

L 29685-65 5/1(a)/500(w)/501(a)/502(a)/503(a) 11P(1) 11

ACCESSION NR: AP5005402

1/0065/65/000/001/001/001

AUTHOR: Koutsky, J. (Koutsky, J.); Jesak, J. (Jesak, J.); Jandou, F. (Jandou, F.)

TITLE: Problem of structural stability of  $\delta$  ferrite in modified 18% Cr steels with Nb and Ti at high temperatures

SOURCE: Kovove materialy, no. 1, 1965, 11-19

TOPIC TAGS: long time annealing, sorbitic structure, Laves phase precipitation, ferrite decomposition, creep, high temperature strength

ABSTRACT: The authors introduce the results of a study on the structural stability of  $\delta$  ferrite in Cr12Ni type steel containing in addition a small amount of Nb and Ti. While in long-time annealing of steel specimens at 550-650°C precipitation of Laves-phase took place in the sorbitic structure only, and no precipitation was observed inside  $\delta$  ferrite grains, there was an extensive decomposition of ferrite in the specimens subjected to creep at 600°C. It was shown by electron microscopy, chemically, and by x-ray photography that this precipitation can also be considered a Laves phase. Thus, it seems correct to look for an interrelationship be-

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ACCESSION NR: AP5009405

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From the high-temperature strength and the properties of the IAvs phase and to consider the presence of  $\delta$  ferrite in the structure as advantageous to high-temperature strength. Orig. art. has 5 tables and 17 diagrams.

ASSOCIATION: Vysokomy tlak, Eisen (IZ Research Institute); CIAV (stav vlastnosti kovu, pobočka, Prague (CIAV Research Institute for Study of Metal Properties Prague Branch)

SUBMITTED: 13/1/65

ENCL: 100

SUB CODE: 1A

NO REF SOV: 001

OTHER: 000

Card 2/2

KOUTSKY, Jaroslav

Effect of age on vegetative nervous system. Neur.psychiat. cesk.  
18 no.3:178-183 May 55.

1. Stantni lecebna psychiatricka, Jihlava, Reditel MUDr Vilem  
Kotina

(AUTONOMIC NERVOUS SYSTEM, physiology  
eff. of age)

(AGING, physiology  
eff. of autonomic nervous system)

KOUTSKY, Jaroslav, MUDr

Vegetative system in diagnosis of schizophrenia and neurosis.  
Cas.lek.cesk. 94 no.17:458-461 22 Apr 55.

1. Statni lecebna psychiatricka, Jihlava; reditel MUDr Vilem  
Kotina.

- (SCHIZOPHRENIA, manifestations,  
autonomic nervous system, diag. significance)
- (NEUROSES, manifestations,  
autonomic nervous system, diag. significance)
- (AUTONOMIC NERVOUS SYSTEM, in various diseases,  
neuroses & schizophrenia, diag. significance)

KOUTSKY, Jaroslav, MUDr

Effect of the reflex conditioned prolonged sleep on the vegetative system of neurotics and schizophrenics. Cas.lek.cesk. 94 no.17: 461-465 22 Apr 55.

1. Statni lecebna psychiatricka v Jihlave, reditel MUDr Vilem Kotina.

- (NEUROSES, physiology,  
autonomic nervous system, eff. of reflex conditioned sleep)
- (SCHIZOPHRENIA, physiology,  
autonomic nervous system, eff. of reflex conditioned sleep)
- (SLEEP,  
conditioned reflex sleep, eff. on autonomic nervous system in neuroses & schizophrenia)
- (AUTONOMIC NERVOUS SYSTEM, in various diseases, neuroses & schizophrenia, eff. of conditioned reflex sleep)

KOUTSKY, Jaroslav; VONDRAK, Zdenek

Autonomic system in neurotic and normal persons. Cas. lek.  
cesk. 46 no.10:303-307 8 Mar 57.

1. Statni psychiatricka lecebna Jihlava, prim. Dr.  
Vilem Kotina. J. K., Jihlava, Dlouha stezka 1.

(AUTONOMIC NERVOUS SYSTEM, in var. dis.  
neurosis, comparison with normal persons (Cz))

(NEUROSES, physiol.

autonomic NS, comparison with normal persons (Cz))

KOUTSKY, Jaroslav; KOUTSKA, Marie

Influence of daily rhythm on autonomic nervous reactions. Cesk. psychiat. 53 no.2:90-95 Mar 57.

1. Statni psychiatricka lecebna, Jihlava.  
(SCHIZOPHRENIA, physiol.  
eff. of daily rhythm on autonomic nervous reactions (Cz))  
(NEUROSES, physiol.  
same)  
(AUTONOMIC NERVOUS SYSTEM, physiol.  
eff. of daily rhythm on autonomic nervous reactions in  
neurotics & schizophrenics (Cz))

KOUTSKY, Jaroslav; VONDRAK, Zdenek; CHLOUPKOVA, Karla; MATEJICEK, Valdimir

Autonomic profile of schizophrenia, Cns. lek. cesk. 97 no.30:  
938-943 18 July 58.

1. Stani lecebna psychiatricka, Jihlava, red. prim. Dr. Vilem Kotina.  
J. K., Jihlava, Dlouha stezka I.  
(SCHIZOPHRENIA, physiol.  
autonomic NS (Cz))  
(AUTONOMIC NERVOUS SYSTEM, in var. dis.  
schizophrenia (Cz))



KOUTSKY, Jaroslav; KOUTSKA, Marie

Potassium/calcium quotient and certain vegetative reactions.  
Cas.lek.cesk.99 no.37:1160-1164 9 S'60.

1. Statni lecebna psychiatricka v Jihlave, reditel MUDr.Cenek Klier.  
(POTASSIUM metab)  
(CALCIUM metab)  
(MENTAL DISORDERS metab)  
(AUTONOMIC NERVOUS SYSTEM physiol)

KOUTSKY, J.

Body constitution and vegetative reactivity. Cas. Lek. Cesk. 101  
no.5:419-151 2 F '62.

1. Psychiatricka lecebna, Kromeriz.

(BODY CONSTITUTION)

(AUTONOMIC NERVOUS SYSTEM physiol)

KOUTSKY, J.

Studies on functional properties of the cerebral cortex by the method of motion stereotypes. Bratisl. lek. listy 42 no.1:29-36 '62.

1. Z psychiatricke lecebny Kromeriz, reditelka MUDr. S. Lakosilova.  
(CEREBRAL CORTEX physiol) (REFLEX CONDITIONED)

KOUTSKY, J.; KOUTSKA, M.

Effect of diet on vegetative reactivity. Cas. lek. cesk. 103.  
no.25:717-720 19 Je'64

1. Psychiatricka lecebna v Kromerizi (reditelka: MUDr. S.Lakosilova).

Kautsky, J

✓ Heat-Treatment of Rails. J. Kautsky. (Prague).  
1953. 2. (11): 252-254. (In Czech). Some Czechoslovakian  
and Russian experiments on the heat-treatment and optimal  
composition of rails are discussed. High-frequency equip-  
ment, operating at 500 kHz/cm/sec, used for heat-treating  
rails and maintaining red color is described. Details of harden-  
ing, the relation between hardness and brittleness in rails,  
taken and related problems are considered. --r. v.

~~J. Koutsky~~ Koutsky, J.

Distr: hE2c

<sup>11</sup> <sup>27</sup> <sup>27</sup> 5  
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 ✓ Precipitation of carbides and nitrides during drawing of 12% chromium steel low in carbon. Jaroslav Koutsky and Jaroslav Jezek. *Hutnické listy* 13, 1098-106 (1958). Processes taking place during the drawing of 12% Cr steel low in C were studied. Besides classical metallographical methods electron-microscopical and radiographical methods were used. It was found that the course and mechanism of carbide reactions during the martensite decompn. is, in these steels, the same as it is in steels of similar compn. studied by Kuo (*J. Iron Steel Inst.* 184, 258 (1956)) and Helsinki. During this pptn. the different types of carbides

do not have the specific shape which would differentiate them one from another. In sorbite and in ferrite acicular ppts. appear during drawing; this was detd. as Cr<sub>7</sub>N. This Cr<sub>7</sub>N is the only kind of ppt. appearing within the grain of ferrite δ. The thermochem. considerations executed show that relatively small amts. of dissolved N will be sufficient for the pptn. of nitrides at temps. under Ac<sub>1</sub>. 23 references. Petr. Schneider

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CZECH/34-59-5-19/19

AUTHORS: Ježek, Jaroslav, RNDr., Koutský, Jaroslav, Candidate  
of Technical Sciences, Ing. and Pluhař, Jaroslav, Ing.Dr.

TITLE: The Nature of the Precipitates which Separate Out from  
Modified 12% Chromium Steel at Temperatures above 550°C  
(Podstata precipitátů vylučujících se z modifikovaných  
12procentních chromových ocelí v oblasti nad 550°C)

PERIODICAL: Hutnické Listy, 1959, Nr 5, pp 469-472 (Czechoslovakia)

ABSTRACT: (Czechoslovak Metallurgical Research Reports).

The authors studied the precipitates of 12% Cr steels alloyed with small quantities of W, Mo, V and in some cases also Co (full analyses of the tested steels are entered in Table 1, p 469) after various heat treatment procedures, using chemical, electrolytic and extraction separation and electron and X-ray diffraction analyses. It was found that in steels, which in addition to chromium contain tungsten as the main alloying element, the inter-metallic phase  $Fe_2W$  separates out from the  $\delta$ -ferrite and sorbite after long duration annealing. This phase occurs in steels with  $\delta$ -ferrite as well as in purely martensitic steels and its range of existence

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The Nature of the Precipitates which Separate Out from Modified  
12% Chromium Steel at Temperatures above 550°C

extends to the  $Ac_1$  temperatures. In steels which have an increased Mo content and no W the isomorphous inter-metallic phase  $Fe_2Mo$  is present, the range of existence of which does not exceed 700°C. In chromium steels which do not have any further alloying additions, a small quantity of the nitride  $Cr_2N$  forms in addition to the carbide  $(Fe,Cr)_{23}C_6$ .

There are 3 figures, 4 tables and 14 references, 10 of which are Czech, 4 English.

ASSOCIATIONS: SVÚMT Prague and VZÚ Závodu V. I. Lenina, Plzeň  
(V. I. Lenin Works, Pilsen)

SUBMITTED: February 7, 1959

Card 2/2

KOUTSKY, J.; JANDOS, F.

