

Design for Safety: Safety Consideration in Planning and Design of Airport Airsides

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Abstract : During airport planning and design stages, the major issues of capacity and safety in construction and operation of an airport need to be taken into consideration. The airside of an airport is a major and critical infrastructure that usually consists of runway(s), taxiway system, and apron(s) etc., which have to be designed according to the international standards and recommendations, and local limitations to accommodate the forecasted demands. However, in many cases, airport airside are suffering from unexpected risks that occurred during airport operations. Therefore, safety risk assessment should be applied in the planning and design of airside to cope with the probability of risks and their consequences, and to make decisions to reduce the risks to as low as reasonably practicable (ALARP) based on safety risk assessment. This paper presents a combination approach of Failure Modes, Effect, and Criticality Analysis (FMECA), Fuzzy Reasoning Approach (FRA), and Fuzzy Analytic Hierarchy Process (FAHP) to develop a risk analysis model for safety risk assessment. An illustrated example is used to demonstrate risk assessment process on how the design of an airside in an airport can be analysed by using the proposed safety design risk assessment model.

Keywords : airport airside planning and design, design for safety, fuzzy reasoning approach, fuzzy AHP, risk assessment

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