



Revisiting the feasibility analysis of on-site wind generation for the control of a dutch polder

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EU targets to substantially reduce greenhouse gas emissions, by 20% within 2020 and 40% within 2030, has resulted in the introduction of more renewables to the grid. The recent announcement (2016) by the UK and the Netherlands to build offshore wind farms of 1.2 GW and 0.7 GW, respectively, is an example of the increasing trend for wind power penetration in the grid. The uncertainty in renewable electricity generation and its use has, however, created problems for grid stability, necessitating smarter grid and demand side management. Renewable energy, through the use of on-site windmills, has been used to keep Dutch polders dry for centuries. In this work, we present preliminary analysis of the potential for on-site wind energy use for draining a Dutch polder. A mathematical framework is presented to optimise pumping subject to uncertainties in wind energy variations and runoff predictions.