Stakeholder Meeting
Dublin, Ireland 13-06-2014

Update on the new F-Gas Rules

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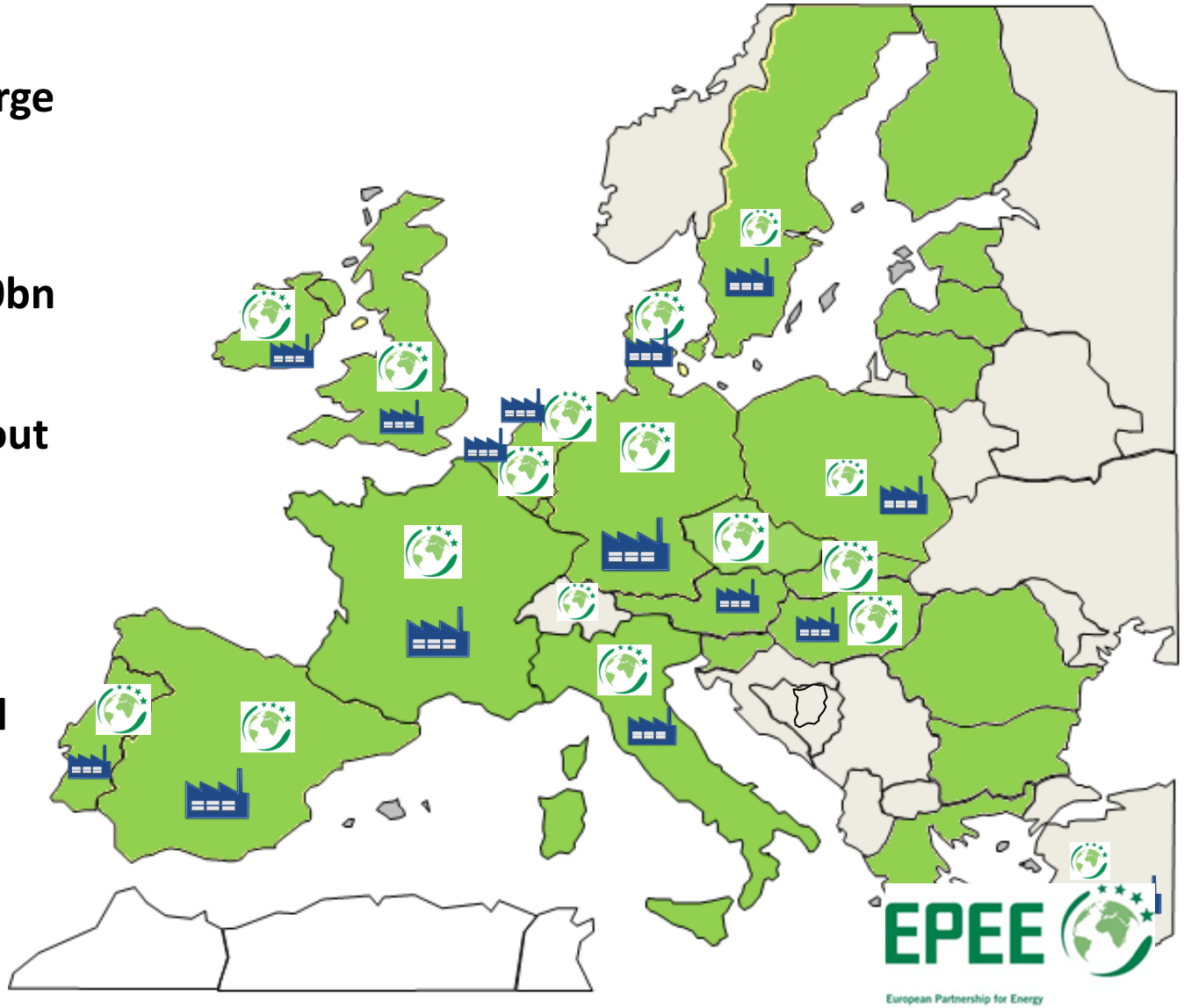
EPEE: the voice of the heating, cooling and refrigeration industry in Europe

1. **Small – medium – large size entreprises**
2. **Over 200,000 direct employees, over €30bn turnover**
3. **Production throughout Europe**
4. **Using all types of refrigerants**
5. **Representing the full value chain of the heating, cooling and refrigeration sector**



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EPEE's Main Fields of Activities

