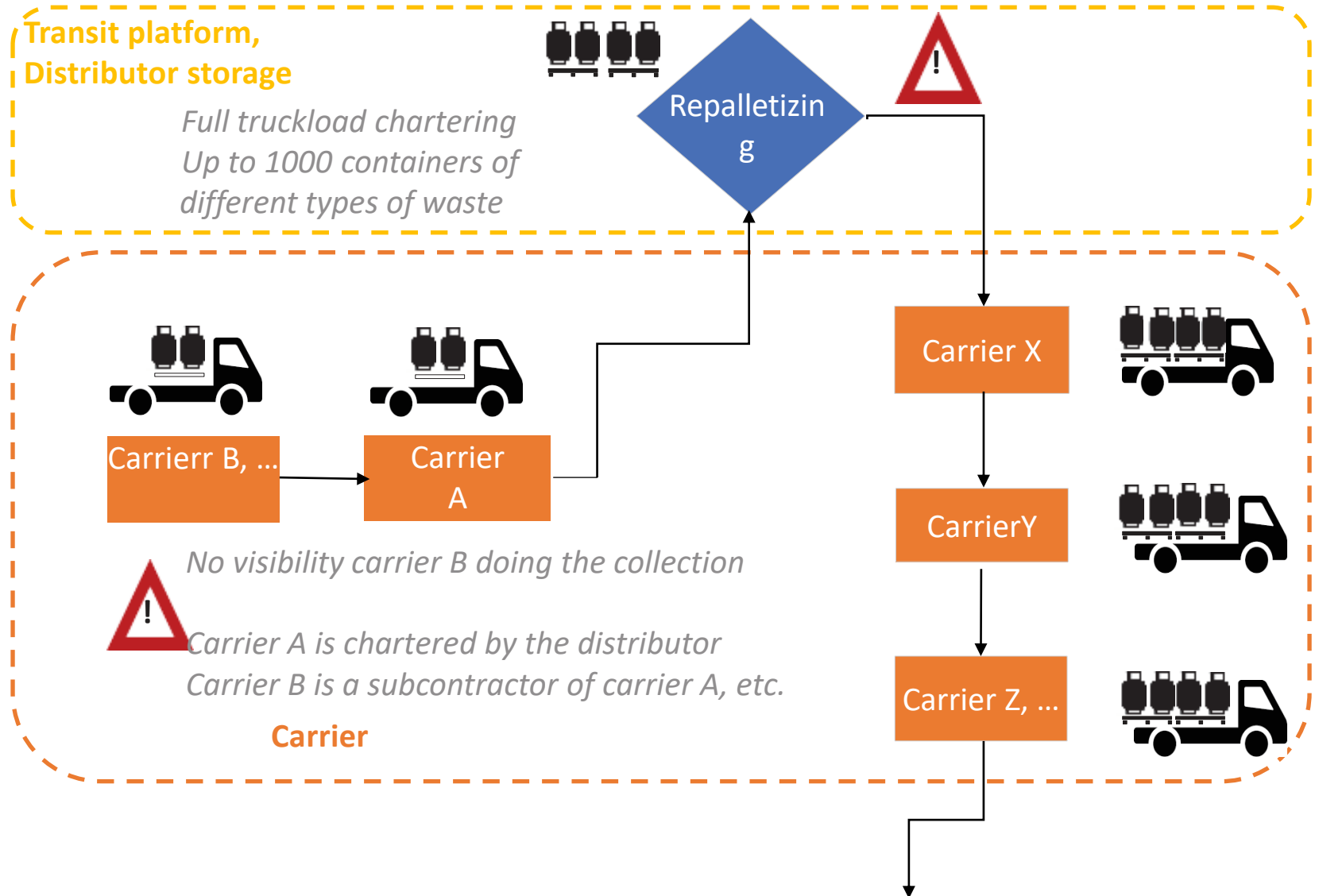


- Traceability
- All containers identifiable by barcode or QR code
- Limit the risk of error
- 400 to 600,000 files/year
- + More than 54,000 certified establishments