Nondestructive methods for measuring the depth of the hardened layer. p. 379.

STROJIRENSTVI. (Ministerstvo tezkého strojírenství, Ministerstvo přesného strojírenství a Ministerstvo automobilového průmyslu a zemědělských strojů) Praha, Czechoslovakia. Vol. 9, no. 5, May 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, no. 10, Oct. 1959. Uncl.



18. P200

67777

AUTHOR: Kcutsky, Jaroslav, Candidate of Technical Sciences, <sup>CZECH/34-59.11.8/28</sup>  
Engineer

TITLE: Contribution on the Basic Nature of Creep Resistance in <sup>24</sup>  
Inoculated 12% Chromium Steels<sup>19</sup>

PERIODICAL: Hutnické listy, 1959, Nr 11, pp 951 .. 955

ABSTRACT: Creep may be due to slip dislocations or to diffusion phenomena which enable the formation of vacancies and of energy fluctuations. According to E. Orowan and others (Refs 1-4), transient creep is caused by slip dislocations, whilst continuous creep is a diffusion process. I.A. Odling (Ref 5) arrived at the opposite conclusion. Cottrell (Refs 7,8) introduced the conception of "atmospheres" which are capable of inhibiting diffusion movements of atoms and the movement of dislocations. Development of new heat-resistant materials is mainly based on empirical results. The author of this paper was concerned in developing an inoculated 12% chromium steel for operation at temperatures up to 600 °C. The composition of this steel was largely based on similar foreign materials (Table 1, p 951) and also on availability of the alloying elements in Czechoslovakia. Tungsten<sup>21</sup> was

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12% Chromium Steels

used as a further main alloying element. All the steels contained vanadium to some extent. According to G.P. Fedorcev-Lutikov and M.F. Sesen'ev (Ref 10), small quantities of molybdenum in the presence of tungsten have a favourable effect on creep. A thorough explanation of the effects of these elements has not been published. Therefore, in the here described experiments, the composition was so chosen that, in addition to the influence of the delta-ferrite quantity, an idea can be gained on the influence of molybdenum and vanadium on the properties of steels which, in addition to chromium, contain tungsten as the main alloying element. The chemical compositions of the five melts produced in the experiments are entered in Table 2. Ingots weighing 40 kg were smelted in a high-frequency furnace; after casting, they were annealed at 950 °C, rough-machined and forged at 1 150-850 °C into 22 mm dia and 14 x 14 mm rods. After forging, the rods were annealed for two hours at 800 °C. Some of the results

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have been described in an earlier paper. The graph, Figure 1, gives information on the changes in the hardness and impact strength of all the steels after short-duration tempering. The results of phase analysis are described and the relation between the structural changes and the creep properties are discussed; Table 5 contains data on the creep properties of the five steels for a test temperature of 600 °C; Table 6 gives the maximum hardness values of some of the tested steels at the temperatures 600, 630 and 650 °C. On the basis of X-ray diffraction analysis of extracted particles and of the isolate, it is concluded that as a result of long-duration annealing of 12% Cr steels alloyed with a relatively large quantity of tungsten and possibly also small quantities of vanadium and molybdenum, the intermetallic phase  $Fe_2W$  will precipitate from the ferrite. Thermochemical analysis showed that there was a relation between the dispersion hardening and the precipitation of this phase. The diffusion of tungsten plays an important part in the

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precipitation and coagulation of the  $Fe_2W$  phase; the diffusion is slowed down if vanadium is present. In view of the complicated nature of the relations governing the creep resistance, the properties of the solid solution and the effect of alloying elements of these properties cannot be disregarded. The investigation of this problem is very laborious but it is necessary to study the effect of the precipitate over periods of the order of 10000 hours and to find out whether these do not have an adverse effect on the creep properties. The necessity of obtaining such information is also evident from the American experience with similar steels (Ref 12), for which it was found that even a homogeneous sorbitic structure obtained, for instance, by adding a large quantity of Co, could not guarantee sufficiently stable creep properties.

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CONTRIBUTION ON THE BASIC NATURE OF CREEP RESISTANCE IN INOCULATED  
12% CHROMIUM STEELS

CZECH/54-56-11-8/28

There are 5 figures, 6 tables and 18 references of which 6 are Czech, 7 English, 6 Soviet and 1 German.

ASSOCIATION: ZVIL Píseň (ZVIL, Pilsen)

SUBMITTED: April 18, 1959

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KOUTSKY, Jaroslav.

(8) The essence of precipitates segregating from modified  
 12% chromium steel in the temperature area above 550°C.  
 Jaroslav Telek, Jaroslav Koutsky, and Jaroslav Pluhar.  
*Hutnicki listy* 16, 400-72 (1950).—Chem., electrolytic, and  
 extn. sepn. and electron and x-ray structure analysis were  
 used to exam. the ppts. in 12% Cr steels alloyed with  
 smaller quantities of W, Mo, V, in some cases, Co, and  
 treated under different temp. conditions. In steels in  
 which besides Cr, W occurs as the main alloying element, if  
 subjected to a long-time annealing at service temps., there  
 segregates from  $\delta$ -ferrite and sorbite the intermetallic phase  
 Fe<sub>3</sub>W. The region of pptn. of this phase extends to the  
 temps. Ac<sub>1</sub>. In steels with increased content of Mo and  
 without W there occurs the isomorphous intermetallic phase  
 Fe<sub>3</sub>Mo, the region of which extends only to lower temps. and  
 does not exceed 700°. Petr Schnekler

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S/129/60/000/06/003/022  
EO73/E535

AUTHOR: Koutsky, J., Candidate of Technical Sciences

TITLE: Structural Changes in Some Inoculated 12% Cr Steels ✓

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,  
1960, Nr 6, pp 10-20 + 1 plate (USSR)

ABSTRACT: Numerous authors believe that the ferrite in 12% Cr steel has a harmful influence if present in large quantities. To limit the content of  $\delta$ -ferrite some authors reduce the Cr content (Ref 1), partly increasing the contents of carbon, manganese and nickel or using additions of cobalt (Refs 3 and 4). TsNIITMASH developed an inoculated 12% Cr steel which has excellent high temperature properties up to 600°C and at the limit concentration of alloying elements a content of 40%  $\delta$ -ferrite is permissible (Ref 5). Gemmil et al. (Ref 6) studied in detail a 7 to 8% Cr steel with 3% Mo and very low contents of carbon which contained 40 to 100%  $\delta$ -ferrite; they found that the creep resistance was the higher the higher the content of  $\delta$ -ferrite in the structure. It cannot be considered an established fact that the low resistance of 12% Cr steel is due to the

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presence of  $\delta$ -ferrite, since there is very little data on the behaviour of  $\delta$ -ferrite at the operating temperatures. In their experiments the authors of this paper used tungsten as the basic alloying element. The tungsten content as well as that of the other elements were selected from the point of view of achieving differing quantities of  $\delta$ -ferrite in the hardened structure. The authors also intended to elucidate the influence of Mo or V in steels which contained, in addition to chromium, tungsten as an alloying element. The chemical compositions of the five steels used in the experiments are given in Table 1. The steel was produced in a 40 kg high frequency furnace. The ingots were annealed at 950°C, rough machined and then forged into 22 mm dia and 14 x 14 mm cross-section rods. After forging (at 1150 to 850°C) the rods were annealed for two hours at 800°C. In studying the behaviour of the steels during heating, the suitable hardening temperature and also the changes in the mechanical properties and the

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microstructure during tempering were determined. The results of tempering of the specimens of experimental steels which were quenched from 1050°C are entered in Fig 1. The influence of long duration heating on the structure and the mechanical properties for two of the tested steels are entered in plots, Figs 2 and 3. Fig 4 (plate) shows the microstructure of one of these steels after quenching and tempering, it consists of sorbite with bright ferrite grains. After soaking at 500°C for 500 hours changes in the ferrite grains are evident in optical microscope investigations (Fig 5). Fig 6 shows the microstructure of a specimen after soaking for 16 hours at 650°C and Fig 7 after soaking at the same temperature for 1500 hours; a tendency to coagulation of the particles inside the ferrite grains is noticeable with increasing soaking time and increasing temperature. After soaking for 3000 hours at 650°C it is difficult to Card 3/7 distinguish between sorbite and the original  $\delta$ -ferrite.

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The decomposition of  $\delta$ -ferrite was observed by means of an electron microscope. The replicas of specimens soaked for 1500 and 3000 hours at 500°C show fine rejected particles in the ferrite (Fig 8); the sorbitic grain is distinguished from the ferritic one by the presence of coarser particles. In the case of shorter soaking durations (500 hours) at the same temperature, the rejected particles in the ferrite grains appeared rarely in the neighbourhood of the grain boundaries; by using chromium shading further structural details were revealed (Fig 9). In addition to coarse carbide edges at the boundaries of the ferrite and the carbide particles in the sorbite, zones of increased etching appear in the ferrite at the boundaries of the carbide grains. The quantity of these decreases with increasing heating duration. After heat treatment (without subsequent tempering) there is no selective etching of the ferrite grains. Specimens tempered for 3000 hours at Card 4/7 650°C contain only coarse particles. The results show

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that the decomposition of the  $\delta$ -ferrite is linked with dispersion hardening of the ferrite-martensite steels. A thermo-chemical analysis was made of the rejection of the carbides from the martensite and  $\delta$ -ferrite. In this respect the quaternary system Fe-Cr-W-C is the relevant one; the types of carbides which can exist in this system and their compositions are entered in Table 2. In this quaternary system no carbides appear other than those which are known to exist in the ternary systems Fe-Cr-C and Fe-W-C. To evaluate the thermo-chemical stability of individual carbides in the various structural components of the steels, it is necessary to know, at least approximately, the chemical composition of the basic solid solution, this was calculated by means of relations published by K. W. Andrews (Ref 10) using the data on the dependence of the free energy of the reactions of formation of the carbides on the temperature, given in Table 4. The results of X-ray analysis are entered in Tables 5 and 6. The creep test results are given in

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Table 7, whilst Table 8 contains data on the soaking time at 600, 630 and 650°C, which is required for attaining the maximum hardness of the steel. The following conclusions are arrived at:

- 1) The structure of 12% Cr steels, alloyed with a high content of tungsten (3 to 4%) and also Mo and V (which bring about heterogeneity of the structure at various temperatures), is unsuitable since the  $\delta$ -ferrite decomposes and brings about dispersion hardening.
- 2) It was established by electrolytic separation of precipitates and electron and X-ray structural analysis that the phase  $Fe_2W$  is rejected from  $\delta$ -ferrite in the case of long run heating.
- 3) Heat resistance tests showed that  $\delta$ -ferrite decomposition is not accompanied by a drop in the creep resistance.
- 4) The analysis indicates that small quantities of V and Mo are effective additions in the presence of tungsten.
- 5) The results have confirmed that very large quantities

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of  $\delta$ -ferrite do bring about an increase in the  
brittleness of the steel.

