

The Use of Nuclear Generation to Provide Power System Stability

Authors : Heather Wyman-Pain, Yuankai Bian, Furong Li

Abstract : The decreasing use of fossil fuel power stations has a negative effect on the stability of the electricity systems in many countries. Nuclear power stations have traditionally provided minimal ancillary services to support the system but this must change in the future as they replace fossil fuel generators. This paper explains the development of the four most popular reactor types still in regular operation across the world which have formed the basis for most reactor development since their commercialisation in the 1950s. The use of nuclear power in four countries with varying levels of capacity provided by nuclear generators is investigated, using the primary frequency response provided by generators as a measure for the electricity networks stability, to assess the need for nuclear generators to provide additional support as their share of the generation capacity increases.

Keywords : frequency control, nuclear power generation, power system stability, system inertia

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