

# GAS SAFETY Bulletin

## Message from the Editor

In this issue of the Gas Safety Bulletin, readers will find reports on the requirements for gas installations for catering purposes in commercial premises and a new portable remote gas detector, and an article "Behind the Olympic Flame" for reference by the trade. This issue also outlines legal knowledge on gas safety, a gas safety seminar and key points to note when submitting new applications for registration as a gas installer and applications for change of class of registration, as well as statistics on prosecutions for gas-related cases.

Happy reading!

## Behind the Olympic Flame

### The Role of Gaseous Fuels in Producing Special Pyrotechnics Effects

The Beijing Olympics concluded successfully, with China winning 51 gold medals. One of the much talked about highlights of the Beijing Olympics was the moment when Li Ning, the "prince of gymnastics", lit the Olympic cauldron in the opening ceremony. Hong Kong, a sophisticated city despite its small size, was chosen as one of the co-host cities of the Beijing Olympics, which is something that all Hong Kong people should be proud of. Indeed, when the Olympic Equestrian Events were held in Hong Kong several months ago, the same Olympic Flame which symbolised the Olympic spirit also burnt in Hong Kong at the events venue.



The Olympic Torch

Liquefied petroleum gas (LPG) and town gas are the most common gaseous fuels used in Hong Kong. In our daily lives, cooking, bathing and even the generation of electricity depend on gaseous fuels. In fact, gaseous fuels also play an important role in producing special effects in films and festivities. LPG was used to fuel the dazzling Olympic Flame from the Olympic Torch for the Olympic Equestrian Events.

### Technical Requirements of the Olympic Flame

Preparations for the Olympic Flame started at the LPG cylinder store. To give the Olympic Flame the gold colour as in a natural flame, the engineers used LPG which has a higher carbon content as fuel for the Torch to achieve that colouring effect. LPG was first vaporised by the vaporiser, then transmitted at a pressure of 70 kPa through pipes to the valve control room, where the LPG pressure would be regulated again. The LPG was then divided into two parts. One part would be supplied to the main burner of the Torch, while the other part supplied to the pilot burners for igniting the Olympic Flame in the main burner. The valve control room had numerous pressure sensing valves. When the pressure of the gas was at an abnormal level, gas supply would be cut off immediately. All regulators and related installations were installed in metal boxes for mechanical protection.

In addition, two air blowers were installed in the valve control room to provide sufficient air to the pilot burners through pipes, in order to ensure that the LPG in the pilot burners underwent complete combustion and no carbon was accumulated. The LPG, the pressure of which was regulated by the regulator to various degrees, was then transmitted

to the tailor-made main burner. The main burner was ignited by two pilot burners which burnt continuously to ensure that the LPG in the main burner was successfully ignited and would not disperse with the wind. Each pilot burner had an independent flame monitoring system to monitor and control the flame to ensure that the pilot burner would burn continuously. Inside the Torch was an air blower which blew upwards to move the air around the main burner. Apart from cooling down different parts in the Torch, it also created the visual effect of an Olympic Flame mildly flickering upwards in the wind.

The Olympic Flame, a sacred symbol of the Olympic Games, must keep burning non-stop day and night. To meet this strict requirement, we must solve a management problem, and that was to ensure a steady supply of LPG. Apart from the basic LPG store, the venue also provided an auxiliary LPG store in the venue to provide back-up LPG supply. The Torch was specially designed so that it had two levels of burning capacity. When no competition was held, the burning capacity was kept at a low level to reduce gas consumption. The gas consumed during these periods was only 60% of that during competitions. Various arrangements such as the timing of gas deliveries, the quantity of LPG cylinders stored and the routes of the LPG cylinder wagons were all carefully planned so as to strike a balance between gas safety and the need for a steady supply of gas.

### Other Safety Considerations

In addition to proper emergency procedures, the controllers also monitored the system 24 hours a day to ensure normal operation. The LPG cylinder store was also checked with gas detectors every hour to prevent gas leakage.

### Heroes Behind the Scene

In our daily lives, a flame comes by easily just at the press of a button on the gas appliance. Yet, for that small flame, staff of the law enforcement department and gas utilities have performed their duties and done a lot of work to ensure gas safety. The same is true of the grand Olympic Flame, for which the relevant staff had to put in a lot of efforts. Behind the glamour of the Olympic Games opening ceremony and the medal-winning athletes was in fact a lot of hard work by the athletes and numerous staff behind the scenes, without which the glamour and success would not have been possible. 