- **Promote Energy Efficiency**
  - 2030 targets
  - Ecodesign & Energy label Directives
  - Eco Label Directive
  - EPBD - Energy Performance of Buildings Directive
  - RES - Renewable Energies Directive
  - Energy Efficiency Directive
- **The F-Gas Regulation and its revision**
  - Make the new F-Gas rules work
  - Support EU Commission and Member States in implementing the new rules
  - Support global action to reduce consumption of HFCs
- **Raise awareness on Market Surveillance**
  - Importance of properly enforcing and policing legislation
- **Promote an HVACR association network at EU level**

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EU Legislation on Refrigerants in the international Context

Montreal Protocol UNEP

Kyoto Protocol UNFCCC

EU 2037/2000 Regulation on Ozone-Depleting Substances

EU 814/2006 F-Gas Regulation

EU 1005/2009 Revised Regulation on Ozone-Depleting Substances

EU 517/2014 Revised F-Gas Regulation

EU 20-20-20 Targets
EU 2050 Low Carbon Roadmap

The Main Pillars of the new EU F-Gas rules

2050 Low Carbon Roadmap

Containment & Competence

Regular leak checks

Certification and training of installers

Phase-Down

Consumption Reduction of HFCs

Y 2020:
-37%

Y 2030:
-79%

GWP Limits

2015: GWP 150
Domestic Refrigerators & Freezers

2020: GWP 150
Moveable A/C

2020: GWP 2500
New stationary Refrigeration Equipment

2022: GWP 150
Multpack refrigeration systems >40kW (except cascades: GWP1500)

