INTRODUCTION

The Environmental Building Partnership Ltd (EBP) is an innovative clean technology company, specialising in the development of Dynamic Breathing Building (DBB) systems for use in environmentally friendly, sustainable buildings of all types.

Dynamic Breathing Building systems utilize a dynamically insulated building envelope that acts as a ventilation source, heat exchanger and filter of environmental pollution. The heat or coolth that normally flows out of the building and is lost to the environment is brought back in the form of pre-heated or pre-cooled ventilation air. As a result the energy required for space heating and cooling is reduced. At the same time, the air entering the building is filtered to a high standard, significantly improving overall comfort levels for users of the building.

EBP has developed the *Energyflo™* cell, the world's first commercially available Dynamic Insulation product, forming the core component of a range of DBB Systems that will significantly reduce the carbon footprint and improve the indoor air quality of the built environment.

HOW DOES THE DBB SYSTEM WORK?

Dynamic Breathing Building systems consist of the *Energyflo™* Dynamic Insulation product, linked to air handling, MVHR or HVAC systems to capture and circulate the energy recovered by the Dynamic Insulation envelope. A typical DBB system is shown schematically over the page. A slight pressure difference allows outdoor air to flow into the building envelope via appropriately located inlet vents in the outer leaf. The air moves through the *Energyflo™* cells and picks up conduction heat that would otherwise be lost (or gained). This ventilation air, scrubbed of particulate pollutants through Dynamic Filtration, passes to the air handling systems for distribution into the indoor space. Optimum heat recovery occurs at between 0.6 and 3.0 room air changes per hour, achieving exceptional indoor air quality without cost penalty. This process is shown schematically in the following diagram.

In the base system, indoor air is heated through conventional means. As the air is conducted out of the building through the walls, air pressure in the plenum captures the escaping heat and brings it back into the building through the dynamic insulation process created by the *Energyflo™* cells. This system requires low energy to create the air pressure differential, but the impact on energy saving is reduced.

In the optimal DBB system, air passing through the *Energyflo™* cells as described above, is captured by an MHVAC unit and distributed to the indoor space. In this solution, the efficiency of the MVHAC system is improved and the energy savings increased.

**FEATURES AND BENEFITS**

The main features and benefits associated with the DBB are summarised below.

**Benefit**

**Feature**

Incoming ventilation air preheated/cooled - Less energy is needed to maintain the indoor air temperature, thus the operational costs for space heating and cooling are significantly reduced.

Low dynamic U-Values achieved using thin walls - Avoids the need to use thick wall construction to meet current and future building regulations, saving money and maximising floor plate efficiency.

Cell acts as an air filter, removing airborne particulate pollution from the ventilation air - Superior indoor air quality, allowing the occupiers to live/work in a healthier environment.

- Over time, the building will act as a cleanser of particulate pollution from the local environment, by taking in polluted air and exhausting clean, filtered air.

Cell is maintenance free and lasts the life of the building - Maintenance costs relating to the regular replacement of air filters in buildings are eliminated.

Walls become the ventilation source - Dynamic Breathing Building (DBB) System - Can simplify air handling and improve efficiency by eliminating supply ducting.

- Windows and doors not required for ventilation purposes.

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Dynamic Breathing Building (DBB) System

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CLEAN TECHNOLOGIES FOR THE HIGH QUALITY, LOW CARBON DYNAMIC BREATHING BUILDINGS OF THE FUTURE

DYNAMIC BREATHING BUILDING SYSTEMS CONCEPT
Dynamic Breathing Building System
Energy flow
Dynamic Insulation
Envelope
heat exchanger
fan
heat recovery unit
Cistern
Indoor Space
Air flow

CAVITY WALL CONSTRUCTION METHOD

DYNAMIC ENVELOPE CONSTRUCTION DETAILS FOR DIFFERENT WALL TYPES

TIMBER FRAME CONSTRUCTION METHOD