There are 11 figures, 8 tables and 12 references,  
3 of which are Soviet, 1 Czech, 1 German and 7 English.

ASSOCIATION: Závody imeni Lenina, g. Plzeň (Lenin Works, Pilsen,  
Czechoslovakia)

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Z/034/60/000/011/004/009  
E073/E335

AUTHORS: Koutský, Jaroslav, Candidate of Technical Sciences,  
~~Engineer and Ježek, Jaroslav~~, Doctor of Natural Sciences

TITLE: On the Problem of Precipitation of Laves Phases in  
Modified 12% Chromium Steels ✓

PERIODICAL: Hutnické listy, 1960, No. 11, pp. 864 - 867

TEXT: In the first part of the paper earlier published results of the authors and their team (Refs. 1-5) are summarised on the study of the structural stability of low-carbon 12% chromium steels alloyed with W, Mo, Co and V and intended for high-temperature application; discrepancies between the results obtained in this work and the results obtained by J. Kehsin-Kuo (Ref. 6) are discussed in some detail and it is stated that detailed Soviet results confirm the results obtained by the team of the authors of this paper. The main difference between the results consists of the fact that Kehsin-Kuo has not detected in any of the investigated cases the intermetallic phase Fe<sub>2</sub>W. X  
The fact that Laves phases were detected in Czech steels and were not detected in the steels investigated by Kehsin-Kuo

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On the Problem of Precipitation of Laves Phases in Modified  
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is explained by Čadek (Ref. 9), primarily by the presence of V, pointing out the low value of the atomic ratios W:C and Mo:C in Czech steels. According to him, the condition for precipitation of Laves phases in Mo steels is that the Mo:C ratio should be above 5. The authors of this paper do not agree with the view of Čadek; they have proved the presence of the Laves phase  $Fe_2W$  in a Czech vanadium-free steel (3D - Table 1). They believe that even in Co-containing steels which have a homogeneous structure in the heat-treated state, the presence of V is not a necessary condition for the precipitation of the Laves phase but Co probably has a catalytic effect on separating out  $Fe_2W$  in the case of a W:C ratio which is less than the critical value. For verifying these views, the authors have carried out experiments with two melts, one a 12% Cr-Mo steel and the other a 12% Cr-Co-W steel with the following chemical compositions:  
Steel M - C 0.20%, Si 0.47%, Mn 0.48%, P 0.018%, S 0.030%, Cr 11.9%, Ni 0.42%, Mo 1.84%;  
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On the Problem of Precipitation of Laves Phases in Modified  
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Steel C - C 0.28%, Si 0.25%, Mn 0.16%, P 0.010%, S 0.029%,  
Cr 11.56%, Ni 0.17%, W 3.42%, Co 5.50%.

The steels were smelted in a 40 kg induction furnace, cast into  
ingots which were then annealed and forged into 14 x 14 mm rods  
and heat-treated by quenching from 1 050 °C in oil, followed by  
tempering from 770 °C (Steel M) and 670 °C (Steel C) with cooling  
in air. After this heat treatment a number of specimens were  
subsequently annealed at 650, 700 and 800 °C for durations of  
100, 500 and 1 500 hours. Investigations were carried out by  
optical and electron microscope studies and analysis of the  
precipitates. Microstructural and X-ray analysis of the specimens  
led to the following conclusions.

1) Even in the absence of V precipitation of the Laves phase  
 $Fe_2W$  can occur in 12% Cr-Mo steels with a low atomary Mo:C ratio.

in which the microstructure in the heat-treated state is  
heterogeneous. This supports the view of the authors that in  
such cases concentration differences between the ferritic and

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austenitic (sorbic) phases have a decisive importance.

2) In the case of 12% Cr-W steels, which have a high Co content and a homogeneous structure in the heat-treated state, precipitation of the Laves phase  $Fe_2W$  may occur in the case of low atomary W:C ratios, even in the absence of V; this confirms the view of the authors that in such a case the separation of the intermetallide  $Fe_2W$  may be due to the catalytic effect of

Co. Acknowledgments are expressed to J. Neid for his cooperation in X-ray structural analysis and to Engineer P. Schier (Metallurgical Institute, CSAV) for his assistance in the work with the electron microscope. There are 4 figures, 6 tables and 9 references: 6 Czech, 2 English and 1 Soviet.

ASSOCIATIONS: ZVIL, Pilsen and SVÚMT, Prague

SUBMITTED: July 27, 1960

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KOUTSKY, J.

Distr: 4B2c

Effect of metallurgical phenomena on the mechanical properties of castings from 13% chrome steel melted in an induction furnace. Jaroslav Koutský (Závod V. I. Lenina, Píseň, Czech.). *Hutnické listy* 15, 170-88 (1960).—The content of Cr and C has to be as low as possible in order to get the Cr and Ni equiv. approx. equal. The presence of ferrite in the structure up to about 20% is acceptable. Final deoxidation is carried out best with CaSi. These steels are not sensitive to the casting temp., 1580-1460°. After remelting, the impact strength is substantially improved.

Petr Schejda

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E073/E535

AUTHORS: Koutský, Jaroslav, Candidate of Technical Sciences and  
Teindl, Josef, Corresponding Member of ČSAV

TITLE: Comments on the Brittleness of AK 1 (Cr 13) Steels

PERIODICAL: Hutnické listy, 1961, No.2, pp.129-135

TEXT: It is known that for the steels AK 1 (ČSN 17021), containing 11.5 to 14.5% Cr and a maximum of 0.15% C, the strength, hardness and impact strength do not change appreciably in the case of tempering up to 450°C. Above this temperature there is a sharp drop in these properties. In this paper the test results are summarized which were obtained on tempered, quenched specimens and also on specimens which, after heat treatment, were annealed for durations of up to 1000 hours. In the experiments current heats of the following compositions were used:

	In %								
	C	Mn	Si	P	S	Cr	Ni	N	
A	0.15	0.36	0.21	0.022	0.013	13.40	0.14	0.026	
B	0.07	0.37	0.34	0.024	0.017	13.40	0.31	0.024	

Card 1/11

✓

Comments on the Brittleness of AK 1... Z/034/61/000/002/002/006  
E073/E535

The specimens were produced from rolled, annealed rods 32 x 32 mm cross-section. For the steel A the highest hardness was obtained for hardening temperatures of 950 to 1000°C with soaking times of two hours. For the steel B the maximum hardness after hardening was lower and the structure contained  $\delta$ -ferrite in addition to martensite. The specimens from these steels were quenched from the temperatures 900, 1000 and 1100°C and this was followed by tempering for 2 hours/air to a temperature up to 750°C. Fig.4 shows the dependence of the mechanical properties on the temperature for specimens of the steel A, quenched from 1000°C and tempered for two hours. Fig.5 shows similar results for specimens of the same steel quenched from 900°C and tempered for two hours. Fig.9 shows the results of long run tests of up to 1000 hours duration obtained for specimens of the steel A at the temperatures 200, 450, 550, 650 and 750°C, quenched from 1000°C/2h/oil (---- hardness, ——— impact strength). The results of tests on the reversibility of the embrittlement in the temperature range 400 to 650°C are also given. Fig.10 shows the effect of the following heat treatment on specimens of the steel A: 1000°C/2h/oil - 750°C/2h/oil

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Comments on the Brittleness of AKI... Z/034/61/000/002/002/006  
E073/E535

followed by tempering for 2 hours at various temperatures, temperature, °C vs. R, mkg/cm<sup>2</sup>. Fig.11 shows the influence of notch impact strength on the impact test temperature for the steel A: curve 1 - 1000°C/oil - 750°C/2 h/air; curve 2 - 1000°C/oil - 750°C/2 h/air + 500°C/15 h/air, temperature, °C vs. R, mkg/cm<sup>2</sup>. To determine the changes in the mechanical properties of heat treated specimens at operating temperatures, in addition to steel A, a carbon steel C of the following composition was used in the tests: 0.13% C, 0.27% Mn, 0.18% Si, 0.021% P, 0.013% S, 13.20% Cr, 0.19% Ni, 0.024% N. In addition to martensite, the structure of the quenched specimens contained individual islands of δ-ferrite. The steels were heat treated as follows:

- a) 1000°C/2 hours/oil - 650°C/2 hours/air
- b) 950°C/2 hours/oil - 650°C/2 hours/air
- c) 1000°C/2 hours/oil - 650°C/20 hours/air
- d) 1000°C/2 hours/oil - 750°C/2 hours/air

Specimens with the heat treatment (a) were subsequently annealed at 350, 450 and 550°C for durations up to 1000 hours. The specimens with the heat treatments (b) to (d) were subsequently annealed at

Card 3/11

Comments on the Brittleness of AK1... Z/034/61/000/002/002/006  
E073/E535

450°C only. The results of notch impact and hardness tests, as well as the chromium contents in the carbide phase are given in plots, Figs. 12-16 for specimens of the steels A and C. Fig.12 shows the results obtained for the steel A after heat treatment (a) followed by annealing at 350, 450, 550°C. Fig.13 gives the results obtained for the steel C. Heat treatment conditions same as in Fig.12. Fig.14 gives the results obtained for specimens with the heat treatment (b) followed by annealing at 450°C. Fig.15 gives the results obtained for specimens with the heat treatment (c) followed by annealing at 450°C. Fig.16 gives the results obtained for specimens with the heat treatment (d) followed by annealing at 450°C. Fig.17 gives the relation between embrittlement after long run annealing and after "artificial ageing", R, mkg/cm<sup>2</sup> vs. log of time, hours; curve A - impact strength after the heat treatment: 1000°C/oil - 650°C/4-8-25 hours; curve A' - impact strength after heat treatment followed by "artificial ageing"; curves B and B' - hardness H<sub>B</sub>. The obtained results indicate that the range of embrittlement which arises after tempering of hardened specimens is the result of two parallel or slightly

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Comments on the Brittleness of AK1... Z/034/61/000/002/002/006  
E073/E535

shifted processes. The first is precipitation and correlation of carbides resulting from martensite decomposition, which influences not only the dynamic but also the static mechanical properties (hardness, strength). Its kinetics cannot differ appreciably from heat to heat, it is an irreversible process since its effects do not manifest themselves in the heat treated states: its effects in the case of tempered, quenched steels are very intensive and may frequently overshadow the effects of the second process. This second process leads to embrittlement of tempered specimens, which is characterized by the fact that its influence manifests itself only on the impact strength; this is a reversible process. Since embrittlement of heat treated specimens in the case of long run annealing at 450°C has the same characteristic, the authors believe that embrittlement is of the same nature in both cases. Of practical importance is determination of the kinetics of embrittlement of heat treated specimens at 450°C; with the exception of a single case, the impact strength in the brittle state never dropped below 4 mkg/cm<sup>2</sup>, the value demanded by steam turbine designers. Determination of the impact strength at normal temperature gives the results under the most unfavourable conditions, Card 5/11

Card 6/11

Z/046/61/000/004/001/009  
D007/D102

AUTHORS: Koutský, J., Engineer, Candidate of Sciences, Pilous, V.,  
Engineer, Candidate of Sciences, and Pokorný, R., Engineer

TITLE: Experiences of the LZ in the development of modified 12%  
chromium steels for steam- and gas-turbine parts.

