

HKIE Fire Division Annual Dinner 2012

Speech by CHAN Fan, Frank JP

Mr. CK, Mr. Gilbert, distinguished guests, ladies and gentlemen.

Origin of Fire

The Fire Discipline and the Fire Division of the Hong Kong Institution of Engineers were established a few years ago, but fire engineers have been around for many decades. And if we look back in time, fire and humanity have co-existed over thousands of years, with many amazing stories of fantasy, discovery, love and tragedy.

According to Greek Mythology some 2,800 years ago, Prometheus was said to have created man from clay. He stole the heavenly fire from Zeus, the King of God, and gave it to mankind to enable progress and civilization. Because of this very act, Prometheus was sentenced to eternal torment, bound to a rock where each day an eagle was there to feed on his liver, only to have it grow back to be eaten again the next day. The Chinese legend on fire is a bit less heroic but perhaps more humane and scientific, citing the discovery of fire making by the drilling of wood with smaller tree branches some 4,000 years back by Sovereign Sui.

Fire has a lot to do with human civilization. Fire was used by our ancestors for staying warm in cold season, for lighting at night time, for protection from harm and for making of hot meals. Fire was mystic, sacred and perhaps a symbol of power at that time. The making, keeping and controlling of a fire was indeed a very daunting challenge, bearing in mind how little they knew about the sciences of fire as compared to fire engineers today.

Use of Fire

Once the might of fire was tamed by humanity, and the art of making, keeping and controlling of fire was mastered, the use of fire has transcended beyond domestic usage other than heating, lighting and cooking.

Fire has been deployed extensively in warfare until now. Many of you would have heard of the Battle of the Red Cliff. In that battle, Zhuge Liang destroyed the whole fleet of Cao Cao by burning it down. A story similar to David and Goliath, but instead of a sling and a stone, the secret was arrows with fire, simple and yet very effective mass destruction weapon.

The Greek however came up with more sophisticated fire weapon 2,200 years back. The great mathematician Archimedes invented a weapon constructed of a large array of highly polished bronze shields. The shields acted as a parabolic reflector and focused sunlight on enemy ships, setting them on fire. The weapon was called "Archimedes' heat ray" in honour of him.

Eight hundred years later, there came another invention, enabling the Greek navy to propel a sticky liquid flame at enemy ships. Since water alone could not extinguish the liquid fire, the sea was therefore scattered with fires and flames during naval war. If anyone of you here tonight want to have a look and feel of what it was, you may wish to go to the Ocean Park and watch the Symbio show at night time, because our dear friends, the gas engineers, have designed and produced the world's first "Flames on water" fantasia here in Hong Kong.

Love and Tragedy

The love between humanity and fire is inseparable. Fire is basically everywhere with boundless applications. Fire embodies a special meaning to humanity in various spiritual and religious ceremonies. Fire is used in entertainment and magic shows. Hot air balloon could not go sky high without fire and the Olympic Game would not be complete without the Olympic flame. What I have mentioned so far is only the tip of an iceberg and I am not going to bore you further. But amongst all applications, the most significant use of fire is the transformation of its thermal energy to engines that drive the Industrial Revolution, and the production of electricity that becomes indispensable for humanity nowadays.

Since the Industrial Revolution in the 18th century, the world's population grows rapidly and more people move to live in cities. With increasing population density, the risk and consequence of fire poses acute and immense challenges. Realizing the relentlessness and destructiveness of fire, engineers started thinking of fire prevention and fire extinction technologies. And yet, there were many tragic fires that left human society with many broken hearts and devastated families.

Fire Safety

Hong Kong is one of the most densely populated metropolitan cities. If we divide HK's 7M population by her 1,100 square kilometers' land surface, we would have more than 6 thousand inhabitants per square kilometer. It is only with a concrete jungle of many tall buildings that we manage to accommodate 7M people in such a small stretch of land. As a result, over half of Hong Kong's population is now living at 15th floor or even higher.

Fire safety is therefore of paramount importance as people would face substantial risk when evacuating from a high-rise building. As such, prevention and performance-based fire engineering approach that focuses on fire management and prevention becomes more important than ever.

In contrast to all those who set fire and use fire as a means to achieve other objectives, fire engineers focus on the sciences and practices of fire extinction, fire prevention and fire engineering, with the ultimate objective to protect people and their environments from the destructive effects of fire and smoke.

Fire by itself is full of energy and fantasy, but if neglected, misused or abused, it could turn into a wild and highly dangerous monster. Fortunately, fire engineers have thoroughly mastered its composition and chemistry, documenting its behavior and knowing it well down to minute details. With the use of technologies, expertise and wisdom accumulated over the years, fire engineers have mapped out not only the fire triangle, but also the fire tetrahedron as well as fire extinction strategies. By removing heat, they calm and cool down the monster; by removing fuel, they starve it to death; by removing oxygen, they suffocate it; by interfering the chain reaction, they paralyze it and tame it.

With the ceaseless dedication and commitment, expertise and professionalism of fellow fire engineers, no wonder why Hong Kong's fire safety performance is among the best in the World. I salute you all.

Thank you.

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