

Kasemsan Pathumarak 2010: A Comparison of Smoke Temperature and Smoke Layer Height on a Simulated Fire in an Extra Hazard Building by CFAST and FDS. Master of Engineering (Fire Protection Engineering), Major Field: Fire Protection Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Montri Thamrongpiroon, M.Eng. 159 pages.

A fire simulation by using a computer program to expect the environments to be changed in different periods of time during a fire is a method widely accepted by international institutes that are involved with fire prevention and suppression. There are a number of computer programs that can be used for simulating a fire. This research focuses on comparing the upper layer temperature and the smoke layer temperature inside a building of an industrial factory that uses the flammable liquid. This building consists of thirteen rooms. This research pays special attention at three rooms, i.e. rooms with direct mixing and stirring of flammable liquid (12th and 13th room, respectively), and room with production process that uses the mercury which may create danger against the firefighters and general individuals in case of fire (3rd room). The comparison was conducted by comparing the results obtained from CFAST: Consolidated Model of fire Growth and Smoke Transport (Version 6) and to those obtained from FDS: Fire Dynamics Simulator (Version 5) in order to suggest a better model.

According to the research results, it found that the results obtained from FDS and from CFAST were almost similar. The percentage of average difference for the results obtained from CFAST and from FDS in case of the upper layer temperature for the 3rd, 12th and 13th room were 0%, 18.13% and 34.45%, respectively, and of the smoke layer height for the 3rd, 12th and 13th room were 0%, 40.79% and 44.39%, respectively

Student's signature

Thesis Advisor's signature