



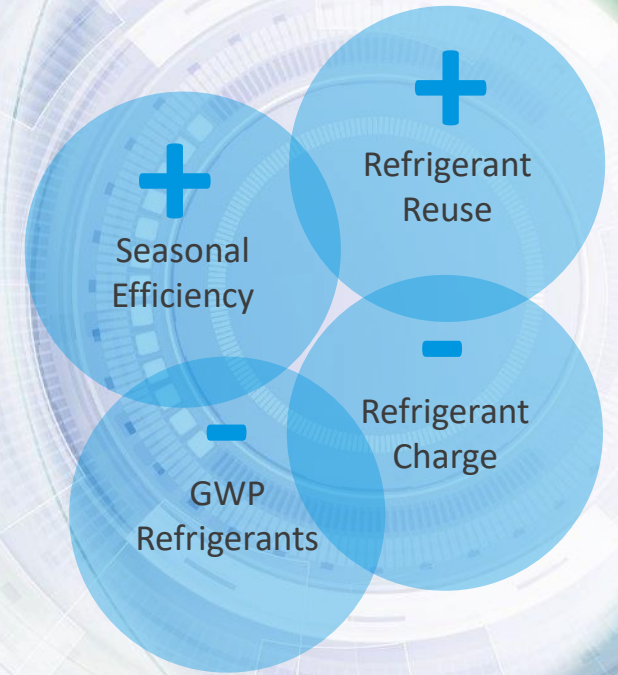
Resource efficiency in the HVAC sector

Daikin's Refrigerant Policy – Towards a Circular Economy



Our environmental promise

Striving to become the **lowest CO₂ equivalent** manufacturer



Striving to become the **lowest CO₂ equivalent** manufacturer



Seasonal
Efficiency

Increasing seasonal efficiency of our products

Achieving sustainability over the entire lifecycle of an installation, thanks to market leading efficiencies



Refrigerant
Reuse

Increasing refrigerant reuse – towards a circular economy

Thanks to the use reclaimed refrigerant in new equipment and supporting refrigerant reuse in the market



GWP
Refrigerants

The development and use of lower GWP refrigerants

Reduced CO₂eq thanks to the use of lower GWP refrigerants such as R-32, R-407H, R-1234ze(E)



Refrigerant
Charge

Reducing the refrigerant charge in new equipment

More efficient refrigerants such as R-32 and microchannel technology reduce the refrigerant charge

