

A Review Paper on Comparative Study of Earth Tube Heat Exchanger Cooling of Air

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Abstract—A ground-coupled heat exchanger is an underground heat exchanger that can capture heat from and/or dissipate heat to the ground. They use the Earth's near constant temperature to warm or cool air or other fluids for residential, agricultural or industrial uses. If building air is blown through the heat exchanger for heat recovery ventilation, they are called earth tubes (also termed earth cooling tubes, earth warming tubes, earth-air heat exchangers (EAHE or EAHX), air-to-soil heat exchanger, earth channels, earth canals, earth-air tunnel systems, ground tube heat exchanger, subsoil heat exchangers, thermal labyrinths, underground air pipes, and others. Basically this paper represent comparative study of earth tube heat exchanger (GI Pipe, Copper Pipe, Concrete pipe, Plastic Pipe) and find whose earth tube heat exchanger are more effective for same climate conditions.

Keywords – ETHE, Blower, Thermo couple wire, temperature auto scanner machine,

I. INTRODUCTION

A heat exchanger is a system used to transfer heat between two or more fluids. Heat exchangers are used in both cooling and heating processes.[1] The fluids may be separated by a solid wall to prevent mixing or they may be in direct contact.[2] They are widely used in space heating, refrigeration, air conditioning, power stations, chemical plants, petrochemical plants, petroleum refineries, natural-gas processing, and sewage treatment.

The classic example of a heat exchanger is found in an internal combustion engine in which a circulating fluid known as engine coolant flows through radiator coils and air flows past the coils, which cools the coolant and heats the incoming air. Another example is the heat sink, which is a passive heat exchanger that transfers the heat generated by an electronic or a mechanical device to a fluid medium, often air or a liquid coolant.

II. EARTH TUBE HEAT EXCHANGER

Earth tubes are often a viable and economical alternative or supplement to conventional central heating or air conditioning systems since there are no compressors, chemicals or burners and only blowers are required to move the air. These are used for either partial or full cooling and/or heating of facility ventilation air

- Types of Earth Tube Heat Exchanger:

There are two types of earth tube heat exchanger

1. Open Loop Earth tube heat exchanger
2. Closed loop Earth tube heat exchanger

III. PREVIOUS WORK

In the field of earth tube heat exchanger only research done to evaluate coefficient of performance, effectiveness etc. taken single earth tube heat exchanger material either GI (Galvanize iron) or copper pipe.

IV. PROPOSED METHODOLOGY

My work mainly focused on compression of data of different -different earth tube heat exchanger and find with the help of compression whose earth tube heat exchanger are most effective and give good coefficient of performance in same climatic condition.

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