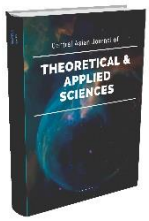

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Heating Furnaces Management

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Abstract: *In this article, we aim to put forward an innovative idea that leads to significant economic savings in power transmission and to scientifically prove its advantage. We would like to provide information about changes in the shape of conductors in order to solve the problem of solving the problem of the amount of savings and proving its advantages.*

Keywords: *power source, resistivity of high voltage conductor, electrical conductor.*

Furnaces are widely used as electrotechnological devices. In this control facility, the furnace is heated by burning fuel or using electricity and oven in his cell heat control will be ie oven adjustable for parameter his known one at the point v_P is the temperature. Management effect **SHE IS** fuel transmission vented condition or electricity with supply chain voltage $\mathbf{U}_1$, air transfer valve status or cooling fan speed $\mathbf{U}_2$ **and** the valve position of the part designed to remove gas or excess heat from the chamber $\mathbf{U}_3$ is calculated (Fig. 1).

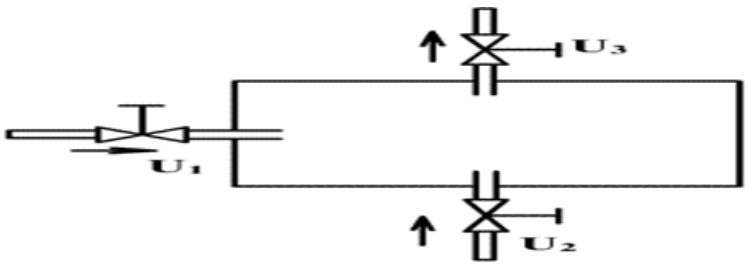

Figure 1. Heat up oven principled scheme

External influences - air pressure in the chamber, thermal parameters during the use of the furnace, the composition of the fuel, waste, and so on.

is carried out by controlling the fuel transfer rate or the power of electricity, and for approximate calculations, the mathematical model of the object is represented by differential equations of the first order.

If Q - one unity time during from the oven separate came out heat quantity and v_{urt} of the oven average temperature if he without heat the balance equation can be expressed as:

$Q \square g (v$

While the temperature of fuel-heated furnaces is adjusted by controlling the fuel transfer, electric furnaces are adjusted by controlling electrical parameters.

The temperature of electric ovens can be adjusted in two ways:

periodic connection and disconnection of the furnace to the supply network;

replacement of furnace heating elements in a "star" connection scheme to a "delta" connection scheme or from a series connection to a parallel connection scheme.

In the first method, the temperature of the oven is controlled by a thermocouple, a resistance thermometer, and a photocell.

Connecting and disconnecting the furnace to the network is carried out through the temperature regulator (TR). To do this, it transmits a suitable signal from the TR to the disconnection circuit (ACh).

Oven temperature vtop □ □v changes to and TR disconnects the furnace from the network. Here □v is the temperature deviation from the given value, the error.

Absorption of heat into the heated body and spreading to the environment

because the heat in the furnace chamber decreases to vtop □ □v after a certain time and TR connects the furnace to the network again. The amount of temperature deviation value □v depends on the accuracy of TR, the inertia of the furnace and the sensitivity of the temperature sensor. Such adjustment is called two-position adjustment. The functional scheme of the furnace and the graph of changes in temperature and power (transient process) are shown in Fig. 2. Urt vtashki) □ S dv urt , dt bu on the ground g - "oven - external atmosphere" system heat conductivity, $and_{outside}$ - external environment temperature, S – of the oven heat capacity. System thermal conductivity g and of the oven heat capacity S to the temperature depends being only approx calculations for constant that to look possible Control effects that cannot be done as external environment temperature $and_{outside}$, of the oven heat capacity S and heat exchange conditions to look possible

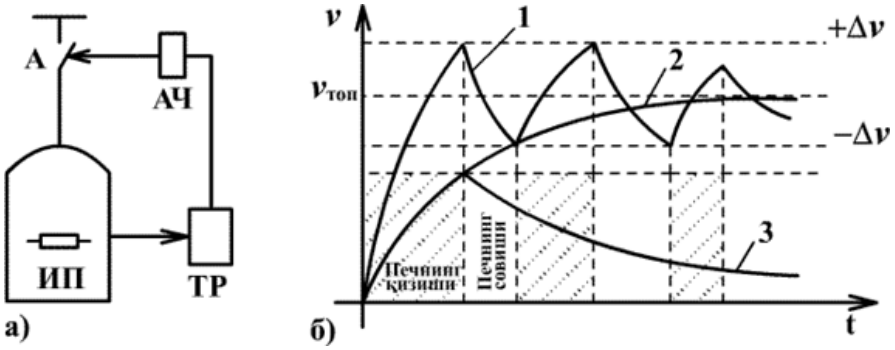

Figure 2. Furnace functional diagram

(a) and temperature and power versus time change graph. 1 - of the oven temperature change, 2 - of the oven average temperature change, 3 - the average power consumption of the oven.

Reducing the power consumed by the furnace from the network by changing the heating elements from the star connection scheme to the delta connection scheme is considered effective from the point of view of energy adjustment of the temperature. Furnace power can also be adjusted using an autotransformer, an additional choke, a reastat or a thyristor adjuster.

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