VRV IV⁺



R-32

BLUEvolution

R-32

Key Considerations for Refrigerant Choice

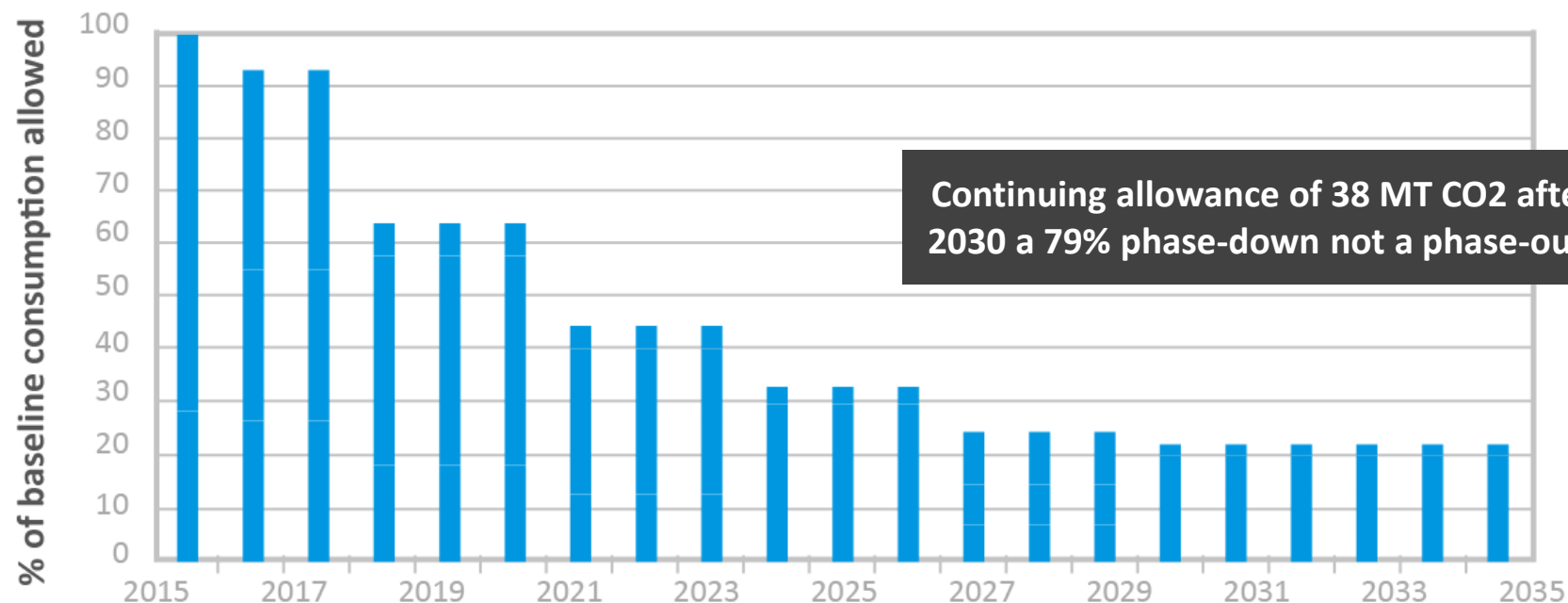
4 basic factors to make the best balanced refrigerant choice for each application



- Safe to use through the entire equipment lifecycle
- Risk assessments for each application
- Not harmful for the ozone layer
- Low CO₂ equivalent charge (refrigerant qty x GWP)
- Refrigerant production process
- Potential for recycling and re-use
- Potential to improve total energy efficiency of the unit
- Easy and inexpensive to install
- Reducing overall operation and maintenance costs

EU F gas regulation

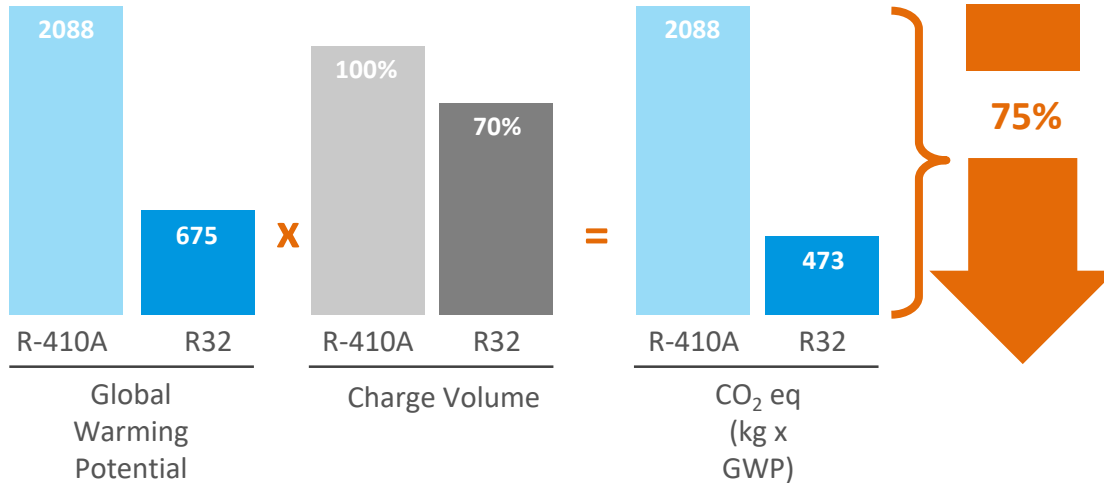
HFC phase down steps (consumption in CO₂ equivalent)



