

RESULTS OF 1958 ALL-UNION COMPETITION FOR  
THE D. K. CHERNOV AND N. A. MINKEVICH PRIZES

(Concluded from previous issue).

The competition for the N. A. Minkevich prize was intended to stimulate work on the development and introduction of processes and equipment for heat treatment of metals as well as of powder metallurgical products and methods.

The first prizes, value 5000 rubles, were awarded to:

1) A. D. Assonov, N. I. Tereshchin and several others for "Investigation and Reduction to Practice of Carbonitriding by Direct Isothermal Quenching in Alkali in a Non-Muffle Installation with a Closed Treatment Cycle".

This paper represents an advance in heat treatment practice. The muffle-free furnace designed by the authors, heated with vertical radiant tubes, deserves attention.

2) G. A. Agranovskii and others for "Study and Introduction into Production of Typical Controlled Atmospheres for Ordinary and Diffusion-Type Heat Treatment of Steel".

An original method for purifying municipal gas by passing it through spent zinc-chrome catalyst used in the synthesis of methanol is described. A great merit is the selection of a catalyst yielding a controlled atmosphere at comparatively low temperature ( $950-1000^{\circ}\text{C} = 1740-1830^{\circ}\text{F}$ ). At the same time electrically and gas heated producers of controlled atmospheres and apparatus for manual and automatic control of the dew point of the atmosphere are described.

The second prize, 3000 rubles, was awarded to:

1) V. A. Yakovlev, Ya. N. Spektor and K. A. Makashev for their paper "New Technique of Induction Hardening Tubular Parts of Intricate Shape".

A method and arrangement for induction hardening of complicated and heavy duty parts 11 m (37 ft) long tubes of variable section in steel 30KhGSA.

The vertical tube, passing through multiturn induction heater coils, with a dispersed electromagnetic field, is eddy-current heated to the required temperature and quenched in oil in a tank under the heaters; the temperature is regulated and measured automatically (FEP-3 apparatus). Before introduction of the proposed method of heat treatment, such tubes were treated in vertical furnaces that take a long time to build and are expensive.

Introduction of the technique described has saved 5 million rubles a year.

2) A. D. Assonov for his book "Technique of Heat Treating Automobile Parts" (Mashgiz, 1958).

This book is very valuable for technologists and designers of automobiles and tractors, for selecting steels and methods of heat treatment.

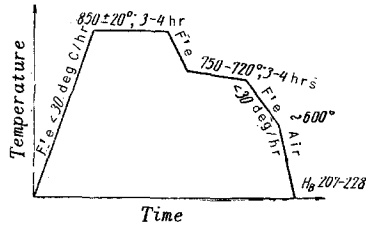
It advocates the most advanced methods: h. f. heating, isothermal treatment, use of forging heat for heat treatment of forgings, gas carburizing with h. f. heating, and high temperature treatment.

The third prize of 1000 rubles was given to E. I. Malinkina for her book "Cracking in Steel Heat Treatment" (Mashgiz, 1958) dealing with this important matter and methods for countering it.

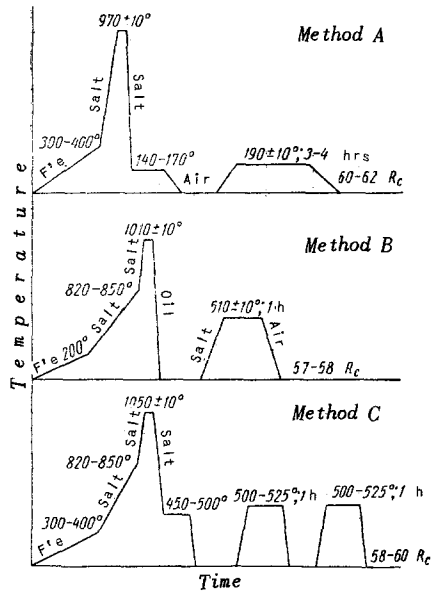
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# HEAT TREATMENT CONDITIONS

Annealing



Quenching +  
Tempering



Method A: Treatment for highest hardness and strength. Lowest resistance to tempering or red hardness.

Method B: Treatment to produce a somewhat lower hardness. High strength. High red hardness.

Method C: Treatment to secure high hardness. Strength low. Highest resistance to tempering (second tempering not indispensable.)

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