IDENTIFICATION SEGMENTS OF ELECTRICAL GRIDS FOR PROBLEMS OF FLOW CONTROL ACTIVE POWER IN ELECTRICAL NETWORKS DGS

V. Bodunov

The proposed one possible guidelines identify segments of the electrical network, in which the problem of power control distributed generation sources.

Power distribution networks, distributed generation sources (*DGS)****, technological power consumption.***

In recent years a steady tendency to change the general concept of energy development. This is the introduction of a new ideology - energy for sustainable development [1], one manifestation of which is to spread the use of mini and mikroelektrostantsiy. Thus, according to official statistics NPC Ukrenergo UES Ukraine only in the last 5 years was commissioned more than 50 new generating facilities [2], of which 16 have installed capacity of less than 1 MW, 12 - in the range of 1 to 5 MW and 5 - from 5 to 10 MW.

In the works of some authors [3, 4, 5] observed that of the distributed generation sources (DGS), operating in parallel grid, may be involved in the regulation overflows active power technology to reduce power consumption. Thus there are no clear recommendations on capacity DGS values as minimum and maximum, in which appropriate conduct regulation of generation. This measure requires to take into account a number of factors such as the economic effect of the additional cost of upgrading management DGS, loss of generation owner forced restrictions generation. At the same time there is no common approach to the allocation of part (segment) electrical network, which is determined by economic benefits.

The aim - is to establish a possible identification of the principles of electrical network segment for further consideration of the problem of the distribution of active power management in electrical networks from DGS.

Materials and methods of research.

The proposed principle of identifying segments of electrical grids is the account in the calculation scheme of such electric network, changes of technological power consumption when setting DRG which will be greater than the maximum error of electricity meters.

To explain the proposed principle consider electricity network as segmented structure, segments which are separated from adjacent metering (on main parts of lines, nodes partitioning, tire RP, TP, sites load generation, etc.).

Formation advanced segment performed as follows:

1) Count formed equivalent electrical network in accordance with the existing accounting system;

2) sequentially from DGS (S1m) for each segment of the graph is determined by the calculated value of technological power consumption without DGS and in his account of;

3) the received values calculates changes of technological power consumption;

4) the resulting value is compared to the calculated value of the absolute error accounting system;

5) If the calculated value changes technological power consumption exceeds the error, the segment nk expanded to include the segment;

6) if the segment is fair value, the accounting system will be insensitive to decrease (increase) technological power losses caused by DGS, under present and following segments not included in the extended segment. Formation completed.

Thus we can highlight some of the electrical network (segment), the modes which will affect DGS connection.

As an example, consider the operation of electric network with constant load capacity, while the relative loss of active power equal to the relative value of technological power consumption. Determine the conditions under which a change of active power losses in the power transformer from joining DGS will be in the dead zone of accounting on tires HV and LV, that is the condition.

Conclusions

1. The principle of formation of segments of power grid management tasks for

distribution of active power in electric networks of DGS.

2. insensitivity zone defined technological power consumption changes depending on the active power and error DGS system of power.