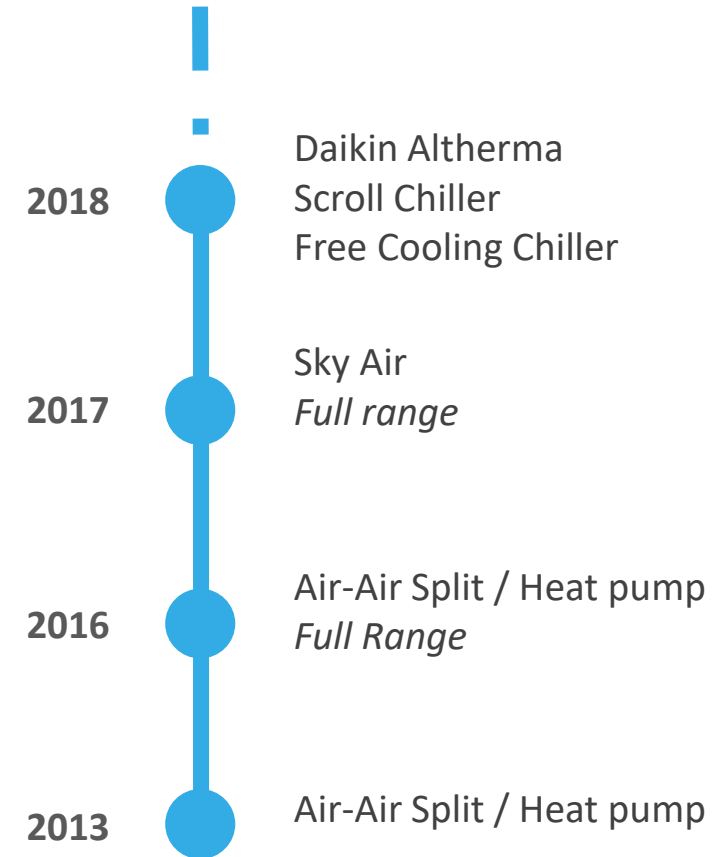
Phase down is in CO₂ equivalent (kg x GWP)
Consumption = production+import-export of bulk gas.
Imports of precharged equipment also needs to be taken into account.
100% = average of 2009-2012 HFC consumption

Example

Reason why Daikin moved since 2013 from R410A to R32



Model	Refrigerant	GWP	kg	CO ₂ equivalent charge (kgxGWP)	CO ₂ eq charge (%)
A	R-410A	2087,5	1,0	2088	100%
B	R-32	675,0	1,0	675	32%
C	R-32	675,0	0,7	473	23%



Striving to become the **lowest CO₂ equivalent** manufacturer



Seasonal
Efficiency

Increasing seasonal efficiency of our products

Achieving sustainability over the entire lifecycle of an installation, thanks to market leading efficiencies



Refrigerant
Reuse

Increasing refrigerant reuse – towards a circular economy

Thanks to the use reclaimed refrigerant in new equipment and supporting refrigerant reuse in the market



GWP
Refrigerants

The development and use of lower GWP refrigerants

Reduced CO₂eq thanks to the use of lower GWP refrigerants such as R-32, R-407H, R-1234ze(E)

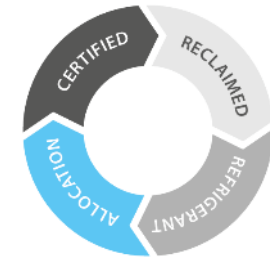


Refrigerant
Charge

Reducing the refrigerant charge in new equipment

More efficient refrigerants such as R-32 and microchannel technology reduce the refrigerant charge

