

SUMAR/CONTENTS METALURGLIA NR. 10 2009

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MATERIALS SCIENCE RESEARCH AND DEVELOPMENT

Éva FAZAKAS, Béla VARGA, Lajos Károly VARGA:
STUDY OF AMORPHOUS-CRISTALLINE PHASE
TRANSFORMATIONS BY DILATOMETER IN THE
CASE OF Al88Y7Fe5 AND Al88Y7Fe4Sb1
AMORPHOUS ALLOYS
.....5

Viorica CEBRUCEAN (HAREA), Ioana IONEL, Ioan
PADUREAN , Dumitru CEBRUCEAN: NUMERICAL
INVESTIGATION OF HEAT TRANSFER AND
PRESSURE DROP IN THE SHELL-SIDE OF A
SHELL-AND-TUBE HEAT EXCHANGER
.....8

Mihai Alin POP, Elena Diana APOSTU, Alexandru
CONSTANTINESCU: STUDY OF KINEMATICS
MOVEMENT OF THE MATERIAL LOAD IN
REVOLVING HEXAGON SCREEN
.....13

Elena Diana APOSTU, Mihai Alin POP, Alexandru
CONSTANTINESCU: KINEMATICS MOVEMENT OF
THE MATERIAL LOAD IN TROMMEL SCREEN
.....17

Vlad MONESCU, Ioan CIOBANU, Sorin Ioan
MUNTEANU, Aurel CRIŞAN: THE INFLUENCE OF
MOULD MESHING ON THE 2D SIMULATION OF
CASTING SOLIDIFICATION
.....22

Diana ȚUȚUIANU, Ioan CIOBANU: CAST METAL
ALLOY COMPONENTS FOR STREET FURNITURE
.....27

ECONOMICAL MANAGEMENT

Oleg MARGINA: STANDARD COST ACCOUNTING
AND EVOLUTION OF ACCOUNTANCY
MANAGEMENT AND COST CALCULATION
.....30

Nicu MARCU, Costel IONAȘCU, Marian SIMINICĂ:
STATISTICAL SECTORIAL ANALYSIS

COMPANIES COMPETITIVNESS IN EUROPEAN
UNION
.....35

Nicu MARCU, Marian SIMINICĂ, Daniela GIURESCU:
ORGANISATION AT THE LEVEL OF
BUREAUCRATIC PUBLIC ADMINISTRATION
.....42

ENVIRONMENTAL ISSUES

Laura JIJĂESCU: ENVIRONMENTAL POLLUTION
AND GLOBAL CLIMATE CHANGES. IMPACT OF
INDUSTRIAL ACTIVITY ON ENVIRENMENT
.....45

REZUMAT/ABSTRACT METALURGIA NR. 10 2009

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MATERIALS SCIENCE RESEARCH AND DEVELOPMENT

STUDY OF AMORPHOUS-CRISTALLINE PHASE TRANSFORMATIONS BY DILATOMETER IN THE CASE OF $Al_{88}Y_7Fe_5$ AND $Al_{88}Y_7Fe_4Sb_1$ AMORPHOUS ALLOYS

.....5

Éva FAZAKAS, Béla VARGA, Lajos Károly VARGA

Key words: amorph, crystalline, transformation, dilatometer, activation energie.

Abstract: Amorphous-crystalline transformation is a first order, exothermic, diffusion controlled process. The kinetic of the nucleation and grain growth process can be followed by any physical parameter sensitive to the structural changes, like electrical resistivity, thermo power, magnetization, etc. In this paper the thermal effect of the structural change is measured indirectly by dilatometer. The thermal dilatation is more sensitive to the structural changes foregoing the crystallization step and consequently the relaxation process in the amorphous state can be followed by this method. The characteristic temperatures might be slightly different determined by dilatometer method. The characteristic temperatures of a multi stage crystallization process depend on the heating rate and from this dependence the activation energies of each transformation step can be determined. As an example, two aluminum based amorphous ribbon samples ($Al_{88}Y_7Fe_5$ and $Al_{88}Y_7Fe_4Sb_1$) will be measured by dilatometer and the activation energies will be compared. The microhardness was determined too.

NUMERICAL INVESTIGATION OF HEAT TRANSFER AND PRESSURE DROP IN THE SHELL-SIDE OF A SHELL-AND-TUBE HEAT EXCHANGER

.....8

Viorica CEBRUCEAN (HAREA), Ioana IONEL, Ioan PADUREAN, Dumitru CEBRUCEAN

Key words: Shell-and-tube heat exchangers, segmental baffles, heat transfer, pressure drop, CFD.

Abstract: Shell-side heat transfer and pressure drop of a shell-and-tube heat exchanger with single segmental baffles has been numerically investigated. The main objective is to compare the results of this work with our previous numerical results in which the properties of the shell-side fluid were kept constant. The numerical simulations have been performed using the commercial CFD software package FLUENT 6.2. The model has been designed with 8 segmental baffles and baffle cut of 25%. Numerical results have shown that the pressure drop has slightly decreased and the fluid properties have almost no effect on heat transfer as compared to our previous study.

STUDY OF KINEMATICS MOVEMENT OF THE MATERIAL LOAD IN REVOLVING HEXAGON SCREEN

.....13

Mihai Alin POP, Elena Diana APOSTU, Alexandru CONSTANTINESCU

Key words: Sand, movement kinematics, polygonal sieves.

