Rural microgrids dublin

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Standalone Microgrids (MGs) play a very crucial role in these kinds of a rural area ...

Home > Theses > Engineering > Doctoral > 135

Electrical and electronic engineering

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy, School of Electrical and Electronic Engineering, Technological University Dublin 2021.

In this thesis, a power management-based droop control is proposed for accurate power sharing according to the power availability in a particular MG. Inverters can have different power setpoints during the grid-connected mode, but in the standalone mode, they all need their power setpoints to be adjusted according to their power ratings. On the basis of this, a power management-based droop control strategy is developed to achieve the power-sharing among the neighbouring microgrids. The proposed method helps the MG inverters to share the power according to its ratings and availability, which does not restrict the inverters for equal power-sharing.

The paralleled inverters in coupled MGs need to work in both interconnected mode and standalone mode and should be able to transfer between modes seamlessly. An enhanced droop control is proposed to maintain the frequency and voltage of the MGs to their nominal value, which also helps the neighbouring MGs for seamless (de)coupling. This thesis also presents a mathematical model of the interconnected neighbouring microgrid for stability and robustness analysis. Finally, a laboratory prototype model of two MGs is developed to test the effectiveness of the proposed control strategies.

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Electrical and Computer Engineering Commons

(EnergyTech Editor"s Note: Data Centers are among the fastest growing markets for both microgrids and the next generation of power resources. This growth also is a challenge to utilities also trying to deal with EV infrastructure expansion and incorporating intermittent resources such as renewables. This story in Data Center Frontier speaks to some of those constraints in the Irish market and beyond. Reposted with permission. Both EnergyTech and Data Center Frontier are part of Endeavor Business Media).

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What happens when a data center market runs short of electricity? As cloud computing grows faster than local utility grids, several of the world"s largest and most strategic data center markets are facing power constraints that pose a major challenge to the long-term growth of the Internet.

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