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We developed the experimental system to test the ways of high-voltage direct current reception and transmission in electric networks, as well as to assess the quasi-optimal values achievement potential of the basic electrical networks parameters, such as capacity, reliability, stability, etc.
The design was made by a research team at the Department of "Industrial enterprises electric power supply".
The aim of the project is to confirm the possibility of achieving the theoretically obtained results in terms of reliability, capacity, stability of the electrical network during DC transmission.
Basic structural and operating characteristics of the system are to provide its adjustment in different modes of the electrical network operation including emergency cases.
The project is used in teaching, as well as in the electrical networks design.
The results of the design is a qualitative and quantitative assessment of various parameters in DC transmission and reception. The expected way of the involved resources usage is the completion of research and development with a view to the practical implementation of the studied DC receiving and transmitting process under certain operating conditions through electric air and cable networks.

The developed system (Fig. 1) has obvious advantages over the previous ones which are used in practical studies and provides:
- DC transmitting and receiving through several independent single-wire channels;
- Electric power transmission and reception both through air and cable lines;
- The test of operation with different DC quality;
- The test of operation with the introduction of different reserve lines number into power supply system checking the electrical network reliability and capacity.

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Experimental power transmission system with High Voltage Direct Current

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