

CASE STUDY

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SMOKE VISIBILITY STUDY FOR CAR PARK

CHALLENGES

Fluid Codes carried out a CFD study for a basement Car Park to determine the optimal locations of Jet fans, as well as to determine the performance of the fans in evacuating the smoke in the event of a fire. This basement was comprised of 3 levels and was connected via a series of ramps. The CFD model accounted for columns, beams, internal walls and other construction elements which could form an obstruction to the air flow.

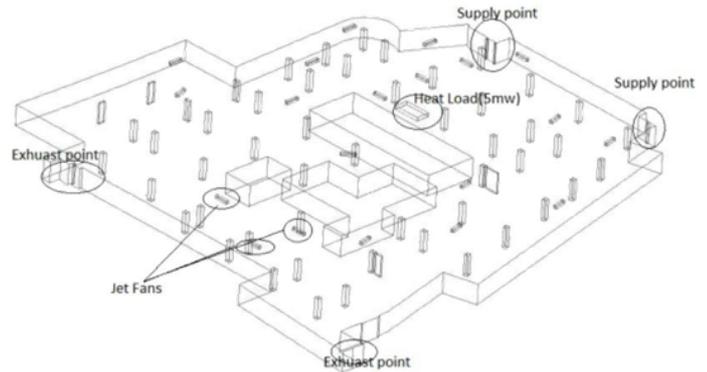


Figure 1. Outlet line of basement Car Park

Engineering Solution

The ventilation system should inject an even amount of air across the car park in order to evacuate the smoke plume downstream of the fire. Thus, enabling the fire fighters in controlling the fire within the allowed time defined by the design code.

CFD calculations for different fire locations have been carried out to provide the efficient ventilation system. Velocity, visibility and temperature plots are generated to verify for the flow filed at 1.8 M height.

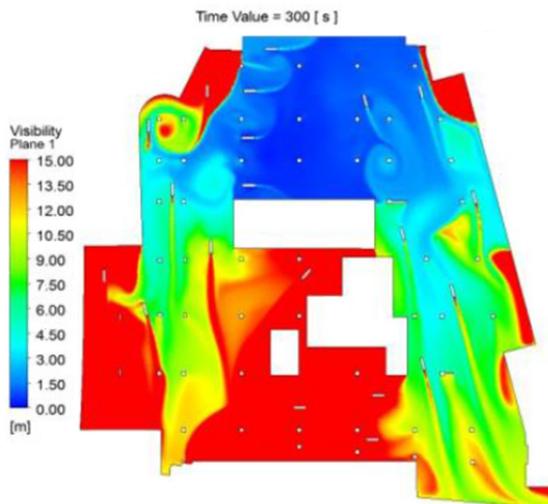


Figure 2. Visibility contour at 1.8 M height

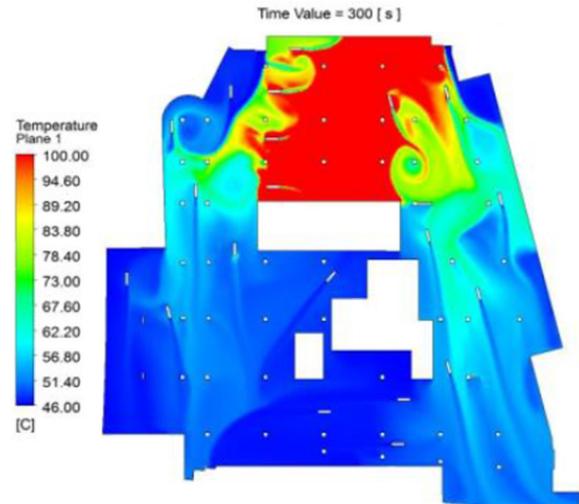


Figure 3. Temperature contour at 1.8 M height