

CONTENTS

Metalurgia International 9/2008

ISSN 1582 – 2214

SUSTAINABLE DEVELOPMENT 5-8 PROCESS TRANSPORT 54-61

VELICU STEFAN, ZAIT DUMITRU, CORĂBIERU PETRICĂ, ANIȘOARA CORĂBIERU, VASILESCU DAN DRAGOȘ: Aspects regarding the improvement of the life metallic products management in the industry of auto components 5

CORINA MARIA DINIȘ, POP EMIL, IAGĂR ANGELA, POPA GABRIEL NICOLAE: Researches upon the hierarchical control of a conveyor belt system from the sintering plants 54

MATERIALS SCIENCE RESEARCH AND DEVELOPMENT 9-53

ADRIANA MIOARA COMȘA, NICOLAE AVRAM, DIMA ADRIAN: Refractory linings realized from refractory concretes with low hydraulic binder content 9

LAZAR GABRIEL, STAMATE MARIUS, LUMINITA BIBIRE, NEDEFF VALENTIN, IULIANA LAZAR: Diamond induced behavior of a-C:H coatings related to the thickness and UV absorption spectra15

ALEXANDRU ADRIAN, ROXANA-GABRIELA CARABET, CARCEA IOAN: Mathematical model for determining residual stresses from superficial layer at deposition and alloying by electrical spark18

PĂDUREAN IOAN, TRUȘCULESCU MARIN, ARPAD FAY, NEDELICU DORIAN, ELVIRA PĂDUREAN: About cavitation erosion resistance of the austenitic stainless steel heat treated 23

ANGELA IAGĂR, ABRUDEAN CRISTIAN, CORINA MARIA DINIȘ, PĂNOIU CAIUS: Research upon optimisation of the volume induction heating process 27

SIMONA BOICIUC, SANDA LEVCOVICI, DAN T. LEVCOVICI, CONSTANTIN GHEORGHIES: Characterisation of hard coatings obtained by laser cladding process 32

POP MIHAI – ALIN, CONSTANTINESCU ALEXANDRU: Utilization of composites for shell-type patterns manufacturing 40

OLĂH ARTHUR: Research regarding the influence of laser heat treatment upon nitrocarburated diffusion layers 43

LEPADATU V. DUMITRU: Matlab procedures for numerical solve of the vibrating string equation 48

ECONOMIC AND FINANCIAL MANAGEMENT. ACCOUNTANCY IN METALLURGY 62-102

CHICHERNEA FLORIN: Value analysis. Part I 62

CARAIANI GHEORGHE: Tendencies in the development of logistics services providers 67

LEPĂDATU V. GHEORGHE, CIOMOS VASILE: Cash flow statements (IAS 7) in management investing activities 76

BADEA G.DUMITRU, ROMAN COSTANTIN, LAURA ELLY NOVAC, IOANA GHERGHESCU: Risk management in heat treatment production units 80

ANDREEA - CATRINELA LAZĂR: "Learning Organization"- new alternative for corporations to become successful 85

POPESCU CONSTANTIN, CARMEN COSTEA, TAȘNADI ALEXANDRU, ELVIRA NICA, LIANA BADEA, STANCIU MILTIADE: Academic Organisation in the service of human autogoverning87

LEFTER VIOREL, DANIELA HÎNCU, ROMAN COSTANTIN: Environmental taxes 95

MIRONELA PÎRNĂU: Methods for knowledge acquisition ... 99

FOSECO Turbostop system – reference list..... I-II

New books, published by Romanian Metallurgical Foundation.....III-IV

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ABSTRACT

Metalurgia International 9/2008

SUSTAINABLE DEVELOPMENT 5-8

Key words: improvement life metallic products management
VELICU STEFAN, ZAIT DUMITRU, CORĂBIERU PETRICĂ, ANIȘOARA CORĂBIERU, VASILESCU DAN DRAGOȘ: Aspects regarding the improvement of the life metallic products management in the industry of auto components
Metalurgia International (vol. XIII), no.9, 2008, p. 5

The improvement of the life of the metallic products management in the industry of auto components has as a purpose to provide solutions which will allow the producers enterprises of auto components the efficient administration of the products and services during the whole life of the products, from the conception phase until the recycling one. The new way of approaching of the development in Romania of the metallic products for automobiles, promoted and studied by the authors in the present work, will contribute to the dynamism of the purchasing chain and will help the enterprises from the field to manage efficiently the change and to capitalize in a high degree the market opportunities. The authors spotlight the fact that only by perfecting the management of the products life cycle, the framing of the automobile's parts and component elements manufactured in the small and middle enterprises into the matrix cost-quality imposed by the European market can be obtained.