VRV IV⁺

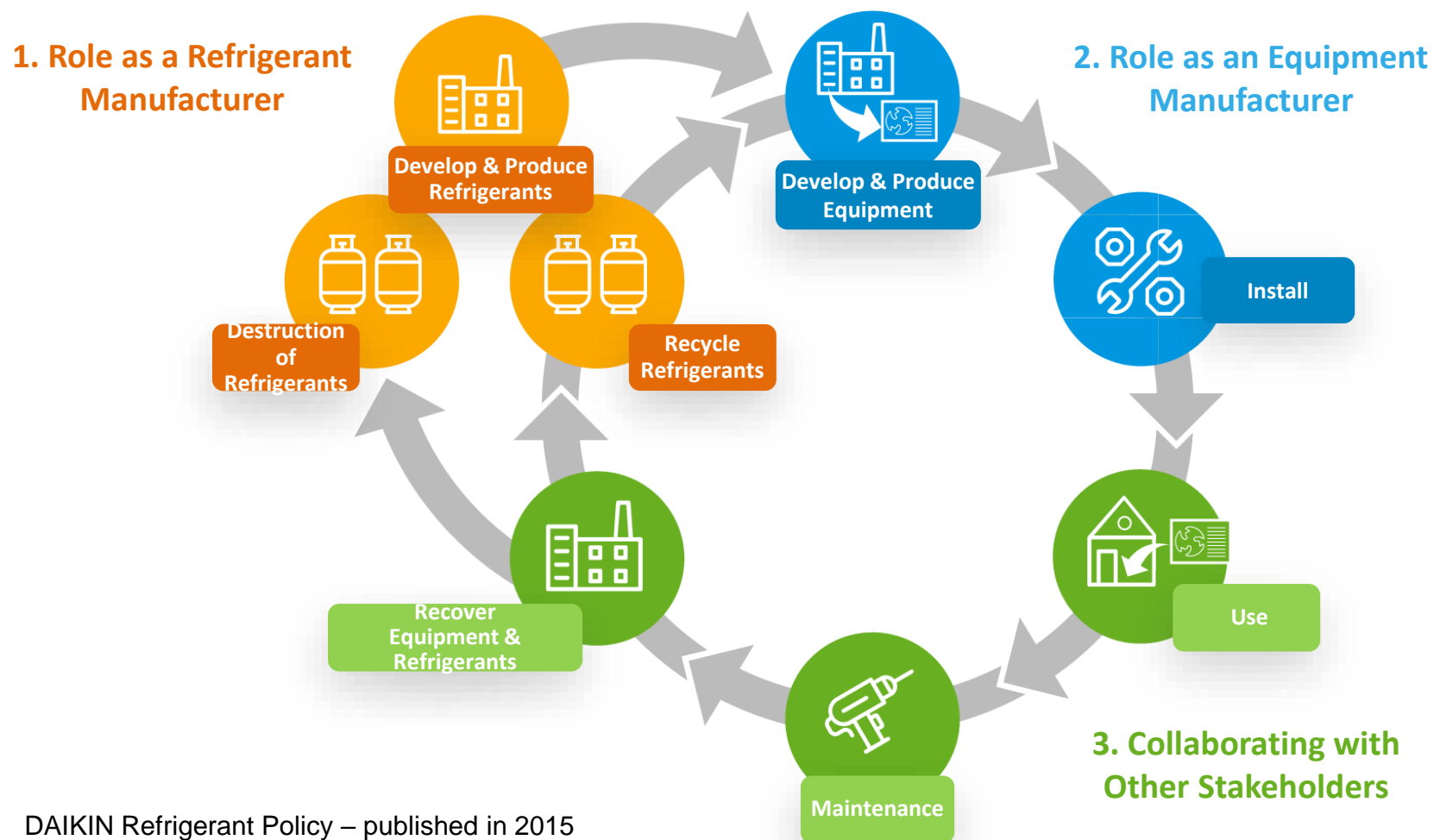


R-32

BLUEVOLUTION

R-32

Towards a circular economy



Daikin's action

Recovery and reclaim commitment

March
2018

Daikin Europe N.V.
invests in recovery and
reclaim of refrigerants

Step 1

Reclaim refrigerants, recovered
through its existing routes.

Step 2

Extend these routes in Europe in
collaboration schemes with other
stakeholders.



