

Reviewing nineteenth and seventeenth topics of National Building Regulations emphasizing on the fresh air and air needed for gas machines' combustion

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Abstract— In accordance with Article 33 of engineering Law, the supervision of the engineer responsible for the design and implementation of national building regulations for all buildings is by Ministry of Housing and Urban Development. Housing Ministry publishes article on this topic has twenty national regulations in the nineteenth topics related to saving energy consumption in the building topic in the building natural-gas lines and regulations of the seventeenth topic the provisions established XIV such thermal arthroplasty air conditioning is. Regulations have been revised several times in the nineteenth topic last revised in 2002; it has been communicated to all the organs. The topic shifted to the seventeenth edition of 1387. Since the National Building Regulations set of technical standards, which are administrative and legal compliance in the design, implementation and monitoring is essential to the construction and implementation of laws providing the safety, health, and productivity welfare is necessary for the individual and society comprehensive and prevented the set of rules is necessary. According to the latest revision of the XIX topics of mechanical and ventilation, yet is brief and incomplete. In this paper, based on its review of the rules and notices published in the fresh air and the air needed for combustion, the emphasis is placed.

Keywords— fresh air, combustion air, National Building Regulations

I. INTRODUCTION

Buildings today simply do not count as shelter against unfavorable natural conditions. But these structures with the aim of creating a better environment - friendly and constructive work and life are built i.e. building as a shelter and to provide comfort and create favorable conditions for various things, so comfort conditions in buildings should be established. Comfort in buildings such factors as temperature, humidity, ventilation and air flow into the room

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depends. The comfort of the people inside the building lighting and sound effects are great. In this paper, air conditioning and indoor air quality, thermal comfort, as is the view of energy saving.

Ensuring conditions into the air so that all people are comfortable room, under ASHRAE standard is nearly impossible. The association of "thermal comfort zone" provided that it is based on indoor air conditions should be such that the majority of people in the room who have covered the season dress that fits their comfort and convenience. Before the oil crisis in the design of buildings was done without considering energy efficiency and the use of air conditioning systems are often required to select larger than needed to heating and ventilation, in this way, under any circumstances can be provided. Airtight buildings regardless of the amount of air moved inside to outside and vice versa, and the gradual penetration of air into the exterior and interior of the building from the outside is one factor that plays an important role in indoor air ventilation.

Cost of energy, new building regulations and national building regulations require that the nineteenth topic buildings are designed and constructed so that the air from inside to outside and vice versa, may be reduced to the minimum value. Although these measures prevent over 30% of energy consumption but also considerably reduces the amount of air conditioning needed.

II. AIR EXCHANGE

Air exchange in buildings of the following purposes:

- provide oxygen for breathing
- To prevent an increase in carbon dioxide
- Discharge of odorous air, smoke and harmful gases
- To prevent air stagnation
- To prevent moisture condensation

Climate change through natural openings or open space to open space, cleaner air out of the building, such as doors, windows, gates, networks and the like should be done. According to the National Building Regulations, the open mouth washing out any air space at least 4% of its space infrastructure is useful. If space is wide open bore cleaner directly to the surrounding space, the air exchange takes place. The open bore cleaner unobstructed space must be at least 8% of the building space is needed in any case shall not be less than 2 square meters [2] if for any reason cannot be replaced by natural air ventilation should be done by the air.

VAV systems are replaced with variable volume air conditioning systems, this means that in situations where conventional HVAC requirements will satisfy the required temperature setting, air is sent into the air conditioning system is reduced and the use of outside air for the ventilation construction to reduce considerable amount. And Buildings are problems that are created by the lack of air conditioning. Symptoms such as chronic headaches, swollen eyes and ... The inhabitants of these buildings can be seen. The buildings, the buildings were named patient.

III. DRAIN AND AIR-CONDITIONING

Displacement of air, the pressure difference occurs is due to the following conditions:

- 1 - Temperature difference
- 2 - Normal winds
- 3 - Aeration and ventilation equipment

Normal vents such as windows, doors and ventilators for mechanical ventilation pipes and exhaust ventilation of air in buildings are responsible. The main role of conventional ventilation, windows and doors in buildings are responsible. In the nineteenth topics about using Windows profiles observed that the use of single-glazed windows with glass or metal is allowed [3].

Currently, the profiles of the three materials used in the manufacture of new windows, including wood, aluminum, PVC and other polymer products are [4]. Each with advantages and disadvantages, but all have different emphasis and an airtight seal is complete. Although seals particular importance from the viewpoint of energy consumption however, by reducing air leakage or air leakage blocking completely fresh faced and can also reduce the combustion air requirements are set forth in Table 1, and the fresh air entering the disorder. The amount of the decrease or entirely airtight, or has not been reported.

In terms of energy saving windows have a crucial role, because about 30% of the total heat loss through the window of the building is done, For this reason, good or windows that have been installed are not protected in a good place, they raise the cost of fuel in the building threads nineteenth Regulations of the National planning and control air is a ventilation replaced terms of the should be consistent with the rules and regulations of health [3].

In this section refers to the amount of air exchange in the form of heating used to provide minimum sanitary conditions equal to 1/2 or cold should not be more than [3]. And rules for buildings classified as Group 1 and 2 that the type and amount of energy, has been developed.

Given the facts above, the fact that gas appliances are installed in indoor air required for the combustion air supply units are installed. We supply fresh air for combustion and ventilation is very important in the building and installation of gas appliances should be chosen such that under normal operating powered devices, and air for the combustion air to the place complete. Basically, if the cracks and pores in the construction and installation of gas appliances so that they do not need air conditioning and natural gas combustion device installed to provide air space, the different techniques, including installation channel or valve, fresh air the seventeenth issue 5 -7 - Instruments must be brought.