PERIODICAL: Zvaračský sborník, no. 4, 1961, 353-371

TEXT: The article describes the properties and behavior of T 58 and T 59  
steel types, developed by the Leninovy zavody (Lenin Works) in Plzeň for  
forged and cast steam- and gas-turbine parts with operating temperatures up  
to 600°C. The T 58 steel is a martensitic, heat-treatable, high-chromium  
steel with the following chemical composition: 0.16 (0.20)% C, 11.5  
(12.5)% Cr, 2.0 (2.5)% W, 0.15 (0.25)% V, 0.5 (1.0)% Ni. Mechanical  
properties of this steel type were tested after different heat treatments  
and compared with other steel types, such as 13% chromium steel, TBW 50,  
HDM, ČSN 15 120, EI 437, and some other foreign steels. Corrosion tests

Card 1/4



Experiences of the LZ in the ...

Z/046/61/000/004/001/009  
D007/D102

were made in cooperation with the SVÚOM and the Výzkumný ústav energetický (Power Engineering Research Institute). Four gas-turbine disks, each weighing 1 ton, were forged from the T 58 steel. After the first forging operation, deep cracks developed originating in internal stress. The heat treatment of ingots and forgings was, therefore, modified so that holding at the recrystallization temperature of 680-700°C was preceded by heating to the A<sub>01</sub> temperature of 850-870°C and subsequent cooling to 300°C. After this heat treatment, only minor cracks were found in the region of forging allowance. The notch toughness in the disk hub, which originally ranged near minimum permissible values or even below, could be improved by increasing the quenching temperature. The T 59 steel is a transition type between the classical 12% Cr steel and the high-temperature steels, and has the following chemical composition: 0.10 (0.15)% C, 11.5 (13.5)% Cr, 0.5 (0.8)% W, 0.10 (0.20)% V, 0.5 (1.0)% Ni. The physical properties of this steel type were also investigated in laboratory tests, and three different gas-turbine casings were cast, the largest weighing 3.5 tons. The surface after sand-blasting was considerably better than that of

Card 2/4

Experiences of the LZ in the ...

Z/046/61/000/004/001/009  
D007/D102

classical 13% Cr-steel castings. All other mechanical properties were satisfactory. Extensive tests were performed to determine the weldability of T 58 and T 59 steels. Electrodes must be used which, under operating temperatures, have mechanical properties similar to those of the parent metal. Tests were performed with the available austenitic E 391 and E 891 electrodes, but cracks were observed in the decarbonized transition zone between the weld and the parent metal. New E 58 and E 58 M electrodes were, therefore, developed by the Lenin Works in cooperation with the electrode shop of the VZKG which are suitable for welding both T 58 and T 59 steels. The weld metal of these electrodes is free from cracks, has the same creep strength at 600°C as the parent T 58 metal, and the following chemical composition: 0.16% C, 0.33% Si, 0.61% Mn, 11.7% Cr, 2.1% W, 0.46% V, 1.0% Ni, 0.014% P, and 0.011% S (VZKG E 58 electrode), and 0.17% C, 0.27% Si, 0.50% Mn, 11.7% Cr, 2.2% W, 0.45% Mo, 0.31% V, 1.1% Ni, 0.018% P, and 0.016% S (VZKG E 58 M electrode). The E 58 electrode is applicable to welds up to 35 mm thick, while thicker welds require intermediate heating. The E 58 M electrode is suitable for welds thicker

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Experiences of the LZ in the ...

Z/046/61/000/004/001/009  
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than 35 mm without intermediate heating and produces a weld metal of greater notch toughness than the E 58 electrode. Notch toughnesses, tested according to the VÚS 2S weldability method, show satisfactory values for both E 58 and E 58 M electrodes. There are 23 figures, 6 tables and 15 references; 13 Soviet-bloc, and 2 unidentified. (Technical Editor: Doctor A. Zapletálek of the VÚZ Bratislava)

ASSOCIATION: ZVIL Plzeň

Card 4/4

KOUTSKY, J.

Clinical experience with the utero-tonic effect of cepentyl administered orally in labor. Cas.lek.cesk 100 no.42:1329-1332 20 0 '61.

1. Gyn. por. klinika lekárske fakulty hygienickej v Praze, prednosta doc. dr. Jar. Padovec.

(OXYTOCICS ther)

18.1151

4016

32409

Z/034/62/000/001/003/011

E073/E535

AUTHORS: Koutský, Jaroslav, Docent Engineer, Candidate of Science, Kletečka, Zdeněk, Engineer, Votýška, Stanislav

TITLE: Influence of melting in vacuum on the properties of ferritic heat-resistant steels. I. Cr containing heat resistant steels

PERIODICAL: Hutnické listy, no. 1, 1962, 31-37

TEXT: The authors have investigated the influence of melting in vacuum on the properties of heat-resistant steels at present being produced or developed in Czechoslovakia. The first studies were made on inoculated 12% Cr steel (type Cr12a2V). The study was made using a 300 kg ingot from a 5-ton heat produced in an electric arc furnace and having the following composition: 0.18% C, 0.74% Mn, 0.42% Si, 0.010% P, 0.018% S, 0.60% Ni, 11.9% Cr, 2.05% W, 0.16% V, 0.15% Cu, 0.04% N. From this ingot 22 mm diameter rods and 14 x 14 mm prisms were forged and used as test specimens. Furthermore, 100 mm diameter electrodes were forged and machined down to 80 mm diameter and used for subsequent re-melting in vacuum in a furnace, produced by Messrs. Heraeus (West Germany), of 30 kg capacity. Three electrodes were  
Card 1/3

32409

Influence of melting in vacuum ... Z/034/62/000/001/003/011  
E073/E535

re-melted at a vacuum of  $10^{-3}$  mm Hg and another three electrodes were re-melted at a pressure of about  $10^{-1}$  mm Hg. From each series of the thus re-melted ingots one was investigated in the as-cast state, and another after forging. A part of the material from the original 300 kg ingot was re-melted in a 40 kg induction furnace in a normal atmosphere and deoxidized with CaSi. Again a part of the material was subjected to tests in the as-cast state, another part after forging. The results, which are described in some detail, showed that except for a certain increase in creep resistance, which still has to be verified by means of long-run tests, the re-melting in vacuum did not have any pronounced influence on the mechanical properties. The hydrogen content, which was very low in this steel, remained virtually unchanged after re-melting in vacuum. The content of other elements did not drop appreciably by the re-melting in vacuum except for the nitrogen content, which was 0.042% in the induction melted steel, 0.021% in the steel produced at  $10^{-1}$  mm Hg and 0.018% in the steel produced at  $10^{-3}$  mm Hg. The authors emphasize that the described results are the first of a series and were obtained for specimens from a single basic heat. X

Card 2/3

18-1151

1496 4016 1413

32411

Z/034/62/000/001/011/011  
E073/E535

AUTHORS: Koutský, J., Engineer, Candidate of Science, Pokorný, R.,  
Engineer and Vetyška, S.

TITLE: Stainless chromium steel with a high yield point  
Czechoslovak Patent Application 18d, 1/30, PV 2062-61,  
dated April 6, 1961

PERIODICAL: Hutnické listy, no.1, 1962, 64

TEXT: The steel is intended particularly for the blades of  
the final stages of large steam turbines. In addition to  
containing 11 to 13.5 wt.% Cr it contains 0.15 to 0.30% C, max.0.8%  
Mn, max.0.6% Si, 1.0 to 2.0% Ni, 0.4 to 1.0% Mo, 0.6 to 1.5% W,  
0 to 0.3% V, 0 to 0.8% Ti, 0 to 0.8% Nb. The minimum total  
content of Ti and Nb is 0.30%. Furthermore, it contains 0 to  
0.005% B, min.0.03% P and max.0.03% S. For final deoxidation of  
this steel CaSi or ZrSi is used.

[Abstractor's note: Complete translation.]

Card 1/1

25626

Z/046/62/000/001/007/007

D007/D102

1.2300

AUTHORS: Koutský, J., Engineer, Candidate of Sciences, and Pilous, V.,  
Engineer, Candidate of Sciences

TITLE: Welding modified 12% chromium steels used at the Lenin Works in  
Plzeň

PERIODICAL: Zváračský sborník, no. 1, 1962, 154-169

TEXT: The Leninovy závody (Lenin Works) in Plzeň, in co-operation with the  
elektrodovna VŽKG (Electrode Plant, VŽKG) in Ostrava and the ŽAZ in Žamberk, deve-  
loped the E 58 electrode for welding T 58 and T 59 steels which are used by the  
Lenin Works for production of power equipment designed for service at temperatures  
up to 600°C. The weld metal of the E 58 electrode has a chemical composition  
similar to the T 58 steel (approximately 0.16 % C; 11% Cr; 1% Ni; 2% W; 0.3% V)  
and is of martensitic structure with a ferrite-delta content up to 5%. Its  
mechanical values at 20°C, and the creep-strength values at 600°C after heat treat-  
ment are relatively high and satisfactory for both T 58 and T 59 parent metals.  
Welding is done with preheating to 350-400°C. Before heat treatment, the welded

Card 1/2



Welding modified 12% chromium steels ...