Daikin's action

Reclaim & reuse commitment

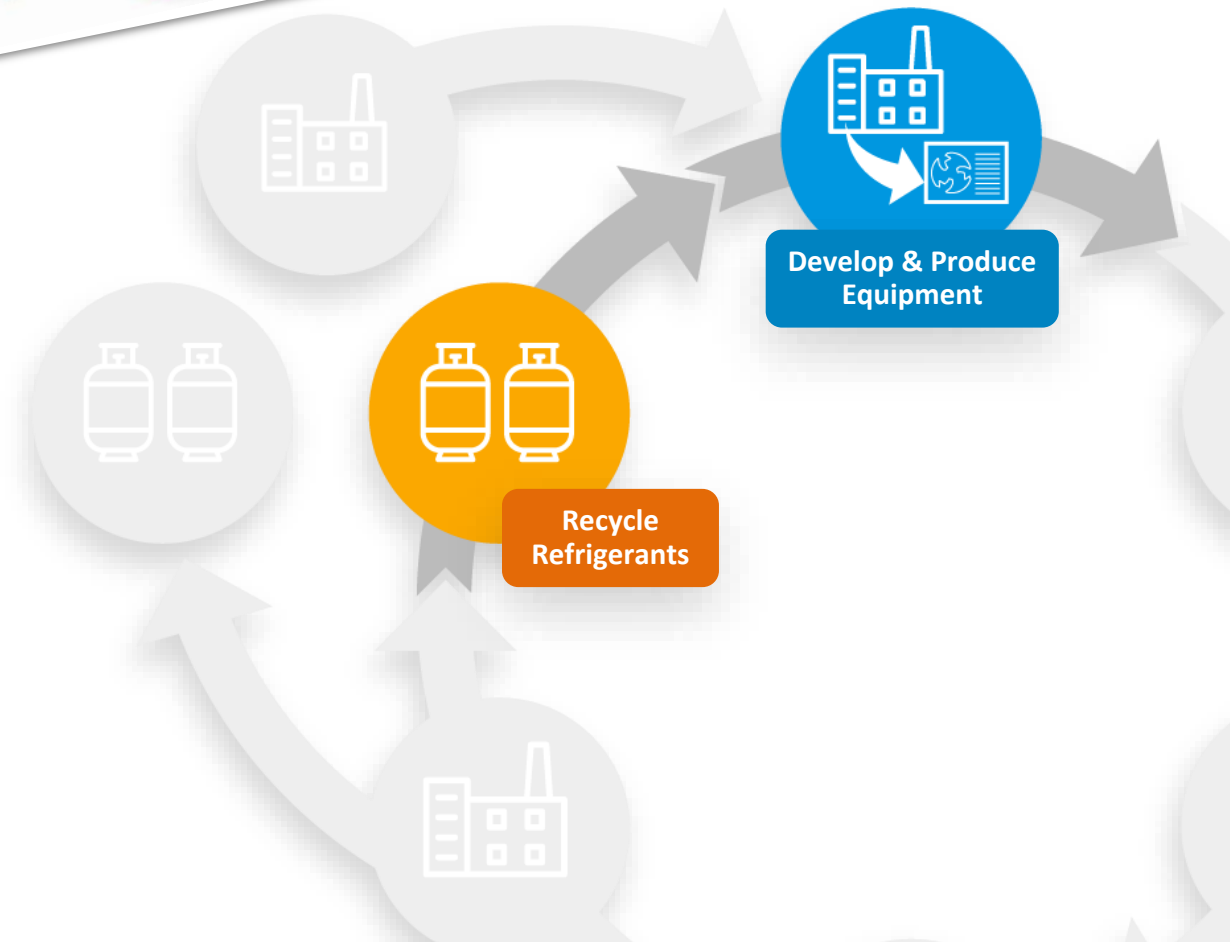
March
2019

Daikin Europe N.V. have

- decided to use a substantial amount of reclaimed R-410A in Ostend factory and
- strives to use more and more reclaimed HFCs for production in European factories

Certified Reclaimed Refrigerant Allocation

- A positive choice saving over 150,000 kg of virgin gas being produced every year



Certified Reclaimed Refrigerant Allocation

External Certified Quality

Reclaimed refrigerant

- meets AHRI700 certified standards
- is the **same quality as virgin refrigerant**.

