Models and Facilities for Automation of Energy Market Organisational Management Systems: A Monograph



Borukaiev Z.Kh., Blinov I.V., Ostapchenko K.B., Chemerys O.A., Shkarupylo V.V.

The monograph is devoted to research on the development of specialised mathematical and computer modelling tools, information technology support for automation of preparation and decision-making processes by the relevant organisational management systems of structural elements of the power system and energy market with developed means of meaningful data processing and user interface for participants of the competitive electricity market operating in conditions of complex relationships and potential risks. The article identifies the peculiarities of the electricity market functioning that require advanced computer modelling tools that enable market participants to formulate and adopt strategies for their behaviour in different segments of the competitive market. The article analyses existing solutions and research in creating modern

software tools for modelling, forecasting, and optimising the functioning of energy markets worldwide. The direction of development of such tools is determined, and the structural and functional composition of information technology support is proposed, represented by the functional components of the process of preparation and decision-making regarding developing a strategy for the market participant's behaviour in its segments. An integrated approach to formalisation of indicators of the functioning of market characteristics subject to control in the operation process by means of mathematical and computer modelling is presented, emphasising the software and algorithmic components. This step aims to provide a mechanism for monitoring the specified indicators of the functioning of electricity market segments.

The monograph is intended for researchers, specialists and experts in information exchange and functioning of electricity markets, postgraduate students and students of higher education institutions majoring in electricity systems and complexes.