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APPLICATION OF DIGITAL TECHNOLOGIES FOR EXPANSION PLANNING OF INTEGRATED ENERGY SYSTEMS

Active promotion of digital technologies in the energy sector requires a change in the principles of building energy systems, as well as the concept of their expansion planning. The need for digitalization of infrastructural energy systems is determined by significantly increasing consumer requirements for reliability and quality of energy supply, which are caused by digitalization and computerization of technologies among consumers. The functioning of infrastructural energy systems that are transforming as a result of the innovative development is fundamentally impossible without effective control systems that are implemented using advanced information and communication technologies and intelligent digital tools. Energy systems are becoming sophisticated cyber-physical systems. At the same time, the problems of cybersecurity are exacerbating [1,2]. The joint functioning of several types of energy systems in the form of a single integrated energy system provides new functional capabilities to improve the efficiency, reliability and quality of energy supply [3,4]. The use of digital technologies in integrated energy systems provides the collection, processing, transmission and representing of information on all components of the system regarding all aspects of integration.

Digitalization of integrated energy systems is carried out in the following two directions:

- application of digital technologies for individual subsystems for the purpose of their control;
- the use of digital technologies for technical and technological integration solutions in order to ensure coordination of subsystems and the implementation of system-wide goals.

The adoption of digital technologies in integrated energy systems contributes to the organization of flexible, coordinated control of the expansion planning of such systems.

References

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