Certified Allocated Quantity

- An audit process ensures refrigerant is correctly **administratively allocated**
- Allocation is done to the **VRV IV+ heat recovery and Mini VRV** factory charge.



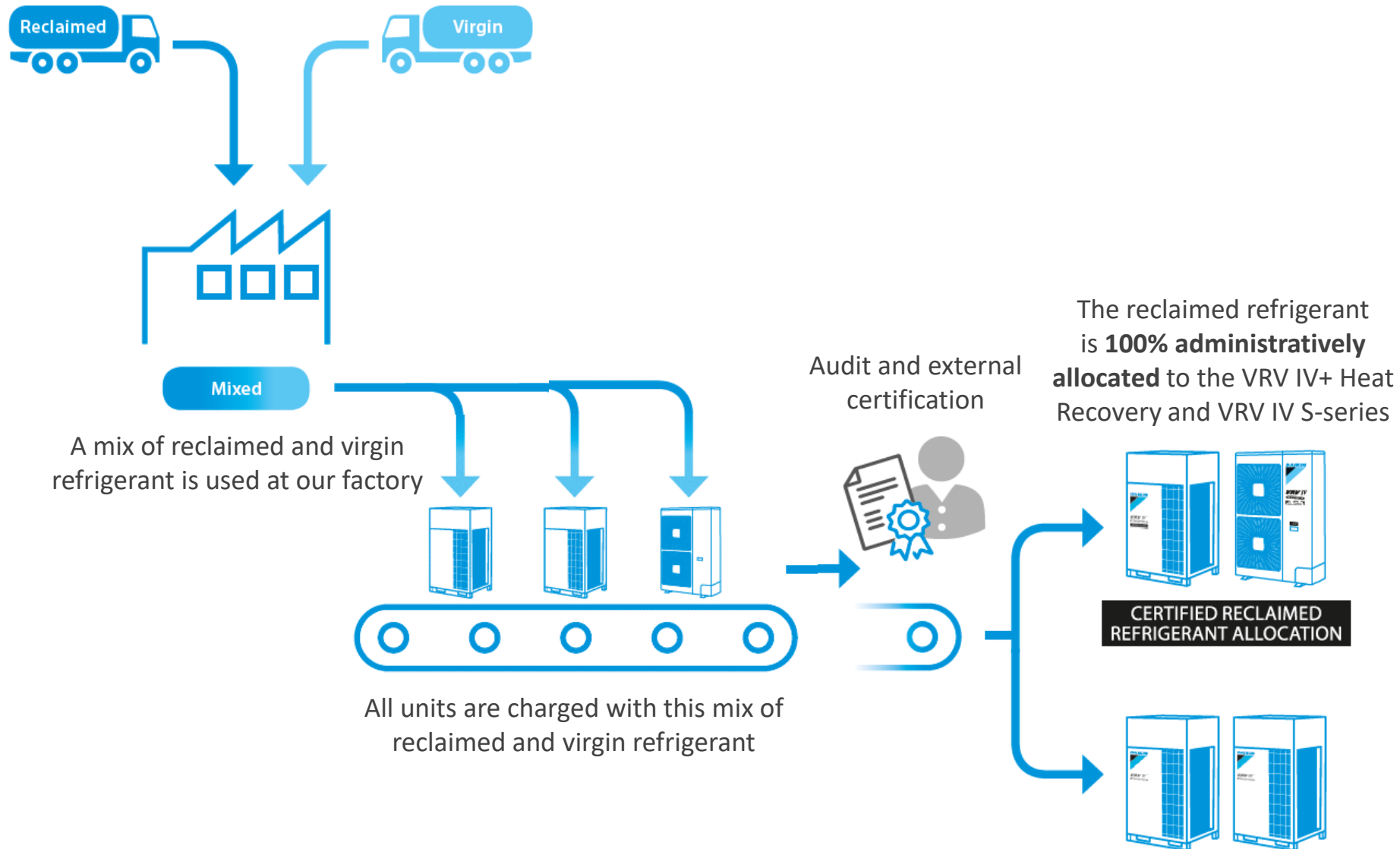
Reclaimed and reused within Europe

- Reclaimed means the refrigerant is regenerated in a high quality way, in line with the F-gas regulation definition
- Units with reclaimed refrigerant **support the F-gas regulation**

