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INSTRUMENTAL AND TECHNOLOGICAL PROVIDING OF FINISH TREATMENT OF DETAILS OF HARD-PROCESSING MATERIALS WITH HEATING OF THE PROCESSED SURFACES

On treatment, a cutting process intensifies with heating. However, at this method treatment through the necessity of heating of purveyance becomes complicated. It is therefore expedient to apply it at cutting of hard-processing materials, for example, of magnetic, chromic alloys and others like that. On treatment of such materials, there are considerable forces of cutting and vibration, which results in the intensive wear of cutting instrument and low quality of the treated surface. In this case, as a result, of the understated modes of cutting and small firmness of instrument the productivity of treatment is very low.

On treatment of hardness descriptions (border of durability, hardness) of the processed material decrease with heating, and that is why tension of process of chip formation and specific loading diminishes on an instrument, and quality of the treated surface rises. By the change of temperature of heating, it is possible to influence on the degree of flowage, friction, wear of instrument, and on other parameters of cutting. However, properties of instrumental material change at heating. Therefore, efficiency of this method of treatment depends on the degree of durability of the processed material as compared to instrumental [1].

Heating of purveyances is conducted in a number of different ways: in heat-treatment furnace or electric stoves, by the currents of high-purity, voltaic arc, induction currents, infrared rays and method of friction [3].

To attain the noted optimum temperature of cutting is possible without heating due to the increase of parameters of the cutting mode. Although, in this case without regard to the temperature of cutting, firmness of instrument will be low. It is explained by the fact that at heating all purveyance is heated, and without heating - only his skims. Therefore, while heating an effect from the decline of durability of the processed material will be higher than without heating.

The investigation offers to use the industrial heat gun. Heat gun apply on a production and in different repair shops. The basic differences of such heat guns are high temperature and speed of heating.

Depending on the type of works and sphere of the use it is possible to classify according to the following categories: heating of material, agglutination of two details, grant the solid of true-to-shape, drying of superficial layer, delete of material under the temperature and so on.

Construction of industrial heat guns is largely homogeneous; a heat element is connected to a ceramic insulator placed in a plastic frame, which withstands high temperatures.

An electric motor executes the function of air handling on a heat element. The power of electric motor directly influences the temperature of stream, which is 600 – 800

°C. Power of industrial heat gun is determined totally from power of spiral (heat element) and ventilator and can be 500 – 2500 W.

An important index of an industrial heat gun is an element of adjusting of air temperature, which is heated, and adjusting of volume of air that is forced. The presence of the electronic support system of the set temperature is provided by control of overheat of detail and diminishes the level of damage of heat gun. Moreover, in this case the presence of display system is necessary, that provides control of parameters of air blast which processes a detail.

An area of heating on treatment surface must be not less than working parts of tools and the process of heating takes place in to perpendicular direction of two heat guns fastened on the special device. In the course of investigation a basic task is providing of increase of parameters of roughness of surface, diminishing of strength of material, and increasing of efficiency of treatment of material, only in the limited area of treatment [2].

A flat detail is exposed to heating of the necessary temperature. Heat guns are directed in front of an instrument on distance not less than working area of an instrument and in perpendicular direction. This setting provides warming up of detail to the level of favorable terms where a temperature is 450-550 °C. Due to this chart the simultaneous and even warming up of material in the entire area on the depth of the processed surface and absent large temperature drops. The component frame does not suffer from the considerable changes of strength descriptions and the necessary quality of surface is provided.

Thus, the offered chart provides the increase of efficiency of treatment of flat surfaces of hard-processing materials with the simultaneous improvement of quality of the processed surface.

Further research is foreseen with the use of different type of steel.

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