REDUCTION OF THE ENERGY LOSSES IN ELEMENT CAPACITOR STEAM TURBINES

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Given work is dedicated to problem to modernizations energy-block, as follows consideration reduction strategy of the energy losses in element capacitor turbine installation.

The more essential influence upon factors of efficiency TES render the low-potential complexes, as follows their main element - a capacitor. Change state of working energy-block and quality coolling water bring about intensive soiling the surfaces head-exchange capacitor, in that time contamination capacitor brings about:

- a reduction to powers energy-block (the underproduction to electric powers);

- an increase the working expenses;

- a deterioration to economy energy-block;

- when increase the pressure on 1 kPa power of the turbine in kondensation mode decreases on 0,8-0,9% or so increases the specific consuption a fuel.

Simultaneously with this, maintenance of the purity capacitor requires the additional expenseses, brings about underproduction of the electric powers at period of the cleaning. In this connection appears the problem to optimization mode cleaning capacitor.

In base of the mathematical model of the determination of the optimum periods of the cleaning the surfaces capacitor is accepted methods, advanced author by account and analysis perennial statistical condition data to usages element low-potential complex energy-block Zmievskoy TPP, Zuevskoy TPP, Zaporozhskoy APP.

The difference of the proposed methods of the determination of the optimum periods peelings from existing is concluded in following: instead of independent optimization of each interval between cleaning is offered optimization for a certain typical time lag T. For time is chosen overhaul period. In this case optimum location is realized on time axis of the moments of the unhooking the capacitor on clear i.e.

$$(k+1)\cdot\tau_{opt} + k\Delta\tau = T,$$

where k - an amount of the unhooking the capacitor on cleaning for overhaul period;

T - an overhaul period of the block, hour;

$\Delta\tau$ - length of the cleaning the capacitor, hour;

τ_{opt} - an optimum interval between two cleanings, hour.

In given methods is taken into account time for cleaning the capacitor $\Delta\tau$ that contributes it is enough essential adjustment and raises the quality of the planning period cleaning.

Using standard programme methods of searching for of the optimum of the system is defined minimum to functions F in point τ_{opt} whereupon possible define optimum number of the cleaning the capacitor for period T.

AUTOMATION SMALL HYDRAULIC POWER PLANT (HPP) WITHOUT SERVICING PERSONNEL

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On modern small HPP (mHPP), since and on HPP with hydrounit of the greater powers, are installed complex systems of the autocontrol and technological automation, which check and adjust over 20 parameters, and are an expensive equipment. Together with that, on mHPP no need for checking such amount parameter through simplified modes of their work.

All this leads to ungrounded increase the capital expenses at construction HPP and prime cost produced to electric powers.

Besides, on present time for HPP small power work, basically, analog systems of the autocontrol and systems of the technological automation on the base electromagnetic and electromechanic relay, reliability of the work falls due to that to stations.

Control HPP small power is realized servicing personnel on shield and board of control, which are installed right in machine common-room station that also brings about increasing of the working expenses to stations.

For HPP small power by actual problem is a most further optimization of the schemes of the automation and structures energy-block, particularly in condition of the