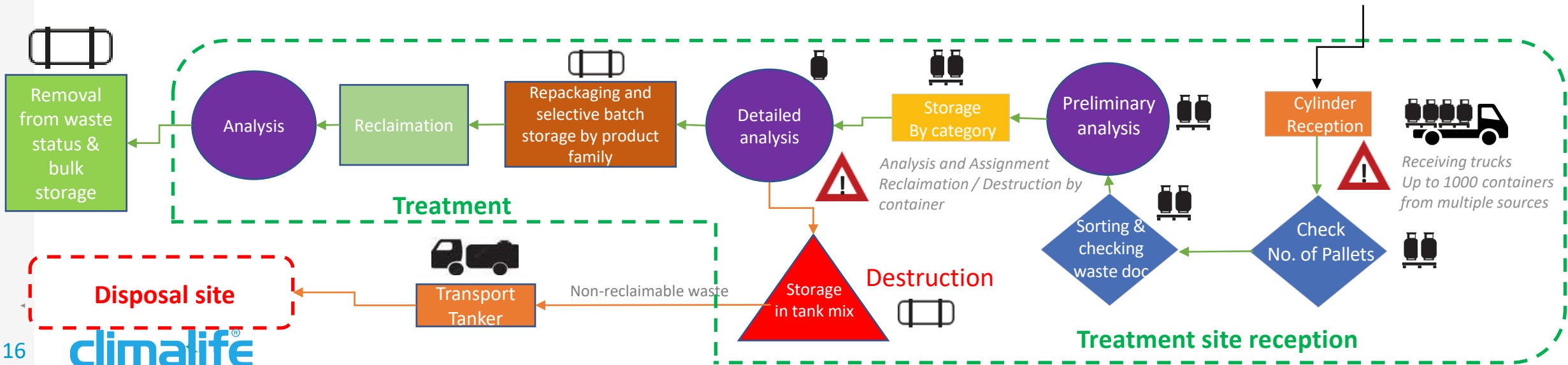
The Path of a Pressurised Gas Waste: SF₆ & Refrigerant CFC, HCFC, HCF, HFO, NH₃, HC

- Carriers have 1 or more subcontractors
- Poor knowledge of regulations by drivers
- Several stop points
- Grouping of containers / waste of different types



The Path of a Pressurised Gas Waste: SF₆ & Refrigerant CFC, HCFC, HCF, HFO, NH₃, HC

- Checking of waste documentation
- Reception, by full truck, from regrouping (repalletising)
- Identification by packaging number
- Choice of waste treatment after individual analysis of each container



On-site service: your advantages



Tailor-made solutions
(define and analyse the need)



Availability
(services throughout Europe)



Regulatory compliance



Fast and efficient service
(specific equipment,
packaging availability)



**Planning &
document management**



Sharing of knowledge
(expertise, physico-chemical
properties of fluids, etc.)



Cost optimisation
(planning, risk management,
product regeneration, etc.)



Qualified and empowered staff



All products
(liquefied gases, flammables,
heat transfer fluids, etc.)



Environmental protection
(reduction of emissions, waste recovery)

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THE CONCEPT OF A CIRCULAR ECONOMY, THE VERY ESSENCE OF OUR BRAND

The environmental responsibility is at the heart of our technological innovations

IN FIGURES



75% of fluorinated greenhouse gas waste is **recovered**.



More than 30 millions t. Eq. CO₂ **avoided** by our action in Europe



R&D Investment : + 10% TO



Introduction of bio-sourced materials in the formulation of heat transfer fluids



WHY IS IT NECESSARY NOW TO INCREASE COLLECTION AND UPDATE RECLAMATION PROCESSES?



WHY IS IT NECESSARY NOW TO INCREASE COLLECTION?

