

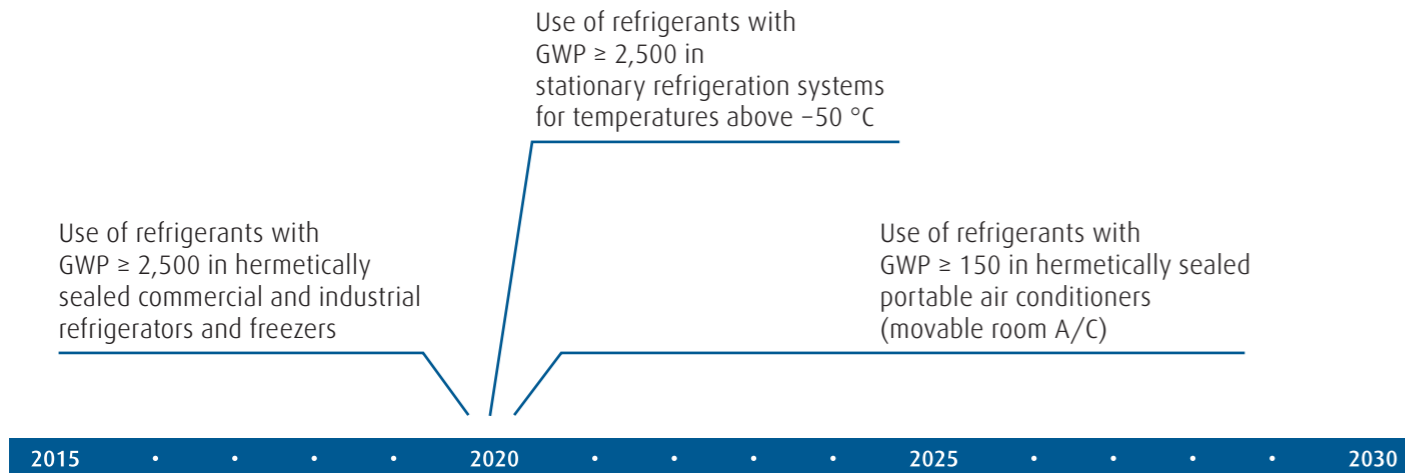
Making our world more productive



# The F-gas 2020 Bans



## 2020 F-gas Restrictions/Bans on Use in New Systems



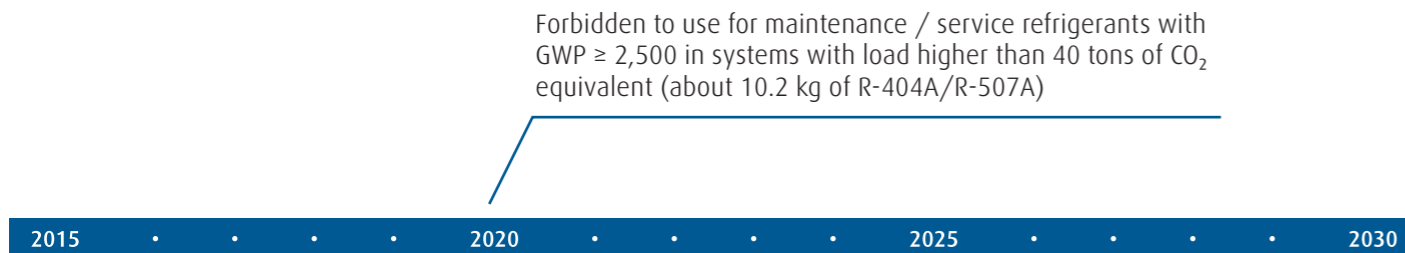
### Refrigeration Systems Affected

This will mainly affect the use of HFC R-404A or R-507A in:

- industrial refrigeration systems
- large commercial refrigeration systems, e.g. “central pack” systems used in supermarkets
- large transport refrigeration systems, e.g. in trains or ships

Most refrigeration systems in trucks and trailers don't use enough F-gas to be covered by the ban, but the largest could be affected.

## 2020 F-gas Restrictions/Bans in Maintenance / Service



### With the following exceptions:

- Systems for military use
- Refrigeration systems for products at temperature below  $-50\text{ °C}$
- Use of regenerated F-gases collected from existing equipment (up to 2030 only)
- Use of recycled F-gases collected either from your own equipment, or by the company servicing your equipment (up to 2030 only)

## Recovery vs. Recycling vs. Reclaiming

### Recovery

- Recovery means transferring the system's refrigerant into a refillable refrigerant cylinder
- Not contaminated refrigerant may be charged back into the system after repairs are completed
- Or, the recovered refrigerant may require further processing. This may mean recycling or reclaiming

### Recycling

- Recycling is cleaning the refrigerant for reuse without meeting all of the requirements for reclamation
- Recycled refrigerant is cleaned using oil separation and core filter-driers, which reduce moisture, acidity and solid particles

**Remember: Recycled refrigerant may only be reused in the system that it was recovered from, or in any other system owned by the same equipment's owner.**

### Reclaiming (Regeneration)

- Reclamation (Regeneration) is processing used refrigerant which has previously been used in some type of refrigeration loop into the new product specifications
- It has to be verified by chemical analysis (GC lab test) that new product specifications have been met (AHRI 700 standard)

**Reclaimed refrigerant can be resold to third party or used in a system of different owner.**



# Getting ahead through innovation.

With its innovative concepts, Linde is playing a pioneering role in the global market. As a technology leader, it is our task to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde offers more. We create added value, clearly discernible competitive advantages, and greater profitability. Each concept is tailored specifically to meet our customers' requirements – offering standardised as well as customised solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow's competition, you need a partner by your side for whom top quality, process optimisation, and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

Linde – Making our world more productive.