

## IMPACT OF PLASMA NITRIDING ON DEPTH OF DIFFUSION LAYER IN SELECTED STRUCTURAL STEELS

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**Abstract:** Plasma-nitriding technology not only substantially increases surface hardness, fatigue strength but also corrosion resistance. This article presents a study of the effect of the process parameters on the depth of the diffusion layer in the selected plasma-nitrided structural steels based on the Vickers microhardness test.

**Keywords:** Plasma-nitriding. Surface hardness. Microhardness. Steels.

## THE USE OF LINEAR PROGRAMMING METHODS TO OPTIMIZE TECHNOGENIC RISKS IN THERMAL POWER ENGINEERING

Inga URIADNIKOVA

**Abstract:** The paper shows that a complex technical system is described by nonlinear mathematical relationships that create significant challenges in optimizing its operation. Presented optimization of technological and environmental risks of complex systems in the presence of non-linear constraints. Some aspects of optimization of technological and environmental risks of complex systems using linear programming were discussed.

**Keywords:** Technological and environmental risks. Linear programming, optimization.

## SPEED COMPARISON OF THE ADDERS IN FPGA

Michal TURČANÍK

**Abstract:** Security threats are affecting the evolution in cryptographic algorithms, and modular arithmetic is an important part of these algorithms, especially in the case of public-key cryptosystems. To obtain optimal system performance and not to lose physical security, it is desirable to implement cryptographic algorithms in hardware. However, many public-key cryptographic algorithms require the implementation of modular arithmetic, specifically modular multiplication, for operands of 1024 bits in length. Field Programmable Gate Arrays (FPGAs) are an appropriate option for achieving this goal. The targeted FPGA will have been designed with the architectural requirements for wide-operand modular arithmetic in mind in an effort to maximize system performance. This contribution analyzes existing FPGA architectures with respect to arithmetic operations. It also proposes a new FPGA realization of wide-operand additions required for modular multiplication.

**Keywords:** FPGA. Public-key cryptography. Adder.

## INCREASING OF MANET THROUGHPUT USING QUASI-OPTIMAL UAVS PLACEMENT CONTROL

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**Abstract:** The paper is devoted to development of new method for increasing mobile ad-hoc networks throughput based on quasi-optimal placement control of unmanned aerial vehicles in view of the rapid and unpredictable movement of mobile subscribers. Method application allows increasing of network throughput to 15-20 % in comparison with existing methods. Deviations of sub-optimal solutions from optimal, received by exhaustive method, are not more than 5-7 %.

**Keywords:** Mobile ad-hoc network. Unmanned aerial vehicle. Network throughput. Placement control.

## THE ARMED FORCES OF THE REPUBLIC OF POLAND IN THE ACTIVITIES FOR SECURITY

Zbigniew GRZYWNA

**Abstract:** Presented action plans should be outlined in order to show how to integrate plans and works focused on technologies and systems related to the security issues. The use of some available units of forces, resources and means should be in place, depending on the thematic areas, these kind of tasks are inherent for the armed forces of the Republic of Poland. Changes in the security environment in Europe and around the world have contributed to decreasing the level of likelihood of military conflict. However, the possibility of non-military threats has not been eliminated. Their importance, the extent and type are showing trends in growth, being widespread on a regional and even continental scale.

**Keywords:** Security. Military and non military threats. Armed forces.

## ETHICS OF ORGANIZATION CULTURE AS AN EXISTING CONDITION OF SECURITY CULTURE

Juliusz PIWOWARSKI

**Abstract:** The main goal of this article is to show the role of ethics in organization culture. For this purpose the author uses specific perspective – securitology, that is the science about security. This point of view is very important, because it combines inter- and multidisciplinary character.

**Keywords:** Organization culture. Security culture. Ethics.

## RESOLUTION OF CONFLICTS IN CROSS-FUNCTIONAL TEAMS

Application of Hackman's model of intractable conflicts to the  
process of Integrated Business Planning

Peter JUREČKA

**Abstract:** If not managed properly, issues based on misaligned incentives and expectations from representatives of various business functions within the process of business planning may evolve into intractable conflicts. This article deals with analysis of such dissents. On the application of Hackman's model of effective teams, potential remedial measures for conflict mitigation or avoidance are demonstrated. The example illustrated on the case of Integrated Business Planning can be also viewed as application of general management theory related to cross-functional teams to the business process environment.

**Keywords:** Integrated business planning. Sales and operations planning S&OP. Conflict resolution. Cross-functional teams.