Schedule Phase down of HFCs in the Kigali agreements

Montreal Protocol Parties agreed to reduce the use of HFCs in a gradual process with different schedules for developed (art.2) and developing (art.5) countries:

	A5 Group 1	A5 Group 2	A2		UE Règlementation F-Gas II 517/2014 CE
				Le Belarus, la Fédération de Russie, le Kazakhstan, le Tadjikistan et l'Ouzbékistan	
Baseline	2020-2022	2024-2026	2011-2013	2011-2013	2009-2012
Formula	Average HFC consumption in teq CO ₂	Average HFC consumption in teq CO ₂	Average HFC consumption in teq CO ₂	Average HFC consumption in teq CO ₂	EU average HFC consumption
HFC	65% of Average HCFC consumption	65% of Average HCFC consumption	15% of Average HCFC consumption	25% of Average HCFC consumption	
Freeze	2024	2028	-		2015
1st step	2029 –10%	2032 –10%	2019 –10%	2020 –5%	2018 -2020 –37%
2rd step	2035 –30%	2037 –20%	2024 –40%	2025 –30%	2021 -2023 –55%
3rd step	2040 –50%	2042 –30%	2029 –70%	2029 –70%	2024-2026 –69%
4th step			2034 –80%	2034 –80%	2027-2029 –76%
Plateau	2045 –80%	2047 –85%	2036 –85%	2036 –85%	2030 –79%

For Belarus, Russian Federation, Kazakhstan, Tajikistan, Uzbekistan 25% HCFC component of baseline and different initial two steps (1) 5% reduction in 2020 and (2) 35% reduction in 2025

Notes:

Group 1: Article 5 parties not part of Group 2

Group 2: GCC, India, Iran, Iraq, Pakistan

Technology review in 2022 and every 5 years

Technology review 4-5 years before 2028 to consider the compliance deferral of 2 years from the freeze of 2028 of Article 5 Group 2 to address growth in relevant sectors above certain threshold.

