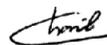Chalermpol Kamkontrong 2008: An Application of Fire Dynamic Simulation with Evacuation Program for Competency Analysis of Evacuation from Medium Residential Building. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Chanin Panjapornpon, Ph.D. 148 pages.

At present, residential building or condominium have been highly in demand. Building layouts designed under minimum requirement of relevant laws and standards, which is only when compares to commercial areas that cannot give a certain number of people in building until construction is completed. To evacuate people from emergency to safe place is importance. So, Fire Dynamic Simulation and Evacuation Simulator (FDS+Evac Program) are used for competency analysis of evacuation from buildings that design to comply with laws and standards.

This study is to propose a competency analysis of resident in medium residential building in case of fire, which is simulated from FDS+Evac Program. The building design is followed recent regulation, law or standard of building design, while FDS+Evac is a tool for analyzing evacuation time that people use for finding exit when fire affected people movement by smoke forming. The simulation is performed under 5-floor building, with center-corridor. This study comprises of 2 cases of evacuation - building layout requirement and evacuation condition. The first case: simulation results show that evacuation time of 1 exit condition is 5.8 minutes and fire condition is 8.8 minutes, which are exceeded law specification at 5 minutes. And the second case: it is 5-floor building with 2 exits, while one exit is stair; the evacuation time in normal condition complies with the law while fire condition is 7.5 minutes. The results show Center-Corridor Plan of building design, size of corridor and other components of building which relate to evacuation time is exit number. Building with one exit needs more evacuation time than 2-exit building; anyway, the time also depends on condition. In fire condition, people take more time than normal condition to evacuate and it is not comply with the law at 5 minutes. Anyway, this simulation is only prepared on building lay out design, without other fire prevention system, therefore, simulated evacuation times are prediction.

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