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# BACKGROUND OF THE ORIGIN AND PERIODIZATION OF THE DEVELOPMENT OF THEORETICAL ELECTRICAL ENGINEERING IN UKRAINE (1930 – BEGINNING OF THE XXI CENTURY)

## Summary

The formation and development of theoretical electrical engineering in Ukraine during the XX century – the beginning of the XXI century is investigated. It is found that the initial researches in the field of theoretical electrical engineering were grounded on the basis of technical universities of Ukraine by P.P. Kopnyaev, M.A. Artemyev, H.E. Evreinov, etc. in the early twentieth century became prerequisites for the formation of this direction. However, they acquired a systemic character with the creation of specialized departments, which determined the beginning of the first stage. The organization of the Institute of Electrical Engineering of the Academy of Sciences of the Ukrainian SSR gave a chance to expand significantly the scientific research in theoretical electrical engineering. The characteristic feature of the first stage was the formation of theoretical electrical engineering as a discipline, the development of terminology apparatus and the appearance of scientific schools in the field of theoretical electrical engineering.

The second stage is limited by 1960–1990. This is due to the fact that at that time there was a differentiation of development directions of the electrotechnical industry and accordingly the requirements for specialists were increasing. Automation of production and involvement of computer technology contribute to the expansion of theoretical studies with the use of modern mathematical methods. In addition, new methods of organizing the educational process were being created and implemented, which helped to rethink the role of "Theoretical Foundations of Electrical Engineering" discipline in the training of electrical engineers and scientists.

At that time, the contribution to the development of theoretical electrical engineering in Ukraine was made by such scientists as: O.M. Miliakh (the theory of inductive–capacitive converters of voltage sources to current sources); M.H. Maksymovych (the development of matrix methods for the study of complex electric circuits and the theory of nonequivalent transformations of electric circuits); V.P. Sihorskyi (the development of theory of algorithms for analysis of transistor circuits, the theory and synthesis of multivalued elements and structures of discrete technique); O.V. Tozoni (the development of calculating electromagnetic circuits methods in nonlinear media using a computer); V.B. Klepikov (the basics of the theory of a new class of electromechanical systems); O.O. Maievskyi (the integrated methods for the study of valve circuits and means of increasing the energy performance of deeply regulated semiconductor converters); Ye.I. Sokol (the development of microprocessor control systems for semiconductor electricity converters); V.S. Rudenko and V.I. Senko (the basics of the theory of transformer technology, the theory of electromagnetic processes in semiconductor converters was developed); V.S. Perkhach (mathematical modeling in power engineering) and others.

In the third stage, there were two main periods: the first lasted during 1991–2005 and was characterized by the development of new scientific directions and practical problems of theoretical electrical engineering in terms of breaking close economic and technical connection with the republics of the former Soviet Union. In the difficult economic and political conditions of the early 1990s, the researchers of

the Institute of Electrodynamics of NAS of Ukraine and the Higher Electrotechnical School tried to preserve and develop the accumulated intellectual capital, taking into account the new practical needs of Ukraine.

The second period (2006–2017) was characterized by the gradual formation and development of the newest theoretical and technical directions and tasks aimed at meeting the meet the requirements of the state for high–tech electrical products in the conditions of rapid economic growth of the electric power complex of Ukraine. Scientific teams of research and educational institutions are working on the further development of theoretical and applied research in the field of theoretical electrical engineering and are aimed at solving actual problems of modeling and forecasting the action of the electromagnetic field, protecting the environment from the electromagnetic impact of energy objects and the implementation and practical implementation development of the industrial complex of Ukraine at the present level.

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