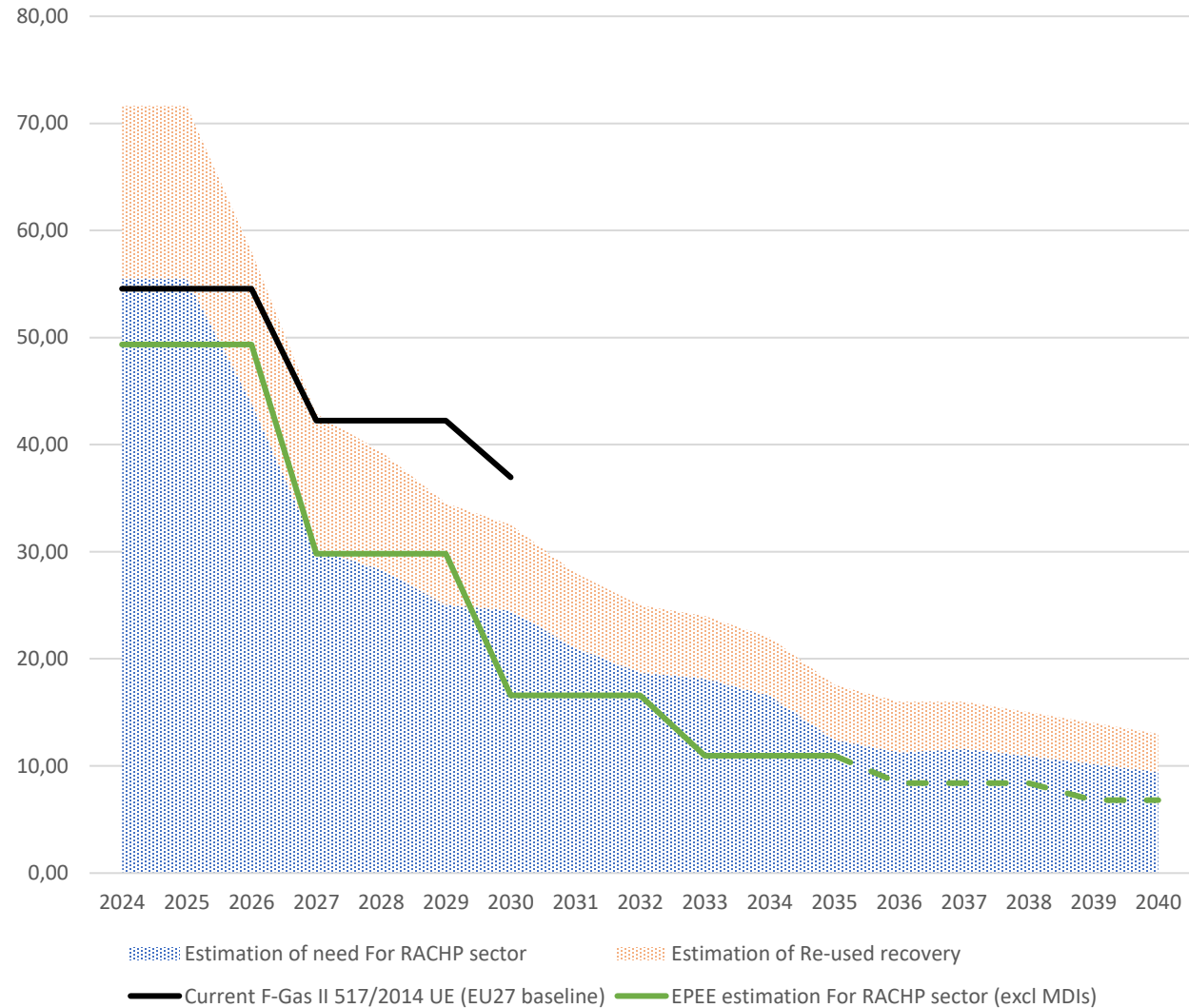


WHY IS IT NECESSARY NOW TO UPDATE RECLAMATION PROCESSES?

F-Gas review

- Risk of shortage as early as 2027 in UE:
 - Highlighting recycled or reclaimed refrigerants
 - No filling with non-recycled or non-reclaimed refrigerants
 - Recovery: maintaining existing systems

UE Virgin F-Gases needs + Reused vs F-Gas Proposals



WHY IS IT NECESSARY NOW TO UPDATE RECLAMATION PROCESSES?

Reclamation process no longer suited to new blends or future products: several limitations

More and more products on the market: increase in the number of molecules (over 19 vs. 5 in 2015)

- Too many products for selective collection

Creation of unintentional azeotropic mixtures during collection

- Increase in impurities present in fluorinated gas waste
Hydrocarbons, CO₂, other fluorinated gases, ...
- Increased deposition in waste
Increase in non-reclamable waste



Climalife builds a new site which includes fluorinated waste treatment activities.

Management of waste fluorinated gases

- Waste analysis
- Sorting of waste CFC, HCFC, HFC, HFO
- Simple reclamation of used refrigerants
 - HFC, HFO
 - Non-flammable & Flammable gases
- Substance separation ARHI standard **80%** of ultimate fluorinated greenhouse gas waste recycled



Climalife builds a new site which includes fluorinated waste treatment activities.

Management of waste fluorinated gases:

- Substance separation ARHI standard **80%** of ultimate fluorinated greenhouse gas waste recycled
- A project in collaboration with European research centers since 2018
- **Climalife patented technology.**
- Project supported by the French and European authorities



Climalife builds a new site which includes fluorinated waste treatment activities

Management of waste fluorinated gases:

- Substance separation ARHI standard **80%** of ultimate fluorinated greenhouse gas waste recycled
- **What types of waste are we able to distill?**
- Flammable & non-flammable waste
- Zeotrope & azeotrope mixture
 - Including impurities HC, CO₂, CFC, HCFC
- Target substances
 - HFC
 - HFO



