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FAULT AND EVENT-TREE TECHNIQUES IN OCCUPATIONAL HEALTH-SAFETY SYSTEMS – PART II: STATISTICAL ANALYSIS

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Abstract

Fault-Trees (FT) and Event-Trees (ET) are useful analytic tools for the assessment of reliability and safety of complex technical systems, and occupational health-safety systems (OHSS), as well. In this work we broaden and expand our previous study regarding the features of FT/ET methods. To clarify this further, in the present article we statistically analyzed the results of a literature survey, concentrated on FT/ET techniques applied in risk assessment (RA) of OHSSs, in order to (i) depict the subsistent situation of their application in various occupational fields, and (ii) enhance their handling and usage in RA of OHSS. The paper consists of two parts, including: (i) a literature survey (for years 2000-2012), concentrated on the main categories of FT/ET techniques concerning OHSS RA, and (ii) an examination and statistical analysis of the corresponding scientific papers published by thirteen representative scientific journals of Elsevier_B.V. and IEEE_Inc. The review shows that: (a) FT/ET techniques are classified into three basic categories (qualitative, quantitative, hybrid), (b) in risk assessment of occupational worksites, FT/ET application is not quite expanded and has not been extensively incorporated in the main RA methodologies of OHSSs, despite their significance, (c) the papers with FT/ETs constitute a very small part of the literature (~0.71%), (d) the qualitative methods present the highest relative occurrence-frequency (59%), and (e) the field of “Industry” concentrates the highest percentage of the papers (34%).

Key words: event-tree techniques, fault-tree techniques, occupational health and safety systems, risk assessment

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