MATERIALS SCIENCE RESEARCH AND DEVELOPMENT 9-53

Key words: refractory linings
ADRIANA MIOARA COMȘA, NICOLAE AVRAM, DIMA ADRIAN: Refractory linings realized from refractory concretes with low hydraulic binder content
Metalurgia International (vol. XIII), no.9, 2008, p. 9

Due to the more and more severe conditions during continuous casting, the long-lasting lining of the tundish formed by embedded refractory bricks, was replaced step by step with a monolithic lining of refractory concrete with low hydraulic binder content. The paper presents the researches performed in order to obtain a mass of concrete with low hydraulic binder content BAC, which has to satisfy the users requirements. Thus, one realized 12 concrete compositions, determining some of their properties (absorption capacity, density, porosity, resistance to compression and contraction) for different temperatures. Through the knowledge about these properties, it is recommended to use these concretes in continuous steel casting machines.

Key words: diamond induced behavior of a-C:H coatings
LAZAR GABRIEL, STAMATE MARIUS, LUMINITA BIBIRE, NEDEFF VALENTIN, IULIANA LAZAR: Diamond induced behavior of a-C:H coatings related to the thickness and UV absorption spectra
Metalurgia International (vol. XIII), no.9, 2008, p. 15

Some peculiarities in ultraviolet (UV) absorption spectra for amorphous hydrogenated carbon coatings are presented. The coatings were prepared by the rf magnetron sputtering method, with a gas pressure between 0.1 and 0.3 Torr. The most significant result found was that the films deposited at high pressures (greater than 0.2 Torr) and small thickness (below 400 nm) presents some peculiarities in the UV absorption spectrum. That are corresponding to a diamond-like structure. The Tauc plot for these films, compared with the films with thickness greater than 1000 nm, presents two different regions corresponding to two different optical transitions. Films deposited under similar conditions, with a thickness greater than 1 μm , present an optical band gap around 2.5 eV and a large

sp³ ratio (greater than 85%). The results suggest a dimensional effect indicating optical absorption behavior closer to diamond.

Key words: mathematical model, residual stresses, electrical spark
ALEXANDRU ADRIAN, ROXANA-GABRIELA CARABET, CARCEA IOAN: Mathematical model for determining residual stresses from superficial layer at deposition and alloying by electrical spark
Metalurgia International (vol. XIII), no.9, 2008, p. 18

The paper presents a mathematical model for the determination of residual stresses in deposition and alloying by electrical spark. The achievement of a large amount of layers with special properties, capable of satisfying a large scale of applications is fulfilled with the help of DAES processing.

The appearance of residual stresses in DAES processing is mainly caused by the presence of non-stationary heat processes.

In order to achieve depositions with a certain weight there are necessary one or maximum two depositions. The increase of deposition specific time or the number of repeated depositions without intermediate stress relieving determines spraying of the anterior deposition and decrease of its final weight and thickness.

Key words: cavitation; erosion; heat treatment, vibratory device; erosion rate; cavitation erosion time
PĂDUREAN IOAN, TRUȘCULESCU MARIN, ARPAD FAY, NEDELICU DORIAN, ELVIRA PĂDUREAN: About cavitation erosion resistance of the austenitic stainless steel heat treated
Metalurgia International (vol. XIII), no.9, 2008, p. 23

Paper presents the experimental results obtained by testing to cavitation erosion the Austenitic stainless steel GX5CrNi19-10 in conformity with SR EN 10283 [20] after solution treatment. The test facility used is of magnetostrictive type with nickel tube. The tests have been carried out in Timisoara Hydraulic Machinery Laboratory. The results have been compared with those of the steel 40Cr10 with good but not excellent cavitation erosions and with the steels used for hydraulic turbines T07CuMoMnNiCr165-Nb and T09CuMoMnNiCr185-Ti. For comparisons have been used the characteristic cavitation erosion curves [1], [2] and it resulted that GX5CrNi19-10 has excellent cavitation erosion qualities.