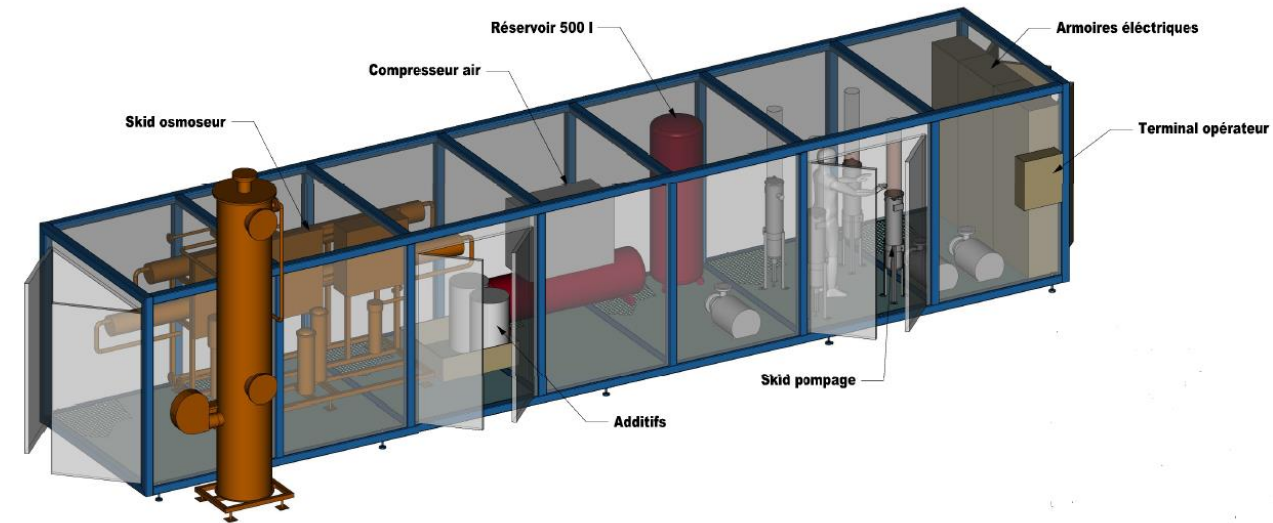
Climalife builds a new site which includes fluorinated waste treatment activities.

MDIs Crusher:

- MDIs management
 - Recovery & reclamation of fluorinated propellants (HFA & HFO)
 - Processing of impurities and scrap

SF₆ reclamation unit:

- Used SF₆ management
 - Reclamation of SF₆ waste IEC standard



CLIMALIFE, A KEY PLAYER IN WASTE MANAGEMENT

30 years of Climalife expertise

The strength of an international presence

- **The Climalife network for second life**
 - Direct with HVACR contractors and wholesalers
 - Direct with automotive workshops and distributors
- **Climalife, the specialist in waste collection**
 - Management of recovery containers
 - Recognised laboratory
 - Collection points in the main countries
 - Agreement with the waste carrier

Climalife has established its activities over the years by developing a unique global offer and a tailor-made service for its customers thanks to its presence in growth markets.



Our territorial coverage allows us to be even closer to our customers. The cultural and linguistic diversity of our employees enriches our brand and strengthens our ability to respond locally to the specific needs of industries.

 **15** Climalife subsidiaries on three continents

 **40** A network of distributors in over 40 countries around the world

 **14** production sites and logistics centres

 **200** Over 200 local depots in Europe

 **+ than 12,000** customers trust Climalife

“ We want to extend our positioning and our expertise by offering more local services through our existing distribution network and by deploying our key success factors in new territories distribution network and by deploying our key success factors in new territories.

