Barra costantini system South Africa

What is Barra-Costantini system?

Abstract. It describes the passive solar system,developed in Italy and called Barra-Costantini System,from the name of Barra who concei-ved the fluid dynamics and from Costantini who conceived the me-chanical part and applied it as an experimental prototype to his house in Salisano (Rieti).

What is the difference between Barra-Costantini and glazed PV glass panels?

The conventional Barra-Costantini system gives an internal air temperature of 22.9 °C, while systems with glazed semi-transparent PV and semi-transparent PV only produce temperatures of 22.6 °C and 21.5 °C, respectively. The maximum electrical efficiency of the PV glass panel is 15.6%, while that of the glazed PV glass panel is 13.1%.

What is a Barra Solar System?

(August 2013) The Barra system is a passive solar building technologydeveloped by Horazio Barra in Italy. It uses a collector wall to capture solar radiation in the form of heat.

In the Barra-Costantini system the warm air is released at the non-sun facing rooms, heating the distant part of the building, and flowing back guaranteeing the best heat distribution. A main disadvantage is the hard maintenance: air movement can collect dust between the glazing surface and the wall or condensation may occur during cold nights.

The Barra-Costantini system (Fig. 1) is based on an air collector technique with the installation of an absorber (1) between a wall (2) and glazing (3), in order to benefit from double natural circulation.During winter days, the air in contact with the absorber is heated, naturally ventilated upward and circulated in channels located in the ceiling (4).

Barra-Costantini is a development of the Trombe Wall which uses lightweight glazed collectors and is insulated from south-facing wall. The warm air circulates through ducts positioned in the ceiling, as seen in Fig. 5.14. (Goulding and Owen 1997).

The Barra system is a passive solar building technology developed by Horazio Barra in Italy. It uses a collector wall to capture solar radiation in the form of heat. It also uses the thermosiphon effect to distribute the warmed air through channels incorporated into the reinforced concrete floors, warming the floors and hence the building.

Passive solar systems which provide heating, cooling, and ventilation in different seasons of the year [9], such as the Barra-Costantini [10] and the Silvestrini Bell systems [11], though uncommon ...

The Barra-Costantini(BC) system is a passive tool which can be successfully applied to such dwellings, due to

the ceiling floor used as thermal storage and the absorber disconnected from the south facing wall. This allows an uniform distribution of the air among several rooms, as the heat is conveyed trough ceiling channels.

The aim of this paper is the numerical study of two new configurations of the Barra-Costantini system using building integrated semi-transparent PV technology. Each configuration is integrated...

The Barra-Costantini system (Barra et al. 1980) air heating system is a naturalconvection dual-pass collector with the attributes of a Trombe-Michel wall but unlike a true Trombe-Michel wall, ... In a building with south and north facing rooms, separate thermostats will be necessary since the south rooms will respond to the solar gains much ...

It is found that the installation of the Barra-Costantini system in three climatic zones of Algeria reduces the annual heating needs by 60 to 70%. The profitability of this system strongly depends on a coefficient "RCGE" which represents the ratio of gas cost to the capital cost of the required equipment.

The Barra-Costantini system is a passive heating system developed by O. Barra and T. Costantini in Italy in the late 1970s after a series of tests ... A dark absorber is placed in the middle of the space between the south wall and the glass which doubles the exchange surface between the absorber and the air circulating in the solar chimney ...

The Barra-Costantini system is a passive heating system developed by O. Barra and T. Costantini in Italy in the late 1970s after a series of tests carried out over many years and at various sites [4]. ... The conventional B-C system is integrated on the external side of the south wall and on the roof of the building. It consists of a glass, an ...

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The design and building processes of 40 solar passive flats in Marostica (Vicenza, Northen Italy) gave the opportunity to develop a mass produced low-cost passive component, the...

common. Some of the known systems in this inside the building throughout the year in compo-category are, Sky-Therm (Yellot and Hay, 1969), site climates. earth-air tunnel (Mihalakakouet al., 1995; Sodha et al., 1986), the Silvestrini Bell (Benedittini et al., 1981) and the Barra-Costantini system (Barra 2. BASIC CONCEPT OF THE SYSTEM et al ...

o The conventional Barra-Costantini system gives an air temperature of 22.9°C, while systems with glazed semi-transparent PV and semi-transparent PV produce temperatures of 22.6°C ...

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