Key words: induction heating, numerical modeling, numerical control, optimization
ANGELA IAGĂR, ABRUDEAN CRISTIAN, CORINA MARIA DINIȘ, PĂNOIU CAIUS: Research upon optimisation of the volume induction heating process
Metalurgia International (vol. XIII), no.9, 2008, p. 27

This work presents a program for optimization of volume induction heating process of steel semiproducts. The program is written in C++ and is based on modeling with Finite Differences Method (FDM) of electromagnetic and thermal fields from the processed material.

This work also suggests a numerical control system for the volume inductive heating process. This control system uses the results of numerical modeling.

Key words: laser cladding, nickel, microstructure, micro-hardness, diffractometry
SIMONA BOICIUC, SANDA LEVCOVICI, DAN T. LEVCOVICI, CONSTANTIN GHEORGHIES: Characterisation of hard coatings obtained by laser cladding process
Metalurgia International (vol. XIII), no.9, 2008, p. 32

The paper deals with the thermal stability of a laser clad Ni-Cr-B-Fe-Al alloy, by powder injection method. The layers hardness variation with heating temperature and treatment length

ABSTRACT

Metalurgia International 9/2008

was studied. Layers thus obtained were micro-structurally characterized and phase- quality analysis by X-ray diffractometry was performed.

Key words: shell-type patterns manufacturing
POP MIHAI – ALIN, CONSTANTINESCU ALEXANDRU:
Utilization of composites for shell-type patterns manufacturing

Metalurgia International (vol. XIII), no.9, 2008, p. 40
New technologies and materials represent always a necessity, determined by dynamical evolution of material goods production.

Composite materials have more and more spreading in many fields.

Composite materials are mixtures of two or more components, whose properties are reciprocally suitable, ensuring materials with higher properties, as compared to the initial properties.

Composite materials are utilized also for shell-type patterns, required for casting moulds manufacturing.

Key words: the influence of laser heat treatment
OLĂH ARTHUR: Research regarding the influence of laser heat treatment upon nitrocarburated diffusion layers

Metalurgia International (vol. XIII), no.9, 2008, p. 43
The paper presents the influence of laser heat treatment upon nitrocarburated diffusion layers. In first part is presented a comparative study depicting the influence of carbon containing and maintenance time upon nitrocarburated. In second part is presented the influence of heat treatment with laser radiation upon nitrocarburising microhardness and structures

Key words: matlab programming, numerical solve, vibrating string equation
LEPADATU V. DUMITRU: Matlab procedures for numerical solve of the vibrating string equation

Metalurgia International (vol. XIII), no.9, 2008, p. 48
In this paper it show how can be solved of a same problem using the matlab programming system.

We present the facility of solving this problem using finite differences method and argues the possibility to recall for this matlab procedure to others problems. We states and possibility to plot and export of the solution.

PROCESS TRANSPORT..... 54-61

Key words: belt conveyors, sintering plant, Software-oriented control system, hierarchical control system
CORINA MARIA DINIȘ, POP EMIL, IAGĂR ANGELA, POPA GABRIEL NICOLAE: Researches upon the hierarchical control of a conveyor belt system from the sintering plants

Metalurgia International (vol. XIII), no.9, 2008, p. 54
Using the software oriented technologies which contain maximum of integrated software resources in product, in this work has been developed the software for the hierarchical control of a complex conveyors system from the sintering plants. This ensures hardware simpleness, implementing of some evolved control algorithms, on-screen measuring devices, a friendly graphic interface, which makes that the entire system to show high reliability and flexibility.

Also, is presented a software-oriented control system, distributed and conceived hierarchically for a belt conveying flow, with application for material dosing within a sintering plant.

This work represents an application of the 16-bit microcontrollers and the PLCs in the hierarchical control of the belt conveyor lines from the sintering factories, or similar.

ECONOMIC AND FINANCIAL MANAGEMENT. ACCOUNTANCY IN METALLURGY 62-102

Key words: value analyse, value optimal value
CHICHERNEA FLORIN: Value analysis. Part I

Metalurgia International (vol. XIII), no.9, 2008, p. 62
The paper presents a complete study of VALUE ANALYSIS applied concretely to a selected piece of equipment. The phases and ITERATIVE operation of the Value Analysis method are presented.