Vaporiser and gas main



# Requirements for Gas Installations for Catering Purposes in Commercial Premises

## Introduction

Any person who wishes to run a restaurant in Hong Kong should apply for a licence from the Food and Environmental Hygiene Department (FEHD) before commencement of business. The FEHD will issue a restaurant licence to the applicant when all the relevant requirements laid down by the FEHD have been met.

If gas is used as a cooking fuel in the restaurant, the applicant should submit to the FEHD the Certificate of Compliance and the Certificate of Completion. These certificates should be issued by registered gas contractors who have employed gas installers of appropriate classes. This is meant to allow the applicants and the registered gas contractors employed by the applicants to confirm that the installation of the gas installations has been completed and that the gas installations are ready for operation in accordance with the Gas Safety Ordinance and the Code of Practice GU06: LPG Installations for Catering Purposes in Commercial Premises.

## Requirements for Gas Installations

According to the Gas Safety Ordinance and the Code of Practice GU06: LPG Installations for Catering Purposes in Commercial Premises, applicants should take note of the following to ensure gas safety:

- LPG shall not be supplied to basement kitchens or seating areas below ground level.
- LPG cylinders shall only be installed to supply fixed appliances where piped gas supply is not available within the premises.
- LPG cylinders shall be located in a purpose-designed chamber in accordance with the Code of Practice GU06.
- Storage of LPG/LPG cylinders with an aggregate water capacity exceeding 130 litres is not allowed.
- A notice indicating the location of the emergency control valve or the fire safety valve shall be prominently displayed at the entrance of the kitchen.
- Gas metres shall not be installed in a place which is the only route of escape from the premises.
- On/off signs shall be provided for the emergency control valve or the fire safety valve.
- Gas pipework shall have identification labels, be adequately supported and protected by painting or by being enclosed in a sleeve (if such pipework is installed through a wall). A minimum separation distance of 25 mm from the electric conduit shall be kept.
- Domestic gas appliances shall be installed with the approval of the Gas Authority and shall bear the GU mark.
- Gas appliances shall bear suitable warning labels reminding users that the mechanical ventilation system shall be properly activated before the gas appliances are put to use.

- Where the smoke extraction pipework of a gas appliance is connected to the mechanical exhaust system, an interlock and an indication lamp shall be provided under the Code of Practice GU 12 (with effect from 1 May 2004).
- An enclosed type gas-fired meat roaster shall be installed and used in accordance with the Code of Practice GU14.

## LPG Cylinder Storage Chambers

For gas safety, LPG cylinders shall be stored in a specifically designed chamber. The construction and use of an LPG cylinder storage chamber shall comply with the Code of Practice GU06. Please take note of the following:

- A chamber shall be located in an area with good ventilation and shall not impede the escape routes from the premises.
- A chamber shall be constructed of concrete or a material with at least 2-hour fire resistance.
- The chamber door shall preferably be made of metal. The warning notices "LPG Cylinder Storage Chamber" and "No Smoking" shall be displayed on the chamber door, and adequate ventilation openings shall be provided on both the upper and lower parts of the door. A gas isolation valve shall be installed outside the chamber.
- Where a manifold is connected to two or more LPG cylinders at a pressure exceeding low pressure, non-return valves shall be fitted to each LPG cylinder outlet connection and the length of the flexible tubing shall not exceed 1 m.
- The gas supply system in a chamber shall be fitted with a pressure gauge indicating the gas supply pressure. Gas pipework shall be corrosion resistant, be suitably protected and clearly identified, and be securely fixed to a wall.
- An on/off sign shall be affixed to the valve.
- "Instructions for the Safe Exchange of LPG Cylinders" and "Safe Use of LPG" notices shall be prominently displayed inside the chamber.

## Responsibilities of a Registered Gas Contractor

Upon completion of work, a registered gas contractor should give the gas installation manual and user guide to the restaurant or its representative. He should also carry out regular gas safety checks for the gas supply system and keep the work records for two years for inspection.

For the requirements for gas installations for catering purposes in commercial premises, please refer to the Code of Practice GU06: LPG Installations for Catering Purposes in Commercial Premises at [http://www.emsd.gov.hk/emsd/c\\_download/ppsgas/gu06c.pdf](http://www.emsd.gov.hk/emsd/c_download/ppsgas/gu06c.pdf).

