**Ammonia in Gas Turbines: A Review**

Alnajideen M1,\*, Alsaegh A, Alnaeli M1, Wang P2, Mashruk S1, Shi H1, Valera-Medina A1

1 Cardiff School of Engineering, Cardiff University, CF24 3AA, Wales, UK

2 Institute of Energy Research, Jiangsu University, Zhenjiang, China

\* Corresponding author: [AlnajideenMI@cardiff.ac.uk](mailto:AlnajideenMI@cardiff.ac.uk)

Ammonia gas turbines are currently under development for the efficient use of this molecule to support large power outputs. Although the chemical has demonstrated its versatility to serve as an adequate fuelling source for these types of equipment, it is necessary to address the history, trends, and standing challenges that ammonia gas turbines still suffer. This review addresses these points and also evaluates the potential of novel techniques such as doping, humidification, retrofitting and health and safety aspects, amongst others, to unravel the requirements for the transition towards ammonia fuelled units. The work presented shows that the potential for achievement is extremely high, with companies and institutions already developing equipment capable of using the chemical for scales that range from kWs to MWs in power outputs.