Thanachok Sukjit 2009: Design Sprinkler System and Study Result of Installation Sprinkler System in Dwelling by Hydraulic Calculation and Fire Dynamic Simulator. Master of Engineering (Fire Protection Engineering), Major Field: Fire Protection Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Apichart Changbamrung, Ph.D. 157 pages.

This research studied designing home fire sprinkler by use a Full Hydraulic Calculation program to help in the calculation the pressure loss in a pipe for choose the capacity of pump are appreciate the requirement in the system and calculation flow rate and pressure of sprinkler activate in room fire. Analyze result of installation sprinkler with fire case. Use FDS program (Fire Dynamics simulator) to simulate for compare with the effect from the fire between a house where do not installation sprinkler and a house do installation sprinkler.

Give the situation that the fire start in living room which the compartment fire when the fire start will most violence and have to change the post flash over. In the simulation was set heat release rate of burner as 50 KW at sofa in living room and use time to simulate 480 second. Simulation house installation sprinkler refer position of sprinkler as designed for bring the result of simulation are compare.

The studies shown that the capacities of pump where the system want are 83.8 liters/minute at pressure 1.325 bar. For flowrate and pressure of sprinkler activate in living room is 52 liters/minute at pressure 0.742 bar. The result of simulation by FDS program was shown that in living room will be generate Post flash over phenomenon at time 443 second. Heat release is 6500 KW and temperature was increase to 850 $^{\circ}$C. For visibility at stair was decrease is 0 meter in 250 second. After installation sprinkler the result of simulation was shown that the heat release is 0 KW and temperature was decrease to 20 $^{\circ}$C. For visibility at stair was increase is 15 meters.

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