

A.G.KYSELOVA

## **Context-aware control system of power semiconductor converters**

*National Technical University of Ukraine "Kyiv Polytechnic Institute"*  
*Kyiv, Ukraine*  
*E-mail: a.g.kyselova@gmail.com*

Over the past few decades the energy demand has been continuously increasing (both in industrialized and in emerging countries) and the control systems for renewable sources and electrical loads have become much more sophisticated. The paper is devoted to development of intelligent context-aware control system of power semiconductor converters inside a microgrid using the principles of cognitive, object-oriented analysis is describes. Mathematical software for decision-making system of power semiconductor converters was developed using knowledge-engineering methods.

The developed ontological knowledge base of the microgrid provides a complete description of the subject area concerning the obtainment and integration of general and specific knowledge, delivered from different sources and described by various models of knowledge representation: domain ontology, the rules for identifying the problem situations and precedents of withdrawing from them. The algorithm description using the Semantic Web standards allowed to consolidate the accumulation of knowledge and to provide access to it to the remote users. Experiments made have shown that the context-aware control system of power semiconductor converters inside a microgrid may be operated in real-time.