The 2023 IERE-CSRIO Brisbane Hydrogen Workshop
May 22–25, 2023

Transformation to Hydrogen Firing in Black Point Power Station
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A Technology and Readiness Review Towards 2030 and Beyond

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Keywords: *Power generation, fossil fuel, hydrogen firing, decarbonization*

Abstract

In recent global research, hydrogen would play a more important role in the decarbonisation of different industries. The technologies using in different types of power plants, which are originally designed with fossil fuels, are being under significant advancement to transit from a few percentages of hydrogen burning capability nowadays to pure hydrogen burning in near future. Hydrogen element has the smallest molecular size in nature, considered the most abundant resources but its special characteristics in particular the flammability would create challenge to the existing power plants based on fossil fuel design. In Black Point Power Station of CLP Power Hong Kong Limited there are 9 combined cycle gas turbine currently in operation and 1 unit under construction. Based on the latest market development, this paper would like to share the recent development of different gas turbine technologies particular in Europe and US to help transiting the existing units in BPPS being capable to burn hydrogen in future. It also addresses the different foreseeable challenge during the transition, and assessment of the potential impacts being manageable from the view of capacity, efficiency, environment, and O&M consideration.