

## **Evaluate Performance of Earth – Air – Pipe System under Laboratory Condition**

### **Abstract**

The ambient temperature getting hot especially in the city region of Malaysia due to impact of vary rapid growth of population and economic. Fans, single air condition units and central air condition units are commonly used in the cities commercial and residential buildings for cooling purpose. The dependency on electricity appliances is also increased indirectly the pressure on environment. The passive cooling system can be used to reduce the space of the commercial building temperature into comfortable rage (298K to 300K). In this study the passive cooling system is defined as solar chimney assisted ventilation and earth air pipe (EAP) air cooling system. An earth air pipe model is designed and conducted experiments at Mechanical Engineering Laboratory, Faculty of Engineering, Universiti Malaysia Sabah. The length of the earth air pipe system, air flow rate, soil moisture and depth of the soil are considered as independent variable whereas temperature is considered as performance indicator as well as dependent variable. The experimental results show that the earth air pipe model is able to reduce 5.5K from ambient temperature 305K when the length of the pipe is about 5.68m and the depth of the soil is about 1 m.