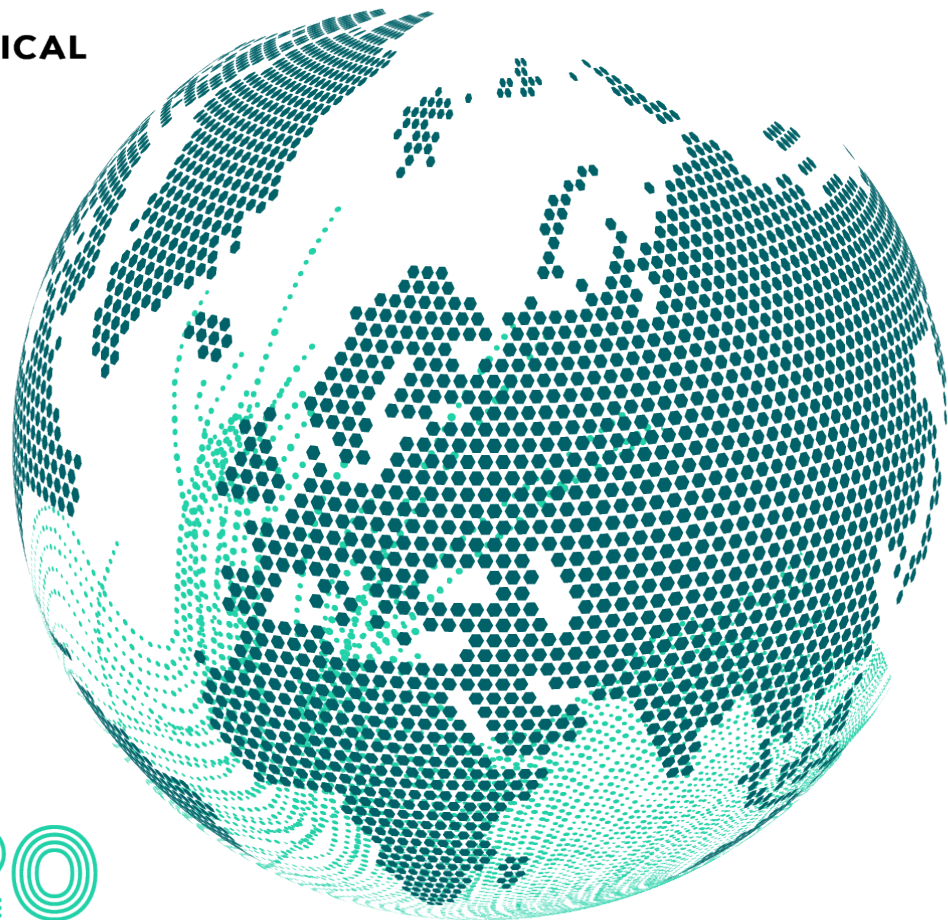


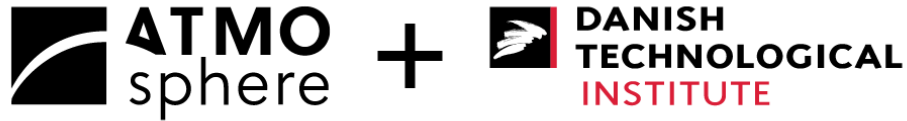


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**ONLINE**

23-24/06/2020



## Current work on stationary AC

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#GoNatRefs

## Background

- EU F-Gas Regulation (EU) No 517/2014, Article 21(4) : EU Commission to assess, by mid-2020, if *“cost-effective, technically feasible, energy-efficient and reliable alternatives exist, which make the replacement of fluorinated greenhouse gases possible in new small single split air conditioning systems”*
  - > Report coming out soon
- Evaluation and Impact Assessment of the F-gas Regulation and potential review
  - > Contract started: Consortium led by Öko-Recherche partnering with Öko-Institut, Ricardo
  - > Stakeholder consultation likely in autumn 2020

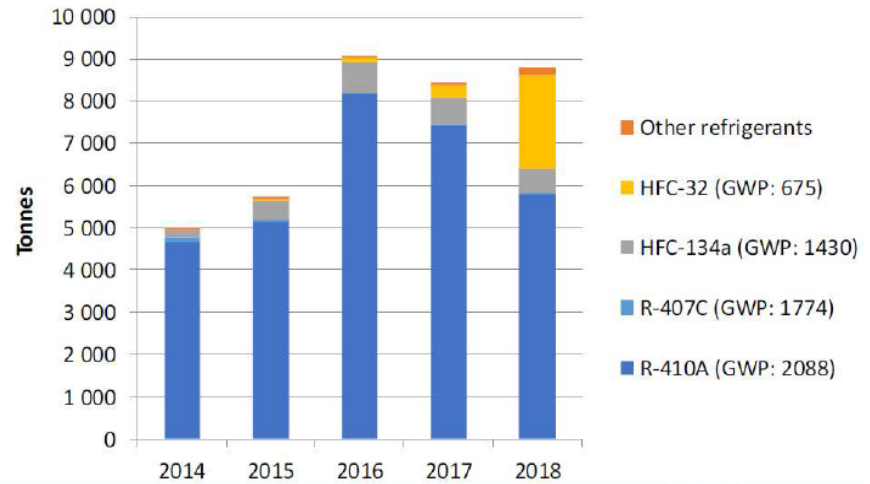
# Technology development & innovation in recent years

- R407C/R410A no longer the most common refrigerants in stationary AC and heat pump applications
- Other refrigerants introduced in new systems and for retrofit:
  - R290 (propane), R1270 (propylene), R744 (CO<sub>2</sub>), R718 (water)
  - HFCs with lower GWP: R32
  - HFC-HFO blends, e.g.
    - R452B (67% R32 / 7% R125 / 26% R1234yf; GWP 698; A2L);
    - R454C (78.5% R1234yf/ 21.5% R32; GWP 146; A2L)
    - R513A (56% R1234yf/ 44% R134a; GWP 631; A1)
    - *R466A and other blends with HCFOs or CF3I (ozone depleting potential)*

# HFCs and HFC alternatives in split AC systems - I

- Briefing Paper for EU COM:  
[https://ec.europa.eu/clima/sites/clima/files/docs/0106/2020\\_03\\_25\\_hfc\\_alternatives\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/docs/0106/2020_03_25_hfc_alternatives_en.pdf)
- EU market:  
 R32 increasingly common (all main manufacturers), also being introduced in other applications (mini-VRF, heat pump)  
 R410A still relevant

Figure 1. Refrigerants in imported stationary refrigeration and A/C equipment (metric tonnes).



## HFCs and HFC alternatives in split AC systems - II

- HFC phase down recognized as key driver for new technical solutions in AC
- R&D activities worldwide for small and large split systems, multi-split, VRF will lead to market-ready alternatives in the near future
- Announcement of a major Chinese manufacturer to introduce R290 small split AC systems to EU market in Q3/2020
- Use of R410A (GWP 2088) seems no longer necessary in small split AC in most EU countries
- Still certain barriers for flammable refrigerants e.g. in France, Italy (especially for A3)



## Discussion points

- Can all stationary AC applications do without HFCs today?
- Where are HFCs still needed and for how long?
- How should policy support the technology change?

We also welcome your input to the public stakeholder consultation in autumn 2020.



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Thank you  
for listening!

