Linde can support you in understanding the implications of the service & maintenance bans to help you decide on the best solution that meets your requirements.

We offer many lower GWP refrigerant gases suitable for retrofitting existing installations such as R404A, R507 and R422D systems. The range of gases is continually growing, and we expect to have new HFO blends in our portfolio in the near future that will offer further environmental benefits.

Linde also provides a wide range of additional services including refrigerant recovery, reclamation and banking.

Any questions?

For further information or queries on the f-gas regulation and how Linde can help meet your environmental and legislative challenges, please contact your local Linde supplier.

Alternatively visit www.linde-gas.com/lgas
Understanding service and maintenance ban implications

**Starting point**
Is your system using a gas with a GWP of less than 2500?
- Yes → No action required.
- No → Continue

**Is your system charge size less than 40 tonnes CO₂e?**
- Yes → No action required.
- No → Convert

**Does your system have an application or process exemption (e.g., military equipment or temperatures below –50°C)?**
- Yes → No action required.
- No → Convert

**Is your system using reclaimed or recovered gas?**
- Yes → Service and maintenance ban as of 1st January 2030.
- No → Replace

Service & maintenance ban as of 1st January 2020.

**From 1.1.2020 the use of f-gases with a GWP of 2500 or more to service or maintain refrigeration equipment with gas charge size exceeding 40T CO₂ equivalent (CO₂e) will be banned.**

**Non refrigeration applications, such as air conditioning or heat pumps are not impacted. Low temperature refrigeration (below –50 °C) and military applications are also exempt.**

**Refrigeration equipment using gases such as R404A, R507 and R422D (ISCeOn® MO29) will be impacted.**

**Refrigeration equipment using reclaimed or recycled gases can do so until 1.1.2030.**

**Gases impacted by the refrigeration service and maintenance ban**

<table>
<thead>
<tr>
<th>Refrigerant</th>
<th>GWP</th>
<th>Charge size threshold (40T CO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R23</td>
<td>14800</td>
<td>2.7 kg</td>
</tr>
<tr>
<td>R40A</td>
<td>3922</td>
<td>10.2 kg</td>
</tr>
<tr>
<td>R422A (M079)</td>
<td>3143</td>
<td>12.7 kg</td>
</tr>
<tr>
<td>R422D (M029)</td>
<td>2729</td>
<td>14.7 kg</td>
</tr>
<tr>
<td>R428A (RS-52)</td>
<td>3607</td>
<td>11.1 kg</td>
</tr>
<tr>
<td>R434A (RS-45)</td>
<td>3245</td>
<td>12.3 kg</td>
</tr>
<tr>
<td>R507</td>
<td>3985</td>
<td>10.0 kg</td>
</tr>
<tr>
<td>R508B</td>
<td>13396</td>
<td>3.0 kg</td>
</tr>
<tr>
<td>MO89</td>
<td>3805</td>
<td>10.5 kg</td>
</tr>
</tbody>
</table>

**Options: continue, convert or replace**

For systems that are impacted by the service & maintenance bans, there are a number of options to consider:

**Continue**
Use the existing equipment and gas until 2020, and then use reclaimed or recycled gas, if available, until 2030.

**Convert**
Modify the equipment to run on a retrofit refrigerant gas with GWP less than 2500.

**Replace**
Install new higher efficiency equipment that uses lower GWP gases.