

ABSTRACT

Heat transfer is the science that predicts the transfer of energy that occurs because of differences in temperature between objects or materials. Heat treatment is the process of heating and cooling metals in solid state changing the physical properties of metals. In heat treatment, a furnace is needed for heating objects or materials. Furnace is a device wherein it is heated in a workpiece at a certain temperature and held in a certain time interval.

In order for heating to occur perfectly, a heat treatment furnace is needed that can reach a certain temperature and can withstand heat during the heat treatment process. So to help this process, a heat treatment furnace with a wall of refractory (Refractory) is built. This design process uses refractory materials (refractories), steel plates, elbow iron, heating elements, thermocouples and thermocontrols.

A heat treatment furnace design is produced which can be used for heat treatment, with a designed working temperature of 1200 ° C. However, after being applied to the shape of the tool, it is only able to reach a maximum temperature of 1150 ° C in an interval of 12 hours 17 minutes.

Keywords: Furnace and Heat Transfer