Abstract: Researches have established experimental conditions in which a volumetric ranking can be done best in a rotating cylindrical sieve. A special situation is encountered at the hexagonal sieve, which by their construction made capsizing and throwing the material almost perpendicular to the surface by grading, partially satisfying the condition of sifting optimal, but is necessary to determine an optimum speed and taking into account the volume and load characteristics and grain geometry of the sieve.

KINEMATICS MOVEMENT OF THE MATERIAL LOAD IN TROMMEL SCREEN

.....17

Elena Diana APOSTU, Mihai Alin POP, Alexandru CONSTANTINESCU

Key words: Sand, movement kinematics, cylindrical sieves

Abstract: Volumetric ranking tools used today must have some constructive and functional improvements aiming to increase processing capacity and eventually reduce power training. We believe that studies conducted so far are incomplete, disregarding higher speed of the sieves when is possible detachment of the material on the sieve and discard it after a parabolic trajectory with fall perpendicular on the surface of ranking, but released in advance of the material in moving upward on the wall sieve. It is made a series of experiments in putting the record of movement of the load of material at different speed.

THE INFLUENCE OF MOULD MESHING ON THE 2D SIMULATION OF CASTING SOLIDIFICATION

.....22

Vlad MONESCU, Ioan CIOBANU, Sorin Ioan MUNTEANU, Aurel CRIȘAN

Key words: solidification, casting, simulation, grey cast iron

Abstract: It was analysed the case of solidification simulation of a plate of cast iron with the cross section 280×40 mm. Many solidification simulations were realized for different meshing of the mould in surface elements with the side $\Delta = 0.5 \div 8$ mm. It was established that the optimal value for Δ that assure an adequate precision for the

solidification time and a reasonable computing time for simulation is $\Delta = 2 \div 4$ mm.

CAST METAL ALLOY COMPONENTS FOR STREET FURNITURE

.....27

Diana ȚUȚUIANU, Ioan CIOBANU

Key words: casting, cast, street furniture, grey cast iron

Abstract: The paper presents an analysis of street furniture parts achieved by casting from various materials, in view of

deploying their utilization and aesthetic functions, respectively. The discussion concerns several such objects of the more frequently encountered types in the urban landscape. The integration of such parts in the landscape and architectural assembly is analyzed from the viewpoint of their materials and dimensions, expected to highlight both the natural component of the space and the artistic features of the respective object.

ECONOMICAL MANAGEMENT

STANDARD COST ACCOUNTING AND EVOLUTION OF ACCOUNTANCY MANAGEMENT AND COST CALCULATION

.....30

Oleg MARGINA

Key words: cost calculation, standard costs, direct costs, indirect costs.

Abstract: The standard cost represents a comparison system between the real and commercial price with the standard cost of the commercial price, pre-established, as well as an analyse system of the reasons of the difference between the standard expenses and effective sale collection.

STATISTICAL SECTORIAL ANALYSIS COMPANIES COMPETITIVENESS IN EUROPEAN UNION

.....35

Nicu MARCU, Costel IONAȘCU, Marian SIMINICĂ

Key words: competitiveness, international comparisons, development potential, activity sectors.

Abstract: Romanian companies face new challenges after integration in European Union regarding the competition with European companies. Because European companies

accumulated a rich experience in this field. Their experience represent for Romanian companies a good basis for understanding these phenomenon. Differences among companies belonging to different activity sectors are very important. Advantages offered by different sectors represent opportunities for Romanian companies to penetrate the European market.

ORGANISATION AT THE LEVEL OF BUREAUCRATIC PUBLIC ADMINISTRATION

.....42

Nicu MARCU, Marian SIMINICĂ, Daniela GIURESCU

Key words: bureaucracy, mechanism, public administration, hierarchy, centralisation.

Abstract: The public administration is based on centripet model, consisting of centralization and hierarchism. The bureaucratic model was extended and is found in majority of administrative systems. Bureaucracy represents the dominant organization system, being a very well designed mechanism in order to achieve different functions. Each component of this mechanism is contributing to the achievement of maximal performance .

ENVIRONMENTAL ISSUES

ENVIRONMENTAL POLLUTION AND GLOBAL CLIMATE CHANGES. IMPACT OF INDUSTRIAL ACTIVITY ON ENVIRENMENT

.....45

Laura JIJĂESCU

Key words: pollution, greenhouse effect, environment protection, carbon dioxide, fuels.

Abstract: Pollution is supposed to deteriorate the atmosphere, water and soil with different chemical substances, dust and fume and represents the result of any environment modifications, creating a natural ecologic disequilibrium. The pollutants are result of industrial activity. During this activity, different fuels are burned, creating greenhouse effect gases. Carbon dioxide is

permanently retaining heat on earth surface, avoiding its reflection in the atmosphere. Thus, the greenhouse effect is produced, consisting in growth of earth temperature, melting of polar icefields, floods and so on. Due to emissions, the ozone layer changed its dimensions, and even disappeared in a few areas. This phenomenon creates climate changes, consisting of draught periods, fires and catastrophic floods. The acid rains represent another negative of the pollution, due to the transformation of nitrogen and sulphur oxides into acids. Disappearance of some forrest is a result of this phenomenon. Seawater pollution by oil represent another dangerous aspect of pollution. Environment protection represent both individual and collective preoccupation!