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FIND US ON:



2021 SME Climat Hub charter signed

- Green solution provider
- Net zero 2050

2023 joins the COPA alliance

- For responsible F-Gas management and end-of-life



Accelerate the transition to a circular economy

Climalife plays a proactive role in reducing carbon footprint

Products

- Reclaimed fluids
- Bio-sourced heat transfer fluids
- Leak detection & management to avoid gas emissions

Waste recovery and treatment

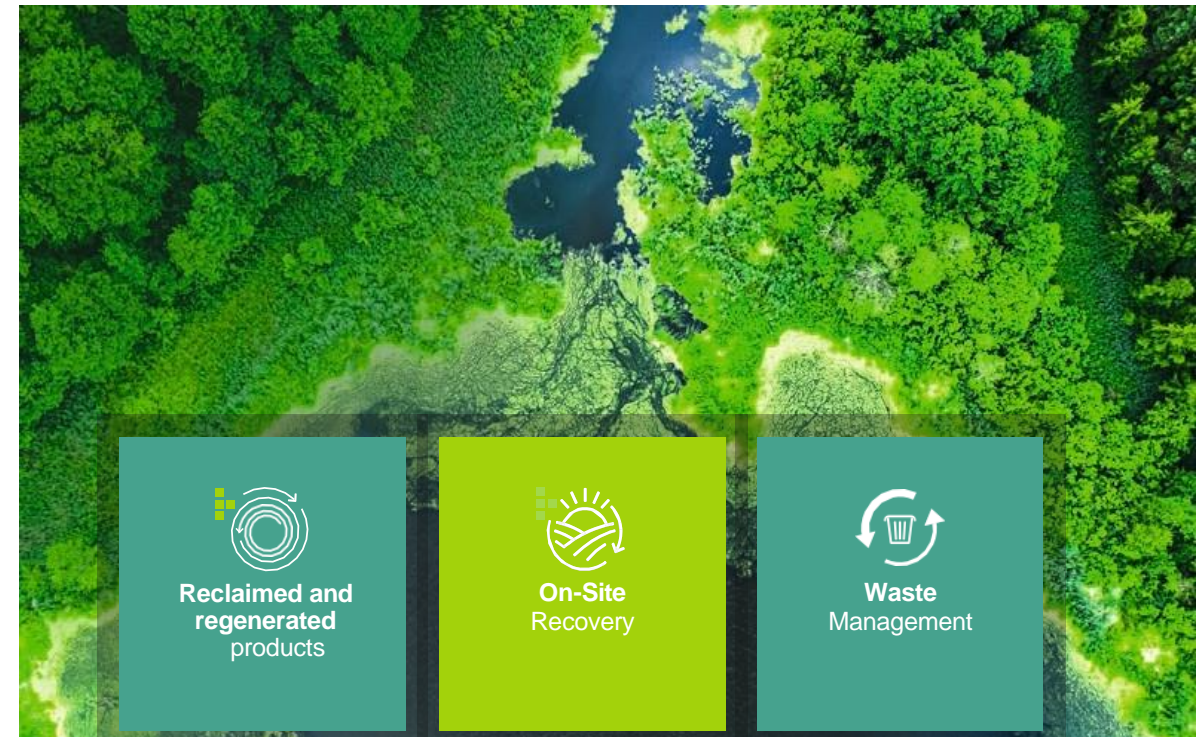
- Recovery filters for HFC, HCFC, HFO, NH₃, SF₆
- On-site dismantling operations
- Waste treatment

Technical and connected tools

- Selection of low GWP fluids to improve energy efficiency
- Eco-efficiency model to optimise refrigeration systems
- Monitoring and management of refrigeration systems & packaging traceability (Clim'app)

Services

- On-site services: recovery, retrofit / refilling, draining
- Engineering: filling stations for non-flammable or flammable products, storage units, customised recovery units, etc.
- Advocacy management





PIONEER
IN RESPONSIBLE
REFRIGERATION

GOING BEYOND THE RECLAMATION OF FLUORINATED GREENHOUSE GASES WILL ACCELERATE THE TRANSITION TO A CIRCULAR ECONOMY



Laurent GUEGAN
Circular Economy Manager



Morgan BOVE
APAC General Manager



THANKS FOR YOUR ATTENTION

climalife[®]



The expert in eco-efficient solutions to service the industry