**A**s you are aware, gas installation works must be carried out by gas installers of the appropriate classes. Please also note that the gas installers must also be employed by registered gas contractors.

We would like to share with you from our case records two reported incident cases which we handled recently, both related to gas installation works:

- (1) Case 1 : A gas installer not employed by a registered gas contractor was found to have carried out gas installation pipe alteration work in a unit occupied by a customer of his friend engaging in interior decoration work.
- (2) Case 2 : A gas installer employed by a gas appliance supply company which was not a registered gas contractor was found to have carried out gas appliance tests.

Pursuant to section 3(1) of the Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations, no person other than a registered gas installer who is a registered gas contractor or the employee of a registered gas contractor shall carry out any gas installation work. However, a registered gas installer may carry out gas installation work in domestic premises occupied by him. Any person who contravenes the Regulations commits an offence and is liable on conviction to a fine of \$25,000 and imprisonment for 6 months.

In the above cases, the gas installers concerned were prosecuted and convicted of contravening the Regulations. They were fined \$2,500 and \$4,000 respectively.

We would like to remind all gas installers to comply with the above Regulations.



**W**e have previously discussed cases of gas distributors being prosecuted for supplying excessive quantities of liquefied petroleum gas (LPG) to customers in the "Case Sharing" column. We would like to go over the relevant legislation again so that readers can have a better understanding. According to regulation 3(2)a of the Gas Safety (Gas Supply) Regulations, no person shall supply gas to any premises where he knows or ought reasonably to know that there is an excessive quantity of LPG stored in the premises (i.e. LPG cylinders with a total water capacity of over 130 litres without the approval of the Gas Authority); or that there will be an excessive quantity of LPG stored in the premises if he further supplies LPG to the premises. Otherwise, the above regulation will be contravened.



**Legal Knowledge**

Gas distributors, being members of the gas trade, should be fully aware of the potential danger of storing excessive quantities of LPG. According to Code of Practice for Cylinder LPG Distributors, gas distributors should maintain records of purchases of their customers for the past 18 months. In addition, they should pay attention to the LPG quantities of their customers when delivering LPG to them. If gas distributors can fully cooperate by following the Code of Practice, they will not contravene the above Regulations.

According to our records, there were cases where customers refused to let the staff of the gas distributors to collect LPG cylinders in which not all LPG was used up, resulting in the excessive storage of LPG. In dealing with such customers, gas distributors should explain clearly to them the legal requirements and should not supply excessive quantities of LPG to them.

Furthermore, all used LPG cylinders should be returned to the gas distributors as soon as possible and should not be put in public places. Anyone who finds any abandoned or unattended LPG cylinders should phone the gas supply company for collection and should not deliver them to scrap iron collectors, to avoid any danger.





# A New Method to Detect Gas Leakage

Fuel gas in Hong Kong is distributed mainly through pipe networks, comprising various types of gas pipes laid both below and above ground. To ensure public safety and maintain the efficiency of the gas supply system, the gas supply companies carry out gas leakage inspections of gas pipes regularly.

When a gas supply company carries out a gas leakage inspection, its technicians usually use a portable gas detector with a probe (e.g. a flame ionisation detector, see Figure 1) to test the condition of the pipes. But the gas pipes to be tested must be located in a place that the technician can reach. However, Hong Kong is densely populated and most of the buildings are high-rise constructions. If the gas pipes are elevated or difficult to reach, the use of the traditional detectors will be limited. The technician may have to consider using other auxiliary equipment, for example building a working platform, so as to carry out the leakage detection.



Figure 2: Remote gas detector being tested

To meet the needs of different environments and to improve leakage inspections of elevated gas pipes, a new portable remote gas detector is now on the market. The technician

can simply stand in front of the detection target and direct the infra-red laser beam produced by the detector at the detection target (Figure 2). He can judge from the beam that is reflected back whether a gas pipe is leaking (Figure 3).

The remote gas detector is light and easy to carry and operate. Under normal circumstances, the detector has a maximum remote detection range of about 30 metres. Test results show that the detector senses gas leakage quickly. It can detect, through a window, whether there is a gas leakage in a house. Although relatively expensive, this device provides an alternative to users.