Reclaiming R-410A is just the start

- **There is a huge potential of R-410A available in existing installations**
- **Join our mission** in creating a circular economy

Certified Reclaimed Refrigerant Allocation: The principle

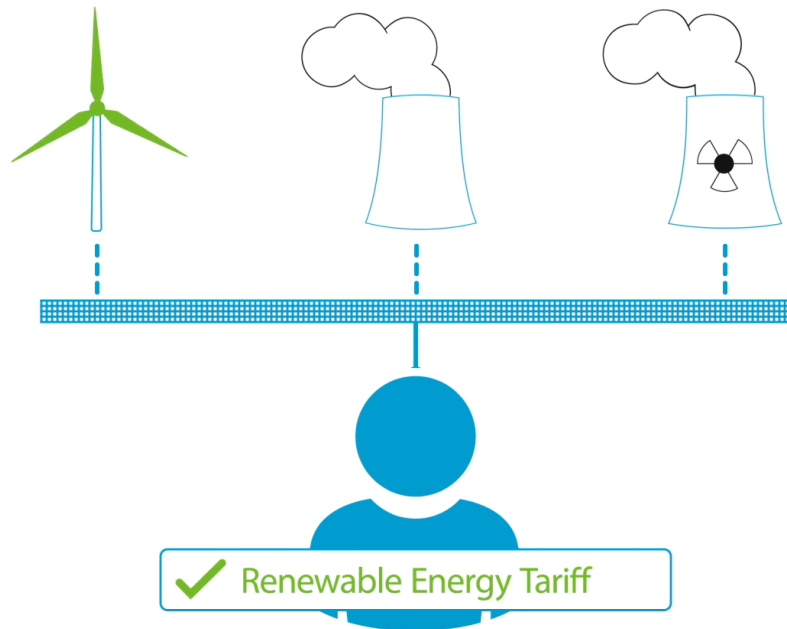


These units are not fully charged with reclaimed refrigerant

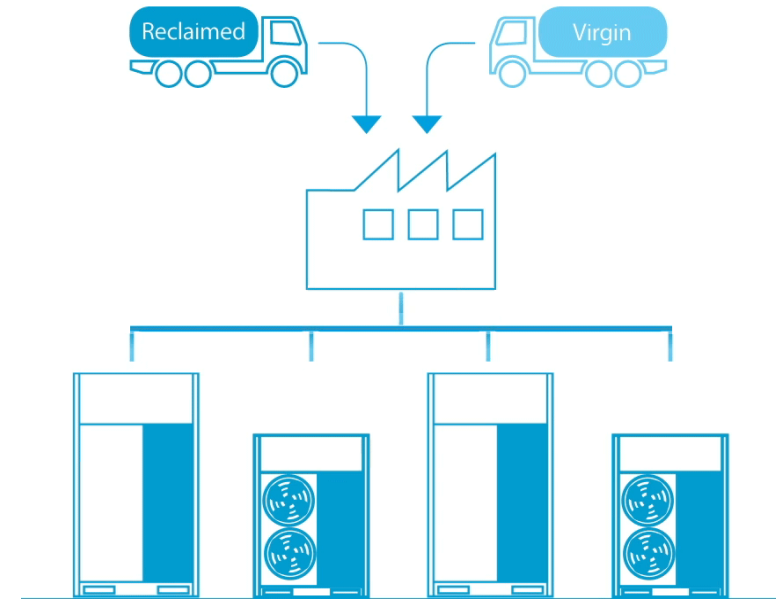


Comparable to a green electricity contract ...

