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ISSN 0461-9579

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MATERIALS SCIENCE RESEARCH AND DEVELOPMENT

QUANTITATIVE ANALYSIS OF SOME LAYERS DEPOSITED ON COPPER SUPPORT

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Marius VASILESCU, Ruxandra PĂUNESCU, Ioana GHERGHESCU

Key words: quantitative metallographical analysis, ceramic layers, arc plasma spray.

Abstract. *The paper presents some quantitative metallographical analysis done on copper samples covered with different types of ceramic layers by arc plasma spray. Prior to the ceramic deposition itself, a bond coating made of a Ni, Co, Cr, Al and Y complex alloy was realized, for each and every sample. The quantitative metallographical analysis aimed to characterize the depositions as for their thickness and adherence on the copper support.*

CARBON DIOXIDE EMISSIONS REDUCTION POTENTIAL OF SPARK IGNITION ENGINES VALVE TRAIN DIAMOND LIKE CARBON COATING

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Adrian IRIMESCU, Nicolae LONTIȘ, Ioana IONEL, Ioan PĂDUREAN

Key words: Diamond like carbon (DLC) coating, CO₂ emissions, Spark ignition engines, Valve-train

Abstract: Diamond Like Carbon (DLC) coatings offer better friction properties and as the cost of reducing Internal Combustion (IC) engines pollution levels are becoming ever higher, reducing the friction in auxiliary systems like the valve train can be an economically viable way of reducing fuel consumption and CO₂ emissions. Being a product of perfect combustion, carbon dioxide emissions

can only be reduced by lowering fuel consumption. With vehicle production growing annually and pressure on manufacturers to reduce vehicle emissions, innovative methods will have to be found to make engines more efficient. Driving the valve train requires power from the engine and any reduction in friction losses equals better fuel economy and lower CO₂ emissions.

THE INFLUENCE OF MOULD MESHING ON THE 3D SIMULATION OF CASTING SOLIDIFICATION

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

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

Abstract: *The paper presents the results of a study about the influence of meshing size of moulds assembly on the 3D simulation of casting solidification. It was analyzed the case of simulating the solidification of a part cast in grey cast iron, cubic shape, with the side $a=40$ mm. There were done many solidification simulations for different meshing of the mould in cubic elements with the side $\Delta = 1 \div 8$ 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. Reducing the elements size under 2 mm is unsuitable because leads to very long computing time for simulation. For big and very big parts the optimal value of the mesh size for mould assembly is bigger because the great number of elements leads to long simulation time.*

ENVIRONMENTAL ISSUES

LIDAR SYSTEM FOR INVESTIGATION OF ATMOSPHERIC AEROSOLS

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Ion VETRES, Ioana IONEL, Ioan Pădurean, Nicolae LONTIȘ

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

Abstract: *Atmospheric aerosols have a large impact on human health and to the radiative balance of the earth.*

They consist in different size of dust, water vapor and different chemicals harmful to human health. The need to know the dynamics and origins of these pollutants were developed Lidar systems, are similar to radar systems. With this kind of system can be done vertical profiling of pollutants and mapping of large areas by scanning.

ENVIRONMENT IMPACT OF THE FLUE GASES FROM 1000 kW HYDRAULIC DIESEL ENGINE LOCOMOTIVE

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Ramon-Mihai BALOGH , Ioana IONEL , Ioan PĂDUREAN , Luisa DUNGAN

Key words: environment, pollution, environment impact.

Abstract: *Environmentally, the main concern of the railway transporters and rail vehicles constructors is to determine pollution level and reducing the chemical pollution of the locomotives and rail buses equipped with diesel engine. The paper presents the environment impact based on real measurements made at different speed steps of hydraulic diesel locomotive, LDH 1000 kW.*

ECONOMICAL MANAGEMENT

RELATIONSHIP WITH CUSTOMERS AND MARKET POSITION OF COMPANIES USING MODERN ACCOUNTANCY INSTRUMENT

.....33

Gheorghe V. LEPADATU

Key words: accounting tools, strategic management, budget.

Abstract: *Forecasting methods are based on accounting tools, such as: balance-sheet, profit and loss account, budget, investment plan. The main effect of strategy is the successful positioning of the company on the market, respectively, a satisfying participation while the expected result of the operational plan is to perform the planned activities and get the expected income.*

regarding the subjective growth of inflation could appear. Successful implementation of the common monetary politics, low levels of interest rate, economic growth and investment growth are the main benefits of participation to a monetary union. At the same time, diminution of international transaction costs, elimination of speculative attack on national currency, and elimination of costs related to protection against currency risk, intensification of competition with positive results on productivity growth, are also expected.

DOES EURO ENCOURAGE OR DELAY STRUCTURAL REFORM?

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Roxana Mihaela CALIMACHI (CHIRIACESCU)

Key words: economic integration, custom union, free exchange zone, common market, economic and monetary union, complete economic union, optimal monetary zone, costs and benefits of unique currency exchange rate, external competitiveness, Euro zone.

Abstract: *Structural reforms are essential for European economic development, representing the required premise for achievement of a real and sustainable convergence in EU territory. Growth of competition intensity is the main purpose of these reforms. Under these conditions prices for goods and services diminish and real salary growth. Profit of companies, as margin is in continuous diminution. In short terms, growth of tendency for consumption will be expected, being correlated to real salary level, more than to profit level. Consumption growth will feed production growth and employment rate growth. Specific programs destined to sustainable development have to be implemented.*

COSTS AND BENEFITS OF PARTICIPATION TO ECONOMIC AND MONETARY UNION

.....36

Roxana Mihaela CALIMACHI (CHIRIACESCU)

Key words: economic integration, custom union, free exchange zone, common market, economic and monetary union, complete economic union, optimal monetary zone, costs and benefits of unique currency exchange rate, external competitiveness, Euro zone.

Abstract: *Every phase of integration, known at European level is characterized by the trend to eliminate discrimination between states, is required. The cooperation politics are performed under the following phases: information, consultancy, coordination, unification. Costs, associated to the participation in a monetary union are derived from renunciation of direct control of national currency and its exchange rate, which in the past were utilized for both inflation mitigation and growth of competitiveness for export products. Some problems*