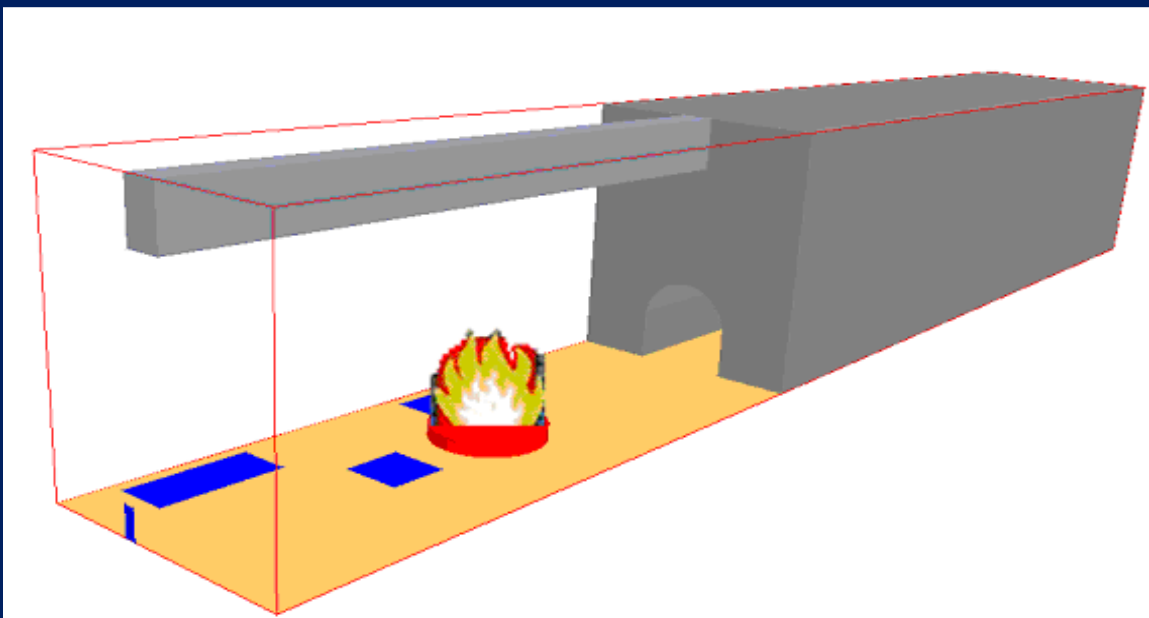


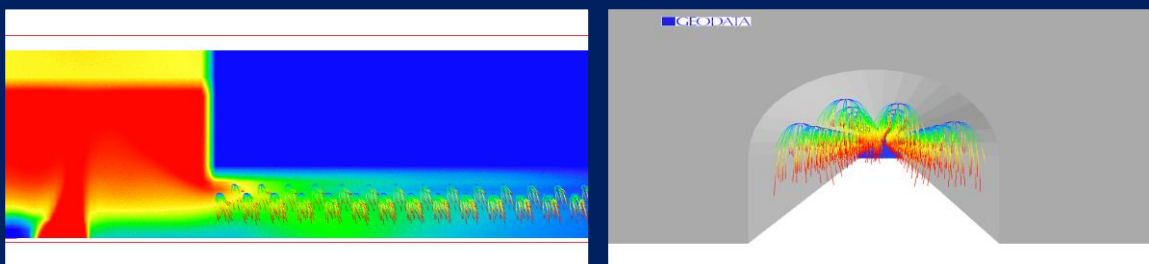
PHOENICS Case Study: Fire Sprinkler Fire Suppression Study

Italian GeoEngineering consultants, GeoData Srl, applied PHOENICS/FLAIR's sprinkler-modelling capabilities to a multi-storey underground hydraulic power station. In the scenario described, one of the two generators is on fire (38MW). All blue areas are treated as entrances for fresh air from other parts of the complex. There is a walking pass across the ceiling of the chamber for emergency evacuation. The focus of the study is on the tunnel at the end of the chamber. GeoData's client needed to know that the temperature in the tunnel (which contained sprinklers) would remain low enough for the fire brigade to access the complex during a fire.



There are 60 sprinklers installed near the tunnel entrance.

Figures below shows temperature distribution in the first section of the tunnel. The temperature range in the access tunnel is between 11°C and 140°C (the temperature in the red region is higher than 140°C).



The figure shows the distribution of relative humidity from 0 to 100%

As expected, the water spray has destroyed the smoke stratification before cooling it down. Unlike a normal tunnel fire in which the general public may be involved, the smoke stratification is not particularly important in this case.