



21-23 May 2020, Iași - România

11th EUROPEAN EXHIBITION OF CREATIVITY AND INNOVATION

"EUROINVENT"

Technical University of Moldova,
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THERMOGAZOCYCLIC NITRURATION PROCESS

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Goal:

Simplifying the technological process, reducing the cost of the product and protecting the environment.

Patent application
MD 6614
from 24.02.2020

Solution:

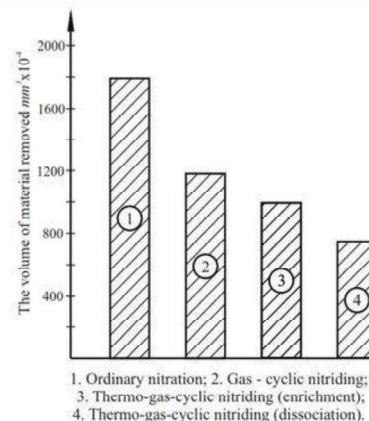
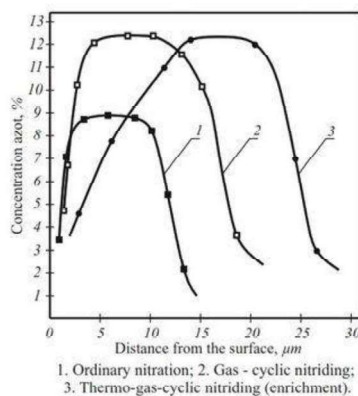
Thermo-gas-cyclic nitriding technology is based on the periodic alternation of enrichment cycles (saturation) to gas flow nitriding and dissociation of the nitrided layer to a maximum possibility of reducing the atmospheric saturation property.

Advantages:

We point out that, following the research, it has been established that the minimum wear corresponds to the thermo-gas-cyclic nitriding, which ended with the dissociation stage, at which the duration of the half-cycle was 0.5 hours. The wear of the samples is about 2.5 times lower than the usual nitriding.

Stage:

Computerized model.



Description of the invention: In order to increase the service life of the parts of the machine parts, of the most loaded ones, in the industry, the thermal and chemical-thermal hardening procedures are often used. Chemical-thermal treatment, increases hardness, wear resistance and corrosion. Forming in the superficial layer favorable compression stresses, which increase the reliability and service life of the machines. But this process has a number of shortcomings, the main disadvantage of the process is the high cost and the long duration of the process. At a temperature of 500 °C, for example, every 10 hours the nitrogen diffuses into the iron at a depth of about 0.1 mm, so the total duration of the process is 30... 60 hours.

A new efficient method of thermogasocyclic nitriding is proposed. The new technology allows to reduce the consumption of saturated and emission gases in the atmosphere by about 10 times, by about 5 times the reduction of the process duration, as well as the increase of the diffusion layer thickness by 2-6 times, without reducing the physical and mechanical characteristics of the product.