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Aspects of adhesive bonded surface mechanical treatment by grit blasting (M. Müller, M. Jirka, R. Chotěborský) 63

An Adhesive bonded surface mechanical treatment is one of necessary steps in an adhesive bonding technology application. A grit blasting ranges among prospective adhesive bonded surface treatment technologies. A resulted surface structure depends on many factors. A grit blasting material grain size together with specific fraction size belongs to basic parameters.

This paper deals with an influence of the grain on surface roughness parameters as well as on a charge of an adhesive bond strength.

Key words: Adhesive bonding, grain size, grit blasting, surface roughness

Discrete-controlled continuous processes with prediction of limit value of determining dynamic variable with time delay (R. Krehel) 66

This article describes a new concept evolution to the simulation process of cutting tool size abrasion with subsequent element of correction in limits of parametrically defined optimal feeding. It deals only with one aspect concerning the polynomial transformation of experimentally obtained discrete values of cutter head position and their integration into continuous functional form compatible with used software environment.

Transient diagram of transponder MOBY I – MDS 439E (M. Růžička, G. Künzel)..... 68

This contribution describes an object identification in the extreme industrial environment, specifically in environments with high temperatures. It is focused on analysis of the transponder MOBY I – MDS 439E - its features and behaviour in such environments. The results of measuring the dependence of internal temperature on external temperature were used to create a transient diagram, transfer function and the transfer function optimised employing the Matlab – Simulink software. These results will be used for the design of an identification system - most notably for its adjustment during conveyor systems' tact increase and the development and enhancement of heat-isolated features.

Evaluation and quantification of the reliability interval of measurement parameters (M. Borovička) 70

The article presents an evaluation and quantification of the reliability interval of measurement parameters based on the theory expressing an uncertainty in measurement as was recommended by the CIPM (Comité International des Poids et Mesures) in 1993. Numerical values of the reliability interval are quantified by statistical methods. The quantification technique for reliability interval has three components. The reliability interval u_c is obtained as a statistical calculation of measurement parameters x_i using the reliability coefficient $e = 2.72$. The combined reliability interval u_{cc} is obtained as a statistical (square) sum of reliability interval u_c and uncertainty of parameters measuring device u_b . The reliability interval of measurement parameters U_c is obtained as a multiplication of combined reliability interval u_{cc} with coverage factor k relevant to the probability P .

The reliability interval of measurement parameters is used for evaluation and managing technology processes with aim to secure the quality of products and the efficiency of production.

Mathematical model of the vehicle movement (J. Hromádko, V. Hönig, P. Miler, J. Hromádko)..... 72

Abstract. The aim of this article is to design a mathematic model of the vehicle movement, which will be able indirectly determine the immediate and cumulate value of the production of emissions

and the fuel consumption. These determined and cumulated value of emissions or more precisely fuel consumption can be paid for and stimulate the drivers to be considerable to the environment in this way. A principle of the method is based on determination of engine load course that is possible to be assigned to the production of harmful emission and the fuel consumption. Characteristics of the engine's emissions and the fuel consumption must be known preliminary. The model of the vehicle movement is used to determine the engine load course.

Keywords. driving resistance, engine speed, engine torque, fuel consumption, harmful emissions

Interference of diffuse electron waves in metallic nanometric conductors under the equilibrium regime (J. Pospíšil, J. Hrdý, F. Pluháček) 75

The fundamental quantum-statistical and electromagnetical theoretical interpretation of the electrical conductance of diffuse free electrons in a nanometric metallic conductor under its thermodynamical, electrical and statistical equilibrium, regarding to an entrance and exit electron reservoir, is introduced in the present article. Such a conductance is treated as the consequence of the quantum-mechanical phase coherence and interference of the adequate de Broglie's corpuscular (electron) waves in a metallic nanosample under the low absolute temperature. The formulae presented follow from application of the quantum Fermi-Dirac statistics of energetic distributions of free electrons in a metallic nanosample and from considerations about the two-beam interference of totally coherent electron waves over the entire nanosample, whose relative stochastic phase is controlled by an external tuning magnetic field. Furthermore, some contemporary methods of experimental verification of formulae mentioned above for a ring and straight metallic nanosample and homogeneous tuning magnetostatic field are then described and evaluated in the closing text of this article.

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More than we could expect (P. Horňák, A. Janíčková, F. Mikuláš) 88

HEAT – High Elevation Auger Telescopes (D. Mandát, M. Palatka, M. Hrabovský, P. Schovánek, M. Pech) 90

ANOTACE

Korekčné koeficienty pre výpočet Youngovho modulu z rezonančnej frekvencie ohybových kmitov – revízia (A. Lintnerová, I. Medveď, V. Labaš) 83

V príspevku poukazujeme na to, že korekčné koeficienty, ktoré použili Štubňa a Trník na výpočet Youngovho modulu z rezonančnej frekvencie ohybových kmitov (Journal of Mechanical Engineering – Strojniški vestnik. 52, 2006, p. 317), je možné použiť s veľmi dobrou presnosťou iba ak Poissonovo číslo $\mu = 0.25 \pm 0.05$. Po preskúmaní ich výsledkov navrhujeme presnejšie hodnoty korekčných koeficientov pre prvú vyššiu frekvenciu a hranolovú vzorku so štvorcovým prierezom, kedy je ich nesúlad najzjavnejší.