

## 11063 - Experience with CO<sub>2</sub> free Generator Operation

### SC A1 Rotating Electrical Machines

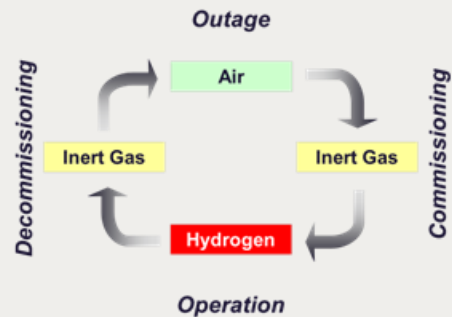
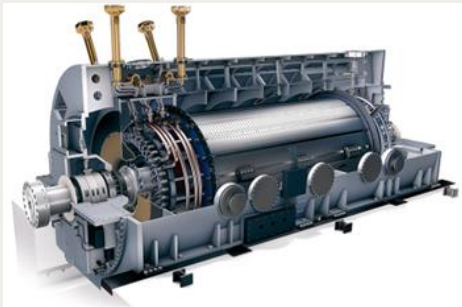
**Question 3.8:** The reduction in the use of greenhouse gasses is a global initiative generally focusing on the larger contributors to CO<sub>2</sub> production. This paper gives an example of reducing CO<sub>2</sub> usage and release on a more modest scale. Have other manufacturers or users considered similar schemes to reduce the use of greenhouse gases in power generation rather than process that create greenhouse gases?

Uwe Eickelbeck, Germany

# 11063 - Experience with CO<sub>2</sub> free Generator Operation

- Answer to question 3.8

There are other options available, but they don't have all the advantages of using Argon as an purge gas for hydrogen-cooled generators



Gas Data					
	Hydrogen (H <sub>2</sub> )	Air	Argon (Ar)	Carbon Dioxide (CO <sub>2</sub> )	Nitrogen (N <sub>2</sub> )
critical temperature	-239.9 °C	-140.73 °C	-122.43 °C	+31.0 °C	-146.9 °C
density, gaseous at 0°C and 1.013 bar	0.08988 kg/m <sup>3</sup>	1.293 kg/m <sup>3</sup>	1.784 kg/m <sup>3</sup>	1.977 kg/m <sup>3</sup>	1.250 kg/m <sup>3</sup>
density ratio to air at 0°C and 1.013 bar	0.0695	1	1.38	1.53	0.97
thermal conductivity at 25°C and 1 bar	1861*10 <sup>-4</sup> W/mK	260*10 <sup>-4</sup> W/mK	178.2*10 <sup>-4</sup> W/mK	164.0*10 <sup>-4</sup> W/mK	258.3*10 <sup>-4</sup> W/mK

Group Discussion Meeting