## DANGER - A SUBJECTIVE EVALUATION OF OBJECTIVE REALITY

Vasyl ZAPLATYNSKYI

**Abstract:** The article is devoted to the ground of term «danger». Existent today numerous determinations of this term substantially differentiate on sense and are not general. In the article, taking logical and philosophical approaches, a new determination of this term is formulated. That was basic pre-condition, that danger, as well as safety, are notions subjective, which can change because of practical activity of man, development of science and society. These notions ascend to notions well and it is badly, which can be perceive even at an instinctive level. The decision of question of formulation of base terms is of not only interest from point of theoretical science, but it has an important practical aspect. In history there are the enough examples of good actions, including directed on the rise of safety, which turned around, farther more, by the calamities, catastrophes and etc.

The new definition of "danger" is as follows: danger - a subjective concept that refers to the possibility of circumstances in which the matter field, information, energy, or a combination thereof may affect the way a complex system, it would lead to consequences that are perceived and valued stakeholders (at the level of thinking, feeling or instincts) at a certain stage of development of the perceiver as negative until after the implementation of the risk or occurrence of adverse effects.

**Keywords:** Danger. Determinations. Circumstances.

## **PROCESS AND METHODOLOGY OF APPRAISAL OF OFFICERS OF THE POLICE OF THE CZECH REPUBLIC**

Petr JEDINÁK, Tomáš ŘÍMSKÝ

**Abstract:** This paper provides information about setting of appraisal processes for officers of the Police of the Czech Republic. For each organization it is fairly important to have feedback to the applied appraisal methodology and in that way the organisation becomes aware of the way the appraisal system is perceived by individual officers. This goal is reached in practice by conducting specific research projects.

**Keywords:** Police offices, appraisal methodology, work performance, feedback, research.

## **COST ANALYSIS OF TRANSPORT**

Michal ZELENÁK

**Abstract:** The Army of the Czech Republic in its structures retains the elements securing the activities necessary to ensure its operation. One of these activities is the transport of oversized objects by the units of the Logistics Division. This text identifies some of the costs and related expenses connected with the preservation of own mobility. The obtained data are compared with the price of identical activities provided by external carriers.

**Keywords:** Analysis. Cost. Compared. Military. Repair. Transport. Value.

## **PSYCHO-SOCIAL ASPECTS OF STADIUM HOOLIGANISM**

Janusz ZIELINSKI, Wojciech BAJOREK

**Abstracts:** Objectives: The main aim of the research was to present the difference in personal preferences in the groups of football fans "K" and hooligans "H".

Method: The author of SUI using the theory of interpersonal functioning, created a test allowing the diagnosis of functioning and malfunctioning of personality. According to the answers provided by 70 respondents, 12 scales showing a profile of a person were created. They are as follows: managing – authoritarian, over protective – patronizing, cooperative-friendly, dependable, withdrawing – masochistic, rebelling- suspicious, aggressive – sadistic, competitive- narcissi, self – accepting, lie, reliable, hopeless. This tool allowed the measurement of groups' attitude. 120 respondents (aged 19-28) where 60 were hooligans, the so called pseudo-fans (basic group) calling themselves the fans of Rzeszów football teams and 60 students of Rzeszów University - declaring to be football fans.

Result: Using the SUI procedure allows to capture the similarities of interpersonal functioning of two groups: football fans and hooligans. It turns out that in the majority of life situations the representatives of these groups react differently, which confirms the similarity of created profiles ( $r_{ps} = 0.16$ ). We already know that hooligans seek actions that would allow them, even on a minimal, to satisfy their need of strong experience. Analysis of particular SUI segments showed that the respondents in the group (K) in contrast to the respondents (H) are characterized by the so-called pro-social syndrome. The average score in the scales 2, 3, 4 means that these respondents will be represented by behavior socially acceptable based on meeting the needs of the common environment. Hostility syndrome (scales 5, 6 and 7, often 8) is arranged differently than in the previous scales. In this case, hooligans are the leaders. Distrust, suspicion and overt aggression are traits that are characteristic for individuals with higher values in these.

Conclusion: The interpretation procedure used by the author of SUI allowed to assess the research group profile. Analyzing the behavior of hooligans, pseudo fans and football fans of respondents with neurasthenia, depression and hysteria, it turned out that there is a high probability concerning football lovers and people with mental disorders. In contrast, hooligans represent a strong anti-social attitude.

**Keywords:** Stadium hooliganism. Scale SUI, Pro-social syndrome.