2025: GWP 750
Single split a/c < 3kg

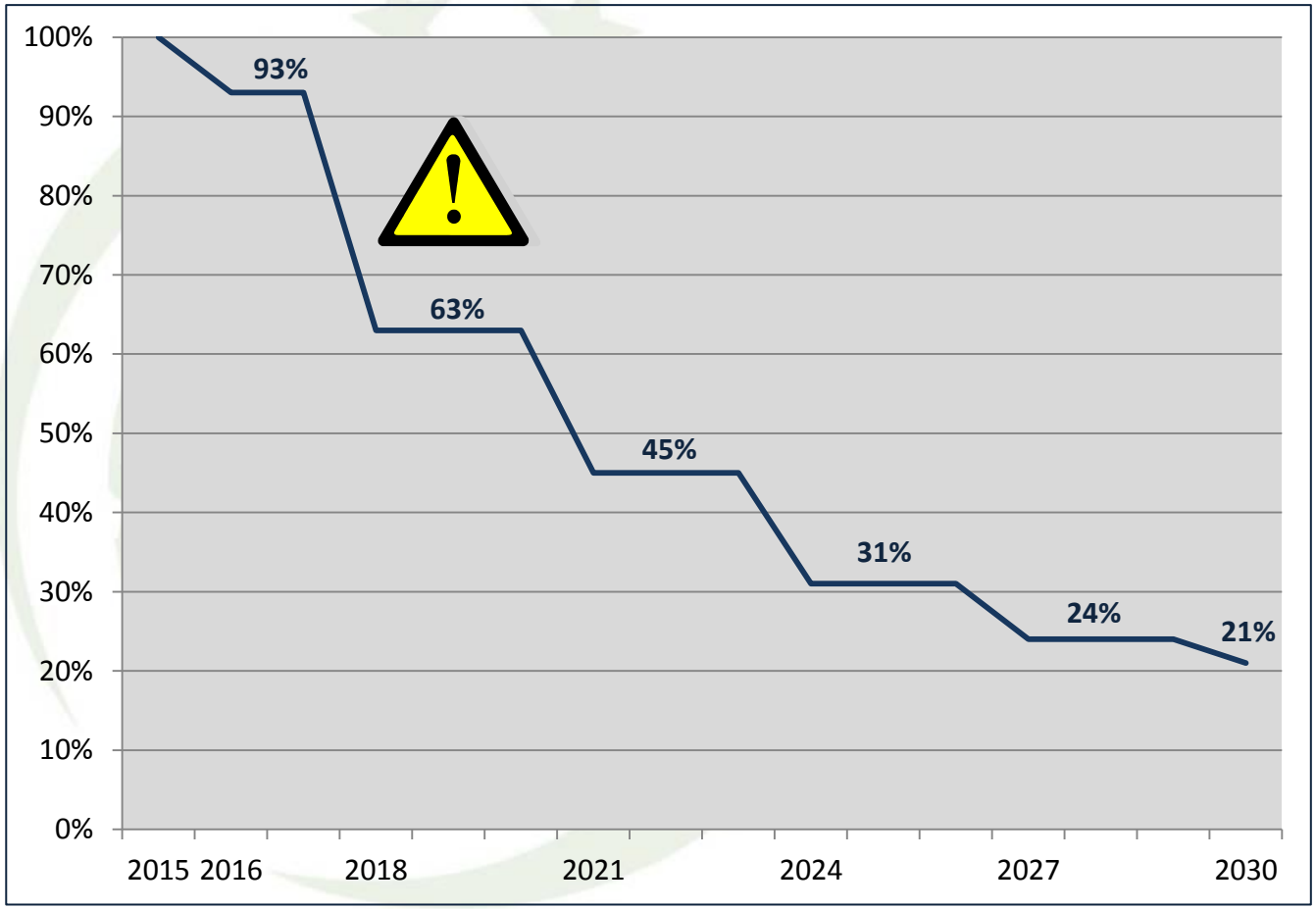
Others

2017:
Traceability systems for pre-charged equipment

2020:
GWP 2500 for service & maintenance

In detail: the phase-down steps

Year	Reduction by
2015	100% (Freeze)
2016-17	93%
2018-20	63%
2021-23	45%
2024-26	31%
2027-29	24%
2030	21%



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In detail: the quota allocation (1) What does it mean for industry

- **All HFCs placed on the EU market must be covered by the phase-down**
- **Only bulk HFC producers and importers can apply for quota**
  - **Deadline for registration: 1 July 2014**
  - If they are based outside the EU, they need to apply for quota via an Only-representative based in the EU
  - New Entrants applying for quota need to physically supply HFCs
  - Applying for quota and not using it means „wasting“ quota and leads to unnecessary shortage in the market.
- **Manufacturers / importers of pre-charged equipment cannot apply for quota** but need to make sure that HFCs contained in their products are covered by the quota as of 2017 and need to report as of 2015 . They can:
  - Buy HFCs in the EU and fill in the EU or outside the EU
  - Buy HFCs from a non-EU producer holding own quota (via Only-representative) and fill outside the EU
  - Obtain an authorization to use quota from a quota holder

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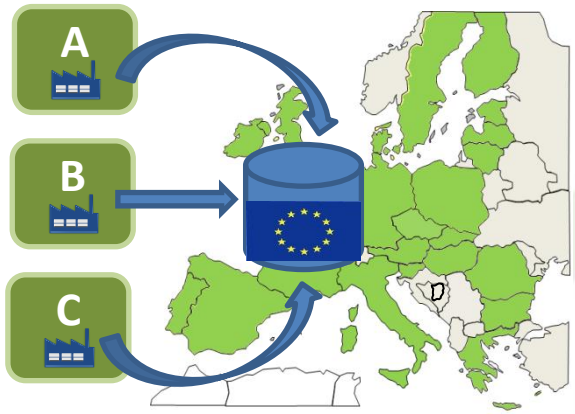
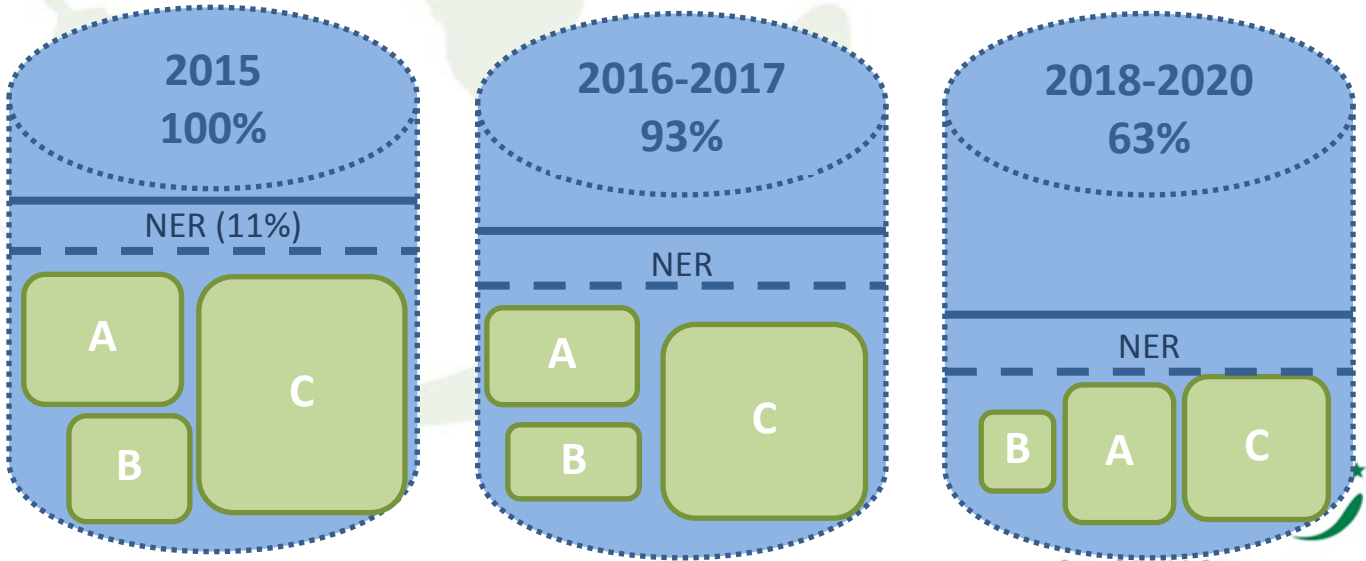
In detail: the quota allocation (2) The principle



