

Avoiding the dreaded flashover

Underground construction giant holds fire drill with a difference

By MENG YEW CHOONG
metro@thestar.com.my

MOST of us would be familiar with the common fire safety drills involving portable extinguishers or high pressure hoses to put out flames.

But for contractors working in the 9.5km portion of the Klang Valley MRT (KVMRT), which covers seven underground stations, that knowledge is simply not good enough.

What they need is a simulation of real fires, and that is what they experienced recently.

A fire in a tunnel under construction presents even greater dangers due to the confined space and lack of permanent ventilation.

"To minimise the risk of injury to our dedicated firefighting teams, live fire training under controlled conditions which replicate a fully developed tunnel fire is needed,"

said Christopher John Fenton, head of safety for MMC-Gamuda KVMRT (T) Sdn Bhd, the contractor for the underground portion of the MRT.

KVMRT firefighting and rescue crews must be familiar with the phenomenon called flashover, which is a relatively new word even for Fire and Rescue Department personnel.

Flashover can be likened to an explosion in slow motion and is over in just a few seconds.

It is the near-simultaneous ignition of most of the directly-exposed combustible material in an enclosed area, including combustible



On their knees: At the end of the training, the participants have to crawl out of the flashover container to avoid the superheated gas above their head.

gases produced as a result of pyrolysis, or thermal decomposition of organic material.

For example, extreme heat from a fire can "convert" all the wood inside a room into flammable gas.

A fireman who cannot evacuate the room in time will be consumed by the rapidly expanding flames when the mass of superheated gas ignites at around 500 degrees, along with other flammable materials.

MMC-Gamuda enlisted the help of two seasoned firemen from the Los Angeles City Fire Department to train its rescue personnel on



Preparing to be baked: The writer (sans oxygen face mask) prior to entering the 'learning chamber' to see what a flashover is all about.

You can train using the computer all you want, but there is nothing like training using real fire.

—GREG PASCOLLA

and both are in the container with the trainees all the time.

A fire is lit, and the heat from this initial fire is high enough to turn all the plywood sheets lining the container wall into a flammable gas, which floats like a layered cloud at the container roof.

By expertly controlling the fire and smoke generation through the appropriate opening and closing of the container doors, the firemen indicate when one should leave the building as survivability in a flashover is extremely unlikely.

"You can train using the computer all you want, but there is nothing like training using real fire. This is about as close as you can get to real life," said Pascolla, who revealed that flashover training is increasingly gaining popularity in the United States.

The training provides rescue crew

with the ability to recognise the signs of an impending flashover, the dangers involved and, more importantly, the immediate actions to take to protect their lives.

As the first Malaysian journalist to undergo basic flashover training, this writer learned that firefighting is not always about carrying the hose into a building to "fight" the fire no matter what.

There are times when even the most determined firemen need to recognise their limits, and flashover training is designed to keep them alive.

Long-serving safety officers such as Suhaimy Md Noh, an MMC staff who is now part of the KVMRT emergency rescue team, has been in the business for 16 years but only underwent his flashover training last month.

"Even in other countries where I had previously worked, there was no flashover training. But we are hoping that the majority of our 200 team members will undergo it."

Arziah Mohd Ahsim, 26, a safety clerk, feels all rescuers, especially those involved in tunnel rescue operations, need to go through the training.

A video on what goes on inside a flashover container is found at www.youtube.com/watch?v=olyDjU06gU, while the view from outside can be seen at www.youtube.com/watch?v=i2onc2dPFEg&feature=youtu



Unbearable heat: Even after the container (left) has been sprayed with water to douse the flames, wall temperatures remain well above the boiling point of water. 151 Celsius is measured here using a handheld laser thermometer.

Making the right call: It is not the size of the fire, but the speed, direction and layering of smoke that one should be concerned about when it comes to predicting flashover.



Pascolla: The loss of a colleague to a flashover 14 years ago inspired him to push for flashover training to be a standard part of firefighting training.