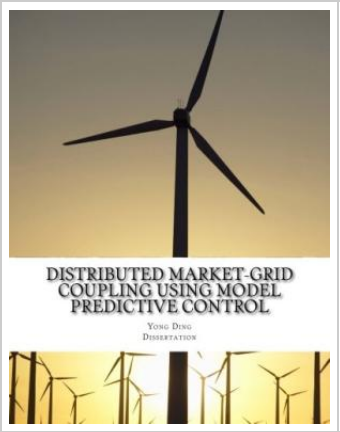

Distributed Market-Grid Coupling Using Model Predictive Control: Dissertation (Paperback)

By Yong Ding

Createspace Independent Publishing Platform, United States, 2016. Paperback. Condition: New. Language: English. Brand new Book. Real-time monitoring of electricity grids' power flow, which reflects the physical reality of the power system, plays a crucial role in the power market, since the real-time market behavior often deviates from long-term market forecasts, due to unexpected supply-demand imbalances and the resulting price volatility. The real-time market results, in turn, have a major influence on the optimal dynamic economic dispatch of the power generation for stabilizing the power load in the grid. However, an appropriate market-grid coupling, in terms of a real-time interaction between the market and the grid, has not been designed to be available either from the grid network side or from the market structure side. In particular, in the context of Demand Response (DR), an incentive-driven load shedding or shifting for grid relief cannot be realized without an appropriate market-grid coupling. In this dissertation, a feedback control concept is proposed, designed and evaluated for modeling a market-grid coupling. The dissertation, also, addresses the research question of whether the market price as a feedback signal can effectively control the power dispatch in the grid, and vice versa. Recently, researchers have focused primarily...

Reviews

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