2009-2012:
Baseline &
Reference values

- The total „quota pot“ is reduced by the phase-down steps
- Reference values are re-calculated every 3 years
- If A, B, C do not place all allocated quantities on the market, the new entrants reserve (NER) will increase in the next reference period
- From 2018 onwards, incumbants (A, B, C), „old“ new entrants and „new“ new entrants can apply for the NER



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In detail: the quota allocation (3) Precharged equipment for export

Precharged equipment for export must be exempted from the phase-down:

- To ensure a level playing field between EU and non-EU manufacturers and to support EU competiveness
  - On average 30% of EU production is intended for export

- The F-Gas Regulation is tailored for the EU market. Global action needs to be addressed in global fora, e.g. Montreal Protocol

- Via the definition of „undertaking“, the new F-Gas rules stipulate that bulk and precharged equipment for export are exempted from the phase-down

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In detail: the GWP limits (1)

- 2020/2022 GWP 2500 and 150 Hermetically sealed systems (Refrigerators and Freezers)
- 2020 GWP 2500 Stationary refrigeration equipment
- 2022 GWP 150 and 1500 Large commercial refrigeration systems
- 2020 GWP 150 Movable room a/c appliances
- 2025 GWP 750 Small split a/c systems

11. Refrigerators and freezers […] for commercial use (hermetically sealed systems)	**that contain HFCs with GWP of 2500 or more**	**1 January 2020**
	that contain HFCs with GWP of 150 or more	1 January 2022
11a. Stationary refrigeration equipment, that contains, or that relies upon for its functioning HFCs with GWP of 2500 or more except equipment intended for application designed to cool products to temperatures below -50°C		1 January 2020
11b. Multipack centralised refrigeration systems for commercial use with a capacity of 40kW or more that contain, or that rely upon for their functioning, fluorinated greenhouse gases with GWP of 150 or more, except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1500 may be used		1 January 2022
12. Movable room air-conditioning appliances (hermetically sealed equipment which is movable between rooms by the end user) that contain HFCs with GWP of 150 or more		1 January 2020
12a. Single split air-conditioning systems containing less than 3kg of fluorinated greenhouse gases, that contain, or that rely upon for their functioning, fluorinated greenhouse gases with GWP of 750 or more		1 January 2025

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In detail: the GWP limits (2)
The Multipack ban - definitions

ANNEX III

- 12. **Stationary refrigeration equipment**, that contains, or whose functioning relies upon, HFCs with GWP of 2500 or more except equipment intended for application designed to cool products to temperatures below -50°C
- 13. **Multipack centralised refrigeration systems for commercial use** with a rated capacity of 40kW or more that contain, or whose functioning relies upon, fluorinated greenhouse gases with GWP of 150 or more, except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1500 may be used

DEFINITIONS

- '**multipack centralised refrigeration systems**' means systems with two or more compressors operated in parallel, which are connected to one or more common condensers and to a number of cooling devices such as display cases, cabinets, freezers or to chilled store rooms
- '**primary refrigerant circuit of cascade systems**' means the primary circuit in indirect medium temperature systems where a combination of two or more separate refrigeration circuits are connected in series such that the primary circuit absorbs the condenser heat from a secondary circuit for the medium temperature

