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STATISTICAL METHODOLOGY FOR PREDICTION THE LIFE OF AEROSPACE COMPONENTS USING ACCELERATED EXPERIMENTS UNDER IMPACT TESTING

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The main scope of this paper is to estimate the lifetime and the reliability parameters of an industrial product (from aerospace area) subjected to accelerated experiment. The reliability indicators (reliability function, unreliability function, failure rate, probability density function, mean time to failure) for the analyzed case study are determined using the accelerated life testing under impact in the laboratory. For the case study analysis it used ReliaSoft ALTA 7 and Weibull softwares that provides a complete array of analysis tools for data from quantitative accelerated life tests. In this paper, the analysis with finite elements was used to validate and to compare the data resulted from the experimental tests of the landing skids from the structure of the small helicopter. FEA is an effective calculus tool that can successfully replace the experimental results, which has the purpose of streamlining the development costs of the products.

ANALYSE CONSTRUCTIVE ET FONCTIONELLE D'UNE BOITE DE VITESSE POUR LA MACHINE DE TAILLE DE PIERRE

(CONSTRUCTIVE AND FUNCTIONAL ANALYSE OF A GEARBOX FROM THE CUTTING STRONE MACHINE)

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The paper proposes a constructive and functional study of a cutting stone machine used in the context of a production society of stone quarry in Tunisia. It analyse, from the technical point of view, the operation and construction of the gearbox of the machine, which is integrated in a hydraulic transmission. Finally, a 3D model of the gearbox is proposed.

POST-ELASTIC BEHAVIOR OF WIDE FLANGE STEEL STRUCTURE

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Metallic materials with porous structure or metallic foams are a new class of materials with low densities

and new physical, mechanical, thermal, electrical and acoustic properties. They offer a new material, potential material for lightweight structures, for energy absorption and thermal management. At this time the foam metal used is based on Al, Ni,Sn,Pb. This paper attempts to understand and discover the mechanical properties and the material compoment in various fields.The research work in the paper uses a finite element analysis software (Abaqus) to simulate the behavior of a sample of metal foam based on SnPb and the results are compared with results obtained from experimental analysis.

CNC MILLING OF CLOSED CONTOURS USING FACI-13 SOFTWARE SYSTEM

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This paper proposes an alternative to using established software systems, like CAD / CAM / CAE, for CNC processing by milling closed planar contours using end mills or ball end mills. The proposed software package has been designed for small and medium enterprises whose activity is based on contour manufacturing and for whom it is not justified, from a financial standpoint, purchasing a complex software CAD / CAM / CAE produced by established companies. The software package presented in this paper offers facilities both in the phase of designing the contours, but also in the phase of their manufacturing process, through a semi-automation of the two processes. This is accomplished through the use of predefined geometric configurations and by an interface that automates many of the specific CAM phase steps. There are also accepted several options for defining new geometries – for the CAD phase. Another advantage, far from being insignificant, of this system, is the acquisition cost comparing with the cost of the established systems that are on the market nowadays.

TECHNOLOGY FOR ZINC NANOCOMPOSITE COATINGS WITH HIGH CORROSION RESISTENCE

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This paper presents experimental date regarding nanocomposite coatings with Zn-Fe(1-3%) and Zn-Ni(7-15%) metallic matrix and ceramic nanoparticles of aluminium oxide and TiO₂. Deposits were obtained using alkaline electrolytes. The effect of molybdenum ions, added into electrolyte, on corrosion resistance was studied. Structural characterization using

scanning microscopy showed that the deposits are nanocrystalline.

STUDY ON THE STABILITY OF RESTORATIVE MATERIALS IN THE ORAL ENVIRONMENT

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Chemical composition of restorative materials play an especially important role in determining the corrosion behaviour, and in appreciation of their biocompatibility. Interaction between biological environment and its structural phases is the one who determines what items will be issued, but the reaction of the body's response to this phenomenon.

ASPECTS OF THE TRIBOLOGICAL BEHAVIOR SIMULATION OF CERAMIC MATERIAL IN ORAL ENVIRONMENT

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Stomatognathic system simulators allow carrying out experimental determinations respecting both the kinematics and dynamics of mandibular. It takes a few variables to describe the precise process simulation: the force of friction, frequency, movement, the number of cycles, lubricants, surface roughness, Poisson and the module of elasticity of antagonistic bodies, energy dissipated. Using a surface as a reference, the volume of wear can be determined precisely and compared.

ETUDE EXPERIMENTALE DU PHENOMENE DU STICK – SLIP

(EXPERIMENTAL STUDY OF THE STICK – SLIP PHENOMENON)

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The paper presents an experimental study of the phenomenon of stick-slip, on a test bench provided by the company GUNT. It analysis the behavior of three friction couples in dry conditions: steel – steel, steel - bronze and steel – polyamide. The evaluated parameter was the variation of the friction coefficient as a function of the normal force and the slip rate. Finally, it was determined the best pair of materials in terms of stick-slip.

OPTIMAL CONCEPTS AND DEVELOPMENTS IN THE OPTIMAL DESIGN

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The main goal of this paper lies in emphasizing once again the advantages of optimal design of all sorts of products as compared to the classical design method (i.e. trial and error method) currently used to tackle real-engineering problems. In this paper we describe five interesting optimal design examples. These optimization problems were solved by using our own Cambrian Software (which belongs to the Optimal Design Centre of Technical University of Cluj-Napoca) that implements a large number of Evolutionary Algorithms.

“PERSPECTIVES 360” – AN USEFUL INSTRUMENT FOR SKILLS ASSESSMENT AND TRAINING

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Perspectives 360 is one of the most simple and effective 360 assessment tool for the use of the SMEs managers by adapting and transferring this skills assessment tool from UK to 5 European countries: Greece, Slovenia, Lithuania, Romania and Ireland. It is “a time and resource efficient system that targets management development needs and improved performance”.

MAXIMISING THE VALUES OF “PERSPECTIVES 360” INSTRUMENT

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The “Perspectives 360” instrument is a simple and effective skills assessment system for assessing the skills of managers. The instrument is focused on the assessment of managers, Human Resource specialists, trainers, business coaches, management consultants and business advisors and it provides valuable information on their perceived skills. It ideal for first line managers, middle and senior managers, relatively new managers and experienced managers because there are taking into account the different perspectives of the people invited to assess.