**Non-CO₂ Greenhouse Gases:** High-GWP Gases

**Source/Sectors:** Substitution of ODS/Fire-Fighting Sector

**Technology:** Inert gas systems (C.1.5.2)

**Description of the Technology:**
Inert gas systems use argon, nitrogen carbon dioxide, or a blend of these gases to extinguish fires (UNEP, 2001).

**Effectiveness:** Good

**Implementability:** Inert gas systems can be applied for the standard HFC systems in Class A (ordinary combustible) total flooding applications. This includes electronics as well as telecommunications applications (IEA, 2003).

**Reliability:** For most Class A fire hazards, it provides an equivalent level of both fire protection and life safety/health protection (USEPA, 2006b).

**Maturity:** Commercially available; however, several risks may prevent the option from widely use and therefore, further research are needed (IEA, 2003).

**Cost Effectiveness:**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Lifetime (yrs)</th>
<th>MP (%)</th>
<th>RE (%)</th>
<th>TA (%)</th>
<th>Capital cost</th>
<th>Annual cost</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inert gas systems(^1)</td>
<td>10</td>
<td>20</td>
<td>100</td>
<td>15-76</td>
<td>$98.57</td>
<td>$3.57</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

Note: MP: market penetration; RE: reduction efficiency; TA: technical applicability; costs are in year 2000 US$/MT\(_{CO₂-Eq.}\).


**Industry Acceptance Level:** The inert gas systems are assumed to increase over time, as old systems are replaced to new systems (IEA, 2003).

**Limitations:** This system may not be applicable for situations that fire expansion is rapid, because of its slow discharge time (4 to 6 times slower than standard HFC systems); the additional space and weight necessary for the installation of the system may not be suitable for many systems which infrastructure are already fixed (IEA, 2003).

**Sources of Information:**