Z/046/62/000/001/007/007  
D007/D102

joint has to be cooled below 100°C, then a full heat treatment, and eventually refining, is performed. For extreme cases tempering at 730°C for 8 hours with cooling in air is recommended. The notch-toughness values of the weld-parent metal transition correspond to those of the T 58 and T 59 parent metals. There are 20 figures and 4 tables. (Technical editor: Doctor of Natural Sciences A. Zapletálek, VÚZ Bratislava)

4

ASSOCIATION: Leninovy závody (Lenin Works), Plzeň

Card 2/2

34845  
S/129/62/000/003/006/009  
EO21/E335

18.7500

AUTHORS: Koutsky, J., Candidate of Technical Sciences and  
Ježek, J., Doctor

TITLE: Precipitation of Laves phases in steels with 12% Cr

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,  
no. 3, 1962, 29 - 33 + 1 plate

TEXT: Steels of the percentual composition given in  
Table 1 were investigated. With the exception of steels 1A  
and 4E, all the samples after refining had a heterogeneous  
structure consisting of sorbite and  $\delta$ -ferrite. Precipitation  
of Laves phases was observed in the  $\delta$ -ferrite region. The  
results obtained were compared with those of Kehsin Kuo  
(Ref. 4 - Journal Iron Steel Inst., v.185, 1957) and the  
following conclusions were drawn. Precipitation of the Laves  
phase  $Fe_2Mo$  in steels containing 12% chromium and additions of  
molybdenum with a low atomic ratio Mo:C and having a hetero-  
geneous microstructure can occur even in the absence of vanadium.  
The different concentrations in the ferrite and in the austenite

Card 1/2

X

Precipitation of Laves phases .... S/129/62/000/005/006/009  
E021/E335

(sorbite) have the deciding influence. Precipitation of the Laves phase  $Fe_2W$  can occur even in the absence of vanadium in steels containing 12% chromium and additions of tungsten and cobalt and having in the refined state a sorbitic structure (with low atomic ratio W:C). It is assumed that in this case cobalt has a catalytic effect on the precipitation of the intermetallic compound  $Fe_2W$ . The phase  $Fe_2Mo$  is less stable than the phase  $Fe_2W$ . There are 6 tables.

ASSOCIATIONS: Zavody imeni Lenina (Works imeni Lenin), Pízeň, Gosudarstvennyy issledovatel'skiy institut materialov i tekhnologii, Praga (State Research Institute for Materials and Technology, Prague)

Card 2/3

X

S/137/62/000/010/025/028  
A052/A101

AUTHORS: Koutský, Jaroslav, Pilous, Václav

TITLE: Weld metal, especially for modified ferrite steels

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 10, 1962, 36, abstract 10E199 P (Czech. pat., no. 100249, July 15, 1951)

TEXT: A weld metal is suggested which is especially suitable for modified ferrite steel (18% Cr, 8% Ni) or steels with  $\geq 15\%$  Cr. Composition of the metal (in %): 0.14 - 0.18 C, 11 - 12 Cr, 2 - 2.5 W, 0.2 - 0.3 V, 0.8 - 1.2 Ni, 0.4 - 0.6 Mo (not imperative),  $\leq 0.4$  Si,  $\leq 0.8$  Mn,  $\leq 0.03$  P,  $\leq 0.03$  S. In the welding seam the metal has a high creep resistance (in 100,000 hours at 600°C beginning at 10 kg/mm<sup>2</sup>, 1% in 100,000 hours at 600°C, 5.5 kg/mm<sup>2</sup>), is corrosion-resistant, no cracks are found in welded seams.

S. Glebov

[Abstracter's note: Complete translation]

Card 1/1

KOUTSKY, J., inz., C.Sc.; PILOUS, V., inz., C.Sc.

Welding of modified 12 per cent Cr steels used in the Lenin Works in Plzen. Zvar sbor 11 no.1:154-169 '62.

1. Leninovy zavody, Plzen.

KOUTSKY, J.

National conference on development and production of the stainless and high-temperature chrome steel in Plzen. Hut listy 17 no.9:668-669 S '62.

KOUTSKY, Jaroslav, kandidat technických ved; TEINDL, Josef

Observations on the brittleness of the steel AK 1 (Cr 13).  
Hut listy 16 no.2:129-135 F '61.

1. Zavody V.I.Lenina Plzen (for Koutsky). 2. Clen korespondent  
Ceskoslovenske akademie ved; Vysoka skola banska, Ostrava (for  
Teindl).

KOUTSKY, Jaroslav

Effect of the genital cycle on some vegetative reactions. Cas. lek.  
cesk. 101 no.39:1166-1170 28 S '62.

1. Psychiatricka lecebna v Kromerizi, reditelka MUDr. S. Lakosilova.  
(MENSTRUATION) (AUTONOMIC NERVOUS SYSTEM)

ACCESSION NR: AP4041520

Z/0065/64/000/003/0257/0288

AUTHOR: Koutsky, Jaroslav (Koutskiy, Yaroslav); Jezek, Jaroslav (Yezhek, Yaroslav); Jandos, Frantisek (Yandosh, Frantishek); Barackova, Lydie (Barachkova, Lidiya)

TITLE: The heat resistance of 12% Cr steels with tungsten, molybdenum, and vanadium

SOURCE: Kovove materialy, no. 3, 1964, 257-288

TOPIC TAGS: heat resistant chromium steel, twelve percent chromium steel, modified chromium steel, heat resistant steel

ABSTRACT: Twenty-seven heats of modified 12% Cr steel containing 0.20% C, 10.82-13.09% Cr, 0.25-9.38% Mo, 1.04-15.32% W, and 0.12-1.11% V were investigated in order to determine the effect of prolonged (up to 5000 hr) aging at 550-650C on its structure and mechanical properties. The following phases were identified in the steels studied:  $M_{23}C_6$ ,  $M_6C$ ,  $V_4C$  carbides,  $M_2X$  carbonitride and intermetallic Laves phases:  $Fe_2Mo$ ,  $Fe_2W$ . Molybdenum and vanadium were found to increase the notch toughness of the tempered steels. The notch

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ACCESSION NR: AP4041520

toughness does not drop under the effect of aging unless a high content of these elements causes precipitation of the  $Fe_2Mo$  Laves phase or the  $V_4C_3$  carbide. The  $Fe_2W$  and  $Fe_2Mo$  Laves phase precipitation during aging is accompanied by an increase of tensile strength and embrittlement. The precipitation of the  $V_4C$  carbide has a similar but less pronounced effect. The  $V_4C_3$  carbide precipitates in the martensite as well as in the delta-ferrite forming fine two-dimensional particles. During aging, these particles disappear in the sorbite (originally martensite), while they grow in the delta-ferrite. The precipitation and and coagulation kinetics of the Laves phases is different; both processes proceed much slower than in the case of carbides. Orig. art. has: 24 figures, 9 tables, and 1 formula.

ASSOCIATION: Vyzkumny a zkusebni ustav LZ, Plzen (Research and Testing Institute, LZ); Vyzkumny ustav uslechtilych oceli, Prague (Research Institute of Alloy Steels)

SUBMITTED: 27Sep63

ENCL: 00

SUB CODE: MH

NO REV SOV: 008

OTHER: 032

Card 2/2



L 16290-65 ENT(m)/ENF(w)/EPE(n)-2/EWA(d)/EWP(t)/EWR(b) Pu-4 IJP(c)  
ACCESSION NR: AP4044394 JB/JG Z/0065/64/000/004/0344/0363

AUTHOR: Koutsky, Jaroslav (Koutskiy, Yaroslav)

TITLE: The nature of heat resistance of Ni, Mo and V alloyed 12% Cr steels B

SOURCE: Kovove materialy, no. 4, 1964, 344-363 18

TOPIC TAGS: heat resistant chromium steel, molybdenum containing chromium steel, tungsten containing chromium steel, vanadium containing steel 27 27 27

ABSTRACT: Twenty-seven heats of 12% chromium steel additionally alloyed with molybdenum, tungsten, and vanadium have been tested for the effect of the additional alloying on the heat resistance. It was found that the precipitation of the Laves phases is the most important factor affecting the heat resistance of the steels studied. The effect of Laves phases is more important than that of alloying elements dissolved in the solid solution. The Fe, W-type Laves phase has a stronger effect than the Fe, Mo-type phase because of the precipitation characteristic of the former; therefore, Mo steels

Card 1/2 [Cr steels would be Cr alloys]

L 16290-65

ACCESSION NR: AP4044394

with an equivalent Mo concentration are less heat-resistant than W-steels. However, molybdenum in the presence of tungsten increases the amount of the precipitated Laves phase and improves the heat resistance of tungsten-alloyed steels. Vanadium in the presence of tungsten intensifies the precipitation and coagulation of the Laves phases and improves the heat resistance only under conditions of short service life. The highest heat resistance is obtained by alloying with all three elements in optimal amounts. Orig. art. has 10 figures, 1 table, and 7 formulas.

ASSOCIATION: Vyzkumny a zkusebn ustav Leninovych zavodu, Pilsen  
(Research Institute of the Lenin Plant)

SUBMITTED: 27Sep63

ENCL: 00

SUB CODE: MM

NO REF SOV: 007

OTHER: 015

Card 2/2

ACCESSION NR: AP4042273

Z/0032/64/014/007/0518/0523

AUTHORS: Koutsky, J. (Docent,engineer); Pokorny, R.,(Engineer); Sachova, E. (Engineer)

TITLE: New chrome steel for steam turbine blades

SOURCE: Strojirenstvi, v. 14, no. 7, 1964, 518-523

TOPIC TAGS: chromium steel, corrosion resistance, high temperature steel, turbine blade, turbine blade machining, thermal conductivity

ABSTRACT: A new T-60 steel is described (Cs. patent 103710), developed for the blades of a 200 MW steam turbine at the V. I. Lenin plant. Its required mechanical properties are  $\sigma_{kt} = \text{min. } 70 \text{ kp/mm}^2$  and  $R_M = 5\text{--}6 \text{ mkp/cm}^2$  and good electrochemical corrosion resistance. The chemical composition is:

Card 1/6

ACCESSION NR: AP4042273

C	Mn	Si	P	S	Cr	Ni	Mo	W	V	Ti
0,20	max.	max.	max.	max.	11,5	1,3	0,40	0,60	0,15	0,30
0,25	0,80	0,60	0,035	0,035	12,5	1,8	0,60	1,00	0,25	0,50

Also described are the heat treatment procedure, the mechanical properties of T-60 between 50 and 200C, and its physical properties. The thermal conductivity was measured by a comparison method. Young's modulus was measured by a dynamical method in the 20--600C range. A fatigue test was carried out on a Schenck-type setup. Corrosion resistance was tested by a method developed at the Vyzkumny Ustav CKD Blansko and is compared with that of other materials. The technology of producing large blades and the results of a detailed study of the mechanical properties of four blades are described. Orig. art. has: 13 figures and 6 tables.