According to Section 17 of the Building Regulations with conventional seam gas unit volume of air required for the combustion of 177 kcal per hour Baza' of one cubic meter. Designed for ease of installation of gas appliances and gas piping systems, gas systems to suit install location of the three types of power they have divided the result is as follows. A - Devices power consumption of less than 35 kW (30,000 kcal per hour) is.

In this case the device is installed; a minimum amount of space required for installation is as follows:

1 - If using a gas burner installed, at least one of the popup windows or air to air and air to penetrate the seams. The minimum amount of space as shown in Table 1 will be discussed.

2 - If the installation location of the gas is not released directly into the air required for combustion air from the surrounding space to the outdoors, they should be provided. In this case, depending on the spatial relation with surrounding space to be mounted where the gas to be supplied to the open air.

2.1 - If the space between the door seal on three sides and the bottom is not any air gap. Table 2 shows total volume of the space.

2.2 - If the space between the doors seal on three sides, but the bottom air gap is one centimeter, then the volume of space needed for the installation of gas by Table 3.

2-3 - the space between the door seal on three sides, but the bottom air gap is 1.5 cm, and then the volume of space needed for the installation of gas appliances shall be in accordance with Table 4.

Table 1 Minimum space needed for combustion air for gas-fired appliances listed in paragraph 1

By Type	Consumption(M)	Power (KW)	Volume(M)	Description Additional
Gas log				
wall Water Heater	2.5	30	120	The Great water heater150 (M)
Ground Water Heater	1.5	18	72	
Frizzy Oven	0.7	8.5	23.6	The Large Oven
Home Steam	0.6	10	30	
Lighting	0.1	2	8	Except bedroom
Fireplace	0.3	3.6	15	The Large Fireplace 48 (M)

Table 2. Minimum space needed for combustion air for gas-fired appliances listed in paragraph 1-2

By Type	Consumption(M)	Power (KW)	Volume(M)	Description Additional
wall Water Heater	2.5	30	impossible	Installing all Water heaters are prohibited
Ground Water Heater	1.5	18	impossible	Installing all Water heaters are prohibited
Frizzy Oven	0.7	8.5	impossible	Install the Frizzy Oven is prohibited
Home Steam	0.6	10	impossible	Install the heater Home is prohibited
Lighting	0.1	2	12	Except bedroom
Fireplace	0.3	3.6	60	Except bedroom

Table 3: Minimum space needed for combustion air for gas-fired appliances listed in paragraph 2

By Type	Consumption(M)	Power (KW)	Volume(M)	Description Additional
wall Water Heater	2.5	30	impossible	Installing all Water heaters are prohibited
Ground Water Heater	1.5	18	70	
Frizzy Oven	0.7	8.5	65	
Home Steam	0.6	10	55	
Lighting	0.1	2	12	Except bedroom
Fireplace	0.3	3.6	17	Except bedroom

Table 4: Minimum space needed for combustion air for gas-fired appliances listed in paragraph 3

By Type	Consumption(M)	Power (KW)	Volume(M)	Description Additional
wall Water Heater	2.5	30	Impossible	Installing all Water heaters are prohibited
Ground Water Heater	1.5	18	60	
Frizzy Oven	0.7	8.5	55	
Home Steam	0.6	10	50	
Lighting	0.1	2	10	Except bedroom
Fireplace	0.3	3.6	20	Except bedroom

2-4 - If the common space between the door and the seal on any post, but the floor is air gap centimeters, then the volume of gas required to install the device in accordance with Table 3.

2.5 - If the door is no ordinary space between the two sides of one and a half inches from the floor, but did not seal the air gap is, in this case size required to install the shown in Table 4 be powered by.

2.6 - If the connection between the two spaces by a door or window is equipped with a valve, in this case, the volume of space needed for the installation of gas appliances according to Table 1 and the type of valve area by gas will be selected as follows.

1-6-2 - no cap adjustment for gas appliances, two windows to the cross-section of at least 150 square centimeters (at high and low) are used.

2-6-2 - powered devices with the modified cap from the valve on one area, we use at least 150 square centimeters, provided that the capacity is less than the nominal capacity of the gas system is described in table 1.

B - Devices that can be used between 35 and 50 kW (30,000 to 43,000 kcal per hour) is. - In this case, install the valve with a minimum area of 150 square centimeters with a minimum area of 75 square cm each valve to supply the needed air. If we want to provide the required air ventilation through the channel, then the channel cross-sectional area of the channel, we can calculate the specific tables.

IV. CONCLUSION

Given the importance of fresh air in the comfort of the air for combustion gas appliances, gas appliances, buildings with central air supply is not required for the combustion It is of interest to design engineers and supervisors.

Therefore, it is recommended for gas appliances within buildings, such rooms are air gas heater in the supply of

combustion air must be considered in the nineteenth debate. And it is better for heating and cooling systems in buildings based on the type of windows and doors used to be suggested with regard to fresh air and combustion is to reduce energy consumption.

- The specific structure of the energy audit and indoor air quality audit done.
- The nineteenth issue regulations regarding the importance of air conditioning and heating and cooling systems in buildings of Groups A and B will be drawn separately.
- Select the user needs building air conditioning systems, indoor air quality and climate should be done to reduce energy consumption.
- Fresh air will be drawn to the more specific regulation and supervision of mechanical engineers and architects are responsible for it.
- The selection of heating and cooling systems, fresh air should be considered.

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I have been involved in teaching and research in the field of Mechanical Engineering, Heating & Cooling System and Energy.

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