In certain circumstances, for example in a gas leakage incident that involves a large area, its remote detecting function will enable engineering staff to keep a safe distance from the location of the gas leakage, helping to reduce risks. To conclude, this new detection method helps the gas supply companies to carry out comprehensive gas leakage detection in complicated situations or environments which pose many limitations. 🔥

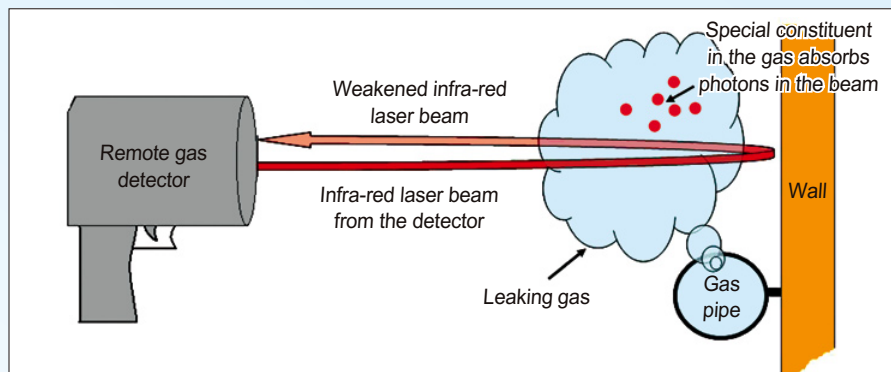
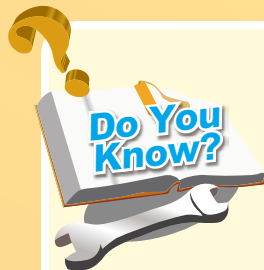


Figure 3: Operating Principle of Remote Gas Detector



Figure 1: Flame ionisation detector in use

# Points To Note on Submitting New Applications for Registration as a Gas Installer and Applications for Change of Class of Registration



It has come to our attention when processing recent applications of the above that some applicants had not submitted or duly completed certain documents. This has caused delays in the handling of these applications. We would like to remind applicants to submit the following documents so as to speed up the approval procedures.

- Signature of the applicant;
- A photocopy of the Hong Kong Identity Card;
- One additional personal photograph (18mm x 38mm) (please submit recent and identical photos );
- Testimonials, certificates of relevant apprenticeship or training;
- Testimonials, certificates of special training course, issued by recognised organisations;
- Records to certify services or employment in gas work (Figure 1).

Figure 1  
Work experience

1. Each blank should be filled in by the contractor / dealer who at the time employed the applicant after the applicant had satisfactorily completed one month's training on a particular class of work under supervision. The signature of the contractor / dealer should also be provided.
2. The company chop, date and the supervisor's signature should be provided in each column.

### Class 4 - Installation of domestic gas appliances to existing, adjacent gas supply points and commissioning and servicing of domestic gas appliances.

Signature of registered gas installer _____ Name _____ Registration no. _____ Licence class _____	Company chop _____ First month Signature of registered gas installer _____ Training period (month / year) _____
Signature of registered gas installer _____ Name _____ Registration no. _____ Licence class _____	Company chop _____ Second month Signature of registered gas installer _____ Training period (month / year) _____
Signature of registered gas installer _____ Name _____ Registration no. _____ Licence class _____	Company chop _____ Third month Signature of registered gas installer _____ Training period (month / year) _____

*[There is no need to complete this part if the particulars are the same as above]*



## Training News

# The 2008 Gas Safety Seminar

We organised a gas safety seminar for the trade on the afternoon of 25 June 2008 at the lecture theatre on the 7th floor of our headquarters building. Topics covered included:



- (1) General responsibilities of gas contractors and gas installers;
- (2) Guidelines on gas laundry dryers ;
- (3) Guidelines on alteration of the installation location of a gas water heater;
- (4) How to avoid damage to concealed gas pipes;
- (5) Safe use of LPG blow torches;
- (6) LPG installations for catering purposes in commercial premises.

Although typhoon signal No. 8 was hoisted that morning, the seminar was held as scheduled and well attended by trade members. During the seminar, engineers from EMSD gave detailed presentations on gas safety matters. The Q & A session also saw enthusiastic discussion and exchange of views by participants. The seminar closed at around 5 p.m.

## Gas Statistics

### Prosecutions for LPG-related Cases (By Type) From January To October 2008