ASSOCIATION: Vyzkumny a zkusebni ustav ZVIL, Plzen (Research and

Card 2/6

ACCESSION NR: AP4042273

Experimental Institute ZVIL)

SUBMITTED: 00

ENCL: 03

SUB CODE: MM, PR

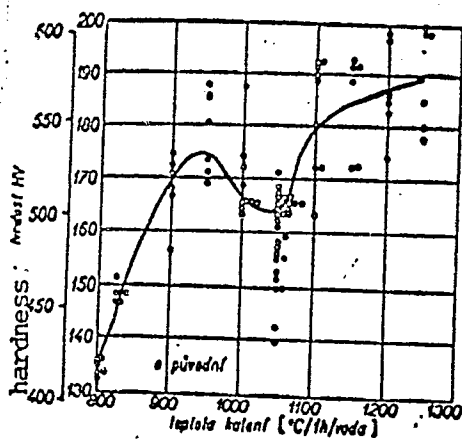
NR REF SOV: 000

OTHER: 007

Card 3/6

ACCESSION NR: AP4042273

ENCLOSURE: 01



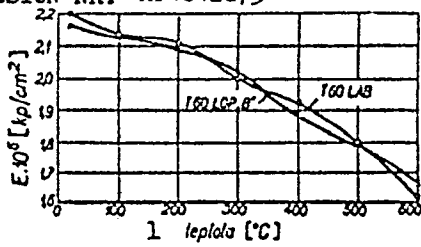
Effect of heat on hardness of T 60 steel

Quenching heat (°C/h/water)

Card 4/6

ACCESSION NR: AP4042273

ENCLOSURE: 02



Effect of heat on modulus of elasticity

- 1- heat
- 2-mod. of elast.
- 3-lab. melt
- 4-production melt, blade B

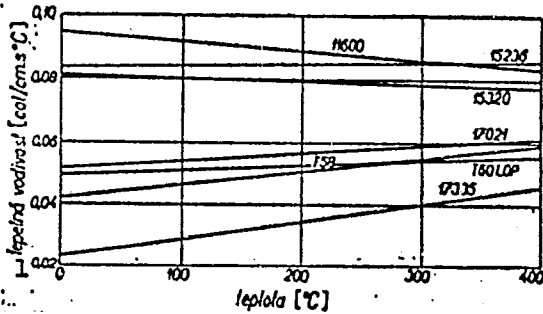
1 Teplota (°C)	2 Modul pružnosti E (kp/cm²) · 10⁶	
	3 Laboratorní tavba	4 Provozní tavba lopatka B
20	2,2007	2,1663
100	2,1472	2,1381
200	2,1120	2,09199
300	2,0016	2,0232
400	1,9203	1,9312
500	1,7947	1,7962
600	1,8209	1,5713

Card

5/6

ACCESSION NR: AP4042273

ENCLOSURE: 03



Thermal conductivity vs. heat

- 1 - thermal conductivity
- 2 - heat
- 3 - material

3 Material	2 Teplota (°C)					
	0	50	100	200	300	400
ČSN 16 236	0,0836	0,0840	0,0842	0,0847	0,0852	0,0858
ČSN 11 600	0,0951	0,0938	0,0922	0,0805	0,0866	0,0838
ČSN 15 320	0,0815	0,0810	0,0805	0,0794	0,0783	0,0772
ČSN 17 021	0,0518	0,0528	0,0540	0,0568	0,0590	0,0614
ČSN 17 335	0,0235	0,0263	0,0202	0,0349	0,0400	0,0464
T 58	0,0423	0,0444	0,0405	0,0507	0,0540	0,0591
T 00 lop.	0,0498	0,0504	0,0510	0,0525	0,0542	0,0557

Card 6/6

L 3121-66 EWA(d)/EWP(t)/EWP(z)/EWP(b) JD

ACCESSION NR: AF5026885

CZ/0034/65/000/006/0418/0423

AUTHOR: Koutsky, Jaroslav (Docent, Engineer, Doctor of sciences); Vanecek, Vladimir (Engineer)

TITLE: Effect of vacuum remelting on the properties of ferritic heat resisting steels. Part 2. Low alloy Cr-Mo-V steels

SOURCE: Hutnicke listy, no. 6, 1965, 418-423

TOPIC TAGS: vacuum melting, heat resistant steel, low alloy steel, solid mechanical property

ABSTRACT: [Authors' English summary modified]: The steels that were investigated were of the 12% Cr type Cr12W2V; Poldi HDM Czech. Norm 15 236, and Lof svor extra Czech. Norm 15 320. Bars of the steels were subjected to 3 methods of treatment: vacuum remelting under normal operating conditions, vacuum remelting at a slower melting rate, and induction furnace remelting. Bars produced by these treatments were compared to the original product. Vacuum melting improved the notch strength of the HDM steel, and the plasticity of the

Card 1/2

3121-66

ACCESSION NR: AP5026885

Loi svor extra steel tested under long term stress conditions. The main improvement due to vacuum remelting is the achieving of homogeneity of the properties in large wrought steel products, rather than some radical improvement of mechanical properties.

"The authors thank the workers of the Research and Development Institute ZVIL, Plzen, Eng. Zdenek Klotocka and Stanislav Votyska, for cooperation in the experimental works." Orig. art. has: 8 figures, 8 graphs, 3 tables.

ASSOCIATION: Vyzkumny a zkusebni ustav, ZVIL, Plzen (Research and Material Testing Institute, ZVIL)

SUBMITTED: 00

ENCL: 00

SUB CODE: MN

NR REF SOV: 000

OTHER: 002

JPRS

PC  
Card 2/2



L 41806-66 EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) RS/JD/HM/JG

ACC NR: AP6031546

SOURCE CODE: RU/0027/65/010/002/0333/0346

AUTHOR: Koutsky, Jaroslav; Pilous, Vaclav

36

ORG: Lenin Works, Plzen 21 BTITLE: Metallurgic welding suitability of steels with 12 percent chromium (modified) and those with 13 percent chromium (classic) in the cast state

SOURCE: Stuii si cercetari de metalurgie, v. 10, no. 2, 1965, 333-346

TOPIC TAGS: weldability, chromium steel

ABSTRACT: The authors describe the procedures used at the Lenin Works of Plzen, reporting on the welding under good conditions of both modified and classic chromium steels. They recommend use of an electrode with a chemical composition similar to that of the base material, such as the universal electrode E 558 with a 12-percent chromium contents. Orig. art. has: 25 figures and 4 tables. [JPRS: 34,166]

SUB CODE: 13 / SUBM DATE: none / ORIG REF: 001 / SOV REF: 002

OTH REF: 013

Card 1/1 af

0919

0231

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000825420019-0

CZECHOSLOVAKIA/Carbohydrates and Their Reprocessing.

H.

Abs Jour : Ref Zhur - Khimiya, No 19, 1958, 65744

Author : Koutsky Josef

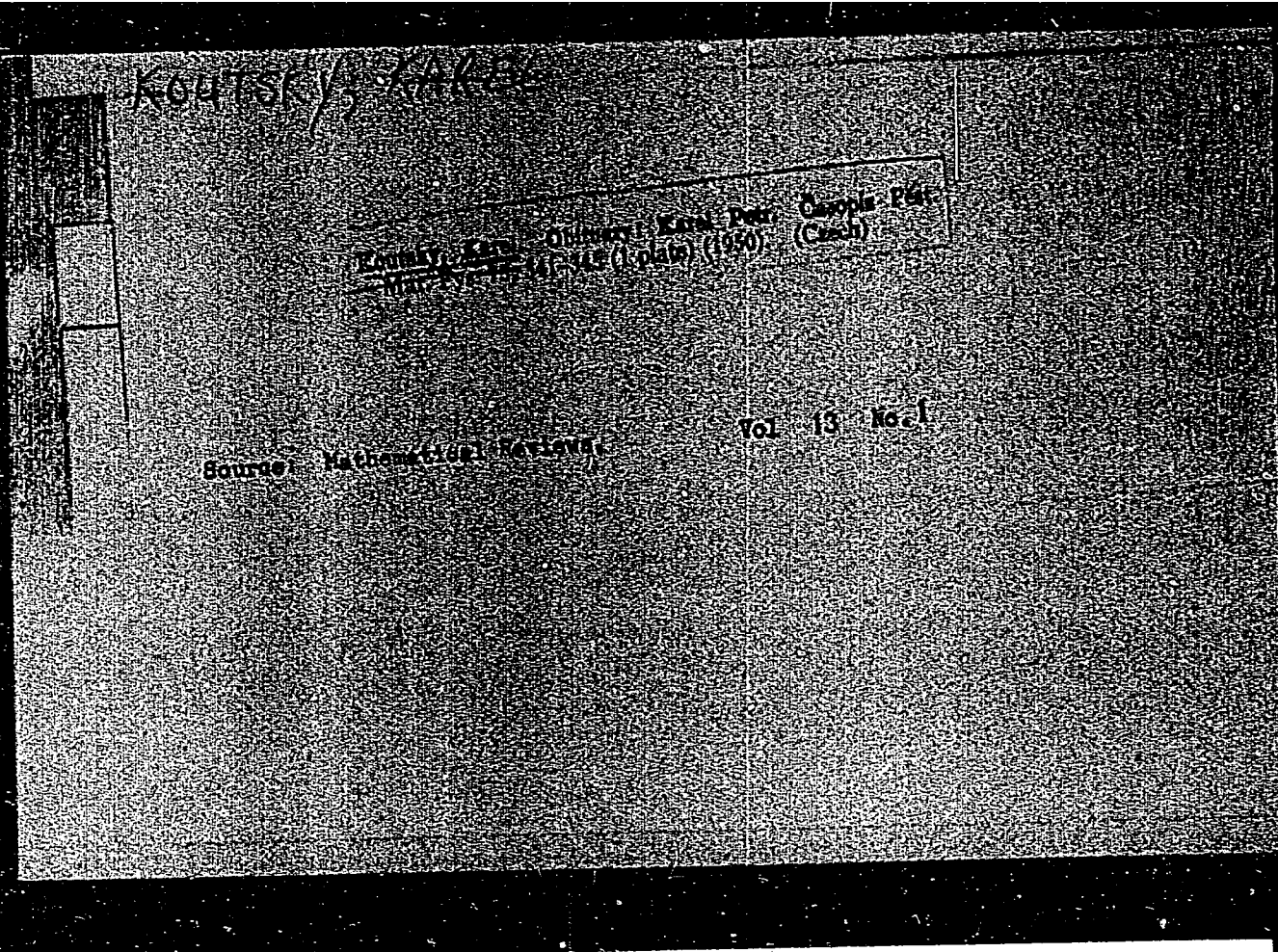
Inst : -

Title : Pneumatic Device for the Separation of Impurities From Beets and Sorting of Beet Tops and Their Reprocessing.

