Guidelines on installation of Instantaneous water heaters (Gas Geysers) with natural gas for domestic use

1. Introduction

This section has been prepared to provide guidelines for installation of copper pipe work and associated equipment inside domestic premises for supply of natural gas to instantaneous water heaters (gas geysers),of nominal heat input not exceeding 25 kW and operating at pressure up to 21 mbar (g). The installation inside the property (or kitchen) comprises copper tubing, appliance valve, steel reinforced rubber tube & geyser commissioning.

2. Instantaneous Water Heaters (Gas Geyser) Installation requirements & information:

2.1 Model of Gas Geyser:

The Gas geyser shall be manufactured and tested in accordance with all the requirements of valid editions of IS 15558 and / or BS EN 26 standards, and the manufacturer should possess valid BIS license for geysers manufactured in accordance with IS 15558 standards.

- Customer can purchase any **BIS approved** gas geyser of any model / brand from Original Equipment Manufacturer (OEM) or their authorized distributor.

- Maximum capacity of Gas geyser shall be 10 liters of water per minute and operating at normal working pressure of 21 mbar (g).

2.2 Gas Geyser shall have the following safety features (As a minimum)

a. **Flame Failure Shut Off Device:** The appliance shall have a flame failure device, controlling the admission of gas to the main burner and possibly to any ignition pilot, in case flame is extinguished.
b. **Over-heat Protection Device**: The water heater shall have a suitable overheat protection device, which shall switch off the supply of gas if the temperature of the delivered water reaches 95 ^{0}C. The gas supply shall be restored manually.
c. **Gas and Water Stability Device**: The appliance shall operate with tap fully open at gas inlet pressure of 21 mbar (g) without the flame extinguishing, blowing off or striking back and without the formation of soot.
d. **Oxygen Depletion Sensor / Incomplete Combustion Safety Device**: The appliance shall have Sensor which can detect Oxygen and / or Carbon Monoxide (CO) at the same time.

2.3 Gas geysers Location:

- Gas Geysers shall only be installed in areas like,

  - Kitchens, living rooms, Utility Rooms, Halls and Passageways if flueing and ventilation can be achieved.
  - Gas Geyser should be installed at such a height that it can be switched off easily. No Gas Geyser is permitted to be concealed.
  - Geysers can be installed outside the property on a patio/balcony provided it is protected from the weather.

Installation and connection of water pipeline to the geyser need also to be planned by customer while deciding location of geyser.

Warning: Geyser shall be installed in a proper ventilated area only and shall not be installed inside the bathroom

2.4 Ventilation requirement:

- Gas geyser shall be installed in an area with adequate ventilation. As a guide, a sufficient ventilation area of must be provided where geyser is located. The gaps under and around door, windows and ventilators provide adequate ventilation to the rooms of normally occupied individual domestic dwellings.

2.5 Advantages of installing Geyser in Kitchen:

a. Safe, as chances of suffocation due to emission of fumes inside the bathroom is eliminated.
b. Hot water will be available in the Kitchen pipe for washing oily kitchen utensils as well.
c. The length of copper tubing/GI will be minimum as the connection will be provided from PNG installation in kitchen.

2.6 Dangers of installing Geyser in Bathroom are:

a. Greater chances of accumulation of fumes inside the bathroom, which can lead to Suffocation / asphyxiation.
b. It is not recommended to run gas pipe across the length of the house as any leak from joints will be dangerous.

3. Safety Requirements

- Identify hazard identification & risk assessment before start of activity.
- Use personal protective equipment.
- Ensure isolation of gas supply & purge out the residue gas outside kitchen before carrying out work.

- Ensure safety compliance while executing work.
- Ensure no gas leak exists in the premises before leaving the site.

4. Technical guidelines:

4.1 Geyser Isolation Valve

- Geyser Isolation Valve must be fitted immediately after Tee connection on downstream copper/GI pipe, along with associated fittings.
- Marked to show the open and closed positions
- To be Fitted in accessible & easy to operate position

4.2 Appliance Valve (AV)

AV shall be fitted at an easily accessible location. One end of the AV shall be fitted with GI fittings and other end shall be fitted with steel reinforced rubber hose.

4.3 Steel Reinforced Rubber Hose

- It is connected between Appliance valve and Gas geyser. The rubber hose shall not be exposed to hot elements.
- Length of flexible hose shall be kept minimum. In no case the length shall be more than 1.5 meter and the installation shall be such that there is no hanging / sagging of the rubber hose.
- Both ends of the hose shall be firmly clamped on the nozzle by metallic worm drive hose clamps.

4.4 Threaded Joint

- When making screwed joints, all threads must be clean. Hemp shall not be used on any threaded joints. PTFE (Teflon) tape shall be used, and it shall be wound with a 50% overlap.