Modeling the preheating of the aluminum cell.

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We inwestigate the influence the different parameters of burning fuel it's temperature, the inputing rate fuel turbulent tangential component V_y, geometrical parameters of the burning under preaheating aluminum cell in three first day.

On practical the main criterion is well known undewr flame preheating of aluminum cell. It is the higher finish temperature which permit staying temperature gradient under inputing electrolit and protect the penetration causting soda in the carbon block of the cathode. Of course it is necessary to obtain uniform temperature field on the all square of the cell with the minimum gradient on the depth of the carbon block. The temperature under the carbon block must be un lower 700^oC, and surface of the carbon block nearly 1000^oC.

Today the flame preheating has the leader position from the different parameters permit economize energy resources and reach the more uniform disrtibution of the temperature field on cathode surface at the end of preheating time during the all cathode surface. The various plants used the nature gases as propane butane or the different diesel fuel. Clear that the nature gases permit obtaine the more higher temperature at the preheating end. But this using is more dangerous than diesel fuel. In Irkutsk and Volgagrad aluminuim plants is using the nature gases as heating gases. In Krasnoyarsk plants using the diesel fuel. It is very impotant to have the information about the value temperature at the worker space to determine the results of the burner and estimate the volume and value of the various harmful matters after the preheating. Today does not exist the evidal reasons and recomendations to choose and using the better heating fuels.

The surface of the carbon block and stuffing seams was heating by the product of the burning fuel with temperature is 1000^oC. The heating of the cathode is realized by the product of the burning fuel and the existence of laminar turbulent stream of the heating gases at the work space with the rate V_x in the direction x and the rate V_y in the direction y.

In this work we study the influence the geometrical parameter and the form of the flame under the temperature of the product of the burning fuel on the surface cathode. We experimental define the rate V_x in direction x which correspond the special pressure of air in the flame and convective coefficient of the heatchange of cathode and the product of the burning fuel. The rate of it's direction y correspond the turbulent of the burning fuel.

We consider the following equations.

$$c\rho\frac{\partial T}{\partial t} = \frac{\partial}{\partial x}(\lambda\frac{\partial T}{\partial x}) + \frac{\partial}{\partial y}(\lambda\frac{\partial T}{\partial y}) + c\rho(V_x\frac{\partial T}{\partial x} + V_y\frac{\partial T}{\partial x});\ (x,y) \in \Omega; \qquad (1)$$