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"HEALTHY BUILDING" – BY NATURAL VENTILATION

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Abstract: Especially in the last decade, the world and especially in Europe, in the field of ventilation and air conditioning installations developed the concept: "Healthy Building". Various studies have shown that in air conditioning buildings, health problems of the occupants, such as "Sick Building" syndrome, allergies, etc., are more frequent than in naturally ventilated buildings. This is why 90 % of people prefer a naturally ventilated building instead of air conditioning one. For a building to be healthy, it must be designed so that an essential condition to be met, namely: to achieve natural ventilation as intense as possible.

Key words: ventilation, "healthy building", temperature.

1. INTRODUCTION

According to what we described in the abstract, the temperature variation inside a room for a period of seven days is presented bellow.

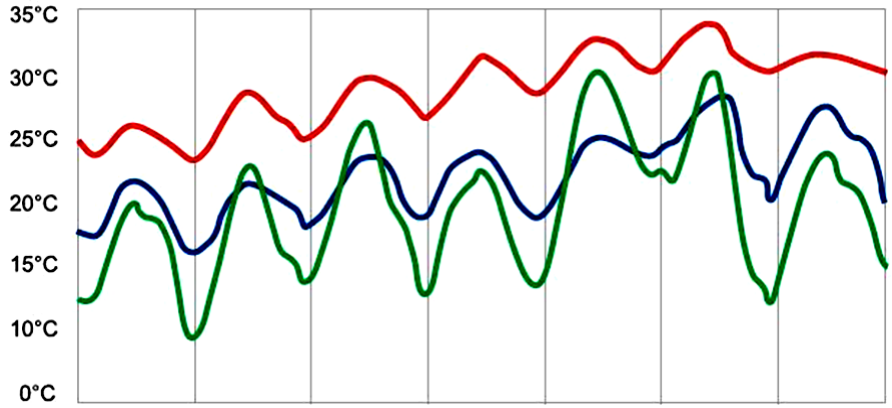

Fig. 1 Temperature variation inside a room for a seven days period of time.

where: ___ : interior temperature variation, without ventilation case;
___ : interior temperature variation, with natural ventilation case;
___ : exterior temperature variation.

2. WINDOW FANS

2.1 Window fans classification

Window fans can be classified into four categories according to their place of assembly to the window frame, namely:

- Fans are mounted in the glass window;
- Fans are mounted above the window frame;
- Fans are mounted into the window frame;
- Fans installed at the roof.

Fans are mounted in the glass window

Their main attribute is that it can be installed in existing buildings without causing a major disruption to installation process.

For their installation following operations must be carried out:

- Removing the window glass;
- Cutting a portion from the window glass equal to the height of the window fan, in order to create the necessary space required for setting up;
- Replacing the fan with the window glass window in its frame.

In this category there are three constructive types of window fans, as we mentioned forward:

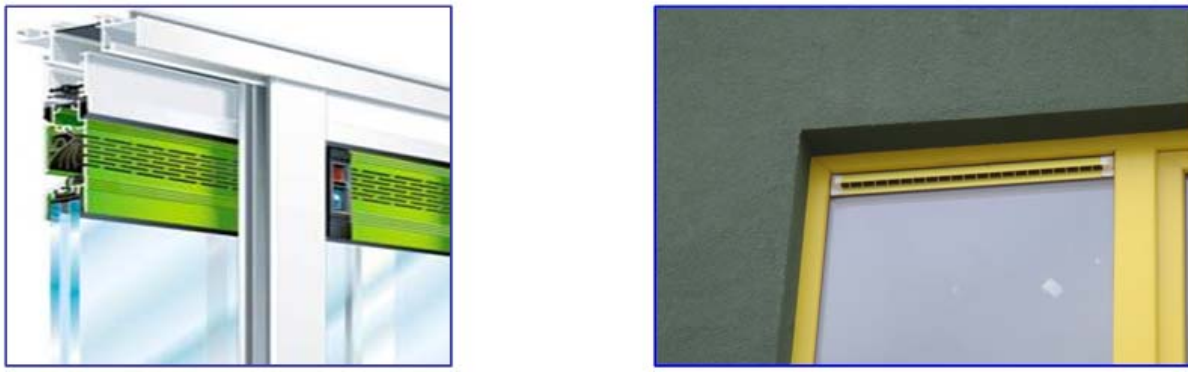

Fig. 2 Flap ventilator.

Fig. 3 Fan with air auto regulation flow according to the difference in pressure, indoor-outdoor.

Fig. 4 Fan with a sliding fastening flap.

Fans are mounted above the window frame

Given their position of installation, window fans in this category can only be installed during building construction.

Fans are mounted above the window frame and obviously, can have large-scale design that allowed developing superior products, comparing to ordinary fans, which fit the glass window and:

- Have better sound insulation;
- May provide, in addition to natural ventilation, the possibility to reduce up to 90 % the solar thermal contributions trough the window where are mounted, due to the textile shield for sun protection that it included.

In this category, there are the following types:

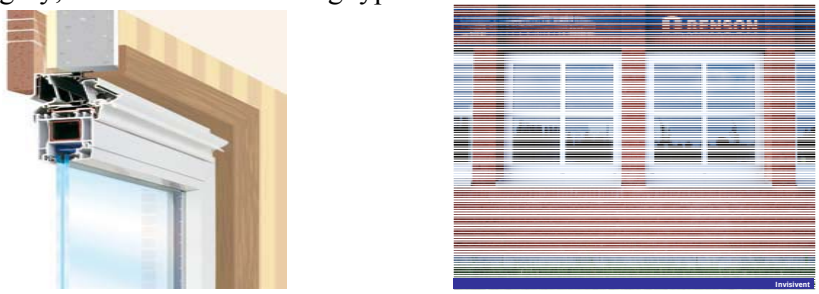

Fig. 5 Simple fan.

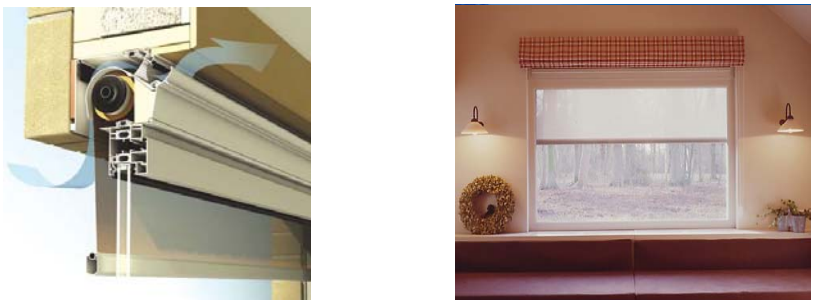

Fig. 6 Fan which is composed of a sun protection shield.

Fig. 7 Sound and heat insulated fan.

Fans are mounted into the window frame

Their essential characteristic is that can be installed in existing buildings, the easiest way possible.

For their installation following operations must be carried out:

- A louver, through which air can reach to the interior, must be made in the upper or lower frame of the window;
- Setting up the window fan above this louver.

Fig. 8 Fan mounted into the window frame.

Fans installed at the roof

These types of fans are used mainly for ventilation glazed verandahs. Their place of assembly is glazed roof of the porch.

Fig. 9 Fan mounted at the roof.

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