Value Analysis combines both ENGINEERING and ECONOMICS without, however, placing neither ENGINEERING or ECONOMICS first. They both are similarly important, as can be concluded by the end of this paper.

Key words: logistics, 4PL, GPN (Global Production Networks), hybrid networks
CARAIANI GHEORGHE: Tendencies in the development of logistics services providers

Metalurgia International (vol. XIII), no.9, 2008, p. 67
The issue of supply and demand represents the motor force of the history of humanity and is directly linked to transport.

The supply chains imply many groups of forwarder partners and logistics is the key through which they are held together. Logistics has known a rapid evolution marked by many structural major tendencies. In this sense the companies who offer a range of logistics services for their customers were developed, becoming today's "4PL".

Key words: financial statements, balance sheet, income statements, cash flow statement, IAS/IFRS
LEPĂDATU V. GHEORGHE, CIOMOS VASILE: Cash flow statements (IAS 7) in management investing activities

Metalurgia International (vol. XIII), no.9, 2008, p. 76
The provision of transparent and useful information on market participants and their transaction is essential for an orderly and efficient market, and it is one of the most important preconditions for imposing market discipline. Left to themselves, markets may not generate sufficient levels of disclosure. Market forces would normally balance the marginal benefits and marginal costs of additional information disclosure and the end result may not be what the market participants really need.

Key words: risk management, heat treatment units, evaluation, safety
BADEA G.DUMITRU, ROMAN COSTANTIN, LAURA ELLY NOVAC, IOANA GHERGHESCU: Risk management in heat treatment production units

Metalurgia International (vol. XIII), no.9, 2008, p. 80
In case of specialized fields, such as metallurgic industry, the risk management process becomes even more important and its approach more and more subjective. Among the many exposures that this field encounters, a significant one is the human resource exposure. Safety measures must be identified and implemented so that the entire organization is limiting its exposure to risks.

Key words: learning organization, core ideology, lifelong learning, corporate learning culture
ANDREEA-CATRINELA LAZĂR: "Learning Organization"- new alternative for corporations to become successful

Metalurgia International (vol. XIII), no.9, 2008, p. 85
Learning Organizations are those that facilitate the learning and professional improvement of all their members and

ABSTRACT

Metalurgia International 9/2008

continually transform themselves. They develop in house systems, mechanisms and processes that are used to continually enhance their capabilities to achieve sustainable objectives for themselves and the communities in which they perform their activities.

Key words: living entity, educational re-spiritualisation, health of academic organisation, intelligent human autogoverning
POPESCU CONSTANTIN, CARMEN COSTEA, TAŞNADI ALEXANDRU, ELVIRA NICA, LIANA BADEA, STANCIU MILTIADE: Academic Organisation in the service of human autogoverning

Metalurgia International (vol. XIII), no.9, 2008, p. 87

The true education has to set the foundation of the intelligent human autogoverning. In the spirit of this idea, the health of the collegiate organization becomes the supreme value for the appreciation of the visibility of any educational system. Determining the Academic Health Indicator based on the values on which the educational system is constructed and functions represents the change from within, the expression that replaces the horizontal transition from past and present with the vertical transition for the future. This is the process that will make the individual ready for the change that wishes to accomplish in life.

Key words: environmental taxes

LEFTER VIOREL, DANIELA HÎNCU, ROMAN COSTANTIN:

Environmental taxes

Metalurgia International (vol. XIII), no.9, 2008, p. 95

Creating the environmental tax as instrument of efficient control upon the development of a "clean economy" and including this tax in the fiscal policy of the European Union and implicitly of Romania can be a solid starting point for a fiscal reform at European or even at international level. Our research concerns an imminent fiscal reform of the Third Millennium.

Key words: knowledge base, expert system, cognitician

MIRONELA PÎRNĂU: Methods for knowledge acquisition

Metalurgia International (vol. XIII), no.9, 2008, p. 99

The expert systems technology has been improving continuously up to the level where the cognitician and the expert can be assisted in doing their work by environments and automated programs generated and specialized instruments. In order to build an expert system, the cognitician must develop a certain program able to emulate the activity of an expert in solving the occurred problems. The system should reproduce as accurate as possible the expert's performance. The power of expert systems to solve the problems derives especially from the owned knowledge and less from inferential used mechanisms.

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