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ΚΟΣΜΗΤΟΡΑΣ

Προς τα Μέλη ΔΕΠ της
Σχολής Μηχ/γων
Μηχ/κών

ΠΡΟΣΚΛΗΣΗ

Σας προσκαλούμε στην παρουσίαση της Διδακτορικής Διατριβής του **Υ.Δ. κ. Ντζερεμέ Παναγιώτη**, διπλωματούχου Μηχανολόγος Μηχανικός του ΕΜΠ, που εκπόνησε στον Τομέα Βιομηχανικής Διοίκησης & Επιχειρησιακής Έρευνας η οποία θα πραγματοποιηθεί την Τετάρτη 17 Απριλίου 2019, ώρα 15:30μ.μ. στην αίθουσα 102, κτίριο Ζ της Σχολής Μηχανολόγων Μηχανικών ΕΜΠ - Πολυτεχνειούπολη Ζωγράφου. Ο ελληνικός τίτλος της Διδακτορικής Διατριβής είναι ο εξής :

**«ΑΝΑΠΤΥΞΗ ΠΟΣΟΤΙΚΗΣ ΜΕΘΟΔΟΥ ΑΠΟΤΙΜΗΣΗΣ
ΕΠΙΚΙΝΔΥΝΟΤΗΤΑΣ ΠΥΡΚΑΓΙΑΣ ΣΕ ΥΠΟΔΟΜΩΝ ΖΩΤΙΚΗΣ
ΣΗΜΑΣΙΑΣ : Η ΠΕΡΙΠΤΩΣΗ ΤΩΝ ΟΔΙΚΩΝ ΣΗΡΑΓΓΩΝ»**

Και ο Αγγλικός ως εξής:

**«DEVELOPING A QUANTATIVE FIRE RISK ASSESMENT METHOD FOR
CRITICAL INFRASTRUCTURES: THE CASE OF ROAD TUNNELS»**

Ο Κοσμήτορας της Σχολής

N. Μαρμαράς
Καθηγητής Ε.Μ.Π

ABSTRACT

With a view to enhance road network's safety, it is crucial to focus primarily on its critical infrastructures, one part of which is tunnels. Tunnels are regarded as complex socio-technical systems. Fire is the foremost critical event for road tunnels' safety. Therefore, risk assessment was officially introduced for ensuring tunnels' level of safety after the disastrous trans-Alpine accidents in Europe in the late 90s. Despite the significant progress, it is disputable whether just applying any risk assessment method is capable of ensuring preparedness against a fire accident.

The review of the relevant literature emerges the fact that important parameters for the safe operation of the tunnel system have significant uncertainty. Although these parameters play a key role in tunnel performance, current methods act on a deterministic approach ignoring thus their embedded uncertainties.

To address this issue, this thesis presents a novel quantitative risk assessment method, named SIREN, aiming at enhancing road tunnels' operational risk assessment regarding fire accidents. The stochastic-based approach of SIREN mitigates the fallacies arising from the traditional deterministic methods. Furthermore, the proposed method offers the possibility of examining the parameters' criticality, which assists safety analysts in choosing additional safety measures, if needed. In this way, the tunnel risk is reduced to as low as reasonable practicable. The SIREN method is illustrated through the case of an urban underground road tunnel during rush hour.

Furthermore, this thesis proposes also the EVADE method in order to support the decision-making process towards the selection of fire safety measures for road tunnels. The method incorporates diverse stakeholders' views while it introduces a list of the most significant criteria that are valuable to judge the appropriateness of selected measures. Contrary to current approaches, the alternatives' ranking comes as a distribution instead of a single number providing the decision-maker richer information for selecting the most suitable measure(s) according to the specific tunnel's situation. The utilisation of the method is presented through an illustrative case of a typical European tunnel.

The results of this research provide a novel approach for enhancing the level of safety of road tunnels and the produced methods can be applied in all types of tunnels.