EN 378 – Cascade systems:

- *"two or more independent refrigeration circuits where the condenser of one systems rejects heat directly to the evaporator of another".*

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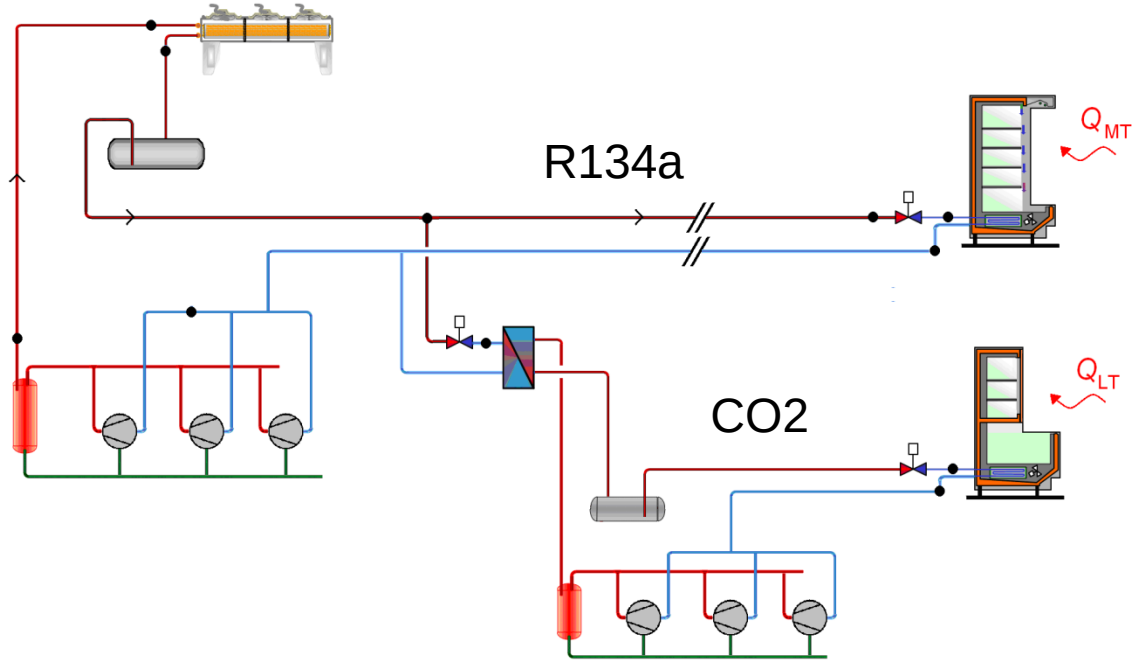
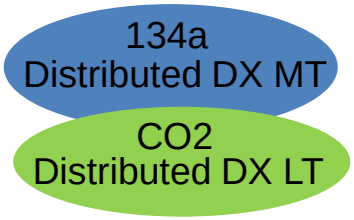
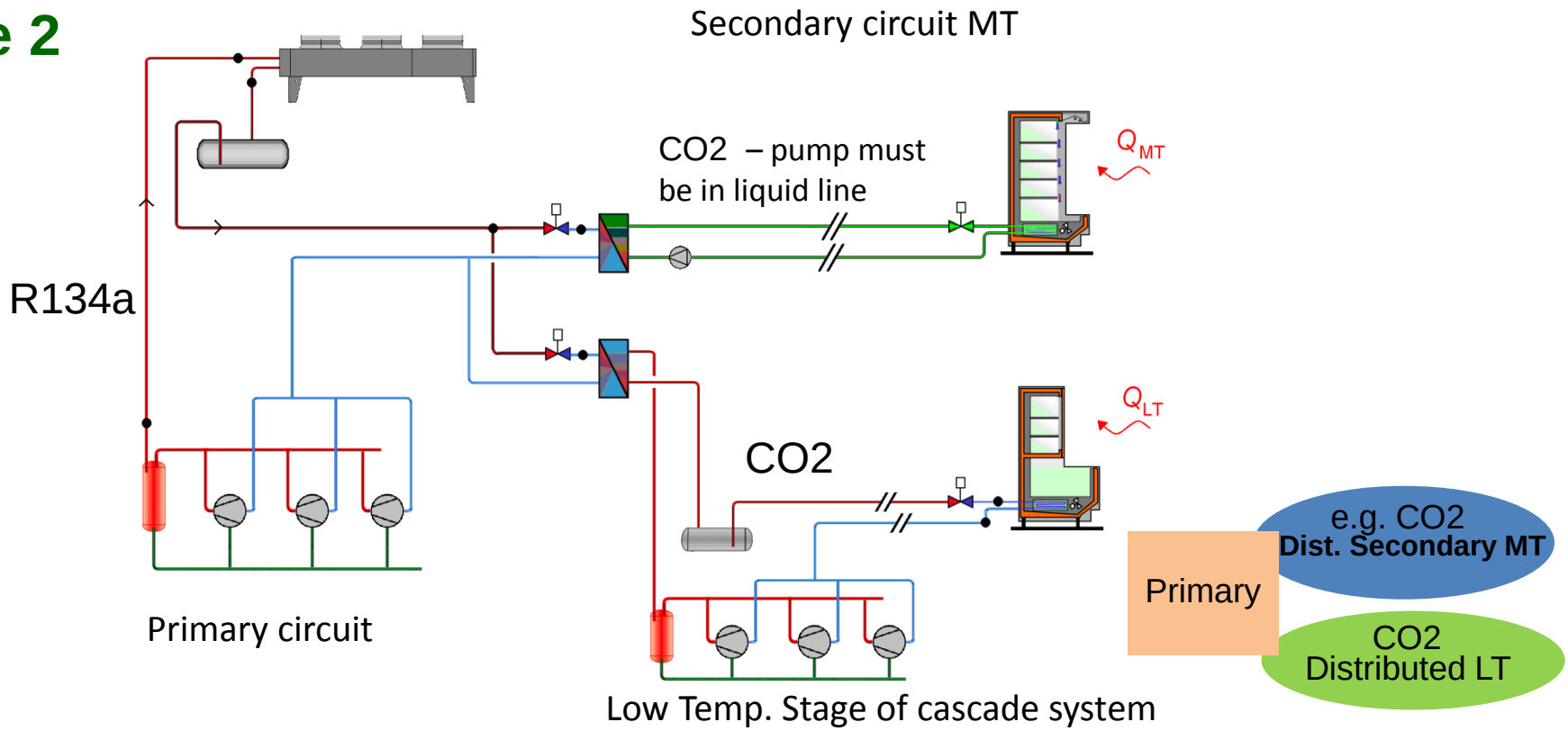
Case 1