Orig Pub : Listy cukrovarn., 1958, 74, No 2, Inform. sluzba, 2-5

Abstract : The devices usually applied for the removal from beets of straw, of leaves and tops (T) perform unsatisfactorily: the rake strawcatchers are quite inactive at -20-30, and the screening machines for the removal of T significantly increase their weight, chipping off T from the whole beet. A new pneumatic device is described, constructed on the principle of common air grain sorters, for the separation of the extras from the beet. The scheme of construction, selection and calculation

Card 1/3



KOUTSKY, K.

Mathematical Reviews  
Vol. 14 No. 10  
Nov. 1953  
Topology

Koutský, Karel. *Théorie des lattices topologiques.* Publ. Fac. Sci. Univ. Masaryk 1952, 133-171 (1952). (Czech and Russian summaries)

A topological lattice is not, as one might think, a lattice which is a topological space in which  $\cap$  and  $\cup$  are continuous operations, but is an abstract lattice in which there is defined a closure operation  $x \rightarrow \phi(x)$  carrying the lattice into or onto itself. With such objects, one has for a long time studied topology without points [e.g., Nakamura, Proc. Imp. Acad. Tokyo 17, 5-6 (1941); these Rev. 2, 342; Monteiro and Ribeiro, Portugaliae Math. 3, 171-184 (1942); these Rev. 4, 223]. The author here introduces the study of topology without points and without axioms, considering a perfectly general closure operation  $\phi$ . The article under review gives also a survey of the present status of the theory of topological lattices as well as a well-thought-out discussion of the results of adding one axiom at a time to the requirements imposed upon the closure operator  $\phi$ .

E. Hewitt (Seattle, Wash.).

KOUTSKY, KAREL

KOUTSKY, KAREL. Matematika a dialektický materialismus. (1. vyd.) Praha,  
Průmyslové vydavatelství. (Kruh, sv. 25) (Mathematics and dialectical materialism.  
1st ed. illus., 70 notes, index)

Vol. 1. 112. 129 p.

KOUTSKY, KAREL

SCIENCE

Czechoslovakia

See: East European Accession, Vol. 4, No. 4, May 1957

KOUTSKY, K.

Determination of the topologic areas by means of a complete system of points.  
p. 153. (SFISY, No. 374, 1956, Brno, Czechoslovakia)

SO: Monthly List of East European Accessions (SEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

KOUTSKY, K.; NOVOTNY, M.; KOSMAK, L.

Additive irreducible elements and additive bases in a combination. In German.  
p. 165. (SPISY, No. 374, 1956, Brno, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

KOUTSKY, Karel, (Brno); PLAK, Vaclav (Brno)

A note on the omissible points in complete systems of points and  
straight lines in the plane. Cas pro pest mat 85 no.1:60-69 F '60.  
(EEAI 9:10)

(Geometry)

KOUTSKY, Karel (Brno)

Docent Frantisek Balada; an obituary. Cas pro pes mat 87 no.1:  
115-117 '62.



KOZISKI, Karol (Brno)

Cech's topological seminar in Brno in the years 1936-1939. Pokroky  
mat fyz astr 9 no. 5:307-316 '64.

KOUTSKY, Karel (Brno)

Cech's topological seminar in Brno, 1936-1959. Cas pro pest mat  
90 no 1:104-118 F '65.

Z/054/65/000/005/004/004  
E073/E335

AUTHORS: Koutsky, L., Doctor Engineer, Candidate of Sciences,  
and Pilous, V., Engineer, Candidate of Sciences

TITLE: Conference of the Rumanian Academy of Sciences in  
Timisoara

PERIODICAL: Hutnicke listy, no. 3, 1963, 224 - 226

TEXT: A conference on the welding and testing of metals,  
convened by the Technical Section of the Rumanian Academy of  
Sciences, was held in Timisoara between October 12 and 15, 1962.  
The following papers were read: Academician Miclosi: selection  
of steels for welded structures; Professor Doctor St. Nadasan:  
present state of testing steels; Academician K.K. Khrenov: new  
current sources for electric-arc welding; Engineer Ion Avram:  
methods and equipment for welding pressure vessels and pipes made  
of carbon and alloy steels (review of three papers submitted by  
individual authors); Professor Engineer Dan Mateescu: welded  
building and machine structures (review of four papers submitted  
by individual authors); Engineer Josif Hajdu: static and dynamic  
tests (review of six papers submitted by individual authors);  
Card 1/3

Z/034/65/000/003/004/004  
E073/E355

Conference of . . . .

Engineer Viorel Miclosi: pressure-welding and additives (review of three papers submitted by individual authors); Engineer Ovidiu Centea: flame- and electric-arc-cutting of metals (review of several submitted papers); Engineer M. Ratiu: test methods and test machines (review of four individually submitted papers); Engineer T. Salagean: additive materials (review paper summarizing experience gained in the manufacture of additive wires, electrodes and fluxes in Rumania); Engineer Vl. Popovici: various processes of welding high-grade alloy steels (review of several presented individual papers); Engineer L. Boleantu: non-destructive testing of metals (review of three submitted individual papers, including one on using betatrons for defectoscopy purposes); Engineer A. Ivancenco: new methods of welding (review paper on welding under flux, welding in a protective carbon-dioxide atmosphere and in an argon atmosphere); Engineer A. Bernath: fatigue-testing of metals (review of seven individually submitted papers); Engineer Josif Bonescu: problems of testing welding machines and of work safety (review paper). The conference was attended by over 230 Rumanian and 40 foreign specialists (5 Czech, 7 Polish, 9 East German, 17 Hungarian).

Card 273

Conference of ....

Z/034/63/000/003/004/004  
E073/E335

The authors consider the contribution of Academician Miclosi on the "selection of steel for welded structures" to be the most interesting.

ASSOCIATION: ZVIL, Pilsen

Card 3/3

KNOBLOCH, Ferd; KOUTSKY, Zd.; MARTINCIXOVA, E.; RIEGROVA, M.

Characteristics of neuroses in Czechoslovakia. Cas. lek. cesk.  
95 no.41:1144-1148 12 Oct 56.

1. Psychiatricka klinika v Praze (ambulance fakultni polikliniky)  
prednosta: prof. Dr. Zd. Myslivecek, F. K., Praha 2, Karlovo nam. 32.  
(NEUROSES, statist.  
in Czech. (Cz))

KCUTSKI, Z. & FRCUZA, L.

A construction of an acceptance region for sampling inspection based on average and range. p. 441.

Vol. 14, No. 10, Oct. 1953. SIAEORPROUDY OBZOR. Praha.

SOURCE: East European Accessions List (EEAL), LC, Vol. 5, No. 3, March 1956

KOUTSKY, ZDENEK

Koutsky, Zdenek. *Some aspects of the number in  $10^k$*   
Prague: Reiz, 1963. 27 p. (1963) (24 cm)

The author considers differential equation  $y'' + p(x)y' + q(x)y = r(x)$  in the complex domain with initial condition  $y(0) = y_0$ . Applying the method of the least squares under the assumption of the knowledge of certain type of means to  $r(x)$  on the best possible estimate for the values of convergence of the power series of the solution. He further considers the inversion of a mapping

$$w = z + \sum_{k=2}^{\infty} a_k z^k$$

assuming the knowledge of certain moments for these power series and certain conditions for the coefficients of the first order terms which guarantee the vanishing Jacobian at  $z = 0$ . He gives also the best estimates for the convergence domain of the power series representing the inverse mapping.

Zdenek Koutsky



KOUTSKY, E.

Prouza, I. Some remarks on the theory and practice of statistical quality control. p. 136.

SLABOPROUDY OZVEK, Praha, Vol. 16, no. 3, Mar. 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955,  
Uncl.

KOUTSKY, Z.

An apparatus for the automatic execution of sequential acceptance procedures.

p. 466 (Slaboproudý Obzor. Vol. 18, no. 7, July 1957. Praha, Czechoslovakia)

Monthly Index of East European Accessions (EMEA) 10. Vol. 7, no. 2,  
February 1958

35110

Z/026/62/007/002/002/002  
D291/D301

9,7500 (3103, 3204, 1154)

AUTHOR: Koutský, Zdeněk, Doctor, Candidate of Sciences

TITLE: The theory of pulse counters and their application

PERIODICAL: Aplikace matematiky, v. 7, no. 2, 1962, 116-140

TEXT: The author generally describes the theory and function of electronic pulse counters, namely a binary (flip-flop) and a ring circuit, and derives the mathematical model of a pulse counter where the detector is considered ideal. The counter model has  $k$  states (positions) and is asymmetrical due to its technical deficiencies, i.e. it has various dead times in different states, and various pulse amplitudes are necessary for the transition from one into another state. The impulse sources which are independent and have different amplitudes, are described by the Poisson process. For both counter types, the distribution functions of pulses counted per time unit are investigated, as well as the functions  $P_k(t, j)$  for finite  $t$  and limiting values for  $t \rightarrow \infty$ , and the functions

Card 1/3

Z/026/62/007/002/002/002  
D291/D301

The theory of pulse ...

