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Μεθοδολογία για τη Μεγιστοποίηση Κερδών των Επιχειρήσεων Παραγωγής Ηλεκτρικής Ενέργειας σε Ανταγωνιστικό Περιβάλλον Αγοράς (Methodology for Profit Maximization of Electrical Energy Production in a Competitive Market)

Tech. Chron. Sci J.T.C.G., Jan. – Apr. 2010, vol. 1, no 1, pp. 127-144 , tab. 9, 21 ref.

This paper proposes a dynamic programming solution to the price-based unit commitment problem. All the usual unit constraints are considered. Limits on a generating unit's ramping capability as well as the minimum up time and minimum down time constraints are included in the problem formulation. Test results for one unit and twenty units are presented and conclusions are drawn.

(Author)

K-W: Power Generation, Dynamic Programming, Competitive Electric Energy Market, System Operation Profit, Optimization, Generation Dispatch

Kotsopoulos, S.

Η Δράση της Αρχής της Ταυτότητας στα Συστήματα Σχεδιασμού (The Function of Identity in Design Systems)

Tech. Chron. Sci J.T.C.G., Jan. – Apr. 2010, vol. 1, no 1, pp. 145-160, tab. , 30 ref.

The paper examines the function of the concept of identity in the context of analogue and digital design systems. The approach falls within the stream of research of shape computation theory. After a brief sketch of the historical and logical origin of identity, the application of identities on forms made out of points, lines, planes and solids is discussed. The paper does not focus on the mathematical details, which can be found in Stiny 1982, 1993, 1994, 1996. Based on the mathematical and visual attributes of the basic elements of space, the presentation of examples with lines and points demonstrates that in design one selects a framework of structural organization, which has great implications for the production of designs. The implications of selecting a framework based on indivisible elements, in the composition and decomposition forms and in their description by digital computers, are also discussed.

(Author)

K-W: Design Systems, Shape Grammars, Shape Computation Theory, Identity Concept

Papakostas, K.

Tsilingiridis, G., Kyriakis, N. (AUTH, Mechanical Engineering Department)

Εκτίμηση Βαθμοημερών Ψύξης 50 Ελληνικών Πόλεων (Cooling Degree-days for 50 Greek Cities)

Tech. Chron. Sci J.T.C.G., Jan. – Apr. 2010, vol. 1, no 1, pp. 161-174, tab. 1, 17 ref.

The purpose of this study is to determine and present cooling degree-day data, for various base temperatures and for 50 Greek cities. The degree-day data for Athens and Thessaloniki were calculated with the use of hourly dry bulb temperature records from the meteorological stations of the National Observatory of Athens and of the Aristotle University of Thessaloniki. Due to the lack of hourly or daily temperature data for the other 48 cities, a reliable model was adopted for the estimation of their cooling degree days. The degree-day data were calculated for every month of the heating period and for base temperatures from 20°C to 28°C in 2°C steps. The results are presented in tabular form and can be used for the estimation of the required cooling energy of buildings, according to the variable base degree-day method.

(Authors)

K-W: Climatological, Cooling Degreedays

Koutsourakis, N.

Ροή και Διασπορά Ρύπων σε Οδικές Χαράδρες: Ανασκόπηση (Flow and pollutant dispersion in street canyons: A review)

Tech. Chron. Sci J.T.C.G., Jan. – Apr. 2010, vol. 1, no 1, pp. 175-190, tab. , 82 ref.

A street-canyon is the urban area between two successive rows of buildings that includes a pollution-emitting street. An ambient wind perpendicular to the street axis above this geometry causes the formation of a big recirculation vortex, which in turn results in pollution trapping inside the canyon. This article provides all the main characteristics of the fluid flow and pollutant dispersion of the street canyon in a single work. A systematic review of a large part of the existing literature on the subject is attempted and most of the main relevant pa-

pers are referenced. The main intent of this work is to provide valuable preliminary assistance to everyone who is interested in the physical phenomena that take place inside urban street canyons.

(Author)

K-W: Street Canyon, Urban Pollution, Pollutant Dispersion, Computational Fluid Dynamics

Kolettas, P.

Vafeidis, A., Agioyantis, Z. (Technical University of Crete, Department of Mineral Resources)

Πρότυπη Μέθοδος Γεωφυσικής Διερεύνησης Υπεδάφους, μέσω Συχνολογικού Προσδιορισμού Σεισμικών Κυμάτων και Πιλοτική Εφαρμογή της σε Καρστικούς Ασβεστόλιθους του Νεογενούς στην Περιοχή Κουνουπιδιανά, Χανίων (A Novel Method for the Geophysical Characterization of the Subsoil Via Frequency Analysis of Seismic Waves)

Tech. Chron. Sci J.T.C.G., Jan. – Apr. 2010, vol. 1, no 1, pp. 191-200 , tab. 1, 9 ref.

The development of novel methods for the investigation of the subsoil contributes to the improvement of geotechnical research, enhances the obtained geotechnical characterization and may reduce the investigation cost by reducing the number of required tests.

This study presents a systematic effort for the processing and evaluation of the geological, geophysical, drilling and laboratory data that may be obtained as a result of a comprehensive seismic refraction study of the subsoil. Seismic data are processed using a novel technique of spectral analysis available through special Matlab packages employing Fourier transform methods.

(Authors)

K-W: Seismic Frequency, Geotechnical Parameters by Seismic Surveying, Detection of Points of Failure, Seismic Methods

Kelessidis, K. (Technical University of Crete, Department of Mineral Resources Engineering)

Πρόβλεψη Διατρησιμότητας Πετρωμάτων στις Γεωτρήσεις Έρευνας Ορυκτών και Υδρογονανθράκων – Πόσο Κοντά Είμαστε; (Prediction of Rock Drillability for Exploration Drilling For Minerals and Hydrocarbons – How Close Are We?)

Tech. Chron. Sci J.T.C.G., Jan. – Apr. 2010, vol. 1, no 1, pp. 201-218, tab. , 58 ref.

In this article an analysis is presented of the suggested equations that predict rock drillability in exploration drilling for minerals and hydrocarbons. What then becomes evident is the unsuccessful attempts to date, because the phenomenon is very complex and involves the interaction of the rock bit and the rock. At the same time it becomes essential that drilling data from the lab and the field should be fully exploited. Use of specific energy, the energy spent by the drilling rig per unit volume of rock, allows us to some extent to predict rock drillability, especially when comparable data for calibration exist. In this paper a new way of analyzing and presenting drilling field and laboratory data is proposed, which allows better understanding of the effect the different parameters have on rock drillability and its prediction.

(Author)

K-W: Rock Drilling, Specific Energy, Drillability prediction