System Type	R134a DX MT (including "primary"); cascade CO2 DX LT
System Temperature	MT and LT
Refrigerant	Primary: R134a, LT: CO2, MT: DX R134a
Capacity	100 kW
Charge	100 kg in primary / DX R134a circuit
Ban?	**Banned**. The exemption of GWP 1500 for cascade systems does not apply because the MT circuit is not an indirect circuit.

Case 2



System Type	R134a primary; Secondary MT (e.g. CO2) / cascade CO2 DX LT
System Temperature	MT and LT
Refrigerant	Primary: R134a, LT: CO2, MT Secondary (e.g. CO2)
Capacity	100 kW
Charge	20 kg in primary circuit
Ban?	**Allowed**, LT cascade, <150 GWP in DX circuit, MT secondary circuit and <1500 in primary (A.III 13)

Upcoming Reviews & Reports

- Report on codes & standards **2016**
- Report on training for alternatives **2017**
- Report on quota allocation **2017**
- Report on refrigeration systems **2017**
- Report on availability of HFCs **2020**
- Report on mV switchgear, split AC **2020**
- Comprehensive Report on effects **2022**
  - Forecast of HFCs demand,
  - Need for further action
  - Overview of standards
  - Analysis of alternatives in equipment not banned

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Conclusions

1. The phase-down requires a move towards lower GWP refrigerants
   - Industry and users need to act now!

2. The GWP limits will set signposts to steer the phase-down
   - The bans of refrigerants with a GWP of 2500 and above will free up quota for other applications such as air-conditioning.

3. Refrigerants with a high GWP such as R-404A and R-507 will be the first ones to be impacted

➲ **Industry needs to act now to avoid shortages**

➲ **Many solutions exist to transition to refrigerants with a lower GWP**

➲ **Containment remains a key priority**

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Thank you for your attention!

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