$P_k \{t, j, \lambda\}$  for  $\lambda \rightarrow \infty$ , which are important for determining random numbers by physical methods. The inevitable technical inaccuracies, i.e. the asymmetry in various counter states, cause deviation from the distribution regularity of random numbers, so that the expression

$$\lim_{t \rightarrow \infty} P_k \{t, j\} = \frac{1}{k} \quad (5.6) \quad \text{is not valid for all}$$

$j = 0, 1, 2, \dots, k-1$ . Results obtained from the mathematical counter model and tabulated errors point directly to the origin of these deviations and thus contribute to eliminating technical inaccuracies and measuring errors occurring in pulse counters. The improvement of counters can practically be effected by proper pulse amplifiers and limiters and the choice of suitable counter elements. There is 1 table. The English-language reference is: L. Takacs: On a Probability Problem Arising in the Theory of Counters. Proc. of the Cambridge Phil. Society, Vol. 52, Part 3 (1956), pp 488-498.

Card 2/3

Z/026/62/007/002/002/002  
D291/D301

The theory of pulse ...

ASSOCIATION: Ústav teorie informace a automatisace ČSAV, Praha 2  
(Institute of Information Theory and Automation,  
Czechoslovak AS, Prague 2)

SUBMITTED: February 23, 1961

Card 3/3

L 41173-66 EMP(c)/EMP(R)/T/EMP(1)/EMP(v) IJP(c)  
 ACC NR: AP6030188 SOURCE CODE: CZ/0088/65/000/005/0431/0460

AUTHOR: Koutsky, Zdenek (Doctor; Candidate of sciences) 24 B

ORG: Institute of Information Theory and Automation, CSAV, Prague (Ustav teorie informace a automatizace CSAV)

TITLE: Determination of the control interval and statistical sampling plan for approval-rejection control charts

SOURCE: Kybernetika, no. 5, 1965, 431-460

TOPIC TAGS: optimal control, probability

ABSTRACT: A Markov chain with two states was taken as the mathematical model of the production process in determining the optimal control interval and optimal statistical sampling plan, with due consideration for nine criteria. If the process is operating properly (first state), then the probability of rejects is  $p_1$ ; if it is operating out of order (second state), then the probability of rejects is  $p_2$ . The transition probability matrix of the Markov chain, i.e., the probability that the production process will change from the first to the second state, is known. With the aid of the model it is possible to determine the following: the average length of the production cycle, i.e., the average time between two successive interruptions of the production process; the probabilities, respectively, that the machine will stop in the first and sec-

Card 1/2 0918 1050

L 41173-66

ACC NR: AP6030188 "APPROVED FOR RELEASE: 08/23/2000" CIA-RDP86-00513R000825420019-0

ond state; the probability of a correct or incorrect decision; the average percentage of produced rejects; and the average percentage of passed rejects. Orig. art. has: 39 formulas and 27 tables [JPRS:34,162]

SUB CODE: 13, 12 / SUBM DATE: 13May65 / SOV REF: 001 / OTH REF: 002

Card 2/2 hs

*KCWAQ, MILA*

1. ...  
 2. ...  
 3. ...  
 4. ...  
 5. ...  
 6. ...  
 7. ...  
 8. ...  
 9. ...

Internal Security Matters. ...  
 ...  
 ...

(1)

Kouyoumdjiev, I

ANGUELOV, S.; KOUYOUMDJIEV, I.

Undulant fever in human and brucella abortus in domestic animals  
in Bulgaria. C.rend.Bulgar. Akad.Nauk, Sofia, Sc.math.natur. 2 no.2-3:  
53-56 '49. (CLML 19:3)

1. Institute of Microbiology of the Bulgarian Academy of Sciences.

NEMTSOVA, M.; KOUZHILEK, K. [Kouzilek, K.]; ENGLITSOVA, M. [Engilsova, M.]

Electrophoretic study of the proteins of the cerebrospinal fluid in mental patients. Zhur. nevr. i psikh. 65 no.1:73-75 '65. (MIRA 18:2)

1. Psikhiatricheskoye otdeleniye (nachal'nik A. Parda) i otdeleniye klinicheskikh laboratoriy (nachal'nik - kand. med. nauk A. Ariyent) Tsentral'noy voyennoy bol'nitsy, Praga.



L 46618-56 RO

ACC NR: AP6024751

SOURCE CODE: BU/0011/65/018/010/0947/0949

AUTHOR: Hollov, N.; Marekov, N.; Popov, S.; Kouzmanov, B.

8

ORG: Institute of Organic Chemistry, BAN, Sofia

B

TITLE: Alkaloids of some *Gentiana* speciesSOURCE: *Bulgarska akademiya na naukite. Doklady*, v. 18, no. 10, 1965, 947-949

TOPIC TAGS: alkaloid, plant chemistry

## ABSTRACT:

*Gentiana L.* is one of the six genera of the *Gentianaceae* family which is fairly common in Bulgaria. Fourteen species of this genus thrive mainly in the highlands. Some of them are widely used in popular medicine. Although in the past many compounds were isolated from the various species of *Gentiana*, no studies on alkaloids have been made yet. Consequently, the authors carried out alkaloid composition studies in *G. cruciata L.*, *G. asclepiadea L.*, *G. lutea L. var. symphyandra Mrb.*, *G. punctata L.*, as well as the endemic species *G. bulgarica*. The article contains detailed data about the amount and types of alkaloids found. A more detailed study of the properties of the individual isolated alkaloids will be published later. This paper was presented by Academician D. Ivanov on 12 July 1965. [Orig. art. in Eng.] [JPRS: 34,805]

SUB CODE: 06 / SUBM DATE: none / SOV REF: 002 / OTH REF: 014

Card 1/1 af

0915 2584

PETRASHEN', G.I.; NIKOLAYEV, B.G.; KOUZOV, D.P.

Method of series in the theory of diffraction of waves by plane  
corner regions. Uch.zap. IGU no.246:5-70 '58. (MIRA 12:2)

1. Leningradskoy otdeleniye Matematicheskogo institut im. V.A.  
Steklova, Leningradskiy gosudarstvennyy universitet.  
(Waves--Diffraction)

KUROV, D.P. (Leningrad)

Resonance due to the diffraction of a hydroacoustic wave  
on a system of cracks in an elastic plate. Fizk. mat. i  
mekh. 28 no.3s409-417 Ry-Je'64 (MIRA 1965)

KOUZOV, D.P. (Leningrad)

Diffraction of a plane hydroacoustic wave on a crack in an elastic  
plate. Prikl. mat. i mekh. 27 no.6:1037-1043 N-D '63. (MIRA 17:1)

L 18591-63

EWP(r)/EWT(m)/BDS AFPTC EM

ACCESSION NR: AP3003249

S/0040/63/027/003/0541/0546

AUTHOR: Kouzov, D. P. (Leningrad) *SP*

TITLE: Diffraction of a plane hydroacoustical wave on the boundary of two elastic discs *W*

SOURCE: Prikladnaya matematika i mekhanika, v. 27, no. 3, 1963, 541-546

TOPIC TAGS: hydroacoustical wave, diffraction, elastic disc, wave propagation

ABSTRACT: This article treats diffraction of hydroacoustical waves on linear inhomogeneities (cracks, junctions of layers of different thickness) in an elastic layer. The author considers the case of small frequencies of the incident perturbation, i.e., frequencies for which the length of the waves in the material of the layer is much thicker than the layer. The introduction of this restriction allows him to go from a contact problem for two media (fluid - elastic layer) to a boundary problem for one medium - fluid, on the surface of which the boundary conditions are obtained on the basis of an equation of oscillations of an infinitely thin elastic disc. The author constructs a general solution of the two-dimensional stationary problem of diffraction of a plane hydroacoustical wave on the boundary of two elastic discs with various elastic characteristics for various conditions of

Card 1/2

L 18591-63

ACCESSION NR: AP3003249

contact between the discs. Orig. art. has: 17 formulas and 3 figures.

ASSOCIATION: none

SUBMITTED: 04Oct62

DATE ACQ: 23Jul63

ENCL: 00

SUB CODE: PH

NO REF SOV: 004

OTHER: 003

Card 2/2

BOGOMOLOV, A.M.; KOUZOV, N.A.

Use of the functional node method of designing in the construction  
of automatic measuring devices. Trudy GGI no.115:63-80 '64.

(MIRA 18:9)

KOUZOV, P., kand. tekhn. nauk

Aid for industries. Okhr. truda i sots. strakh. 6 no.10:24  
0 '63. (MIRA 16:10)

1. Zamestitel' direktora Leningradskogo instituta okhrany truda  
Vsesoyuznogo tsentral'nogo professional'nykh soyuzov.



1ST AND 2ND ORDERS  
PROCESSES AND PROPERTIES INDEX  
3RD AND 4TH ORDERS

CA

A comparison of cyclones. P. A. Komarov. *J. Chem. Ind. (U. S. S. R.)* 19, No. 3, 35-40 (1958). The Davidson cyclone for removing dust from air is compared to a Russian model. H. M. Leicester

COMMON ELEMENTS  
MATERIALS INDEX  
METALLURGICAL LITERATURE CLASSIFICATION

PERIODIC TABLE  
ALPHABETIC INDEX  
SYMBOLS AND ABBREVIATIONS

11. AND THE OTHER PROCESSES AND PROPERTIES ARE:

16 AND 17H CENTER

CA 1

Removal of dust from air by means of wet filters. *В. А. Кошарин. Вспомог. Очистка. Водяные и Пыль. Журнал 1949, 4-22; Khim. Referat, Zhur. 6, No. 7-8, 1950(1949).*—The principles underlying the construction of dust filters were investigated. The air was passed through layers of Raschig rings and gravel upward against a current of water, and also downward with the current of water. The optimum velocity of air current is 3000 to 5000 cu. m. per sq. m. of filter layer per hr. A multistage dust-absorption system is proposed to obtain a max. removal of highly dispersed dust. Best results are obtained with layers 80-100 mm. thick.

W. R. Henn

ASB. 51.4 METALLURGICAL LITERATURE CLASSIFICATION

GROUP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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KOUZOV, P. A.

USSR/Medicine - Surgery  
Medicine - Air

Apr 1948

"Air Supply During Surgical Operations and Measures for Improvement," Prof A. I. Shafir, Docent P. A. Kouzov, Chair of Gen Hygiene, Mil Med Acad 6 pp

"Gig i San" No 4

Result of studies conducted in two large operation-theater blocks to determine the purity of air. Suggests various measures adopted to further purify air being supplied.

PA 65T67

SHAFIR, A.I.; KOUZOV, P.A.; PANSHINSKAYA, N.M.

Paper filters for the purification of ventilation air from microorganisms  
and dust. Gig. i san. no. 9:23-28 S '53.

(MLRA 6:8)  
(Air filters)