- You use a mix of conventional as well as renewable produced electricity
- 100% renewable produced electricity is allocated administratively to your contract



- Reclaimed and virgin gas is mixed at the factory
- The amount of reclaimed gas is allocated administratively to two product ranges: **VRV IV+ Heat Recovery** and **VRV IV S-series (4, 5, 6 HP)**



Daikin is closing the loop

Recovery & reuse – case study



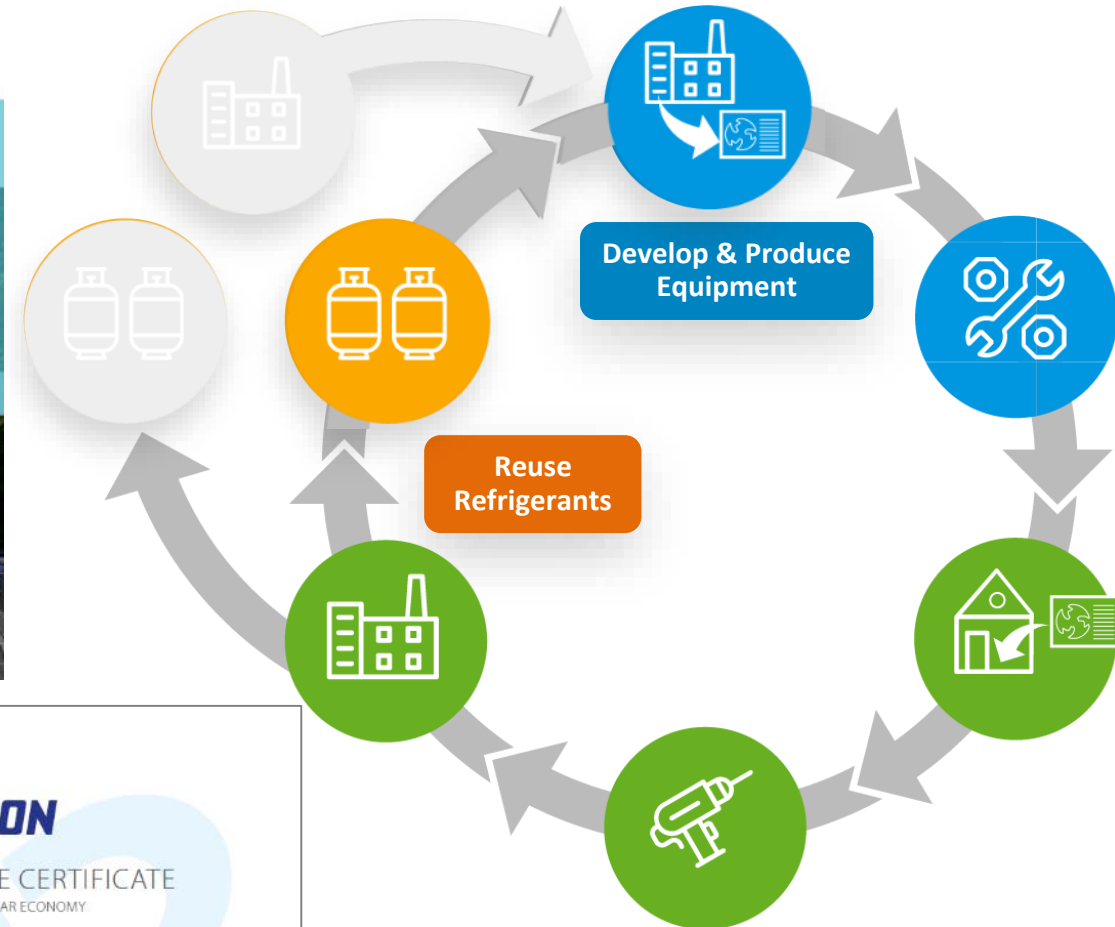
September
2019

Action goes greener
with Daikin Refrigerant
Reclaim Programme



“By setting up this circular economy of refrigerants within our own store network we are able to further reduce our environmental impact.”

Michiel Coolen,
Group Construction Manager ACTION





THANK YOU

